

**MULTIDIMENSIONAL POVERTY MEASUREMENT FROM A
RELATIVE DEPRIVATION APPROACH:**

*A COMPARATIVE STUDY BETWEEN THE UNITED KINGDOM AND
MEXICO*

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Abstract

There is a widespread acknowledgment amongst scholars that poverty should be conceptualised and measured based upon a multidimensional perspective. A one-dimensional poverty approach narrows the vast range of needs that every person in their society is entitled to have in order to achieve a decent way of life. However, there is not yet a consensus on the criteria to identify the multidimensional poor or the manner in which the different dimensions are combined, which results in the implementation of different kinds of antipoverty policies. This thesis builds on a comparative framework of theories, concepts and multidimensional poverty measures developed in Mexico and the United Kingdom, which adopted official multidimensional poverty measurement methodologies in 2008 and 2010, respectively. This comparative study draws on Townsend's relative concept of poverty for the application of the standards that are customary in each society. The aim is to investigate whether different approaches in poverty research give different results concerning the extent and patterns of poverty. This research applies the EU2020 poverty measure and the consensual approach to Mexico. By contrast, it applies the social rights-based approach and the human flourishing theory, developed in Mexico, to the United Kingdom. The research findings indicate that the intersection and union approaches to combining dimensions of poverty result in the identification of different groups of poor people. The history of poverty in the United Kingdom and Mexico reveals that, while the first responds to targeted antipoverty policies, the second focuses on a universal antipoverty policy. This research offers a theoretical and methodological comparative analysis of how poverty conceptualisations impact the operationalization of multidimensional poverty measures and their link with the design and implementation of antipoverty policies. The main purpose of this thesis is to find the best way to measure poverty to inform social policy.

Dedication and Acknowledgements

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I dedicate this dissertation to my parents, my brother and sister for all their understanding and love, especially to my mother, María Esther, from whom I have learned that science is the way to achieve truth.

Author's Declaration

I declare that the work in this dissertation was carried out in accordance with the requirements of the University's Regulations and Code of Practice for Research Degree Programmes and that it has not been submitted for any other academic award. Except where indicated by specific reference in the text, the work is the candidate's own work. Work done in collaboration with, or with the assistance of, others, is indicated as such. Any views expressed in the dissertation are those of the author.



SIGNED:

9 March 2017.

DATE:

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Abbreviations

AA	Attendance allowance
AFORE	Retirement fund management (Administradoras de Fondo para el Retiro, in Spanish)
ANOVA	Analysis of Variance (a statistical model)
AP	Additional pension
AROP	At-risk-of poverty rate
AROP or SE	At-risk-of poverty rate of Social Exclusion
ASPP	Additional statutory paternity pay
BA	Bereavement allowance
BP	Bereavement payment
CA	Carer's allowance
CCA	Canonical Correlation Analysis
CCT	Conditional Cash Transfer
CAUSES	Universal Health Services Catalogue (Catálogo Universal de Servicios de Salud, in Spanish)
CEPAL	Economic Commission for Latin America and the Caribbean (ECLAC in Spanish)
CEPAL-PNUD	Spanish equivalent of ECLAC-UNDP
CFA	Confirmatory Factor Analysis
CONAVI	National Council of Dwelling (Comisión Nacional de Vivienda, in Spanish)
CONEVAL	National Council for the Evaluation of Social Development Policy (Consejo Nacional de Evaluación de la Política Social, in Spanish)
COPLAMAR	General Coordination of the National Plan for Depressed Zones and Marginal Groups (Coordinación General del Plan Nacional de Zonas Deprimidas y Grupos Marginados, in Spanish)
CPL	Consensual Poverty Line
CTB	Council tax benefit
CTMP	Technical Committee for Poverty Measurement (Comité Técnico para la Medición de la Pobreza, in Spanish)

DB	Disablement benefit
DLA	Disability Living Allowance
DOF	Diario Oficial de la Federación
DWP	Department for Work and Pensions
EC	European Commission
ECHP	European Community Household Panel
ECLAC	Economic Commission for Latin America and the Caribbean
ECOSOC	Economic and Social Council (of the United Nations)
EDUMP	Survey of Multidimensional Poverty Thresholds (Encuesta de Umbrales Multidimensionales de Pobreza, in Spanish)
ENCASB	Survey-Access to Basic Satisfiers (Encuesta de Acceso a los Satisfactores Básicos, in Spanish)
ENIGH	National Survey of Household Income and Expenditure (Encuesta Nacional de Ingreso y Gasto de los Hogares, in Spanish)
ENOE	National Survey of Occupation and Employment (Encuesta Nacional de Ocupación y Empleo, in Spanish)
EPASB	Perceptions Survey-Access to Basic Needs (Encuesta de Percepciones-Acceso a Satisfactores Básicos, in Spanish)
EPL	Extreme Poverty Line
EPPU	Survey of Perceptions of the Urban Population on the Minimum Standards for the Satisfaction of Basic Needs (Encuesta de Percepciones de la Población Urbana sobre las Normas Mínimas de Satisfacción de las Necesidades Básicas, in Spanish)
ESA	Employment and support allowance
EU	European Union
EU-SILC	European Union Survey on Income and Living Conditions
EVALUA	Consejo de Evaluación de Desarrollo Social
FB	Family benefits
FNB	Food Normative Baskets
FRS	Family Resources Survey
GDP	Gross Domestic Product
GNB	Generalised Normative Basket
HB	Housing benefit

HF	Human Flourishing
IB	Invalidity/incapacity benefits
ICA	Invalid care allowance
ICESCR	International Covenant on Economic, Social and Cultural Rights
I(IPMM)	Intensity of Poverty (according to the IPMM index)
INDEC	Instituto Nacional de Estadística y Censos
INEGI	National Institute of Statistics and Geography (Instituto Nacional de Estadística, Geografía e Informática, in Spanish)
ILO	International Labor Organization
IMSS	Mexican Institute of Social Security (Instituto Mexicano del Seguro Social, in Spanish)
IPMM	Integrative Poverty Measurement Methodology
I(PLT)	Intensity of Poverty by Income-Time
IS	Income Support
ISSSTE	Institute for Social Security and Services for State Workers (Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado, in Spanish)
ITLP	Index of Employment Trends in Poverty (Indice de la Tendencia Laboral de la Pobreza, in Spanish)
JSA	Jobseeker's allowance
LA	Latin America and the Caribbean
LFT	Federal Labour Law (Ley Federal del Trabajo, in Spanish)
LGDS	General Law of Social Development (Ley General de Desarrollo Social, in Spanish)
LIS	Luxembourg Income Study Center
LSS	Social Security Law (Ley del Seguro Social, in Spanish)
LTC	Long term care
LWI	Low work intensity
MA	Maternity allowance
MCS	Module of Socioeconomic Conditions (Módulo de Condiciones Socioeconómicas, in Spanish)
MD	Material deprivation
Mdn	Median

MIS	Minimum Income Standards
MMPM	Methodology for Multidimensional Poverty Measurement
MODUTIH	Module on Availability and Use of Information Technology in Households (Módulo sobre Disponibilidad y Uso de las Tecnologías de la Información en los Hogares, in Spanish)
MPB	Maternity and Paternity benefits
MPG	Median At-Risk-Poverty Gap
MUD	the Moral Underclass Discourse (of Levitas)
MWT	Minimum Wellbeing Threshold (of CONEVAL)
NBES	Normative Basket of Essential Satisfiers (CNSE, Canasta Normativa de Satisfactores Esenciales, in Spanish)
NCnF	Normative Cost of Non-Food Goods and Services
NCONE	Normative Cost of Other Needs
Nd	No data
NI	National Insurance
NICs	National Insurance contributions
OPB	Old-age pensions and benefits
ODEPLAN	National Office of Planning (La Oficina de Planificación Nacional, in Spanish)
OECD	Organisation for Economic Co-operation and Development
OIT	International Labor Organization (Organización Internacional del Trabajo, in Spanish)
OPB	Old-age pensions and benefits
OPP	Occupational Pension Plan
OSPP	Ordinary Statutory Paternity Pay
PAM	Senior Citizens Program (Programa de Adultos Mayores, in Spanish)
PC	Pension credit
PDI	Proportional Deprivation Index
PL	Poverty Line
PL-IPMM	Poverty Line (according to the IPMM index)
PL-ECLAC	Poverty Line (according to ECLAC)

PROFECO	Federal Attorney's Office of Consumer (Procuraduría Federal del Consumidor, in Spanish)
PSE	Poverty and Social Exclusion Survey
RED	the Redistributive Discourse (of Levitas)
SAP	Statutory adoption pay
SB	Survivors benefits
SCB	Sickness cash benefits
SDA	Severe disability allowance
SEDESOL	the Ministry of Social Development, in Mexico (Secretaría de Desarrollo Social, in Spanish)
SEM	Structural Equation Modelling
SI	Social Inclusion
SID	the Social Integration Discourse (of Levitas)
SMD	Severe material deprivation
SMP	Statutory maternity pay
SP	Popular Insurance (Seguro Popular, in Spanish)
SPS	School for Policy Studies, University of Bristol
SR	Social Rights
SSP	Statutory sick pay
TNCs	Trans National Corporations
UBN	Unsatisfied Basic Needs
UDHR	1948 Universal Declaration of Human Rights
UK	United Kingdom
UNCRC	UN Convention on the Rights of the Child
UNDP	United Nations Development Programme
UNGA	General Assembly of the United Nations
UNICEF	United Nations Children's Fund
WI	Work Intensity
WPA	Widowed parent's allowance
WT	Wellbeing Threshold (of CONEVAL)

Chapter 1

Introduction

1.1 Introduction

Official multidimensional poverty measurement methodologies have been adopted in the UK and Mexico, during the first decade of the 21st century. However, different multidimensional poverty measures have implied divergent results. Additionally, anti-poverty policies have not been designed according to poverty measurement criteria, defined in multidimensional terms.

This is a study of comparative multidimensional poverty measurement, devised in the UK and Mexico, which is carried out based upon a relative deprivation approach. Multidimensional poverty measurement methodologies are assessed, through their application to different respective social contexts, Mexico or the UK, and their methodological criteria are tested with various multivariate and statistical techniques. The main purpose is to find the best way to measure multidimensional poverty, by identifying scientific criteria based upon empirical analysis, in order to inform social policy's contribution to poverty alleviation.

This chapter introduces the context and the subject matter of the thesis; presents the aim and objectives of the research; the research methods; as well as the rationale and the scope of the study, and also outlines the structure of the thesis.

1.2. Multidimensional poverty measures produce divergent results and antipoverty policy responses

The evidence has shown a transition, from one-dimensional to multidimensional poverty measurement methodologies that have been officially adopted, in Mexico in 2008 (EVALUA, 2009a; CONEVAL, 2010) and in the UK, in 2010 (EC, 2010; UK Parliament, 2010a).

In Mexico, the National Council for the Evaluation of Social Development Policy (CONEVAL, 2010) launched at the national level the Methodology for Multidimensional Poverty Measurement (MMPM). At the local level, the Council for the Evaluation of Social Development (EVALUA, 2009a) launched in Mexico City, the Integrative Poverty Measurement Methodology (IPMM). Both poverty measurement methodologies have in common, the estimation of social deprivations (or Unsatisfied Basic Needs, UBN) and (or) low income, to identify the multidimensional poor. Furthermore, the General Law of Social Development (LGDS, by its acronym in Spanish) has defined that the measurement of multidimensional poverty should be estimated, through a social rights-based approach. The law has also established the guidelines of social policy, for the accomplishment of social rights, on the basis of equality and non-discrimination (DOF, 2004).

The Mexican evidence has shown that a large number of Mexican people is still living in multidimensional poverty, about 46% of the total population in 2010, according to CONEVAL's (2013a) official results. Although, other approaches such as the IPMM poverty index shows an estimation of 83% of multidimensional poverty in the same year and at the national level (Boltvinik, 2013c). These results imply diverse criteria to combine the poverty dimensions and to define the poverty thresholds.

Similarly, in the UK, the Government adopted a child multidimensional poverty measurement methodology. The UK's 2010 Child Poverty Act defines a combined measure of low income and material deprivation, jointly with other poverty targets to fulfil the commitment of eradicating child poverty by 2020 (UK Parliament, 2010a). Moreover, poverty is also measured in multidimensional terms for the whole UK population, through the EU2020 poverty measure, which encompasses indicators of relative income plus social exclusion.

The EU2020 poverty measure shows that 22% of the UK population were living at-risk-of-poverty or social exclusion in 2009 (EC, 2011). However, alternative measures have been devised by scholars (Gordon et al, 2013), based upon the PSE (Poverty and Social Exclusion) survey and show that 33% of the population, in the UK, were experiencing

multiple deprivation in 2012. The PSE research work also shows several facets, in which people experience poverty and deprivation in the UK (Gordon, et al, 2000a; 2013).

However, research evidence has shown a gap, between poverty measurement achievements in both countries and their impacts upon antipoverty policies. The design and implementation of social policy in the UK and Mexico have depicted limited responses, regarding to poverty alleviation, in comparison to what it has been achieved in the scope of multidimensional poverty measurement. Also, the target population, estimated by the criteria of the official multidimensional poverty measures (CONEVAL, 2010; EVALUA, 2011a; EC, 2010; 2014a), has not been taken into account, to also design and implement adequate anti-poverty policies in Mexico and the UK. There is no evidence of an objective multidimensional poverty measurement, that identifies the multidimensional poor and which also implies a major reductive effect on poverty, in both countries.

1.3. Study aim and research questions

The study aims to carry out a comparative analysis of multidimensional poverty measurement methodologies, which were developed in the UK and Mexico. The purpose is to compare the different results and patterns of poverty produced with different methodological criteria. The analysis also aims at evaluating methods and underlying theoretical statements, in order to define the objective poverty measure that captures social necessities.

The ultimate goal is to define the best way to measure poverty, by considering assessment criteria for the definition of poverty thresholds and standards; the way poverty dimensions are combined; the inclusion of social deprivation indicators and issues of normative vs. relative stances, to identify the multidimensional poor. Additionally, the study will provide knowledge to inform about implications for antipoverty policy as a response of the methodological approaches.

The current field of poverty studies leads us to pose the following main research question:

I. What is the best way to measure poverty to inform social policy?

The debates on the conceptualisation and the scientific measurement of poverty; as well as the UK and Mexican experience about measurement decisions and impacts upon social policies, guide this study to pose the following set of specific research questions, in order to help answer the main question:

I.1. What are the lessons we should learn from poverty measurement and antipoverty policies, from the UK and Mexican experiences, in their transition from a one-dimensional to a multidimensional poverty measurement?

I.2. What is the theoretical-conceptual relationship, underlying the multidimensional poverty measurement methodologies, and the measurement criteria which need to be evaluated to inform social policy?

I.3. Do multidimensional poverty measurement methodologies produce divergent estimates of the extent and patterns of poverty? And with what effects for anti-poverty policies?

1.3.1. Objectives

I. To conduct a comparative study on multidimensional poverty measurement between the UK and Mexico, based upon Townsend's relative concept of poverty, by identifying the standards prevailing in society to find the objective poverty measure that allows us to pose scientific criteria to identify the multidimensional poor.

II. To critically review the theories and concepts underlying the multidimensional poverty measures developed in the UK and Mexico: the EU2020 poverty measure; the consensual approach; the CONEVAL's MMPM poverty measure and the IPMM methodology, with

the purpose of identifying the target population, for which these methodologies were devised and their link to antipoverty policies.

1.4. The research method: A comparative framework of multidimensional poverty measurement

This thesis offers explanations about theoretical-methodological basis of four different multidimensional poverty measurement approaches, which are currently applied in the UK and Mexico. The multidimensional poverty measurement frameworks are: the consensual approach (Mack and Lansley, 1985; Gordon, 2006a); the social inclusion/exclusion framework, applied through the EU2020 poverty measure (EC, 2010; 2014a); the social rights-based approach through the CONEVAL's (2010) MMPM methodology and the human flourishing viewpoint to the measurement of poverty, with Boltvinik's (1992) IPMM poverty index.

The recent experience in Mexico and the UK on the implementation of official measures of multidimensional poverty give a basis to test the criteria, for the identification of the multidimensional poor by designing a comparative study. This research is grounded in the notion that poverty is relative in space and time and it is in these terms that external methodologies can be applied to national surveys, because the standards to identify needs draw upon the social norms prevailing in each particular society (Townsend, 1979). The UK multidimensional poverty measurement methodologies will be applied to the Mexican context and similarly, the Mexican methods will be applied to the UK context.

Mexico and the UK constitute a suitable comparison despite they exhibit very different dynamics of poverty. The multidimensional poverty measurement methodologies developed in the UK and Mexico have theoretical foundations on Townsend's (1979) relative deprivation approach to poverty. These poverty methods aim at capturing what is customary to live decently (Townsend, 1979), either through having the minimum required to afford the necessities of life (Mack and Lansley, 1985) or to be entitled to fulfil people's social rights (CONEVAL, 2010), as well as to be included in society (EC,

2010) and meet basic needs and develop capacities to achieve human flourishing (Boltvinik, 2005a; 2005c).

Consequently, one of the purposes of this study is to build a bridge between these debates on poverty measurement. This study has identified theoretical convergences underlying the notion of poverty, between the different poverty approaches, addressed in this research (consensual approach; social inclusion; human flourishing; social rights-based approach). There are definitional elements related to social consensus; social participation, social rights, etc. This study shows that all of them imply identifying social necessities for the measurement of multidimensional poverty.

Furthermore, in the UK, Townsend's approach to poverty implies the estimation of multidimensional poverty by combining indicators of low income and deprivation. These poverty dimensions have been recurrent in the analysis of poverty and have been captured in different surveys, such as in the FRS and the PSE surveys. On the other hand, poverty studies emerged in Latin America from Altimir's (1979) approach, who incorporated the unsatisfied basic needs (UBN) and was combined with low income, by Beccaria and Minujin (1987). Also, one of the official and methodological viewpoints in Mexico (CONEVAL's approach to poverty), is to include social deprivations into the measurement of multidimensional poverty, to capture the failure to achieve social rights. Both, UBN indicators and deprivations represent the standard of living.

The UK and Mexican poverty studies have shown debates on multidimensional poverty measurement on the way dimensions are combined. The methodological analysis is then, focussed on the union and intersection approaches to poverty. Moreover, there are differences in the way poverty thresholds are identified, either through multivariate statistical analysis, such as in the case of the consensual method (Gordon, 2006a); or on relative basis, as in the case of the EU2020 poverty measure (EC, 2014a); or through normative method, such as in the IPMM (Boltvinik, 1992) and MMPM (CONEVAL, 2010) poverty methodologies. Furthermore, the outcomes of the research will be compared with external validators, such as the official measures in the UK and Mexico. Other external validators are used to evaluate the multidimensional poverty measurement

methodologies, e.g. those indicators that have shown significant correlations with poverty.

Finally, the evaluation of the multidimensional poverty measurement methodologies showed the objective criteria to identify the multidimensional poor, based on the assessment of reliability, validity and generalisability of methods. Thus, the focus of this thesis was to develop an analytical and comparative framework that formed the basis for empirical research on poverty measurement.

This study was carried out based on Popper's (1969; 1972a) epistemological approach. This approach permitted to corroborate empirical content through replication of multidimensional poverty measurement methods, in two different social contexts, and brings new facts based upon empirical evidence.

1.5. Research rationale and the scope of the analysis

This comparative research is justified because the evolution in poverty studies, in the UK and Mexico, has shown similarities in their transition from the one-dimensional to the multidimensional measurement of poverty. Both historical transitions have been derived from criticisms of budget standards approaches, which conceive absolute notions of needs to measure poverty. One-dimensional approaches to poverty were developed mainly by Rowntree (1901) in the UK; the Economic Commission for Latin America and the Caribbean (ECLAC) (CEPAL-PNUD, 1992); and the Technical Committee for Poverty Measurement (CTM, 2000) in Mexico, between others.

The UK and Mexico have a long experience on poverty studies, particularly since the 1970s, with the major works of Townsend (1979) in the UK and Altimir (1979) in Latin America. These scholars have led subsequent poverty studies towards measuring poverty in multidimensional terms. These experiences have implied that the achievements on multidimensional poverty measurement become important not only at the national level. They have also influenced other countries and international institutions to achieve similar goals in the field of poverty measurement. For example, the CONEVAL's (2010) MMPM

methodology has been also applied by UNICEF and CONEVAL (2013) to measure multidimensional child poverty in Mexico. Also, the European Commission (EC, 2010, 2011, 2014a) has applied the EU2020 to all the current European countries.

There is also the influence of the work carried out by Mack and Lansley (1985) in the UK to the current research work undertaken by CONEVAL (2010), in Mexico. CONEVAL (2010) has carried out the Survey of Multidimensional Poverty Thresholds (EDUMP), which not only captures the socially perceived necessities, but also the poverty thresholds. Also, Gordon (2006a) collaborated in the CONEVAL's (2010) scientific committee to create the MMPM index. He also proposed that social deprivation indicators should be valid, precise and reliable, and should be estimated at the state and municipal levels in representative surveys (CONEVAL, 2010). Therefore, the 2008 Module of Socioeconomic Conditions (MCS) of the National Survey of Household Income and Expenditure (ENIGH) was carried out by INEGI and CONEVAL (2010).

Another reason to carry out a comparative study between the UK and Mexico is because international institutions such as the Organisation for Economic Co-operation and Development (OECD, 2014a), and the Luxembourg Income Study Center (LIS, 2014), have still used one-dimensional poverty measures, to compare figures on poverty for the member countries; despite Mexico and the UK have advocated multidimensional measurement methodologies, in official terms. OECD and LIS produce relative poverty rates of 40% to 60% median income thresholds, to identify the total number of people living in income poverty and child poverty as well (OECD, 2014a; LIS, 2014).

It is not reasonable to continue using a one-dimensional poverty measure, because it entails inadequate estimates of the extent, and social distribution of poverty. Furthermore, the OECD and LIS present their income poverty results, based on surveys that encompass a whole set of social deprivations (UBN), such as the ENIGH survey in Mexico; or in the case of the Family Resources Survey (FRS), which includes indicators of financial insecurity or multiple deprivation for the UK. The MCS module of the ENIGH survey and the FRS have been designed to measure multidimensional poverty (CONEVAL, 2010; Gordon et al, 2013).

A comparative study has also been carried out, because there are few studies showing theoretical and conceptual comparisons of the elements underlying the multidimensional poverty measurement criteria and more particularly, their implications on the extent and social distribution of poverty. So, this research addresses discussions regarding the implications for anti-poverty policies and the possible effects that may result when a specific poverty measurement methodology is advocated. Deacon et al (2010) stress that there is a missing link between the concept of poverty, its measurement and the implementation of social policy in the current field of poverty studies. Some scholars have argued that different definitions of poverty and the criteria for its measurement lead to the identification of different groups as poor and to different antipoverty policies (Kangas and Ritakallio, 1998; Gordon, 2006; Ruggeri et al, 2003). Therefore, there is a need to devise a scientific measurement of poverty to help implement adequate antipoverty policies (Townsend et al, 1997; Townsend et al, 2006; Gordon, 2006a; 2006b).

The evaluation of multidimensional poverty measurement methodologies is also important, because it implies the comparison of divergent patterns of multidimensional poverty, resulting from different methods. This research also shows some evidence, regarding the implications of implementing inadequate poverty measures, that have entailed inappropriate antipoverty policies in the UK and Mexico.

The scope of the analysis is to estimate multidimensional poverty at the national level in the UK and Mexico. The analysis is also looking at the individual level, to identify the population living in multidimensional poverty. However, the study also gives estimates of people living in deprivation only and low income only. The analysis involves the estimation of the patterns of multidimensional poverty by the different poverty methods evaluated. National representative surveys are used to carried out the comparative study.

1.6. Thesis overview

This thesis is structured around the theories, concepts and measures of poverty that have been developed in the UK and Mexico. Therefore, this research is grounded in a critical

analysis, derived from the debates on how poverty is conceptualised and the way poverty measurement methodologies have been approached. The empirical part is focused on the evaluation of multidimensional poverty measurement methodologies to define objective criteria for the identification of the multidimensional poor. The conclusions show divergent estimates of the extent and social distribution of poverty and their impacts upon anti-poverty policies.

This thesis will be divided into three main parts. Chapters 2 and 3 discuss conceptualisations and debates on poverty measurement and implications upon antipoverty policies. A methodological assessment comprises Chapters 4, 5, 6 and 7, while Chapter 8 discusses the findings of the study, regarding multidimensional poverty measures and the resulting patterns of poverty, as well as policy implications. Details of each chapter are set out below.

Chapter 2 examines the transition to multidimensional poverty measurement, from the UK and Mexican experience. The discussion starts with Townsend's criticism of the one-dimensional approach, as well as criticisms from other scholars in Mexico and the UK for those who advocate absolute notions of needs to measure poverty. This chapter analyses the multidimensional poverty measurement criteria. It also provides an analysis of how different poverty measures produce divergent results, regarding the extent of poverty. This chapter also shows that non-objective criteria to measure poverty has implied inadequate antipoverty policies.

Chapter 3 discusses the theoretical principles of the consensual approach; the, social inclusion/exclusion; the social rights, and the human flourishing frameworks, underlying the multidimensional poverty measures developed in the UK and Mexico. This chapter identifies the conceptual and methodological elements converging in the notion of social necessities. It also addresses the importance of capturing social needs by social consensus to identify the multidimensional poor.

Chapter 4 explains the epistemological and methodological approach that underlines this research, and explains the research design. This chapter also describes the methodology of the four multidimensional poverty measures, the consensual method (Gordon, 2006a;

Gordon and Nandy, 2012); the EU2020 poverty measure (EC, 2014a; 2014b); the IPMM and the MMPM multidimensional poverty indexes (Boltvinik, 1992; CONEVAL, 2010), considered in this thesis. The chapter also gives explanations of how these methodologies will be applied and evaluated in different contexts and how the indicators will be operationalized. Additionally, a description of the surveys used to measure multidimensional poverty is also included; as well as ethical issues and limitations of the study.

Chapter 5 explains why the consensual approach has been used in Mexico, to capture consensual poverty thresholds and social needs for the definition of social deprivation indicators. So, this chapter applies the consensual method (Gordon, 2006a; 2010b; Gordon and Nandy, 2012) to the measurement of multidimensional poverty in Mexico, while presenting an assessment of a deprivation index for Mexico; alongside a description of patterns of poverty. In addition, this chapter offers a comparison of the results by considering the information on poverty provided by the official methodologies in Mexico.

Chapter 6 applies the EU2020 poverty measurement approach to the Mexican context. The chapter provides an explanation of why it is relevant to replicate this measure in the Mexican context and offers an assessment of the impact of the at-risk-of-poverty rate, low work intensity and the indicator of severe material deprivation. The combined EU2020 poverty measure provides results on the prevalence and patterns of multidimensional poverty in Mexico and the chapter includes a comparison with the official methodologies used in Mexico. The chapter carries out an assessment of the EU2020 and how coherent this measure is with its social inclusion framework.

Chapter 7 aims to apply the official multidimensional poverty measurement methodologies, the CONEVAL's (2010) MMPM and the IPMM (Boltvinik, 1992; EVALUA, 2009a) indexes to the UK context. The chapter provides explanations of the importance of replicating both methodologies in the UK. Results on social deprivations/unsatisfied basic needs and multidimensional poverty are presented in this chapter for the UK. The multidimensional poverty measurement methodologies are also assessed with multivariate techniques. A comparison of the results is also offered by

considering the information on the prevalence of multidimensional poverty which are provided by the PSE research project in the UK (Gordon et al, 2013).

Chapter 8 answers the research questions posed at the beginning of the study. The chapter presents the contributions of the study by explaining how the empirical analysis for the UK and Mexico, resulted in divergent patterns of multidimensional poverty. Also, the outcomes of the study are examined looking at the implications of antipoverty policies. Finally, an analytical-comparative framework on the theories, concepts and measures on multidimensional poverty is developed.

Chapter 2

The transition from one-dimensional to multidimensional poverty measurement approaches in the UK and Mexico: the extent of poverty and antipoverty policies.

2.1. Introduction

The importance to review the history of poverty measurement in the UK and Mexico is to identify the theoretical and conceptual similarities, and differences that form the basis of poverty measurement methodologies. The evolution of poverty studies in the UK and Mexico shows a one-dimensional to a multidimensional transition with regards to poverty measurement. The transition is identified through criticisms to one-dimensional poverty approaches. The multidimensional poverty measurement criticism is focused on the methodological criteria to combine the poverty dimensions, through the union or intersection approaches. Additionally, the chapter provides a description of the multidimensional poverty measurement methodologies, and the estimates produced in the UK and Mexico.

The experiences in the UK and Mexico shows that one-dimensional poverty measures have underestimated the prevalence of poverty, and have not helped to alleviate poverty in both countries. This also shows that the current official multidimensional poverty measurement methodologies, in the UK and Mexico, show different criteria to estimate multidimensional poverty, resulting in divergent estimates of the extent of poverty. This can lead to not identifying the poor adequately. There is a need to define objective multidimensional poverty measures, which could lead to accurate antipoverty policies for the alleviation of poverty and deprivation.

This chapter aims at providing evidence to answer the following research questions, posed at the beginning of this study: 1) What are the lessons we should learn on poverty measurement and antipoverty policies, from the UK and Mexican experiences, in their transition from a one-dimensional to a multidimensional poverty measurement? 2) What

is the theoretical-conceptual relationship, underlying the multidimensional poverty measurement methodologies, and the measurement criteria which need to be evaluated to inform social policy?

2.2 Criticism of the one-dimensional perspective of poverty in the UK

History has shown that defining poverty in terms of income and measuring it accordingly, is insufficient to capture a wide range of social needs that every person in society has to meet in order to achieve a decent way of life. Therefore, a one-dimensional approach does not enable the design of effective and efficient anti-poverty policies (Ruggeri and Stewart, 2003; Rio Group, 2006; Mancero and Villatoro, 2013). Townsend (1979) discusses the narrow concept of income and the maintenance of physical efficiency which had been prevalent, not only in the UK with Rowntree's (1901) definition of poverty, but also in the developing world.

Townsend (1979) states that Rowntree's budget standards do not express the concept of poverty in relative terms, because the range of needs included in his approach, are oriented only towards what is essential to carry on functioning. For example, Rowntree considers the minimum amount of food, shelter and clothing one requires, but without regard to the changing needs that people experience when society changes. In his criticism of Rowntree (1901), Townsend (1979) reveals a sociological approach to poverty, in which social needs should be considered instead of a subsistence notion of poverty. As such, Rowntree's (1901) definition of poverty neither recognises the changing needs in society, nor what is a customary way to live decently in a specific society. Gordon (2010b) states that the standards to satisfy needs can vary by sex, age, region, occupation, etc. Moreover, he identifies two dangers if a poverty measure relies on the subsistence notion. The first danger is the false belief that an absolute standard of human needs can lend scientific support to a system of social security; the second is the arbitrary definition of such standards.

Rowntree (1901) defined a poverty line based upon his concept of primary poverty which alludes to those families "*whose total earnings are insufficient to obtain the minimum*

necessaries for the maintenance of merely physical efficiency” (Rowntree, 1901, p. 86). He points out that the expenditure required to meet other essential needs for “*the development of the mental, moral, and social sides of human nature*” (Rowntree, 1901, p. 87) was not considered. This definition was used for the abolishment of want after World War II in the UK (Townsend, 1979). Rowntree acknowledges that “*any classification of families according to income must be an arbitrary one*” (Rowntree, 1901, p. 27) stating that his enquiry enables “*a more searching analysis to be made*” (Rowntree, 1901, p. 28). Rowntree also obtained a picture of the standard of living of families amongst the wage-earning class in York, a study which allowed him to identify poverty that was not related directly to income. One example is those people living in poverty because of where they live:

“it must be remembered that some families are living in apparent poverty in the slums, not because of inadequate income, but because of their attachment to the neighbourhood” (Rowntree, 1901, p. 116).

Rowntree (1901) also identifies the concept of secondary poverty, which occurred in households with a sufficient income to maintain physical efficiency, but who nevertheless, suffered poverty as a consequence of insufficient spending, i.e. spending their incomes on other things rather than physical efficiency (Freeman, 2011). Veit-Wilson (1986) argues that Rowntree uses heuristics, to postulate that the lifestyle of the poor was to some extent caused by low income. Rowntree (1901) observed and explained associations of income with other aspects of the style of living, such as rent, overcrowding, health, drainage and sanitation, and identified the causes of primary poverty, as being mainly related to issues of low wages and chronic irregularity of work. Rowntree’s (1901) inquiry helped in the construction of Townsend’s (1979) definition of poverty, in terms of the relationship between income and standards of living, and the definition of poverty in terms of human needs standards.

Townsend (1962; 1979) argues that the problem of defining poverty as a synonym of low income is that it may show incorrectly that poverty is being reduced in certain societies. Townsend (1962) questioned the proposition that poverty was eliminated in Britain in the post-war years. He quotes some contemporary studies, which showed evidence of groups

of people that experienced poverty at the end of the 1950s and the beginning of the 1960s, despite surveys carried out by Rowntree in 1936 and 1950, which showed a sharp decline in incidences of poverty in York, from 18% to only 2%. Townsend (1979) criticised Rowntree's (1901; 1937; 1941) budget standards measure of poverty, because rising standards of living were not taken into account and because, his poverty line is based only on human subsistence, without considering the changing needs that people experience as society changes. This led Rowntree (1901) to produce invalid measures of poverty at least from the relative perspective, pursued by Townsend (Timmins, 1995). Townsend (1979) refers to Orshansky's (1967) study in the United States when arguing that, if "*poverty indices are not redefined periodically and adjusted for comparisons across time, and space, they will produce invalid data about the prevalence of poverty*" (Townsend, 1979, p. 32, quoted Schorr, 1977).

In the UK, the Beveridge Report of 1942 adopted Rowntree's (1941) subsistence standards as the basis for setting social security benefit rates (National Assistance) that were aimed at alleviating poverty (Veit Wilson, 1992). This led Townsend (1954; 1979) to apply Rowntree's (1941; 1951) criterion of poverty measurement to the Family Expenditure Survey of 1953-54 by adjusting income standards according to increases in costs of living. The results showed that 4% of individuals were living in poverty in the UK. This is almost three times the number of those in poverty in York, the city that was used as the reference by Rowntree and Lavers (1951) to characterise poverty experienced in the UK in the 1950s (Abel-Smith and Townsend, 1965; Pichaud, 1988). Townsend's (1962) argument is that the welfare state should respond to contemporary needs, not to those that existed in the past. As such, antipoverty policies had not been designed for poverty alleviation in the post-war years.

Ringen (1985; 1988) criticises Rowntree's research for showing that the UK was about to become free of poverty. Ringen (1988) states that the problem of indirect versus direct approaches draws upon how welfare is defined:

“if welfare is measured directly, we establish what intrinsic goods individuals command, for instance their standard of consumption. If welfare is measured

indirectly, we establish what resources individuals command, for instance their disposable income” (Ringen, 1988, p. 355).

However, this dilemma is ideological and Ringen (1988) assumes that poverty is the consequence of a lack of resources, i.e. deprivation is poverty; which is different from Townsend (1979) who believed that poverty is a lack of sufficient resources (broadly defined) and deprivation is the outcome. Ringen (1988) defines poverty as a “*standard of consumption so low that it excludes those who suffer it from the normal way of life of their community*” (Ringen, 1988, p. 356) and regards income as an indirect definition of poverty.

For Townsend (1979; 1985), the problem of the indirect approach is that it measures poverty as relying only on income, which does not take into account a broader definition of resources. Other scholars, such as Nolan and Whelan (1996a) and Gordon et al (2000b) state that the stances of both Townsend (1985) and Ringen (1988) can be reconciled once the definition of the poor refers to a person who has both a low income and is also deprived. Thus, this definition has the possibility of overcoming this normative debate by including an operational solution of income and deprivation into the measurement of poverty (Rio Group, 2006).

Boltvinik (1999a) explains that the one-dimensional measurement of poverty relies entirely on one variable (usually income) to define a poverty line. Boltvinik (1999a) advocates Ringen’s (1988) approach and states that unsatisfied basic needs are assessed indirectly, if a one-dimensional approach is considered. For Sen (1982) and Boltvinik (1999a), the indirect approach identifies the potential satisfaction of human needs, which is different from the factual satisfaction of basic needs, which is the essence of the direct approach. Additionally, Titmuss (1962) shows that income is an inaccurate indicator, because there are other resources that contribute to a person’s standard of living. Ringen (1985) explained that welfare includes also non-material goods which are, to a large degree, distributed in non-market arenas. Boltvinik (2000) follows the same viewpoint and states that income is only one of several different resources, but that not all sources of wellbeing can be expressed in monetary terms.

Therefore, there is acknowledgement that measuring poverty with income alone, reflects a narrow perception of social needs.

2.3. Budget standards and the definition of the poverty line in Latin America

Altimir (1979; 1982) advocates the methodology pioneered by Orshansky (1965) for the estimation of the food basket. Orshansky stated that there is a generally accepted standard of adequacy for food only, but not for the rest of living essentials. Thus, the way to measure the PL for the rest of the essentials is by estimating the Engel coefficient. This view is based upon two underlying assumptions. The first refers to the proportion of income spent on food, which is assumed to be an indicator of economic wellbeing. The second assumption is that a low percentage of income allocated to food indicates prosperity. By contrast, a high percentage of income allocated to food indicates privation. Orshansky's work is based on a vague notion of a broader concept of human needs (Townsend, 1979; Mack and Lansley, 1985; Boltvinik, 1994). The Engel coefficient to obtain the PL is estimated by Orshansky as three times the income spent on food by hypothetical families of various sizes and compositions¹, alongside an assumption that the families face the constraint of not being able to spend on other expenses. Therefore, if families need to restrict their food expenditure, then other kinds of expenditure will have to be restricted by the same proportion² (Orshansky, 1965). However, Orshansky acknowledges that, if housing expenditures were to be restricted more slowly than food expenditures, a higher poverty threshold may result. So the poverty threshold defined by Orshansky is three times the cost of her concept of "*low-cost and economy*" (Orshansky, 1965, p. 3) food plan, for larger families and 3.7 times the cost of the food plan for two person families.

¹This criterion is based upon a study carried out by Orshansky (1957) using data from the 1955 Household Food Consumption Survey of rural families in the North Central states in the US, where it was found that rural families of three or more people spent between 29% and 33% of their income after taxes on food consumption (both at home and away from home). It should be noted that Orshansky (1965) used a slightly higher Engle multiplier of 3.7 for two person families.

²Orshansky (1965) acknowledges subsequently that, for example, a family can restrict their food consumption but not necessarily the money that is allocated to pay the rent.

Fisher (1992) classifies Orshansky's multiplier methodology as a normative stance, because the consumption patterns of the population as a whole are considered, which means that the method does not depend on the empirical consumption behaviour of lower-income groups. The selection criterion to estimate the Engel coefficient selected by Altimir is the lowest population stratum, used as the reference to deduce the proportion of expenditure on food in relation to total expenditure. Friedman (1968) argues that households that are further above the poverty line, spend higher income proportions on non-food consumption items and so that this may result in the overestimation of the poverty line and the extent of poverty³.

Altimir (1979) states that it is better to use the proportions spent by the households, whose food consumption is slightly higher than the minimum budget. Consequently, this procedure allows the formulation of a normative food basket, by including the dietary patterns of the reference population stratum. Thereafter, the cost of the per capita food basket becomes the per capita extreme poverty line. It is transformed into the per capita poverty line by multiplying by the Engel coefficient (Boltvinik, 1996). Boltvinik (1994) states that this empirical process to determine the PL, does not allow us to know the generic list of items that encompasses the cost of living. Thus, while the food basket is extensively detailed, the rest of the satisfiers are unknown, with only the total cost of living known.

Altimir (1979) claims that definitions in terms of absolute poverty attempt to specify levels of absolute deprivation, on the basis of norms, which refer to the minimum requirements that are considered suitable for the satisfaction of basic needs. Although, Altimir admits that the specification of these norms is based on what is culturally accepted by the population, he affirms that absolute poverty measures are linked to the standards of living that prevail effectively in a society. Cultural patterns are clear in Altimir's basic food basket for Latin American countries contrasted using information from the 1970s, where he argues that the cost of the basket would be completely unrealistic, if the lowest priced food per calorie and lowest price protein were only included. The relative availability of food and the national average of consumer habits were required for the

³Conversely, the application of after tax Orshansky poverty line thresholds to pre-tax income may underestimate the extent of poverty.

formulation of national food baskets. Therefore, there is unquestionably a relative notion implicit in a food poverty line, since dietary patterns in a society have to be considered. Furthermore, Boltvinik (1994) argues that food consumption for people is determined culturally and is different from a cost diet, for which nutritional requirements can be transformed using a linear programming exercise to produce balanced food to minimise costs. Altimir's (1979) conception of poverty leads him to adopt a one-dimensional poverty measurement based upon the construction of food normative baskets to define the EPL (Extreme Poverty Line) and based upon the Engel coefficient to define the PL (Poverty Line) for several Latin American countries. Altimir (1979) conceives income as a measure that can capture the combination of many resources according to their current or imputed market values but does not take into account access to public or subsidised services.

Damián (2004) asserts that one of the main consequences of this conception is that Altimir's poverty measurement method serves to identify food deprivation and not to identify poverty in terms of a decent life. This idea has implications as Altimir laid the foundations for a tradition in Latin America about how to measure income poverty. Therefore, the way in which income poverty has been measured in Latin America may have serious consequences in terms of antipoverty policies throughout the region.

The Generalised Normative Basket (GNB) is the oldest method for poverty measurement. This method was popularised by Booth (1889) and Rowntree (1902; 1937; 1941; 1951) in the UK and was adopted in Mexico as the Normative Basket of Essential Satisfiers (NBES)⁴ in the 1970s by COPLAMAR. In Europe and the USA, it is called Budget Standards (Boltvinik, 2000; 2007). According to Boltvinik (2000), while it is obvious that these procedures differ in quantitative terms, they above all differ in conceptual terms. While the Budget Standards Method or GNB construct complete normative baskets that include all the items and services required by a household to satisfy its necessities, which is a normative stance, the FNB (Food Normative Basket) defines a basket of food and obtains the PL by multiplying the cost of FNB by the observed Engel coefficient of the

⁴The acronym in Spanish is CNSE, called 'Canasta Normativa de Satisfactores Esenciales.

selected reference stratum, thus adopting an empirical stance to determine non-food needs (Boltvinik, 2010).

Altimir (1979) listed the following requirements as part of basic needs:

Table 2.1. Altimir's list of necessities

1. Adequate food
2. Accommodation
3. Clothing
4. Domestic equipment
5. Drinking water
6. Sanitary services
7. Public transport
8. Health services
9. Education
10. Culture
11. Employment

Source: Altimir cited in Boltvinik, 1990, p. 35).

Note: Altimir also adds fuel, entertainment and private consumption expenditure on public education and health. (Boltvinik, 1990).

The Latin American school has traditionally adopted a normative approach to the measurement of the poverty line (PL). Budget standards and Food Normative Baskets (FNB) have been advocated as a means to define the population living in income poverty since the 1970s, with this approach having been developed since the work undertaken by ECLAC⁵ and the United Nations at the beginning of the 1990s. Engel devised a way to measure the subsistence diet cost to define the PL, “*the cost should then bear the same relationship to the household poverty line as food expenditure on average bears to total household expenditure, nationally*” (Spicker et al, 2007, p. 64). ECLAC has continued applying the FNB approach for the definition of the extreme poverty line (EPL) alongside the use of Engel coefficients to determine the PL, while presenting information on the

⁵ECLAC is the Economic Commission for Latin America and the Caribbean. CEPAL is the acronym in Spanish.

incidence and socio-demographic characteristics of the income poor in Latin America (CEPAL-PNUD, 1992; CEPAL, 2012, p 54). Consequently, Budget Standards have been the foremost approach taken to define the PL in Mexico. The food and non-food baskets, developed in the 1980s, were based on inquiries carried out by COPLAMAR⁶ (1982; 1983) to collect information on the essential satisfiers for the different domains that encompass basic needs. These studies have served as a basis for the further development of more complete non-food baskets that are used today in the Integrative Poverty Measurement Methodology (IPMM). The methodology was adopted as the official poverty measurement method in Mexico City by the Council for Social Development Assessment of the Federal District (EVALUA, 2009a).

2.4. Criticism of the income poverty lines applied in Mexico

Before 2000, there was no consensus on the magnitude of poverty in Mexico because of differences in the methods and thresholds used to measure poverty (CTMP, 2002). In 2000, SEDESOL⁷ convened the Technical Committee for Poverty Measurement (CTMP by its acronym in Spanish), which adopted a modified version of ECLAC's FNB to define poverty lines for the measurement of poverty in Mexico (Damián and Boltvinik, 2003). ECLAC had used the same factors (inverse of Engel's coefficient) in Latin America since 1970, which is multiplied by the cost of the FNB to obtain the PL, a coefficient of 2 for urban areas and 1.75 for rural areas (Altimir, 1979; CEPAL, 1992). ECLAC justified this due to the differences in the non-food expenditure pattern, between different household types, within the reference stratum (Feres, 1997). However, the proportion that households spent on food is not constant over time (Damián and Boltvinik, 2003). This method is based upon Altimir's assumption "*that households that fulfil their food requirements also satisfy the rest of their needs*" (Damián and Boltvinik, 2006a, p. 149 quoted Altimir, 1979, pp. 42-3). Damián and Boltvinik (2006a) criticised Altimir's

⁶COPLAMAR was the General Coordination of the National Plan for Depressed Zones and Marginal Groups.

⁷The Secretaría de Desarrollo Social, SEDESOL, is the Ministry of Social Development, which aims to implement social policy and has the mission, to advance towards the achievement of effective social development in Mexico. Their task is to implement social assistance programmes for target populations, to tackle poverty (DOF, 1976).

assumption and stated that increases in household's monetary resources do not necessarily imply a reduction in malnutrition or a better quality in sanitary conditions.

The CTMP (2002) proposed three poverty lines: PL₁ named the alimentary poverty; PL₂ is the capacities poverty and PL₃ refers to the patrimony poverty (Table 2.2). PL₁ is the income poverty threshold to satisfy food needs; PL₂ is the poverty line to satisfy food, health, education, clothing, housing and public transport; PL₃ is the highest poverty line and includes the previous items plus other services (CTMP, 2002). However, the Mexican government (SEDESOL) rejected the highest PL₃ and adopted PL₂ as the highest PL, renaming it as the Patrimony Poverty Line (PPL). SEDESOL established a second level PL named Capabilities Poverty Line, which was redefined as the level of income that is insufficient to acquire basic consumption of food, health and education (CTMP, 2002).

Table 2.2. Poverty lines proposed by the CTMP in Mexico, 2002

Poverty line (PL)	Definition
PL ₁ Alimentary Poverty	It was defined as the proportion of households, whose per capita income is insufficient to satisfy food needs, according to the nutritional requirements of the National Institute of Statistics and Geography and the Economic Commission for Latin America and the Caribbean's (INEGI-CEPAL) Food Normative Basket (FNB).
PL ₂ Capacities Poverty	It was defined as the proportion of households, whose per capita income is insufficient to satisfy food, health, education, clothing, housing and public transport.
PL ₃ Patrimony Poverty	It was defined as the proportion of households, whose per capita income is insufficient to acquire the basic consumption pattern of food, health, education, clothing, housing, public transport plus other goods and services.

Source: Information taken from the CTMP committee (CTMP, 2002).

The main scholar that criticised the PL in Mexico was Boltvinik (2007b; 2010). Boltvinik (2007b) devised the Principle of Totality of Needs, which criticises the poverty lines

developed by the CTMP as truncated, because they do not represent the indissoluble system of human needs.

The Principle states that:

“Economic household’s capacity to satisfy human needs is unitary and indissoluble... The budget line expresses the purchasing capacity of income as a whole. If we compare income as a whole with a fraction of the cost of satisfying human needs, we don’t only violate the rules of algebra and/or logic, but also those of the system of human needs” (Boltvinik, 2007b, p. 25).

The first critique concerns criteria adopted by the CTMP to define PL₃, the highest PL. Although, it includes non-food needs in a semi-normative way, instead of calculating the Engel coefficients based upon the food per capita expenditure of the reference stratum, they chose per capita income equivalent to the FNB in order to obtain the poverty lines. This has serious implications because, where households allocate 100% of their income to raw food, they do not satisfy any necessity including not being able to afford to cook the food. Therefore, they do not even satisfy the minimum nutritional requirements. If all of the household income is spent on food, this would imply an Engel coefficient of 1 (Damián and Boltvinik, 2003). Thus, the non-food expenditure (NCnF) included in PL₃ is small because the Engel coefficient of the reference strata is high; much higher than the non-poor and non-extreme poor households, 2.5 vs. 3.7 (Boltvinik, 2010).

A second critique concerns the poverty line adopted by SEDESOL. PPL implies a truncated poverty concept because it does not take into account the whole range of goods and services to satisfy human needs, as it measures the households’ capacity to satisfy only six needs. The inverse of the Engel coefficient was reduced even further, from 2.5 in PL₃ to 2 in PPL, a considerable portion of non-food expenditure was eliminated, with the argument that they are sumptuary expenditures despite the fact that the selected stratum is extremely poor by CTMP’s own standards (Boltvinik, 2007b). The result was an underestimation of the prevalence of poverty (Damián and Boltvinik, 2003). The government omitted the essential satisfiers that Mexicans are entitled to by adopting a restricted measure of poverty. Thus, the government reduced poverty from 65% to 54% of the population in 2000, according to PL₃ and PL₂ (Boltvinik and Damián, 2003). CTMP

(2002) acknowledged that the reference households have a per capita income large enough to meet nutritional standards and enough resources to acquire the items identified in the basket, but not enough to satisfy other additional necessities. They also said that this is a hypothetical situation and pointed out that in restrictive conditions households assigned food resources to satisfy other needs.

However, in Mexico, Boltvinik (1992) advocated budget standards, called Generalised Normative Basket (GNB), and included it in the IPMM methodology, in order to define the poverty line. COPLAMAR's generalised normative basket, carried out for the first time in Mexico in 1982, represents an evolution of the ECLAC's food baskets applied in Latin America (COPLAMAR, 1982; 1983). COPLAMAR was the General Coordination of the National Plan for Depressed Zones and Marginal Groups in Mexico in the 1980s (Boltvinik and Marín, 2003). Whereas, the GNB is used to construct complete normative baskets that include all the items and services required by a household to satisfy its necessities, through a normative stance; the Food Normative Basket (FNB) defines a basket of food and obtains the PL by dividing the cost of FNB between the observed Engel coefficient of the selected reference stratum, it adopts a semi-normative stance to determine the rest of needs (Boltvinik, 2010). Full normative baskets are implemented by EVALUA, to calculate the PL in Mexico City (EVALUA, 2009a). This kind of budget standards were developed in the UK.

Pichaud (1979); Bradshaw (1993) and Deeming (2005) have advocated Minimum Income Standards (MIS), which represent a reassertion of a budget standards measurement approach, because they include the costs of maintaining social relationships. The tradition continues and has evolved as a mixed approach through a combination of the role of experts, public opinion and focus groups (Bradshaw et al, 2008; Rowlerson, 2010). Exponents of this approach state that it is consistent with the relative concept of poverty because norms that are socially determined are included, while it also provides a broader understanding about the necessity for health and social participation in society (Bradshaw, 1997; Damián and Boltvinik, 2006; Deeming, 2010).

2.5 The transition from one-dimensional to multidimensional poverty measurement approaches in the UK and Mexico

The transition begins with Townsend's (1979) relative deprivation approach to poverty, which was extensively advocated in the UK, as well as in Latin America. The multidimensional poverty measurement methodologies in the UK and Mexico aim to capture the social needs required to live decently and participate in society.

2.5.1. The development of the concept of poverty and relative deprivation

Townsend (1979) stated that poverty is relative and that a lack of resources is the cause of deprivation:

“Poverty can be defined objectively and applied consistently only in terms of the concept of relative deprivation...Individuals, families and groups in the population can be said to be in poverty when they lack the resources to obtain the types of diet, participate in the activities and have the living conditions and amenities which are customary, or are at least widely encouraged or approved, in the societies to which they belong. Their resources are so seriously below those commanded by the average individual or family that they are, in effect, excluded from ordinary living patterns, customs and activities” (Townsend, 1979, p. 31)

Townsend identified a low resources poverty threshold using a deprivation index with data from the 1967/1968 Poverty in the United Kingdom survey. This objective poverty line was based on the resources level below which there was a disproportionate increase in deprivation (Figure 2.1). Townsend argued that there is a level where income falls and a considerable number of families reduce more than proportionately their participation in a community at that given point. *“They drop out or are excluded. These income points can be identified as a poverty line”* (Townsend, 1979, p. 249). Townsend defined style of living as *“types of consumption and customs which are expressive of social form”*

(Townsend, 1979, p. 249) and argued that the style of living has to be operationalized by distinguishing the elements that are common or approved by the majority of the population.

Figure 2.1. Modal deprivation by logarithm of income as a percentage of Supplementary Benefit scale rates



Source: Townsend, 1979, p. 261.

Townsend (1979) defined a list of 60 indicators that embraced different spheres of social life. He adjusted income in terms of household size and composition and plotted household incomes as a percentage of the supplementary benefit scale rates and the modal value of the deprivation index, which was calculated by grouping households on the basis of the income criterion. Townsend found that, below the level of 150% of the Supplementary Benefit standard, deprivation started increasing swiftly (Figure 2.1). He acknowledged that there were situations where it is difficult to detect margins of deprivations because some families may prefer to have other compensating activities instead of, for instance, a week's holiday. This is not necessarily because they are deprived but because they have other customs.

Pichaud (1981) criticised Townsend's analysis of income and deprivation in three ways. Firstly, he questioned if there was a relationship between some of the items selected and poverty and also how the range of items were selected. Pichaud claimed that "*Townsend's*

index offers no solution to the intractable problem of disentangling the effects of differences in tastes from those of differences in income” (Pichaud, 1981, p. 420). For Pichaud, the relationship between some of Townsend’s indicators and income levels are due to people’s behaviour and social and cultural issues rather than deprivation. Secondly, Pichaud criticised Townsend’s study because *“a large part of the variation in deprivation scores is merely due to the diversity in styles of living wholly unrelated to poverty”* (Pichaud, 1981, p. 420). Otherwise, Pichaud (1981) highlighted that people with high incomes and high deprivation scores will be identified as deprived. Thirdly, the idea of a threshold below which the deprivation index increases sharply was questioned by Pichaud. Then, he states that a combination of the two factors, different lifestyles and the notion that poverty is relative, implies that no threshold can be identified between the poor and the rest of society (Pichaud, 1981).

Townsend (1981) addressed Pichaud’s (1981) criticism by using what he called the social conception of need. Townsend (1993b) claimed that it is the task of social scientists to formulate a scientific concept of poverty in order to capture the real meaning of poverty. To achieve this:

“we have to describe the roles which people are expected to play and the customs, amenities and activities which they are expected to share and enjoy as citizens, in order to discern and measure forms and degrees of deprivation” (Townsend, 1993a, pp. 121-2).

Desai (1986) rejects Pichaud’s proposition that Townsend’s deprivation index lacks validity. Desai argues that if there were no correlation between income and what people answered, the poor could respond ‘yes’ or ‘no’ with the same levels of probability as the rich. However, Desai acknowledges that Pichaud’s criticism is valid in the sense that Townsend should differentiate between those who could buy an item but did not want to do so, from those who could not afford but wanted to. Without this distinction, there are biases in the results. Desai also analyses what he considers to be the central dispute between Townsend and Pichaud on the existence of an income threshold. Thus, Desai confirms Townsend’s conclusions through regression analysis.

Nevertheless, a fourth criticism of Townsend was presented by Pichaud (1987) who stated that *“the poor have less choice and are more constrained than those better off or that there is genuine and severe poverty”* (p 153). Pichaud (1987) highlights that there was an advance in the work of the Poor Britain survey (1983) because questions were designed to separate choices from constraints. Regarding the eight items identified by Mack and Lansley (1985) *“for half the items, more said they lacked the item because they could not afford it than out of choice, but for half it was the reverse”* (p 153). Desai (1986) however highlights that answers may not always reflect a lack of income because those who are poor can learn to live in a state of deprivation and may answer that they do not want what they cannot afford, i.e. they adapt their preferences to their situation.

2.5.2. Approaches developed in the UK to estimate multidimensional poverty

Following Townsend’s (1979) major research on poverty studies in the UK, the multidimensional poverty measurement methodologies emerged, by focussing on the definition of poverty based upon social needs. The debates on how to define the poverty indicators and poverty standards have been regularly discussed by scholars, as well as debates on the normative vs. relative approaches. Mack and Lansley’s (1985) approach aims at reducing the opinion of experts to identify the poor. Gordon (2006a; 2006b) has defined objective measurement criteria to estimate the multidimensional poor through multivariate statistical techniques, which will be explained further, and that can be replicated in different social contexts.

On the contrary, the Mexican multidimensional poverty measurement methodologies depend on normative criteria to define the income poverty line. However, the definition of UBN and social deprivations have their basis in the human and social rights-based approach (Altimir, 1979; DOF, 2004)

2.5.3. The consensual approach

Townsend (1979) established the basis to conceive of poverty in multidimensional terms, by using low income and deprivations to estimate poverty. In the UK, a transition has occurred in poverty measurement in terms of the different approaches that have emerged to identify people living in poverty, from Rowntree (1901) who advocates a normative approach by using budget standards to Mack and Lansley (1985), who developed the consensual approach to identify the enforced lack of socially perceived necessities. This latter approach draws upon Townsend's relative concept of poverty (1979).

Mack and Lansley's (1985) consensual approach to poverty was developed from their criticism of Rowntree's approach. They stated that their inquiry entitled '*How poor is too poor?*' implies a more comprehensive idea of needs from the perspective of the society itself rather than those of the experts:

“this will lead us right back to the way the poor themselves have been seen to judge their situation – in comparison with the living standards of others”
(Mack and Lansley, 1985, p. 26).

Rowntree's (1901) idea of physical efficiency ignores many aspects of lifestyles and the *Poor Britain* study considered needs that are culturally and socially determined and takes account of “*social customs and expectations that determine other aspects of one's standard of living*” (Mack and Lansley, 1985, p. 26). Rowntree did acknowledge that, in translating the minimum diet to a minimum cost for the definition of a poverty line, he found constraints because people's actual food purchases are based upon national customs (Mack and Lansley, 1985). Rowntree (1941), in his second survey of York in 1936, considered not only the maintenance of physical health but also a wider range of aspects of people's standard of living, such as consumer durables, leisure activities and social participation. However, Mack and Lansley (1985) argued that in the consideration of these items “*the amounts allowed were small and largely arbitrary*” (p. 27).

Mack and Lansley carried out the first *Breadline Britain* survey, called the *Living in Britain* survey in 1983 (Gordon, 2006), and asked a representative sample of people to determine the necessities for living in Britain in the 1980s. A wide range of items and activities indicative of the various aspects of the way of living were selected by asking people whether these are considered the necessities of life. The authors adopted Townsend's criterion for the selection of social activities. Public services, such as health and education were excluded (Mack and Lansley, 1985). The *Breadline Britain* surveys (Mack and Lansley, 1985 and Gordon and Pantazis, 1997) provided the evidence and trends in poverty over the period of the Thatcher Government (Pantazis et al, 2006). Even though Mack and Lansley (1985) aimed to exclude personal value judgments by considering the consensual judgment of society at large about people's needs, Halleröd (1994) argued that there remain several arbitrary aspects in their work, which concern the design of the survey and the interpretation of the results. The first aspect of arbitrariness is related to the selection of the range of items (35 consumption items), which in Halleröd's view represents the core of Mack and Lansley's research, i.e. the respondents can identify their needs but only from a range of items already established. Boltvinik (2009) argues that making people react to a previously constructed list of items prevents the possibility that respondents may include other items.

According to Halleröd (1994), a second arbitrary aspect concerns the way Mack and Lansley identify the views of society as a whole, or what is consensual. They adopted a 50% or more threshold to decide if an item is perceived as a necessity by the population. Halleröd argued that the idea of the majority of the population is not the same as what is regarded as a consensus: there are no theoretical reasons to choose the level of 50% and more. In addition, the degree of poverty is not considered in Mack and Lansley's study:

“to divide consumption dichotomously into necessary and non-necessary items also means that a person who does not consume items that 51 per cent of the population regards as necessary is seen as being just as poor as a person who does not consume items that 95 per cent of the population regards as necessary” (Halleröd, 1994, p. 4).

The third problem mentioned by Halleröd (1994) is identifying the necessities of the majority of the population without regard to differences in views by demographic and social composition. Halleröd (1994) based his criticism on Swedish data from 1992 which shows significant differences in the proportion of people declaring an item as a necessity, in relation to differences in sociodemographic characteristics. By contrast, Mack and Lansley (1985) in their study stated that “*there is a high degree of homogeneity in perceptions of necessities*” (p. 64). To analyse these differences, Halleröd (1994) used cross tabulation and Chi-square test and also computed interactions, by using four demographic characteristics. Halleröd concluded that sex, age, household type and geographical region had influence on the pattern of people’s preferences and thus, weighted items according to the preferences of these different groups.

Halleröd (1994) also underlined that there is no theoretical basis, to fix the norm by considering three or more necessities. Why not establish the score at one if necessities really are considered to be necessary? Boltvinik (2009) states that Mack and Lansley’s stance is different from the original version of Unsatisfied Basic Needs (UBN), in which the lack of one of the items constitutes poverty. In Mack and Lansley’s view, deprivation must have a general impact to be considered as poverty. The criterion in Mack and Lansley to fix the poverty line at three or more items lacked is justified as few people who are in a better position, in terms of income, lacked three or more enforced necessities. They defined those who are in a better position as those who are in the top half of the income range.

2.5.4. Consensual methods to estimate the truly poor

Halleröd (1994) took the argument developed by Ringen (1987) that a combination of both approaches, the direct and indirect, allows one to identify the “*truly poor*” (Halleröd 1995, p. 122). Nolan and Whelan adopted the combination of income and deprivation to identify poverty in Ireland, in 1987, and concluded that this approach leads to a greater understanding of the most important processes that produce poverty (Nolan and Whelan, 1996).

Nolan and Whelan (1996a) compared Halleröd's (1995) methodology to find out more about the relationship between income and deprivation. They first pointed out differences in the way Halleröd (1995) constructed the income poverty line. The Consensual Poverty Line (developed by Van Praag et al, 1980; 1982) was used by Halleröd (1995) while Nolan and Whelan (1996a) applied relative income lines constructed as a proportion of average equivalised disposable household income, adopted by Eurostat (1990). The construction of deprivation indicators in both analyses are based upon Mack and Lansley's approach. Halleröd (1994), in an attempt to improve on Mack and Lansley's approach on what he called the arbitrariness in the selection of items, retained all the items to construct an index, weighted by the percentage of each item of the population, regarding it as a necessity. Halleröd called this index the "*Proportional Deprivation Index (PDI)*" (Halleröd, 1995, p.119).

However, Nolan and Whelan (1996a) distinguished the generalized deprivation index as a latent variable and to obtain it, they analyse the relationship between the items by factor analysis and, in doing so, identified a core set of eight items. Nolan and Whelan (1996a) found out that the basic items, which are regarded by most as necessities, are lacked by a small proportion of people. It is worth noting that this criterion met Townsend's principle, where only a minority of the population should lack the items selected (this referred to the notion of customary). Also, Nolan and Whelan (1996a) observed that, at least in the case of Ireland, the housing items lacked are those by very specific groups, such as elderly people in rural areas or people living in private rented accommodation, in urban areas. Thus, it was concluded that these items are not suitable to identify generalized deprivation.

Boltvinik (2009) states that, if one considers that there are different sources of households' wellbeing, one can acknowledge that housing items belong to a different source from that of income, as both sources are determined by different factors that operate in different time frames. He concludes that although there is not a strong relationship between them, he argues that this is no reason to exclude housing from the measurement of poverty. Desai (1986) observed that, in Mack and Lansley's (1985) survey, 95% of the respondents considered housing items as necessities "*except for the requirement of '3 meals a day for children', it is housing rather than food which ranks*

high in the community's definition of necessities" (Desai, 1986, quoted in Boltvinik, 2009, p. 17).

On the other hand, Halleröd (1995) integrates income and deprivation in a measure of poverty, through comparing households below the income line with those experiencing deprivation. Halleröd (1995) showed that 21% of households in Sweden fell below the consensual poverty line (CPL), i.e. low income and deprivation. By contrast, Nolan and Whelan (1996a) used a range of equivalised relative income lines and looked at the sensitivity of the results to identify those households with low income and different deprivation index scores of 1 or 2, as cut-offs. They argued that "*given the nature of the items, genuinely enforced lack of even one of these socially-defined necessities should be sufficient to indicate pervasive exclusion*" (Nolan and Whelan, 1996a, p. 230). The combination of income and deprivation approach was adopted "*to ensure precisely that lack of the item or items is indeed genuinely enforced*" (p. 230).

Nolan and Whelan (1996a) distinguished differences between Halleröd's (1995) methodology and their own methodology through a comparison of the results. They emphasized that Halleröd's (1995) methodology identified 17% of the population of Ireland as suffering from low income and deprivation, which was effectively identical to the 16% found by Nolan and Whelan (using their criterion of the 60% relative income line plus a basic deprivation score of 1 or more).

However, the question is whether these methods show the same distribution of poverty by household type. It is important to know why the same households were not identified by the two different methodologies. Nolan and Whelan (1996a) questioned to what extent these differences are due to the different structures of the income poverty lines, or the criteria for the construction of the deprivation index. They argued that both aspects can determine the results and also confirmed that "*both approaches give a picture of the distribution of poverty by household type which is rather different to that produced by reliance on income standards alone*" (Nolan and Whelan, 1996a, p. 232).

The work developed by Gordon (2006a; 2006b) has been applied in the UK to overcome the arbitrariness of selecting the number of items (necessities), for which a person is

considered poor, through the application of multivariate techniques to identify the optimum poverty threshold. Gordon (2006a) states that “*a key policy problem when measuring poverty is how to use scientific methods to find the correct level of resources (often measured as an income level) at which to separate the poor from the non-poor*” (Gordon, 2006a, p. 32). Townsend and Gordon (1989) also state that, in a cross sectional survey, income as the view of resources and deprivation as a view of low standard of living, should be considered to set a scientific threshold level, with both dimensions of poverty being measured accurately, relative to the society’s norms.

Gordon (2006a) applies a set of multivariate techniques to estimate ‘*the deprivation index*’ threshold (Gordon, 2006a, p. 39), to ensure that all the components of this index are valid, reliable and additive⁸. Gordon’s (2006a; 2010b) consensual method advocates the intersection approach to poverty. He defines a relationship between low income as the cause of poverty, and deprivation as the consequence, based on Townsend’s (1979) relative deprivation approach. Gordon (2006a) also identifies other population groups related to poverty: a) the vulnerable people, which refers to people with low incomes and a high standard of living and b) the rising group, with a high income but a low standard of living. Gordon (2006) states that these groups are not poor, but they are vulnerable to poverty.

The surveys of socially perceived necessities had a significant impact, especially in Britain. The 1983 study was replicated in 1990 (Gordon and Pantazis, 1997) and by the PSE Survey in 1999 (Gordon et al, 2000). It was also carried out in Wales in 1995 (Gordon, 1995); and in Northern Ireland in 2002/03 (Hillyard et al, 2003). The 2012 PSE survey is the newest survey in the UK, to identify low income and multiple deprivation (Gordon et al, 2013).

⁸ The methodological criteria are explained in Chapter 4 and are applied in Chapter 5 for the Mexican social context.

2.5.5. The EU2020 poverty measure

In 1984, the EU adopted a definition of poverty derived from Townsend's poverty concept and it is currently the official definition of poverty and social exclusion. The first European Social Inclusion Indicators, Laeken Indicators, were developed as part of the Social Inclusion/Exclusion framework in 2001 (Marlier et al, 2007), although the poor were identified by a measure of relative income, the at-risk of poverty rate (Gordon, 2002). The advance in knowledge about the relationship between income and deprivation in academic research has had an impact on European social policy (Atkinson et al, 2002; Gordon, 2006a). The transition to an official multidimensional measurement of poverty in the EU has implied advancing from disaggregated social inclusion indicators to combining measures of resources and direct indicators of deprivation (Atkinson, et al, 2002). Poverty in the European Union has been defined in multidimensional terms:

“It is the combination of low income with other factors that leads to poverty ...Poverty is multidimensional because it does not consist merely of an insufficiency of resources, but also encompasses cumulative deprivation in relation to income, housing, education, and health care. It concerns non-participation in various important areas of life” (Atkinson et. al, 2002, pp. 79).

In June 2010 the EU adopted its first anti-poverty target and changed its poverty measurement methodology. These changes responded to the strategic goals established in Lisbon 2000 and to the acknowledgement that a large proportion of the population in the EU are living in poverty (Frazer et al, 2010). The new methodology is called Europe 2020 which targets *“promoting social inclusion, in particular through the reduction of poverty, by aiming to lift at least 20 million people out of the risk of poverty and exclusion”* (EC, 2010, p. 2). The new measure has been defined by the European Council on the basis of three indicators: the at-risk-of-poverty rate (after social transfers), the index of material deprivation, and the percentage of people living in households with very low work intensity (EC, 2010).

Gordon (2011) notes that households/people in the EU are now defined as poor if they have a low income or if they suffer material deprivation or live in a jobless household. The disaggregated measures reported that people in the EU living in 2008 with low income are 80 million; people experiencing material deprivation are 40 million and people living in jobless households are additional 40 million. According to the union approach to poverty (EU2020 poverty measure), the 2008 EU-SILC survey indicates that 120 million people in EU27 countries are poor using this new definition (about 25% of the EU27 population) (Gordon, 2011).

This definition has been justified because of the multiple factors underlying poverty or exclusion. However, it may include populations that are not normally considered as poor:

“as it encompasses a territorial perspective and forms of exclusion not necessarily related to income. The territorial dimension is particularly important as the very “poorest people” are often concentrated in particular regions” (EC, 2010, p. 3).

The components of the EU2020 poverty measure are: the at-risk-of-poverty rate (AROP); the low work intensity (LWI) and the indicator of severe material deprivation (SMD) (EC, 2010):

a) The AROP measure has been adopted as one of the components of the EU2020 poverty index (EC, 2014b). This indicator is seen as relevant for the measurement of poverty because the EU has addressed poverty from a relative perspective. This position of the EU was clearly stated in the 2004 Joint Report on Social Inclusion which argued that *“an absolute notion is less relevant for the EU”* (EC, 2004, p. 16). Additionally, the EC (2004) justifies this argument by considering two reasons in its report.

Atkinson et al (2002) mentions that the advantage of this indicator is that it is possible to compare poverty lines between countries because it is relative to the standard of living in each country. Nevertheless, the number of poor people identified depends on the percentage of the mean or median of the equivalised income. Kangas and Ritakallio (1998) state that this is an arbitrary poverty line. Ringen (1987; 1988) argues that the

proportion of the poor in the population is tied to the income distribution in AROP and will change only if this changes. However, the EU (EUROSTAT, 1990) argues that relative income allows poverty to be related with inequity, although inequity is a broader concept than the concept of inequalities of income because it also includes disparities in social welfare (EUROSTAT, 1990). According to Levitas et al (2007), the Laeken indicators (EC, 2003), based on Atkinson and his colleagues' (2002) indicators, address questions of distributive poverty, inequality and labour market access, including some measures of low educational attainment and qualification. Nevertheless, the EC (2010) still uses the AROP measures. It shows that, presently, over 20 million children are at risk of poverty in Europe and one out of every five young people in the EU is at risk of poverty (EC, 2010). Additionally, social exclusion involves deep social problems caused by a continuous process of living in poverty, deprivation and inequality (Levitas et al, 2007).

Furthermore, European countries have shown higher risks of relative income poverty, especially for certain population groups. Some figures presented by the European Commission showed that the risk increases to 25% for children who live in large families and also rises to 30% for children living with lone parents (EC, 2010). Moreover, the risk of falling into relative income poverty of the unemployed, is 44%, more than five times higher than for those who have a job. On the other hand, 19% of the elderly are at risk of poverty, compared to other age groups (EC, 2010).

Additional methodological criteria should be taken into account to measure low income. According to Gordon and Pantazis (1997), income equalisation presents one of the major problems when determining the poverty threshold. This is because the use of some equivalence scales are adult-orientated and ignore children's needs (Nelson, 1993), such as the one developed by McClements (1977; 1978). Additionally, Marlier et al (2007) affirm that equivalence scales are affected by market prices and public provision of housing, education, childcare and health services, e.g. the cost to maintain a child is greater in countries where parents have to pay for education. More research is needed on the types of households since, according to Engels' Law, the proportion of food expenditure is lower than the proportion of recreational goods expenditure, as countries become richer, even for larger households with lower levels of average income. The reason is because recreational goods are to be shared rather than to consume individually,

due to economies of scale (Marlier et al, 2007). Buhmann et al (1988) explain the following issue:

“the range of possible equivalence scales is very wide, with a systematic pattern: the normative OECD scale tends to give the highest weight to additional persons or children in the household, whereas the subjective scale gives the lowest weight to additional children” (Haagenars et al, 1994, p. 24, cited Buhmann et al, 1988).

Furthermore, Boltvinik and Marín (2003) state that economies of scale should also be taken into account in measuring poverty. The economies of scale and the distribution of the benefits of public goods could be taken into account to divide resources within the household. The reason is because income can be adjusted according to the size and composition of households. However, Bradshaw et al (1987) point out that budgets cannot represent fringe benefits, wealth and the consumption of unmarketed public and private services. Another limitation is that budgets do not reflect the way goods are consumed differently within households. However, Bradshaw et al (1987) acknowledge that budgets incorporate elements related to social participation. Nevertheless, despite these limitations, a budget standards approach based on income equivalisation scale is more reliable than an arbitrary equivalisation scale such as the modified OECD scale (Bradshaw et al, 1987). However, there is no consensus on how best to construct equivalence scales. Different approaches have emerged and this has serious implications because the use of different scales affect the measured composition of the poor population (Haagenars et al, 1994; Marlier et al, 2007). The empirical analysis of this study will evaluate how poverty rates vary, according to different equivalence scales.

b) The second component is the LWI indicator. This measure is a response to high unemployment rates since 2005 and the need to restore economic growth with more and better jobs required to combat social exclusion (EC, 2010). Also, the EU2020 poverty measure is tailored to this commitment. The working-poor in Europe represented 8% of the working population in 2008 (EC, 2010). Moreover, the poverty rate increased for the unemployed, from 39% to 44% since 2005 (EC, 2010).

It is very common that analysts of social policy focus all their attention on the unemployment rate as the indicator that summarizes and explains the labour market across different economies (Negrete Prieto, 2012). Unemployment has been seen as one of the most devastating impacts of the economic crisis in the EU (EC, 2010). The National Economic and Social Council (NESC, 2014) in Ireland states that jobless households are defined in two ways: the first refers to the working adults living in a household where no one is working or has a limited access to work; the second refers to the EU's LWI definition. The NESC Council stresses the need to address the problem of household joblessness in order to reduce poverty (NESC, 2014). Therefore, the measure of LWI is an outcome of this approach (Maître et al, 2013). This indicator seeks to explain vulnerability in the labour market faced by households that are composed by members of working age, who are partially working with low hourly rates or/and short and irregular hours of paid work (Burchell et al, 2009). This study aims at evaluating and corroborating these situations in the Mexican social context.

c) Severe material deprivation. This indicator becomes important from the Enlargement⁹. According to Marlier et al (2007), non-monetary indicators are other way to take into account differences in living standards through measuring deprivation directly and supplementing income-based measures. "*Deprivation represents the inability to posse the goods and services and engage in the activities that are socially perceived as necessities in one's society*" (Marlier et al, 2007, p 157).

The importance of using deprivation indicators lies in the fact that they provide a better understanding of the living conditions of the poor; they reflect living standards differences and deprivation levels across countries and over time (Marlier et al, 2007). It is also argued that those who experience low income for a long time are likely to sink into genuine poverty, so in the absence of longitudinal data, direct measures of deprivation may provide a useful substitute (Gordon, 2006; Marlier et al, 2007). Furthermore, the

⁹ The EU experienced the inclusion of New European Members in May 2004, from 15 to 25 countries, which is called "*the Enlargement*" (Marlier et al., 2007, p 31). The new members in that year were Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia. Croatia, the Former Yugoslav Republic of Macedonia and Turkey had the intermediate status of candidate countries (Marlier et al., 2007).

combination of income and deprivation indicators can clarify the analysis in the identification of the poor, i.e. those experiencing low income and deprivation, the so-called consistent poverty (Nolan and Whelan, 1996a; Whelan et al, 2006). Hence it is useful in framing policy to prioritizing those in greatest need (Whelan et al, 2001 and Nolan and Whelan, 2007).

The inclusion of severe material deprivation as one of the components of the EU2020 poverty measure is justified based on the impact of the economic crisis (EC, 2010). In 2008, 8% of Europeans were living in severe material deprivation and could not afford several necessities, considered essential in order to live decently, such as: to face unexpected expenses; one week annual holiday away from home; to pay for arrears (mortgage or rent, utility bills or hire purchase instalments); a meal with meat, chicken or fish every second day; to keep home adequately warm; a washing machine; a colour TV; a telephone; a personal car (EC, 2014b). The rate is higher than 30% in the poorest European countries. (EC, 2010). The European Commission states that the key to overcome poverty is to restore the economic growth and to create more and better jobs (EC, 2010)¹⁰.

2.5.6. The Child Poverty Act

The UK launched the Child Poverty Act (CPA) 2010 as a new measure to target children in poverty as a response to the Government's commitment announced in 1999 to eradicate child poverty in a generation. The new measure is based upon a tiered approach by the interrelation of different indicators to capture the different aspects of poverty over the long term. The measures consist in the inclusion of relative low income (AROP); absolute low income; material deprivation and low income combined; and a persistent poverty target. This last combined approach replaced the Opportunities for All approach that encompassed several disaggregated indicators, and in the absence of a single measure,

¹⁰ The methodological criteria to estimate severe material deprivation are addressed in the methodology chapter.

child poverty had been targeted on the basis of low income only (DWP, 2003; UK Parliament, 2010a).

The Child Poverty Act combined measure represents the intersection approach to poverty. However, it gives additional information on children living in income poverty only. Children living in relative low income households (60% of the median income) represent 17% of children in the UK during 2010-2013. The target is to reduce the proportion of children living in relative low income to 10%. However, the proportion of children living in absolute poverty has increased to 19%, during the same period and the target is to reduce children's absolute poverty to 5%. Children that experience both low income and material deprivation increased to 13% of children in the same period of analysis. Similarly, the target to reduce the proportion of children experiencing low income and material deprivation to less than 5% by 2020 (Kennedy, 2014).

2.5.7. Approaches developed in Latin America and Mexico to define multidimensional poverty

Traditionally, poverty in Latin America has been measured using the Unsatisfied Basic Needs (UBN) approach, which was developed to obtain a picture of the poor across the countries of the region (Altimir, 1979; Becaria and Minujin, 1987). The UN Economic Commission for Latin America and the Caribbean (ECLAC) adopted the method, developed by Becaria and Minujín (1987), which represents a direct measure of living standards and has been also used by Boltvinik (1992) in his IPMM (Integrated Poverty Measurement Methodology).

Altimir (1979) influenced poverty studies in Latin America and incorporated human dignity and human rights into the conceptualisation of poverty, linking these two notions to the concept of absolute poverty. Altimir acknowledges that poverty is determined by the prevailing style of living in a community. So, within this relative conceptualisation of poverty, basic needs are modified throughout history according to changes in lifestyles and the economic progress of a particular society. Also, this content of the concept of poverty is specific for each society, as different styles of living vary from one society to

another. However, Altimir highlights that there is an irreducible core of absolute deprivation, which is identified by manifestations of indigence, malnutrition and visible hardship without incorporating a relative aspect of poverty. Altimir's view leads him to disagree with Townsend's (1954; 1962) and argue that poverty does not necessarily have to be identified in relative terms because the measurement of poverty has to include the absolute notion of the concept as well. The absolute norm that allows us to define this irreducible core, regardless of the national context, comes from our understanding of human dignity and from the universal character we attribute to basic human rights (Altimir, 1979).

Altimir (1979) recognised that, not only should wellbeing be considered, but also standard of living. Thus, all the ways in which people experience poverty, should be considered if the purpose is to alleviate poverty effectively. Altimir (1979) incorporated the UBN approach into the definition of poverty, as a separate poverty dimension to low income, but did not operationalize this definition. The UBN approach is a direct measure of poverty, as this aims to identify the standard of living (Feres and Mancero, 2001). The UBN approach emerged as a measure to capture the different kinds of wants [deprivations] that the population might experience in their lives and to be able to characterize poverty in Latin America since the 1980s (Altimir, 1979)

Altimir (1979) influenced the development of multidimensional indexes of poverty in Latin America, and other Latin American scholars then undertook this task and measured UBN and low income as different forms of poverty (Beccaria and Minujín, 1987; Boltvinik, 1992). The first research that identified the poor from a UBN approach, was carried out by the Planning Office in Chile (ODEPLAN, 1975), and Altimir (1979) guided the application of the UBN method to identify the poor there. This method then became standardised throughout Latin America: Argentina (INDEC, 1984), Uruguay (Kaztman, 1989), Colombia (DANE, 1989), Ecuador (UNDP-CEPAL, 1989), Perú and Venezuela (UNDP, 1990). Thus, ECLAC adopted this method for the measurement and characterisation of poverty in Latin America on the basis of information provided by housing and demographic censuses (CEPAL, 1992); one of the important characteristics of this method applied by ECLAC is to construct poverty maps to identify the UBN across the LA region (Feres and Mancero, 2001).

However, the combination of the poverty line (PL) and UBN approaches was first carried out by Beccaria and Minujín (1987) who found that both methods do not identify the same households as poor in Argentina. Several non-poor households by PL criteria are poor by UBN. The satisfaction of food needs does not necessarily imply the satisfaction of other needs, such as housing, water, children's attendance at school, etc. (Boltvinik, 2000).

2.5.8 The integrative poverty measurement methodology (IPMM)

Boltvinik (1994, 1996) developed his multidimensional approach to poverty, from the criticism to previous poverty methods that had been applied in Latin America, since the 1970s. Subsequently, Boltvinik (1994) criticised the method proposed by Beccaria and Minujin (1987), about the combined measures of UBN and income. This methodology was improved upon by the Integrative Poverty Measurement Methodology (IPMM) to identify the multidimensional poor in Mexico (Boltvinik, 1992). Boltvinik's (1994) has criticised the adoption of income poverty lines in Latin America and Mexico, in relation to the design and implementation of antipoverty policies. His critical analysis started from the viewpoint of the alimentary deficiency, to adopt the concept of relative poverty based upon Townsend (1979). Boltvinik (1994) advocates that poverty is socially determined and depends on the norms, customs and culture of every society. The author acknowledges that poverty is relative. However, his approach to measure multidimensional poverty is different, because it depends on the definition of budget standards and the full realization of human capacities as the ultimate purpose (Boltvinik, 2005c).

The current IPMM methodology is similar to the budget standards approach applied by Bradshaw (2008) which also incorporates the perceptions of needs of the Mexican population captured in the EPASB 2009 survey¹¹ (Boltvinik, 2009). The IPMM method tries, like the Family Budget Union in the UK, to reflect the patterns of household

¹¹ The 2009 *Perceptions Survey-Access to basic needs (EPASB)* aims to capture the necessities of the population in Mexico City (EVALUA, 2009b).

consumption, but it is also informed by public opinion captured in the survey to define the budget standards and it is verified during focus group research (Boltvinik, 2009; Deeming, 2010). In the UK this method is defended by Bradshaw (2008) and Deeming (2010), the last said:

“because the MIS budgets have been thoroughly tested against community norms and public opinion, they offer a firm, defensible and more ‘democratic’ basis for policy development” (Deeming, 2010, p 782).

The IPMM encompasses two characteristics: 1) it adds the family budget to the social public budget, 2) it adds the conventional economic resources¹², time resources and knowledge/abilities which implies the formulation of a budget-time and the identification of knowledge/abilities (Boltvinik, 2009).

Boltvinik (1992) identified two problems in terms of poverty measurement. The first problem is that the original UBN method did not take into account the intensity of poverty. Consequently, the author developed the IPMM method as a combined measure of income and an improved version of the UBN. Boltvinik (1992) cited Sen, to state that the prevalence of poverty does not consider the poverty gap; it considers equally those poor who are slightly below the PL and those that are far from it, living in severe poverty. The second problem found with the original version of the UBN is that the number of poor people is not independent of the number of items included. Boltvinik (1992) points out that Larrea (1990) calculated the poor people by UBN in urban areas in Ecuador. Larrea (1990) initially used UBN indicators and later added child under-nutrition and illiteracy in those over 12 years old. UBN indicators reported 38% of poor households but increased to 50% when the other two indicators were added Boltvinik (1992).

This way to measure poverty loses the possibility to calculate the intensity of poverty for the UBN dimension. To overcome this problem, the UBN dimension implies the construction of a scale in order to differentiate the intensity of both the satisfaction and non-satisfaction of needs (Boltvinik, 1992). Therefore, Boltvinik (1992) devised a

¹² By economic resources, Boltvinik (2009) understands income, basic assets, non-basic assets and access to free services.

method to stratify the poor. The IPMM method is based upon a weighted average system to combine low income and UBN poverty dimensions (Boltvinik, 1999b). The operationalization of these methods is explained further below.

In 2007, the Government of Mexico City created the Council for the Evaluation of Social Development (EVALUA), which adopted the IPMM method and presented official results about multidimensional poverty in 2009. Estimates were carried out based on the microdata set of the National Survey of Household Income and Expenditure (ENIGH), as a sub-sample for Mexico City (GACETA, 2007; EVALUA, 2009a, 2011a).

The domains identified in the IPMM method are: disposable income plus time poverty, to define the poverty line. The domains included in the UBN are: education, quality and space of dwelling, sanitary services, waste disposal, domestic energy, basic assets and durables, communications and health care access (Damián and Boltvinik, 2006).

The reason to mix disposable time with the income poverty line is based upon Grootaert's (1982) concept of total income. This is the sum of monetary income, income in kind (including the domestic production and government services) and the imputed value of services derived from the households' stocks and assets, such as durables, housing and time (Grootaert, 1982). Boltvinik (1992) states that Grootaert's (1982) idea to impute a value to time and sum that value to monetary income, thereby defining the PL, is inadequate. The principle of the IPMM method is to give different treatment to those sources such as government services, basic assets, time and so on, which cannot be combined with money without biasing the results. Boltvinik (1992; 2005a) states that no amount of money can substitute for personal time invested in the acquisition of knowledge and skills. So, the reasons to consider disposable time for recreation in the definition of poverty are: a) the household is regarded as poor when it remains below the PL in spite of overwork, b) or when the household falls below the PL by eliminating the income associated with the surplus labour time (Boltvinik, 1990; 1992).

Boltvinik (1992) argues that it is implicit in these criteria that labour time is not voluntary, it is forced when the household is below the income PL. Although this is a strong assumption and could be false in specific cases. Boltvinik (1992) states that it seems to

be consistent according with the observation of the behaviour of the majority of the poor in Latin America.

The time poverty dimension requires a thorough theoretical and methodical investigation of their relationship with poverty (Burchardt, 2008). For instance, Bojer (2006) argues that time poverty can be seen as part of an Income Capability framework. There is also a need to investigate how time poverty is conceived, if this is part of the scope of resources, as Boltvinik (1992) has conceptualised it. This study is based on indicators of social deprivation or UBN indicators, from the viewpoint of the standard of living and its relationship with income, based on Townsend's (1979) relative deprivation theory.

2.5.9. The Methodology for Multidimensional Poverty Measurement (MMPM)

The General Law of Social Development (LGDS), enacted in 2004, establishes the basis for the development of a multidimensional measurement of poverty based upon the social rights included in the Constitution of Mexico. At the national level, the National Council for the Evaluation of Social Policy in Mexico (CONEVAL, 2010) launched the Methodology for Multidimensional Poverty Measurement (MMPM) in 2008. The first results were released in 2010 using the information provided by the ENIGH 2008 survey (CONEVAL, 2010). The LGDS law also establishes tasks for the CONEVAL council, in order to provide the Mexican Government with information about the characteristics of the population living in poverty to aid the design and implementation of antipoverty policies in Mexico (CONEVAL, 2010; DOF, 2004).

The CONEVAL's MMPM method advocates the intersection approach to poverty, because it is a combination of the wellbeing approach, low income and deprivation, which is ideologically grounded in a social rights-based approach (CONEVAL, 2010).

Firstly, the income poverty threshold is determined by comparing per capita income with the monetary value of two normative baskets, one basket includes the cost of food only. The other basket includes the cost of food and other necessary items, which are usually consumed by Mexican families. The first basket is used to define extreme

multidimensional poverty and the second is used to defined multidimensional poverty; both as combined measures with deprivation (CONEVAL, 2010)¹³. CONEVAL (2010) also defines other subsets of poor populations, which are the vulnerable due to social deprivation; the vulnerable due to low income and the not multidimensional poor and not vulnerable.

In addition, it should be noted that, for the determination of indicators of deprivation in the sphere of social rights, CONEVAL has built its foundation on social law (LGDS):

“To respect the rights approach recognised in the LGDS led to three methodological decisions: (i) deprivations had to be measured by means of dichotomous variables, in the sense that the right is either met or not met, because it does not exist an intermediate value on the fulfilment of any right; hence, there is not an ordinal scale; (ii) no right is superior to any other; therefore, all of them should —have the same value, in other words, given a linear combination of indicators, all of them should be equally weighted; and (iii), the deprivation of any right makes a person socially deprived” (CONEVAL, 2010, p 12).

Thus, the criteria for the identification of the poor according to CONEVAL (2010) are:

“A person is considered to be multidimensional poor when the exercise of at least one of her social rights is not guaranteed and if she also has an income that is insufficient to buy the goods and services required to fully satisfy her needs” (CONEVAL, 2010, p 28).

CONEVAL (2010) has introduced three dimensions of analysis: wellbeing, social deprivation and social cohesion. The LGDS law (DOF, 2004) establishes in Art. 36 a minimum of 8 indicators that CONEVAL should incorporate to measure poverty in multidimensional terms, which are: 1) current per capita income; 2) educational gap; 3)

¹³ The normative baskets of the CONEVAL’s (2010) MMPM method and of Boltvinik’s IPMM method (Boltvinik, 1999a; 1999b) are detailed in Chapter 7 of this dissertation, to be applied to the UK social context, for the measurement of income poverty.

access to health care services; 4) access to social security; 5) quality and spaces of the dwelling; 6) access to basic services in the dwelling; 7) access to food; 8) degree of social cohesion DOF (2004). CONEVAL (2010) has defined three poverty dimensions from these indicators, which are: wellbeing; social deprivation, which refers to the social rights established in the Mexican Constitution (DOF, 2014) and social cohesion.

Special attention is paid to social cohesion because this does not have a unique definition but is associated with social capital, social inclusion/exclusion, or social integration (Rossell, 1995; Maxwell, 1996). Three main issues have to be considered for the inclusion of the concept of social cohesion in the analysis of poverty.

1) It is conceptualised as a multi-level and multidimensional phenomenon that should be studied in the economic, socio-cultural and political arenas (Jenson, 1998; Bernard, 1999; Berger-Schmidt and Noll, 2000).

2) The unit of analysis is not the individual, but rather communities or social groups.

3) It is not evident that social cohesion is an intrinsic component of poverty; both concepts can be phenomena that influence or affect one another (CONEVAL, 2010).

Additionally, Gordon (2010b) has argued that ENIGH does not include information to measure social cohesion because data is only available at the individual and household levels. The survey therefore requires data at the specific area level, in order to reflect the context properly.

2.6. Diverse images of poverty and implications upon antipoverty policies, in the UK and Mexico

This section provides an analysis of the UK and Mexican experiences, concerning the measurement of poverty, as well as regarding the diverse estimates of the extent and social distribution of poverty. The evidence shows that the divergent estimates produced for the

identification of the poor, have diverse implications for anti-poverty policies in both countries, which are not necessarily helpful to alleviate poverty.

2.6.1. The UK experience and a criticism to the official poverty measures, towards the beginning of the 21st century

In the UK, poverty had been officially measured through the use of relative income measures (Atkinson et al, 2002; Marlier et al, 2007), before the EU2020 poverty measure and the Child Poverty Act were enacted in 2010 (EC, 2010; 2014a; UK Parliament, 2010a). The image of poverty in the UK, did not reflect reality and antipoverty policies were inadequate. There was an increase in the proportion of people, who were living in low-income households in Britain (Gordon et al, 2000a; Gordon, 2002). This increase was due to changes in economic and social policy during the period of Margaret Thatcher (1979-1990) (Gordon and Townsend, 2000; Gordon, 2002).

At the end of the 1990s, 14.3 million people in Britain were living in households with less than half average income household, i.e. 25% of the population in 1999 (Gordon et al, 2000a). Overall, the total number of people and the number of children living in households with below half average incomes remain in the same level of relative income poverty, between 1996 and 1999, the first years of the New Labour government (Howarth et al., 1999; DSS, 2000). According to Bradshaw (2000), the child poverty rate increased from 10% to 35% between 1979 and 1997 in Britain. The increase on the proportions of child poverty, circa 1990, placed the UK in the third highest child poverty rate between 19 European countries, based on information of the Luxembourg Income Study (Bradshaw, 2000).

During the 1990s, the range of concerns began to widen into factors that had caused poverty. For instance, high rates of income poverty and unemployment had been explained based on the assumption that the European welfare states, including the UK were founded on full employment (Gordon, 2002). All efforts were oriented to create jobs (Gordon and Townsend, 2000). However, this implied that there would be social security access for the employed and their families, which was not the real situation and poverty

affected other population groups as well. Gordon and Townsend (2000) state that any effective and efficient international anti-poverty policy should include not only employment creation programmes and policies oriented to decent salaries; but also, universal social insurance and public social services amongst other benefits. The recognition of a more comprehensive welfare state implied the right to social security for all workers and their dependents, which have been guaranteed in Article 12 of the European Social Charter (Council of Europe, 1996). Furthermore, the European Code of Social Security, enacted in 1964 (Council of Europe, 1964), establishes the minimum standards of social security, based on the 1952 International Labour Organisation Convention (ILO, 1952)¹⁴.

Also, the UK Government had signed treaties at the European level in the 1980s and the 1990s, that define poverty based on Townsend's (1979) relative terms, i.e. people who have insufficient resources to participate in the minimum customary way of living (EEC, 1981, 1985). Furthermore, there was an important agreement at the Copenhagen World Summit on Social Development in 1995, where absolute and overall poverty were advocated, in order to alleviate poverty (UN, 1995). "*Absolute poverty*" (UN, 1995, p. 57) means the condition of severe deprivation of basic needs. "*Overall poverty*" (UN, 1995, p. 57) not only includes the lack of resources to achieve sustainable livelihoods, but also, lack of participation in society; social exclusion, etc.

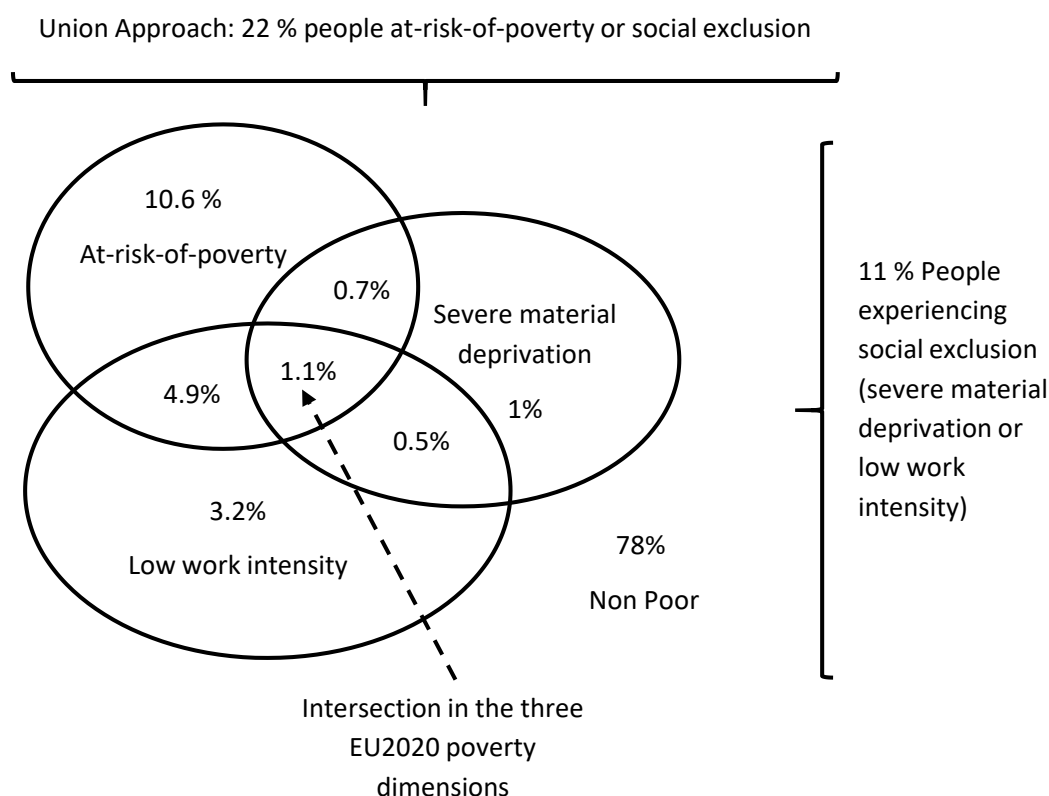
However, across all the National Action Plans (NAPs), income measures of poverty were still used, which allowed the comparative analysis of poverty. However, this consistency began with the development of the Laeken indicators, which meant a key strength of the social inclusion strategy in the EU (MacInnes et al, 2014). Overall, these indicators include income poverty; employment; health; education, income inequality; life expectancy; in-work poverty and long-term unemployment (Dennis and Guio, 2003). Nevertheless, the picture of poverty in the UK was reliant on incomes below an arbitrary percentage of the average income, still before 2010 (Gordon, 2002; 2011) and measures of deprivation were not taken into account.

¹⁴ Social security benefits include: medical care, sickness, unemployment, old age, employment injury, family, maternity, invalidity and survivors' benefits (ILO, 1952; Nickless, 2002).

Gordon et al, (2000a) have shown other diverse facets of poverty and different sociodemographic characteristics, which do not rely on income only. The 1999 Poverty and Social Exclusion Survey of Britain, represents a breakthrough in the analysis of poverty, because it captures information regarding social perceived necessities (Gordon et al, 2000a). The main findings are that children presented higher risks of poverty, when they are living in households with one or more part-time workers, rather than those children living in jobless households. Furthermore, children living in local authority housing, presented higher risks of being deprived than those in owner-occupied homes (Gordon et al, 2000a). Antipoverty policies were not implemented according to the real picture of poverty in the UK, during the 1990s and the beginning of the 21st century. The reason is that the UK Government had implemented more efforts for children in jobless households, as the main cause of child poverty during the 1990s (HM Treasury, 2000).

There was a commitment concerning more accurate measures of poverty, to eliminate all forms of poverty and social exclusion at the 2000 European Council meeting, in Lisbon (Marlier et al., 2007). However, there was not any proposal to define a poverty target until June 2010, when the European Council launched the EU2020 poverty measure (Gordon, 2011). The EU2020 poverty measure reveals that 24% of the UK population were living at-risk-of-poverty or social exclusion between 2012 and 2013 (EC, 2014a). Figure 2.3 shows that, in 2009, 22% of the total population in the UK were poor and the proportion of the population that experienced social exclusion was about 11%. This is measured by the sum of severe material deprivation or low work intensity (EC, 2011a; 2014). Therefore, 78% of the population in the UK were not poor in 2009 (EC, 2011).

Figure 2.2. Overlaps between the three EU2020 poverty measures, UK data 2009



Source: Own elaboration based on information provided by the European Commission (EC, 2011, p. 52).

Socially perceived necessities should be considered to give accurate figures of poverty and deprivation (Gordon et al, 2000a; 2013). In the UK, the percentage of the overall multiply deprived households increased from 14% to 33% between 1983 and 2012 (Gordon et al, 2013). Multiple deprivation is measured by taking into account those households lacking three or more necessities (Gordon et al, 2013). The research work carried out by Gordon et al (2013) show the different facets of poverty and undertook the 2012 PSE survey. The picture of poverty is diverse when the EU2020 and the PSE results are compared for the UK social context. The EU2020 advocates the union approach to poverty by summing up the three components (AROP, SMD and LWI). However, the prevalence of poverty (22%) is similar to the multidimensional poor showed by the PSE team. Main and Bradshaw (2014) revealed also that 22% are living in poverty when people present low income and three or more deprivations (the intersection approach to poverty). Nevertheless, the research work carried out by the PSE team showed also that in 2012, 30 million people in the UK suffered financial hardship, i.e. 47% of the population and more than one in three adults (33%) responded that they felt genuinely

poor, some or all of the time (Gordon et al, 2013). The EU2020 has only show that 11% of the people presents social exclusion, i.e. SMD or LWI (Figure 2.3) (EC, 2011). The EU2020 estimates reveal the need for a wider perspective regarding social deprivations.

The PSE research work (Gordon et al, 2013) also reveals the social distribution of multidimensional poverty. The working age population show high levels of financial insecurity, for instance, 30% of these adults cannot afford to make regular payments into pensions; 13% of adults cannot afford one or more clothing necessities; 25% of adults had household incomes below that needed to avoid poverty in 2012 (Gordon et al, 2013).

Moreover, the figures of child poverty, obtained from the PSE research work showed that 27% of children in the UK, were living in multidimensional poverty in 2012 (Main and Bradshaw, 2014). However, 30% of children suffered from two or more deprivations in 2012 (Main and Bradshaw, 2014). According to Lansley (2013), the combined low income and material deprivation target of less than 5% by 2020 for children is distant. This is because of high levels of unemployment; falling real wages; cuts in a number of benefits; and in public spending. Bradshaw (2012) argues that there are a number of policies that have been implemented against the reduction of child poverty, such as: the abolition of the education maintenance allowance; health in pregnancy grants and child trust funds, the child benefit for some children and others.

There is also a criticism to the EU2020 poverty measurement regarding its poverty target. In the UK, it has been acknowledged that the crisis of the welfare state has had impact on poverty since 2010 approximately (Taylor-Gooby, 2013). For instance, public cuts have affected all areas, but are not spread evenly; public spending cuts in the NHS services; also pensions; educational access; other cash benefits, including housing benefit and benefits for disabled people; social care and social housing, have been concentrated on lower-income people of working age, unemployed and disabled people, for families and for children (Taylor-Gooby, 2013). There has been a recognition that the EU2020 poverty target needs to be redefined in order to take into account indicators of social deprivation, social inclusion, and social participation (Maître et al, 2013). Despite the principle of universalism embodied in the British Legislation, public services have not been available for all (Titmuss, 2014).

2.6.2. A criticism of antipoverty policies implemented in Mexico, towards the beginning of the 21st century

Several scholars have shown that poverty measurement has been solely designed to tackle the population living in extreme poverty, particularly, since the 1980s, with the implementation of structural adjustment programs (Damián 2002; Damián and Boltvinik, 2003; Lustig, 2004) and before the LGDS law was enacted in Mexico (DOF, 2004). The official estimates of the CTMP Committee in Mexico showed that about 57% of the population experienced income poverty at the beginning of the 21st century in Mexico (CTMP, 2002). The official measurement of poverty was based on the calculation of the Engel coefficient to define the non-food normative basket, implying the omission of the whole range of goods and services to satisfy human needs (Boltvinik, 2007b). The consequence of applying one-dimensional measures was the underestimation in the prevalence of poverty, i.e. the Mexican Government did not target 23 million poor in 2000, who should have received social assistance programs. So, these people were excluded from the antipoverty agenda, based on Boltvinik and Damián's (2003) estimates.

Therefore, antipoverty policies responded to one-dimensional concepts and measures of poverty before the multidimensional poverty measure was launched by CONEVAL (2010). Antipoverty policies have not shown a significant progress towards the fulfillment of citizens' social rights since the 1990s (Boltvinik, 2003). Social Policy in Mexico has had a partial view, because it is focused on reducing income poverty only, through targeted policies and mainly through the Oportunidades social program, (CONEVAL, 2012a; DOF, 2013). Evidence shows that conditional cash transfer (CCT) programs have had some positive impacts in improving education and nutrition and lowering rates of child labour. However, these programs do not greatly reduce or alleviate poverty. The Oportunidades program in Mexico, has an important impact on the severity of poverty but a low impact on the poverty rate (Skoufias and Parker, 2001; Godoy, 2004; Maluccio and Flores, 2004). Britto (2006) acknowledges that the impact of CCT's on poverty is not so clear: "*the translation of higher educational attainment into higher earnings cannot be taken for granted*" (Britto, 2006 p. 16). This depends also on the quality of education, rates of employment, general rates of return to education, etc.

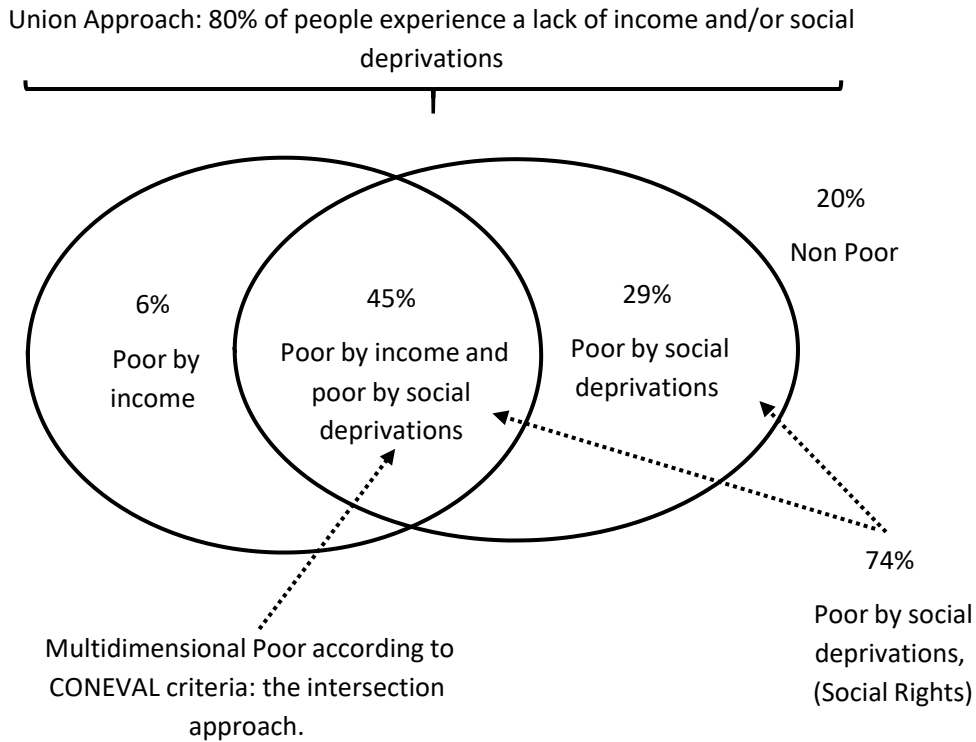
Once, the MMPM official methodology was launched, CONEVAL (2013a) revealed that the prevalence of multidimensional poverty in Mexico between 2010 and 2012 was around 46%. However, Boltvinik (2013a) has criticised the CONEVAL's (2010) MMPM methodology, because he states that poverty cannot be eradicated if only the intersection subset of poverty is taken into account. Boltvinik (2012) shows that about 83% of Mexico's population have remained at the same level of multidimensional poverty, since the beginning of the 1990s to 2012. He considers that a multidimensional poverty measure should include all groups of poor people, that experience either low income or deprivation (Boltvinik, 2012).

Nevertheless, some consensus can be achieved if poverty is measured from the viewpoint of low standard of living in Mexico. Reports suggest a 77% prevalence rate of poverty according to the Unsatisfied Basic Needs (UBN) approach (Boltvinik, 2012), developed as an integral part of the IPMM methodology, with almost an equivalent percentage (74%) found when applying the Social Rights-based approach developed by CONEVAL, according to the ENIGH 2012 survey (CONEVAL 2010; 2013)

By examining the overlaps in dimensions according to the MMPM, Figure 2.2 shows the sum of people vulnerable by income or social deprivation. This represented 80% of the population in 2012¹⁵, while 45% of the population were considered multidimensional poor according to the CONEVAL criteria (CONEVAL, 2013a). Using this criterion, the intersection of the two dimensions of poverty encompasses a social rights-based approach (measured by social deprivations) and a wellbeing approach (measured by low income) (CONEVAL, 2010). Furthermore, this methodology identifies that the vulnerable income poor is 6% and the vulnerable by deprivation is 29% of the population (CONEVAL, 2010; 2013a). Additionally, there are 74% of the population who suffer from one or more social deprivations. So, the percentage of non-poor people in Mexico in 2012 was about 20% of the population (CONEVAL, 2013a).

¹⁵ If the union approach to poverty is applied to CONEVAL's (2010) methodology, then the prevalence of poverty is fairly similar to the IPMM method in 2012, i.e. 80% vs. 83% (Boltvinik, 2012; CONEVAL, 2013a).

Figure 2.3. Overlaps between the CONEVAL poverty dimensions from the MPPM, Mexican data, 2012



Source: Own elaboration based on CONEVAL (2013a, p. 22) with data from the ENIGH 2012 survey.

The official MPPM in Mexico, reveals also the social distribution of multidimensional poverty. Indigenous populations present the highest levels of multidimensional poverty in Mexico, and the prevalence was 72% in 2012 and they experience on average three or more social deprivations (CONEVAL, 2013a). Moreover, children present the highest prevalence of multidimensional poverty across age groups, at 54%. The elderly presented the second highest prevalence of multidimensional poverty, at 46% in 2012. Moreover, a half of the population living with a disability in Mexico, is multidimensional poor (CONEVAL, 2013a).

However, evidence has shown that there has not been a link between the multidimensional poverty measurement criteria and the implementation of social policy. Because, antipoverty programs, mainly, the Oportunidades social program, has not reduced extreme poverty in Mexico (Skoufias and Parker, 2001; Godoy, 2004; Maluccio and Flores, 2004). Moreover, the social security scheme in Mexico has been characterised as

a segmented and fragmented (dual) system, i.e. not all citizens have access to it (Filgueira, 1998; Filgueira et al, 2002). The welfare system in Mexico has not provided social benefits comprehensively, to all Mexican citizens (social security, health care, pensions, etc). There are high percentages of people excluded from social security benefits and social policy has not been designed to accomplish social rights (Boltvinik and Damián, 2003; Bayón, 2009; CONVEAL, 2012a).

2.7. Conclusions

This chapter has provided enough evidence to answer the first research question on: 1) What are the lessons we should learn on poverty measurement and antipoverty policies, from the UK and Mexican experiences, in their transition from a one-dimensional to a multidimensional poverty measurement? The main lesson learned from the UK and Mexican experiences on poverty measurement, is that different poverty measurement criteria entail divergent estimates, of the extent and social distribution of poverty. Consequently, there have been implications regarding the implementation of antipoverty policies. Additionally, the transition from one-dimensional to multidimensional approaches to poverty implied the acknowledgement that there are different dimensions in which people experience poverty and that this concept is relative to every society, based on Townsend (1979). Different research work has carried out to estimate combined measures of low income and deprivation in the UK and Mexico. This is also explained as follows:

There is enough evidence in the UK and Mexico showing that one-dimensional poverty measures have underestimated the real prevalence of poverty in both countries. In the UK, Townsend (1979) showed that Rowntree's (1901) absolute measures of poverty revealed only levels of subsistence that do not reflect the real standards of living in the UK, after World War II. Rowntree's (1941) budget standards did not express the concept of poverty in relative terms (Townsend, 1979). The implication for social policy was that the Beveridge Report of 1942 adopted subsistence standards for setting social security benefit rates, which were aimed at alleviating poverty (Veit Wilson, 1992). Therefore,

antipoverty policies were not designed for poverty alleviation in the UK, in the post-war years (Townsend, 1962).

Another criticism was for one-dimensional approach to poverty based on the measurement of relative income (Atkinson et al, 2002). The poverty line defined by the 50%, 60% or 70% median average household income thresholds, has also implied underestimation of the prevalence of poverty (Gordon et al, 2000a). The consequence is that overall poverty and also child poverty have increased during the 1990s in the UK (Gordon et al, 2000a; Bradshaw; 2000). The reason is because of inadequate social policies, which were not providing comprehensive systems of social security (Gordon and Townsend, 2000; Gordon, 2002).

The EU2020 poverty measure and the Child Poverty Act were launched as a response to a revision of the number of those regarded as poor in the EU and the UK, due to the failure to eradicate poverty (Gordon, 2011; Bradshaw, 2011). The EU2020 measure was developed to overcome estimates based on the measure of relative income poverty, as well as disaggregated measures of social exclusion (Atkinson et al, 2002; Gordon, 2011). The EU2020 poverty and the Child Poverty Act aim to target people living in poverty and social exclusion, including material deprivation (EC, 2010; UK Parliament, 2010a). However, the PSE research work has shown that there are other facets of poverty, such as those people living in financial hardship and multiple deprivation (Gordon et al, 2013). The social distribution of poverty obtained from the PSE survey, reveals that a high percentage of children are living in poverty (Main and Bradshaw, 2014)). So, benefits should be oriented to reach all these poor population groups, to meet the target of eradicating poverty in the UK (Bradshaw, 2012; Lansley, 2013).

The second lesson shows the Mexican experience. The absolute approach to measuring poverty in official publications, by the CTMP committee (2002), has prevailed since the 1980s and with particular criticism at the beginning of the 20th Century, i.e. with no agreement on how to measure poverty (Boltvink, 2007b). A more important issue was that CTMP was underestimating the number of people living in poverty in 2000 and was not showing the social distribution of poverty regarding those people deprived of social security, health care, education, etc. These estimates implied inadequate antipoverty

policies (Boltvinik and Damián, 2003). The transition from a one-dimensional to a multidimensional measurement approach to poverty represents, in theory, a guarantee of the full exercise of social rights established by law in 2004 (DOF, 2004; CONEVAL, 2010).

However, antipoverty policies seem not to progress towards the fulfilment of citizens' social rights. Social Policy in Mexico has had a partial view, which is focused on people living in income poverty through targeted policies, mainly the Oportunidades social assistant program, (CONEVAL, 2012a; DOF, 2013). Additionally, there is a high prevalence of Mexicans lacking the social and public services to which people are entitled, based on official estimates from CONEVAL (2013a). Boltvinik (2013a) has criticised the CONEVAL's (2010) MMPM methodology, because he states that poverty cannot be eradicated if only the intersection subset of poverty is taken into account. Boltvinik (2012) shows a higher extent of multidimensional poverty in Mexico, in 2012.

On the other hand, there is also evidence to provide some explanations for the second research question on: 2) What is the theoretical-conceptual relationship underlying the multidimensional poverty measurement methodologies, and the measurement criteria which need to be evaluated to inform social policy?

All the poverty approaches addressed in this study (consensual methods; EU2020 poverty measure; CONEVALs' approach and Boltvinik's viewpoint); are based on Townsend's (1979) relative concept of poverty. Townsend's (1979) relative deprivation approach to poverty influenced the subsequent research work on poverty measurement in the UK (Gordon, 2006a; EU2020, etc.) and Mexico (Boltvinik, 1992 and CONEVAL, 2010). These poverty measurement approaches reflect the idea that needs are socially determined and are relative in time and space (Townsend, 1979). This theoretical-conceptual element forms the basis for the comparison of multidimensional poverty measurement methods in this study. The common poverty dimensions used to estimate multidimensional poverty are low income and deprivation, between the poverty methods abovementioned (Boltvinik, 1992; Gordon, 2006a; EVALUA, 2009; EC, 2010; CONEVAL, 2010).

However, the multidimensional poverty measurement methodologies devised in the UK and Mexico differ regarding the identification of the multidimensional poor. So, these methods have not shown consensus on what is the best way to measure poverty. The following aspects encompass the measurement criteria which need to be evaluated to inform social policy:

1) The evidence shows that the multidimensional poverty measurement methodologies differ, according to the manner in which the poverty dimensions are combined, either through the intersection or union approaches. The union approach represents the sum of people experiencing income poverty or deprivation, such as in the case of the EU2020 poverty measure, which also includes the LWI indicator. The intersection approach shows the number of people experiencing income poverty and deprivation. Therefore, both dimensions overlap with each other such as in the case of the consensual methods (Gordon, 2006a), which use multivariate statistical techniques and the CONEVAL's (2010) MMPM index, which first estimates the deprivation score (lacking one or more items) and then selects the population that experiences low income simultaneously. On the other hand, the IPMM poverty method uses a weighted average system to combine the poverty dimensions. Also, the IPMM is based on poverty stratification criteria to define the multidimensional poor (Boltvinik, 1992; EVALUA, 2009a).

2) Another important element that differs between the multidimensional poverty measurement methodologies is the definition of the income poverty line. Whereas the EU2020 poverty measure uses relative income measures, the CONEVAL (2010) and Boltvinik's (1992) approaches use budget standards. These measures will be also tested, due to criticism for the AROP measures, about arbitrary definitions to estimate the poverty line. On the other hand, budgets standards approach emerged as an absolute notion of poverty (Rowntree, 1901; 1941). However, there is a reassertion to show that norms are socially determined (Bradshaw, 1997; Damián and Boltvinik, 2006; Deeming, 2010).

3) The third difference between the poverty measures to evaluate in this research, is the way social needs and poverty thresholds are determined. There are normative vs. relative stances to determine social needs and poverty thresholds. The Mexican multidimensional

poverty measurement methodologies (MMPM and IPMM) are normative based and define the poverty thresholds. Although, social needs have a basis in social and human rights (Altimir, 1979; Boltvinik, 1992; CONEVAL, 2010). On the other hand, Mack and Lansley (1985) state that social necessities should be identified based on social consensus. Relative stances to poverty aim at reducing arbitrariness in the number of the items selected, to define the poverty thresholds (Halleröd, 1995; Nolan and Whelan, 1996a; Gordon, 2006a). The conceptualisation of social needs for each poverty measurement approach, is further explained in Chapter 3.

Chapter 3

Multidimensional poverty measurement approaches, revisited from the relative deprivation approach and convergent theoretical elements.

3.1. Introduction

This chapter aims to review the theoretical and conceptual links, underlying the multidimensional poverty measurement methodologies addressed in this enquiry. The theoretical frameworks are revisited from the perspective that social needs are socially determined and relative to society's living standards (Townsend, 1979). The theoretical frameworks analysed in this chapter are: a) the consensual approach (Mack and Lansley, 1985); b) the social rights-based approach (SR) (DOF, 2004; CONEVAL, 2010); c) the human flourishing (HF) perspective (Boltvinik, 2005c) and d) the social inclusion framework (SI) (Levitas, 2006; Gordon, 2007; etc.) The common stance between the theoretical frameworks is the acknowledgment that people are entitled to a decent way of life, through their access to social and public services and to be able to participate in society. There should also be a social consensus to determine basic social necessities.

Thorbecke (2007) states that unresolved conceptual and measurement issues need to be overcome, to implement multidimensional measures in a truly operational sense. Thereafter, this chapter aims to contribute to defining convergent theoretical-conceptual elements, to define and capture social needs in an objective sense. The theoretical analysis will allow us to establish the bases for the methodological analysis. Also, this chapter served as the foundation for answering the study's main research question on what is the best way to measure poverty to inform social policy. It also provides elements to answer what is the theoretical-conceptual relationship underlying the multidimensional poverty measurement methodologies, and the measurement criteria which need to be evaluated to inform social policy?

The theoretical-conceptual analysis of this chapter, starts with the definition of social needs, from a relative perspective on poverty. Secondly, every theoretical framework is

explained by focusing on the links between social needs and poverty, and how these needs should be determined. Thirdly, the chapter provides key definitional aspects to relate the consensual approach, with the SR framework, for the comparative analysis of the Mexican social context. The analysis also includes theoretical and conceptual links, between the HF perspective and the SR approach, to establish the basis for their comparison in the empirical analysis applied to the UK. Finally, the European paradigm of SI is analysed, as well as the way this framework, has been defined in the Mexican social context.

3.2. Defining social needs from the relative perspective to poverty

Defining the concept of poverty, involves a thorough inquiry into how human needs are conceived and the different approaches that have been developed, to understand the relationship between poverty and needs. An analysis of the theoretical and conceptual discussions of human needs, permits us to understand more clearly the possible forms, in which poverty can be manifest and to know the different facets of poverty and its multidimensionality (Drewnowski and Scott, 1966; Drewnowski, 1977; Townsend, 1993a).

The ultimate concern in understanding the concept of needs, is related to their fulfilment, as was stated by Streeten et al (1981). A basic needs strategy is related to the purpose of eliminating mass deprivation. The literature refers to the notion of human needs, as widely employed to define poverty, such as what is needed to have a decent life (Townsend, 1979); to afford the necessities of life (Mack and Lansley, 1985) or in order to satisfied basic needs (Boltvinik, 2000).

Townsend's (1979) formulation that human needs are socially determined has been widely acknowledged. Previously, subsistence definitions of poverty understood the concept of human needs, solely in relation to physical needs such as food; sometimes including shelter; and clothing; rather than social needs (Rein, 1970; Townsend, 1979; 1993b). Lister (1990) supports Townsend's (1990) idea by recognizing the social nature of needs as people perform different socially demanding roles and are active participants

in society. Thus, poverty implies not only unmet physical needs but a more complex approach, because it encompasses the social scope within which human beings interact in their everyday lives. This notion includes the way people interrelate with one another and participate in society as a whole, in the social, economic and cultural arenas (Lister, 1990).

Furthermore, Townsend (1985) argues that, as the notion of human needs are essentially social, then these have to be identified and measured in that spirit. However, this issue raises the distinction between the absolute and the relative character of poverty developed by Townsend (1979) which was previously identified by Marshall in 1890... *“Every estimate of necessities must be relative to place and time”* (Marshall, 1890, p. 68). This recognition has been approved by international bodies since the end of the 1970s, for example:

“the concept of basic needs should be placed within a context of a nation’s overall economic and social development. In no circumstances should it be taken to mean merely the minimum necessary for subsistence...” (ILO, 1976, pp. 24-5).

Townsend’s (1979) criticism of the absolute notion of poverty referred to the narrow understanding of needs that focuses on subsistence and denies the existence of other human needs, which are necessary in order to fully participate in society. Moreover, it represents a *“legitimizing meagre treatment of the poor and the perpetuation of severe inequality”* (Gordon, 2010, p. 234). However, what are these other needs?

The whole range, such as psychological needs, are part of the social, historical and cultural context (Veit-Wilson, 1986, p. 85). Food, for instance, encompasses a social and psychological need (Dowler et al, 2001). Townsend stated that:

“The amount and cost of the food which is eaten depends on the social roles people play and the dietary customs observed as well as the kinds of food made available socially through production and availability in markets. In short, food in all kinds of society is ‘socialised’” (Townsend, 1993b, p. 31).

Boltvinik (1999a) also acknowledges that needs have a social existence and draws upon Marx when he argues that “*human needs (as well as capacities) are socially and historically determined*” (Boltvinik, 1999a, p. 3). Within this social existence, new needs are produced (Boltvinik, 2007b).

For Bradshaw (1972), the concept of social need is inherent to the notion of social service as “*The history of the social services is the story of the recognition of social needs and the organization of society to meet them*” (p. 640). The success of social services depends on how needs are defined. Bradshaw states that normative definitions may differ according to judgments of experts, about the amount of resources that should be assigned to meet needs, as well as developments in knowledge and changing values of society.

These different explanations show agreement on the nature of human needs, which alludes to their social existence, with an acknowledgement that this essence has to be considered in the measurement of poverty, and it is addressed in the following sections.

3.3. The consensual approach and the socially perceived necessities

Mack and Lansley (1985) argued in *Poor Britain*, that necessities are socially determined and that the nature of these necessities is explicitly relative. The notion of what is customary in every society needed to be refined, as it is a vague concept, while the idea of a living style that is widely encouraged or approved, seems to have a collective value judgment. As such, these notions have to be redefined, because they have implications for poverty measurement. Mack and Lansley (1985) found a vague concept of poverty and stated that problems emerged, when Townsend (1979) translated his theoretical definition into a practical poverty measurement which, in their opinion, lacked objectivity (Mack and Lansley, 1985). Therefore, they opted to consider the argument established by Pichaud (1981) when he distinguished options from constraints: “*To choose not to go on holiday or eat meat is one thing...To have little or no opportunity to take a holiday or buy meat is entirely different*” (Pichaud, 1981, quoted in Mack and Lansley, 1985).

Mack and Lansley's (1985) approach was developed on the grounds that, in the examination of society's prescriptions, it is possible to move towards an objective definition of poverty. However, the authors also stated that the objective sense of poverty exists only when necessities are socially perceived:

“there is no such thing as an ‘objective’ as opposed to a ‘socially perceived’ measure: items become ‘necessities’ only when they are socially perceived to be so. The term ‘need’ has, therefore, no meaning outside that of the perceptions of people” (Mack and Lansley, 1985, p. 38).

This stance differs from Townsend (1979) who distinguished actual need from a social perception of need, where the norm is defined as what it is customary or widely approved. The norm in Mack and Lansley (1985) refers to the items which are defined as *essential* for the majority of the population, which is related to the notion of widely approved in Townsend. Only one essence exists in the distinction of needs, which is justified in two ways: Firstly, only the notion of approved is seen as objective, as Sen has contended that *“the choice of ‘conditions of deprivation’ cannot be independent of ‘feelings of deprivation’*” (Sen, 1982, p. 16, quoted by Mack and Lansley, 1985, p. 38). Sen's approach means that these feelings are implicitly recognised in the selection of attributes, i.e. feelings of deprivation in people's view. Secondly, Sen states that it is not only the definition of lifestyle that is generally shared or approved in each society, but also the failure to share resources and the styles of living that is important (Sen, 1982, cited in Mack and Lansley, 1985). The failure to achieve the minimal necessities to live in each society has been identified as constraints, in Mack and Lansley's concept of poverty.

Mack and Lansley (1985) have redefined Townsend's (1979) definition of poverty to capture the objective sense of the concept, which they called the enforced lack of socially perceived necessities. In their perspective, the enforced lack of any particular necessity is defined as deprivation with deprivation becoming poverty, when it affects a person's life as a whole. Rowntree (1901) approached the measurement of poverty by using experts' judgment and by using patterns of expenditure to observe living standards. Mack and Lansley (1985) leave aside these procedures, because they state that *“experts are being asked to define a level for which their ‘expertise’ does not particularly qualify them”* (p.

42), and that “*people’s actual expenditure may reflect financial circumstances rather than need*” (p. 42). Mack and Lansley (1985) summarise that their study aims to capture the minimum acceptable way of life by reference to the views of society as a whole, which they call the consensual approach to defining minimum standards¹⁶.

3.4. Social rights and their relation to poverty

The link between social rights and poverty can be understood from the UN definition of human rights, established in the 1948 Universal Declaration of Human Rights (UDHR), which states in Art. 26:

‘Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control’ (UN, 1948).

This definition encompasses a set of minimum rights, that all human beings are entitled to have and no person should be denied the right to the enjoyment of all these items and services. If they are, that person is prevented from accessing the minimum necessary, to have an adequate standard of living and to fully participate in their societies. Therefore, the lack of this access constitutes poverty (UN, 1995; ECOSOC, 1998; Gordon et al., 2003; UNICEF, 2005; UNGA, 2006). Gustave Speth, an administrator of the United Nations Development Programme (UNDP) stated that poverty must be viewed as “*a denial of human rights*” (UNDP, 1998, p. 27). UN member states have made a commitment to establish institutions to provide their citizens with the fulfilment of their human rights (UNDP, 1998).

¹⁶Mack and Lansley (1985) admitted dangers in the concept of poverty based upon minimum standards for the implementation of policies.

These rights are also identified as social rights, within the framework of the International Covenant on Economic, Social and Cultural Rights (ICESCR), which was enacted in 1966. The ICESCR covenant defines comprehensively the set of economic, social and cultural rights that every person in the world is entitled to. This covenant defines the mechanisms, through which rights must be accessible to everyone and how states should engage with one another, in order to achieve progressively the full realization of social rights, through all appropriate means, including the adoption of legislative measures (UN, 1966).

In particular, discussions concerning problems of poverty have been identified as violations of rights. Consequently, poverty has been defined in multidimensional terms, through indicators of deprivation related to the minimum core obligation of human rights (Gordon et al, 2003). At the World Summit on Social Development in Copenhagen in 1995, all parties agreed to define, measure, and monitor absolute and overall poverty (Gordon et al, 2000b; Gordon and Townsend, 2000).

The UN's Economic and Social Council (ECOSOC) defines human poverty as:

“...a denial of choices and opportunities, a violation of human dignity. It means lack of basic capacity to participate effectively in society. It means not having enough to feed and clothe a family, not having a school or clinic to go to, not having the land on which to grow one's food or a job to earn one's living, not having access to credit. It means insecurity, powerlessness and exclusion of individuals, households and communities. It means susceptibility to violence, and it often implies living on marginal or fragile environments, without access to clean water or sanitation” (ECOSOC, 1998, statement No. 3).

The recognition that poverty is a violation of rights has changed the debate about the nature of poverty, from the idea that the poor are seen as being responsible for their social and economic conditions to the acknowledgement of the macro-economic structures, institutions and policies which may cause poverty. Different bodies such as nation states, international aid organisations, the United Nations, the United Nations Children's Fund

(UNICEF), the International Labor Organization (ILO) and some Trans National Corporations (TNCs) have agreed, to develop mechanisms and legal and institutional obligations to eradicate poverty in the world (Chinkin, 2001).

The human rights view is recognised as a social justice framework to alleviate poverty. St Clair (2006) states that the human rights view provides an opportunity to help alleviate poverty, but a justice approach on its own is insufficient. The focus should be to ensure that all people, especially the poor, are able to exercise their rights. From the point of view of justice, rights-based approaches can be meaningless, if they are not connected to responsibilities for global injustices and if they are unaccountable to institutions and the people who exercise power (De Gaay Fortman, 2006; Pemberton et al, 2012). Robinson (2002) (former UN High Commissioner for Human Rights) highlighted, during the 2002 World Summit on Sustainable Development, that “...*a human rights approach adds value because it provides a normative framework of obligations that has the legal power to render governments accountable*” (Robinson, 2002, p. 1).

De Gaay Fortman (2006) highlights that “*human rights suffer from a huge deficit in implementation*” (De Gaay Fortman, 2006, p. 34), because these rights are abstract and they can fail to sufficiently acknowledge the claims, regarding access to resources, which are necessary to meet people’s needs. For this purpose, social security has been recognised by the UN, as a major policy area to tackle poverty and to eradicate it through respect for social rights. All citizens should have access to the resources (public goods and services), that can satisfy their basic social rights. States parties at the ICESCR convention recognise in Article 9 “*the right of everyone to social security, including social insurance*” (UN, 1966).

3.5 The social rights-based approach developed in Mexico

For Altimir (1979), the UBN approach has its basis in notions of human dignity and basic human rights. Altimir (1979) states that these views refer to absolute definitions of poverty, because basic needs are met on the basis of minimum required norms. He affirms that this approach is less related to the actual prevailing standards of living in society.

Thus, UBN, from Altimir's (1979) perspective is less related to Townsend's concept of poverty.

However, Terrail (1977) and Boltvinik (1984) have argued that there is a negotiation between class organization and the state, to constitute a system of needs that can be defined in legislation. Thus, such conditions represent the recognition of basic needs that are constituted as social rights. According to Ghai and Alfthan (1977), rights and needs encompass the root of the concept of poverty. In Mexico, the social rights-based approach is related to the consensus of society, because SR have been established in the Constitution of Mexico.

Article 1 of the Constitution of Mexico states the following:

“In the United States of Mexico every person shall enjoy the rights recognised by the Constitution and international treaties to which the Mexican State is a party, as well as guarantees for their protection, the exercise may not be restricted or suspended except in cases and under the conditions established by this Constitution. Standards on human rights shall be interpreted in accordance with this Constitution and international treaties on the subject, at all times providing people with the broadest protection. All authorities, within the scope of their powers, have an obligation to promote, respect, protect and fulfill human rights in accordance with the principles of universality, interdependence, indivisibility and progressiveness ...” (DOF, 2014a, p. 11).

On November 27th 2003 the General Law for Social Development (LGDS) was approved, by the Mexican Congress of the Union (DOF, 2004). The Law incorporates the institutional mechanisms for evaluation and monitoring social development policies and offers a decentralised institution from the government, CONEVAL (the National Council for the Evaluation of Social Development Policy), which aims to define poverty in multidimensional terms (Boltvinik, 2006; CONEVAL, 2010).

The LGDS law (DOF, 2004) establishes in its first article that every person is entitled to access to social development, through the full realisation of social rights, enshrined in the Constitution of Mexico. The rights for social development are education; health; food; housing; the enjoyment of a healthy environment; labour and social security and those rights, related to non-discrimination in the terms of the Constitution (Art. 6 of the Law) (DOF, 2004). In addition, the LGDS law governs the aims of the National Social Development Policy and, in order to assure the conditions for the fulfilment of social, individual and collective rights, through guaranteeing access to social development programmes, equal opportunities and through overcoming discrimination and social exclusion (Art. 11) (DOF, 2004).

According to Art. 14 of the LGDS, the National Policy for Social Development includes the following:

- I. *“Overcoming poverty through access to education, health, food, and through generating employment and income, as well as self-employment and training;*
- II. *Social security and social assistance programs;*
- III. *Regional Development;*
- IV. *Basic social infrastructure and*
- V. *The promotion of the social sector of the economy”* (DOF, 2004, p. 5).

The LGDS law also defines the wellbeing and social deprivation dimensions to measure multidimensional poverty, in its Article 36 (DOF, 2004)¹⁷.

3.6. The social rights approach in the UK context

The UK has a long tradition of identifying a large set of social deprivations, particularly since the *Poverty in the United Kingdom* study in 1968/69 (Townsend, 1979). Subsequent studies carried out by Gordon et al (2003) have used indicators of social deprivation for

¹⁷ The indicators to measure multidimensional poverty based on the law, are enlisted in Chapter 2, section 2.5.9.

the measurement of child poverty. Deprivation and social rights are linked, i.e. the failure to fulfil citizens' social rights implies deprivation (Pemberton et al, 2005). Therefore, social rights can be used as a conceptual basis for the measurement of multidimensional poverty, using suitable indicators of relative deprivation (Gordon et al, 2003; CONEVAL, 2010; UNICEF and CONEVAL, 2013).

Social and economic rights have also been recognised in the UK, through the ratification in 1976 of the International Covenant on Economic, Social and Cultural Rights (ICESCR) (UN, 1966: UN, 2014). The social rights included in this legal framework include:

- a) The right to adequate food.
- b) The right to clothing and housing.
- c) The right to health care.
- d) The right to fair labour conditions.
- e) The right to education and training.
- f) To enjoy the benefits of scientific progress and its applications.
- g) The right to an adequate standard of living.

Both, Article 22 of the Universal Declaration of Human Rights and Article 9 of the International Covenant, establish the right of everyone to social security, including social insurance (UN, 1966). These rights include the following social benefits, in cash or in kind, for:

- “1. Lack of work-related income caused by sickness, disability, maternity, employment injury, unemployment, old age, or death of a family member;*
 - 2. Unaffordable access to health care; and*
 - 3. Insufficient family support, particularly for children and adult dependents”*
- (CESCR, 2008, p. 2).

ICESCR (CESCR, 2008) also states that social security is an overriding condition to alleviate poverty and promote social inclusion. Furthermore, other international treaties that include social rights have been ratified by the UK, such as the United Nations Convention on the Rights of the Child (UNCRC) (UNICEF, 2012a; 2012b) and the

Convention on the Elimination of All Forms of Discrimination against Women, ratified in 1986 (UN, 1979; 2013).

Furthermore, the European Convention on Human Rights and Fundamental Freedoms focuses on ensuring citizens' civil and political rights (Council of Europe, 1950). However, there is still a challenge, to explore ways of integrating human rights (social, economic, cultural, civil and political rights) into anti-poverty strategies and policies in the UK, as poor people have been unable to fully realise their rights (Donald and Mottershaw, 2009). So, indicators of the lack of entitlements have been used in this research, based upon the UK legal framework. Thus, the measurement of multidimensional poverty has approached for the UK, through a social rights-based approach.

3.7. Defining theoretical and conceptual links between the consensual approach and the social rights-based approach

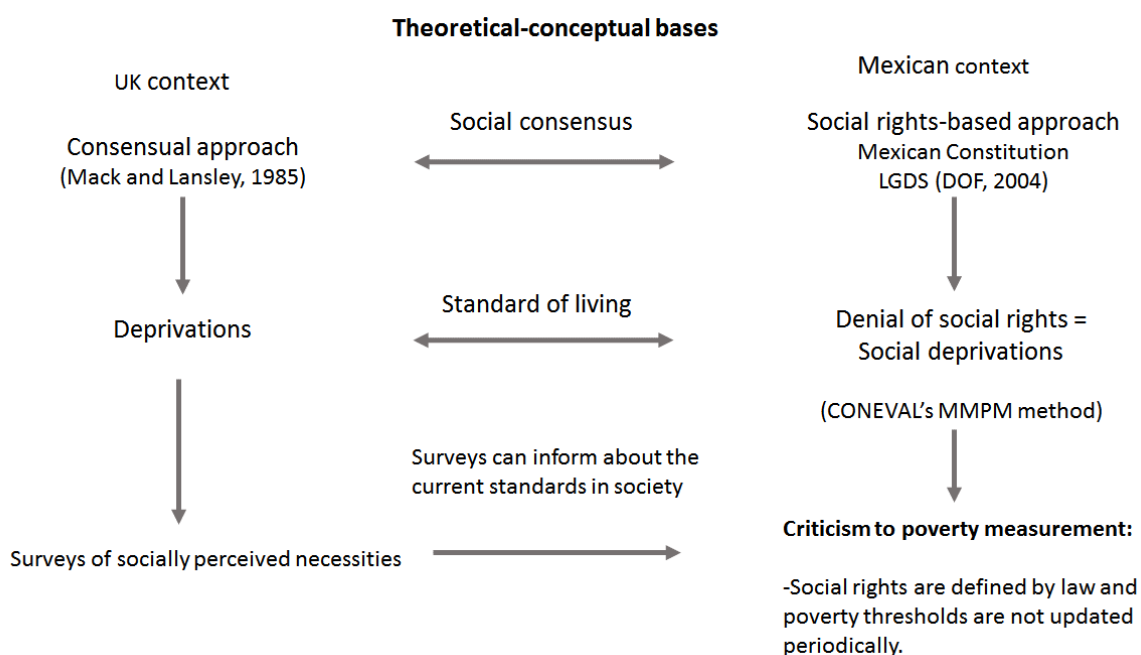
Mack and Lansley (1985) devised the consensual approach, which is based on socially perceived necessities, that capture living standards of the society. On the other hand, the SR approach allow us to estimate social deprivations, produced from the violation of social rights. The consensual approach adds information to the social rights-based approach, regarding conceptual and pragmatic elements for updating social needs and poverty thresholds, in order to give a more accurate picture of the prevalence of multidimensional poverty.

Figure 3.1. shows that there is a conceptual link between the consensual approach and the SR framework. Both approaches define social needs or social rights through a social consensus, either through the law or surveys. The standard of living can be estimated through indicators of relative deprivation, such as in the case of the consensual methods (Gordon, 2006a) or the CONEVAL's MMPM methodology.

However, there is a limitation, found in the CONEVAL's (2010) approach to estimate poverty. The definition of social needs and poverty thresholds have not been updated in

their official multidimensional poverty measurement. Because, the CONEVAL's poverty thresholds and social deprivation thresholds, are based on legal norms or the opinion of experts from public institutions (CONEVAL, 2010), basic necessities and poverty standards do not necessarily represent the current standard of living in societies.

Figure 3.1. Comparative framework between the consensual approach and the social rights-based approach



Source: Own elaboration based on the consensual approach (Mack and Lansley, 1985) and the Mexican legislation (DOF, 2004; 2014) and CONEVAL (2010).

Figure 3.1. shows that the consensual approach can inform the SR approach, about the current poverty thresholds and the current needs of the population, based on social consensus, which can be captured through surveys of socially perceived necessities. The advantage of the consensual approach is the provision of updated information. Otherwise, the measurement of multidimensional poverty will continuously consider outdated living standards. If surveys are carried out periodically, then, new needs can be taken into

account, such as access to internet, which was defined in the Constitution as a social right in Mexico, in 2012 (DOF, 2014).¹⁸

3.8. Human flourishing as an approach to define poverty

Boltvinik's (2005a) thesis on human flourishing represents the conceptual and theoretical framework in which the IPMM methodology is founded. Boltvinik's (2005b) argues that constituent elements of the human flourishing axis require a reflection of human needs in relation to human capacities as an inherent part of human essence. Drawing upon Marx (1973), this human essence is identified historically through '*the trajectory of activities, capabilities¹⁹, necessities, conscience and social being universalization*' (Boltvinik, 2005b, p. 13), and that human consciousness, human needs and human capacities transcends universally from what man has created historically for himself and his counterparts. Hence, Boltvinik's approach draws upon a philosophical-anthropological view.

For the purposes of study, it is important to investigate the theoretical underpinnings of the human flourishing approach and therefore, to establish the basis for the analysis of the multidimensional measurement method developed by Boltvinik (1992), which is to be applied to the UK context in this research. Human flourishing theory is acknowledged to be an approach that transcends a general concept of poverty, which is the minimum necessary to have a decent life in the society or the notion of basic needs²⁰; as such, this view is identified by Boltvinik (2005a) as a theory of human development.

The human flourishing theory formulated by Boltvinik (2005a; 2005b) has been developed from theories and concepts of human needs. Boltvinik poses the question

¹⁸ However, it was previously considered in surveys of socially perceived necessities, such as in the 1999 survey, of the Perceptions of the Urban Population on the Minimum Standards for the Satisfaction of Basic Needs, carried out by the Federal Attorney's Office of Consumer (PROFECO).

¹⁹ Boltvinik's (2005a) thesis argues that the conceptual axis of human flourishing is capacities, this term is different from Sen's (1983) conception of capabilities.

²⁰ This general concept of poverty alludes to the original notion of basic needs identified in the Latin American context by different authors: Altimir (1979), Beccaria and Minujín (1987), Kaztman (1989), Minujín and Vinocur (1992) as well as to the notion of social rights, which represent a minimum floor of rights that every citizen in the world is entitled to fulfil.

whether there is an understanding and apprehension about what human needs are, and states that scholars need to ascertain firstly human beings' necessities, so that a poverty threshold can be determined by researchers avoiding arbitrariness. Boltvinik (2005c) highlights the fact that a human being is an indivisible unit and so human essence can be understood only by considering the individual, from a holistic point of view. However, a fragmented view of the human being has been addressed through the concept of economic poverty, derived as a portion of the conceptual axis of standard of living, i.e. below a certain threshold, economic poverty can be found. Standard of living is considered by Boltvinik (2005b) to be part of the holistic framework of human flourishing, but encompassing only the economic perspective. Therefore, if a study is focused on the economic requirements to satisfy needs, then the psychological and sociological aspects of the human being are neglected, which is incompatible with human dignity. Consequently, the two concepts (economic poverty and standard of living) narrow the human flourishing perspective. Boltvinik (2005b) considers necessities and capacities to be constitutive elements that determine human flourishing, with economic poverty only a first obstacle to overcome for its achievement.

Boltvinik (2005a) draws upon different approaches to human needs which along with human capacities form the core of the theory of human flourishing. He finds a new path to understand human needs based upon the views developed by Markus (1974), Maslow (1943; 1987) and Fromm (1949). Boltvinik (2005a) argues that there is a common point found in their theories of human needs, which is the notion of the existence of an intrinsic human feature (drive or need), which results in fulfilment impulses.

Table 3.1. shows an analytical framework that includes types of needs, satisfiers and resources, for the analysis of human flourishing (Boltvinik, 2007a). There are four types of needs, which are material, cognitive, emotional and growth needs. The types of satisfiers related to material and cognitive needs (such as nutrition or access to education) are for instance, public institutions. However, the satisfiers to accomplish emotional and growth needs are for instance, capacities and subject's activities. On the other hand, the scope of analysis (sources of welfare) are monetizing resources for material needs; time, knowledge and abilities for the other kinds of needs (Boltvinik, 2007a).

Table 3.1. Satisfiers and resources related to four types of needs, included within the human flourishing approach

Types of Needs (examples)	Types of Satisfiers (Main/Secondary)	Resources (Source of welfare) (Main/Secondary)
1. Material needs (nutrition, shelter and safety)	Objects (food/housing), Institutions (family, insurance)/familiar activities (to cook, to clean)	Monetizing resources ¹ /time, knowledge and abilities
2. Cognitive needs (to know, to understand, to be educated)	Subject's activities (to read, to study, to investigate) Knowledge, theories objects (education, books)	Time, knowledge and abilities/monetizing resources ¹
3. Emotional and esteem needs (affection, friendship, love; reputation)	Primary and secondary relationships/ activities with the family or friends; capacities, objects	Time, knowledge and abilities/monetizing resources ¹
4. Growth needs (self-esteem: achievements, personal fulfilment)	Capacities and subject's activities/ (fulfil roles; achieve potential) Work, secondary relationships, <u>objects</u>	Knowledge and abilities, time/monetizing resources ¹

Source: Information taken from Boltvinik (2007a, p 81).

¹According to Boltvinik (2007a), monetizing resources includes current income; basic assets; non-basic assets; access to free goods and services.

Boltvinik (2007a) states that we have first to define the constitutive elements of human flourishing in any analysis of poverty and standard of living, which implies a reflection on what is the human essence. He reviewed the different concepts of poverty and criticised them for not taking into account the whole range of human needs.

Boltvinik (2007a) argues that to achieve human flourishing, human beings have to go beyond the satisfaction of deficiency needs which, according to Maslow (1943), refers to physical (physiological), security and affection/affiliation needs. For Boltvinik (2005c), human flourishing implies people's accomplishment of their potentialities as human beings, with regard to universality, freedom, creativity, and consciousness. In Pogge's (2002) view, human flourishing leads to a more comprehensive evaluation of the quality of human lives.

Derived from his theoretical review of the different concepts of poverty, Boltvinik's (2005a; 2005b) describes the current methods of poverty measurement as partial methods, because they only take into account some sources of wellbeing, so methods are described as:

“reductionist approaches in a triple sense: 1) they reduce human needs to ‘material’ needs; 2) reduce satisfiers to object (goods and services); and 3) reduce resources to monetizable resources (and, among these, they usually recognise current income only)... Time, knowledge and abilities are the resources (sources of welfare) which are always ignored in these conventional approaches” (Boltvinik, 2005a, p. 4).

3.9. Defining the theoretical-methodological link between Social Rights and Human Flourishing

This section provides an analysis of the theoretical and methodological links, between the social rights and human flourishing approaches. It is important to find a convergence between both views, in order to apply the Mexican poverty measurement methodologies to the UK social context²¹.

The social rights approach has an important history in Latin American and the Mexican poverty studies. The SR (DOF, 2004; CONEVAL, 2010) approach and Boltvinik's (1992) approach to human flourishing framework emerged in Mexico, from previous studies of poverty, from the definition of Unsatisfied Basic Needs (UBN) approach. The UBN indicators were originally defined by Altimir (1979), to measure poverty and have an intrinsic link with the social rights view (INDEC, 1998). The Latin American view is based on the fact that basic needs can only be met, through the provision of public services, provided by the State (Altimir, 1979; 1982; Kaztman, 1996) to which all citizens are entitled. In Mexico, these rights are guaranteed by the Constitution (DOF, 2014).

²¹ The application of Mexican methods to the UK has implied a harmonisation process of the UBN and social deprivation indicators, for their operationalization. The harmonisation of indicators allowed this study to compare the results.

This conceptual link between basic needs (social rights) and the provision of public services, is also found in international studies originated as part of new thinking, at the beginning of the 1970s (e.g. the ILO's Basic Needs approach to poverty). Social scientists made this formulation with a twofold purpose: a) to eradicate poverty, particularly in the developing world; and b) for the accomplishment of people's satisfaction of basic needs (ILO, 1972; 1976; Chenery et al., 1974; Streeten, 1977a; Ghai and Alfthan, 1977).

Streeten (1977b) argued that social services should be distributed, not only to the income poor but also to the general population. Furthermore, Ghai and Alfthan (1977) state that the satisfaction of basic needs is based on the universal character of human rights, proposed in the UDHR declaration (UN, 1948). Ghai and Alfthan (1977) also include other concepts, associated with the social rights view – equality, self-sufficiency and participation, which are all characteristic of the most affluent societies (Altimir, 1979).

Altimir's (1979; 1982) perspective can be explained as follows: For Altimir (1979), the notion of poverty is based upon a value judgement, regarding the minimally adequate levels of wellbeing – what are the basic needs whose satisfaction is essential for human beings and what are intolerable levels of deprivation? Altimir (1979) and Boltvinik (1992) have argued that the concept of poverty is essentially normative. This implies the need to define norms for the satisfaction of basic needs, in order to determine who is poor and who is not poor (Altimir, 1979; 1982).

Altimir (1979) also argues that these value judgements are individual and subjective. However, he acknowledged that it is only through consensus, or through the exercise of power, that judgements become a social value (Altimir, 1979). Therefore, there are different kinds of valuations of poverty in any society:

In a particular society, different (or even conflicting) collective valuations of poverty usually exist side by side: that of the governing authorities, that of the different intellectual groups, that of the rich, that of the disadvantaged groups themselves and that of other social groups” (Altimir, 1982, pp. 10-11).

However, according to Altimir (1979; 1982), it is hard to define these valuations in a neutral way. They depend on considerations about the feasibility of public policies to combat poverty. Sen (1978) called it the public policy approach to poverty. Sometimes, these judgements may frequently respond to minimal standards of human subsistence (Altimir, 1979; Boltvinik, 2000).

Regardless of this normative notion, Altimir (1979; 1982) suggested that it is plausible to reach an objective way to define poverty standards through social consensus. Townsend (1979) had explained that social consensus is implicit in the relative deprivation approach. Although Altimir (1979) was aware of Townsend's relative approach to poverty, he did not provide any methodological perspective on how to capture the necessities of life, through social consensus.

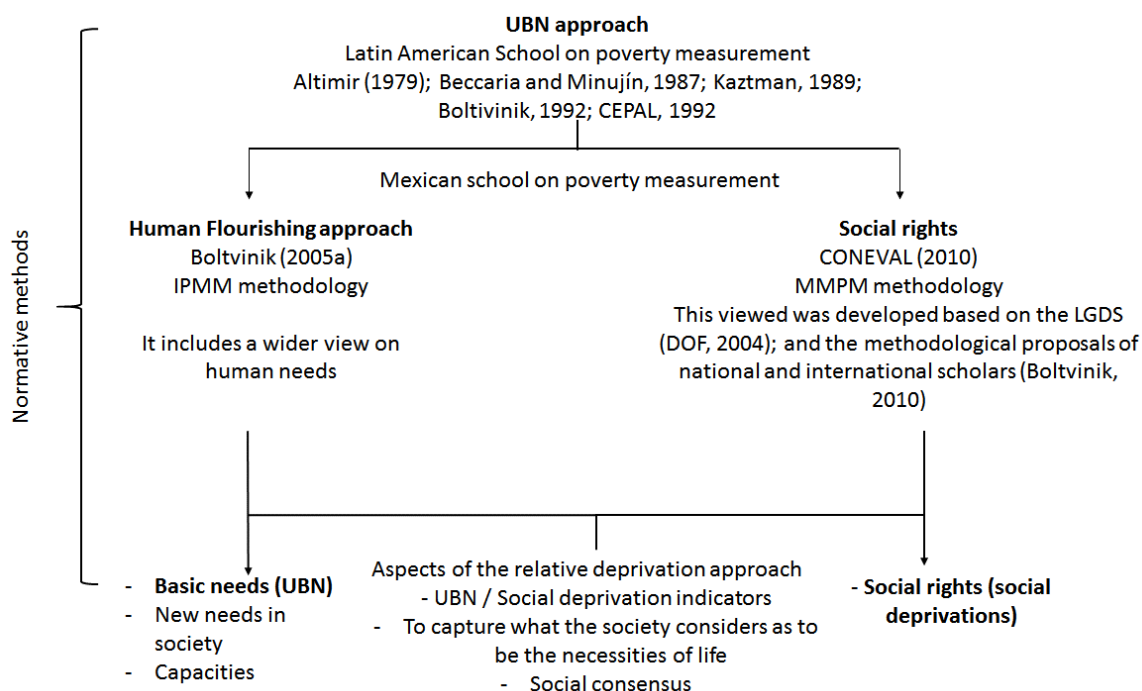
However, in Mexico, social consensus has arguably been achieved, through the use of a social rights framework in the measurement of multidimensional poverty (CONEVAL, 2010). The social rights-based approach provides a broad scheme based on social values, to define the standards of poverty actually applicable in any society. These social values have been established through a social consensus in the Mexican Constitution (DOF, 2014), which is considered to represent the will of the Mexican people. CONEVAL's (2010) research work on the measurement of multidimensional poverty represents a breakthrough, because it established the basis for a link between policy and poverty measurement, through the inclusion of social rights.

There has also been an evolution in Boltvinik's approach to poverty, as his view has moved from the basic needs approach to a more comprehensive framework. Boltvinik (2005a) also states that new needs created by each society should also be included, as the human flourishing approach requires individuals to achieve the development of their capacities.

Figure 3.2. presents the theoretical basis for the human flourishing (HF) and the SR approach. In practice, for the HF approach, basic needs have been defined based upon previous Latin American studies, about the different UBN found in different countries, which are also based on the UDHR declaration of human rights (UN, 1948; Boltvinik,

1992; Feres and Mancero, 2001). By contrast CONEVAL (2010) defines social rights by reference to constitutional norms. Nevertheless, both views represent a social consensus.

Figure 3.2. Theoretical basis of the human flourishing and the social rights-based approach



Source: Own elaboration based upon Altimir (1979); Beccaria and Minujín (1987); CEPAL (1992); Kaztman (1989); Boltvinik (1992, 2005a), DOF (2004); CONEVAL (2010); Boltvinik et al (2010).

Figure 3.2 summarizes these views. The UBN approach represents the basis of the Latin American School of poverty measurement. However, Mexico has now moved to a social rights-based approach for the official measurement of poverty. Boltvinik (2005a) envisages a comprehensive framework of human needs, based upon Maslow (1943, 1987); Fromm (1949); Markus (1974); Max Neef et al (1986); Doyal and Gough (1991) and Nussbaum (1998, 2000). However, there is convergence between the SR and the HF perspectives, because both imply a relative deprivation approach to identify current basic needs/social rights and poverty thresholds. The common ground in Figure 3.2 shows that both frameworks aim to capture what the members of the society recognise as necessary, to live decently and participate in society.

Also, the indicators of social deprivation used by CONEVAL (2010), are similar to the UBN indicators devised by Latin American scholars: INDEC (1984); Beccaria and Minujín, (1987); Kaztman, (1989; 1995); DANE (1989); Boltvinik, (1992); CEPAL (1992). These indicators are based on universal human needs and form part of the official multidimensional poverty measure in Mexico.

There is a link between poverty measurement and social policy. The inclusion of the social rights-based approach into the measurement of multidimensional poverty brings relevance to the design and implementation of social policy in Mexico. CONEVAL's (2010) mission is to evaluate social development policies and social programs, through the measurement of multidimensional poverty, as the key way forward to accomplish citizens' social rights in Mexico. This view clearly recognises the State's obligation to enforce these social rights.

3.10 The paradigm of social inclusion in Europe and the UK

The concept of social exclusion emerged in France in 1974 when Lenoir wrote his book *Les exclus. Un Français sur dix*. Lenoir distinguished a wide variety of people that experienced social exclusion in France. From the 1980s and due to the economic crisis, the term social exclusion gained popularity and new social policies were developed as a result. Policy debates gave importance to the terms of solidarity, integration and inclusion with the purpose of establishing a strong social security system. The idea of social exclusion spread to the rest of Europe, increasing in importance among policy makers, and was adopted by the member states of the European Union in order to help establish mechanisms to implement anti-poverty programmes (De Haan, 2001; Gordon, 2007).

Silver (1994) developed three paradigms to understand the concept of social exclusion and its processes. The first alludes to the French conceptualisation, through which there is an emphasis on solidarity, and draws on the social contract of Rousseau and on the sociology of Durkheim. There is social order that is conceived as a national consensus or collective conscience where institutions are responsible for mediating the relations between individuals and society (Silver, 1994). As such, a rupture of social bonds results

in the exclusion of people's participation in different spheres of social life with special attention given to political rights, citizenship and duties (De Haan, 2001).

The second is called the specialisation paradigm, which is conceptualised on the basis of Locke's worldview and distinguishes itself from a liberal Anglo-Saxon tradition where social exclusion is explained by market failures and unenforced rights established within liberal models of citizenship. Discrimination is identified as denying individuals full participation in society (De Haan, 2001).

The third is the monopoly paradigm which is influenced by Weber's social theory, a philosophical stream having influence mainly in northern European countries including the UK. The main point is that hierarchical groups, such as monopolies, are responsible for social exclusion, creating inequality which, in turn, mitigates social participation and democratic citizenship (De Haan, 2001).

De Haan (2001) underlines that social exclusion is a theoretical concept and a lens through which people look at reality that focuses on societal relations and processes through which people are deprived. It can be deduced that social exclusion can provide a context-specific framework for analysis and policy and can be applied to local circumstances. For instance, it can be applied to the new poor, the underclass in the United States of America, the long-term unemployed, or the marginalised, as understood in a Latin American context. Gordon (2007) argues that social exclusion should be analysed taking into account the role of the welfare states in Europe because it is the main guarantor of social inclusion within the European social model.

Several authors, such as Titmuss (1950s), Wedderburn (1960s) and Briggs (2000) have devised the purpose of the welfare state as one that alleviates market failures and prevents poverty, especially in countries such as Ireland and the UK. In Germany, the focus is on social integration, thus social exclusion is a breakdown of class cooperation and reconciliation. In France, the purpose of the welfare state is to prevent social exclusion by reintegrating the excluded into the labour market and responsible citizenship. According to Thévenet (1989), reintegration is not only a labour market issue but includes housing provision, community development, health and education (Gordon, 2007). In the

UK, the concept of social exclusion became a central aspect of UK policies when the New Labour government created the interdepartmental Social Exclusion Unit in 1997, which produced three reports on neighbourhood renewal, rough sleeping, truancy and social exclusion (De Haan, 2001; Levitas, 2006; Millar, 2007).

Levitas (1998) identified three alternative political discourses concerning the causes of social exclusion in the UK: the redistributive discourse (RED), the moral underclass discourse (MUD), and the social integration discourse (SID) (Levitas, 2007). Levitas (1998) argues that the policy response to social exclusion as identified by the RED discourse is essentially redistribution:

“National action to remedy poverty – through incomes policy, full employment, less specialization of work roles, higher social security benefits, new forms of allowances and rate support grants and a more redistributive tax structure – is implied” (cited in Levitas, 1998, p. 10).

This was exemplified by British critical social policy where the central problem is a lack of resources, money and services (Levitas, 2006). Thus, redistribution is the core in designing social policy to tackle social exclusion in the RED discourse.

The second model identified by Levitas (1998) was MUD (Moral Underclass Discourse). The underclass and the culture of dependency theory were developed by Murray (1990) amongst others. This discourse suggested that the underclass is itself responsible for its own shortcomings within a moral discourse (behaviour of the poor) and obscures inequalities within society, because the underclass is characterised by *“illegitimacy, crime and drop-out from the labour force”* (Levitas 1998, p 26).

The third model that Levitas (1998) distinguishes is SID (Social Integrationist Discourse), which focusses on solidarity as an integrative function of paid work. European Union policies prescribe integration through paid work but, *“this discourse obscures gender, class and inequalities in the labour market and narrows the definition of social exclusion/inclusion to participation in paid work”* (Levitas 1998, p 26). *“In Britain, SID became increasingly visible in New Labour’s Welfare to Work programmes and their*

concerns about workless households” (Levitas, 2006, p. 125). This idea supports the role of active labour market policies as a means to prevent social exclusion by reintegrating the excluded into the labour market.

Townsend (1962) argues that the concept of poverty is dynamic because it alludes to the insufficiency of resources over time but can only be measured in scientific terms from a relative deprivation approach (Gordon, 2010). De Haan (2001) implicitly acknowledges Townsend’s (1965) argument on the different indicators that should be taken into account to measure poverty. He identifies two characteristics of the concept of social exclusion. One is the characteristic of multidimensionality, where people can be excluded in different ways, such as livelihoods, employment, earnings, property, housing, minimum consumption, education, etc. (Silver, 1994). Secondly, De Haan argues that multidimensional deprivation can be experienced in different areas of life at the same time, throughout economic, social and political spheres.

Room (1995), Atkinson (1998) and Tsakloglou and Papadopoulos (2002) have identified that social exclusion is multidimensional and cannot be measured only by income, and should include a wide range of living standard indicators, including neighbourhood or community resources. Appendix 3.1. shows different dimensions and indicators that these scholars have defined for an analysis of social exclusion. It shows that income, social security and labour conditions, as well as social relations, are considered as measures of social exclusion (Millar, 2007; Whelan et al, 2001). Layard (2005) adds the dimension of physical and mental health as part of the quality of life. Tsakloglou and Papadopoulos (2002) also consider social isolation because this presents a different engagement with neighbours, which reflect different cultural norms, national, regional and ethnic identities between countries. Whelan et al (2001) identified five distinct dimensions and indicators using ECHP (European Community Household Panel) data. They selected a sub-set of indicators which, when combined with low income, helped to identify poverty and exclusion, and the description of how levels of deprivation vary over geographical space and time.

Social exclusion can be defined in multidimensional terms:

“Social exclusion is a complex and multi-dimensional process. It involves the lack or denial of resources, rights, goods and services, and the inability to participate in the normal relationships and activities, available to the majority of people in a society, whether in economic, social, cultural or political arenas. It affects both the quality of life of individuals and the equity and cohesion of society as a whole” (Levitas et al, 2007, p. 9).

3.11. Social Exclusion in Mexico

The historical and social context must be analysed, to understand social exclusion in Mexico and whether it is possible to apply the EU2020 poverty measure, to the Mexican context. The EU2020 poverty measure has been seen as a measure aimed at alleviating unemployment (Maître et al, 2013). The current poverty measure applying in the UK and Europe does not include many measures of social deprivation (EC, 2014b). It is seen by some as a measure of low work intensity, its view is oriented to social exclusion due to unemployment:

“The framing of the new poverty target in terms of three dimensions of relative poverty, absolute material deprivation and worklessness will require much detailed technical work. But it could enable a broader policy framework to be developed that addresses the nature of the new social risks of poverty. This should include serious examination of the structure of the labour market, the problems of addressing low wage equilibria, the effectiveness of minimum wages and in work benefits, and the need to modernise EU’s welfare states to cope with new social challenges as well as the adequacy of existing social protection arrangements” (Liddle et al, 2010, p. 90)

The social context in Mexico presents different circumstances where poverty, as in other Latin American countries, is not only related to unemployment but also to other conditions such as lack of access to social services (Lustig, 2004). Indeed, Hubber (2004) explains that lack of access to social security is due to many employees working in the informal sector. Gordon (1997) has contributed with his research to the understanding of

the process of social exclusion in Mexico, as part of the ILO project for Latin American Countries in 1995 (Gore et al, 1995). Gordon (1997) explains this process from the growth model based on import substitution industrialisation (1940s-1970s). This economic model was based on incentives to industry and the evidence shows that, between the period of 1940 and 1970, industrial production in Mexico increased at an average annual rate of 6.4% (Hernández Laos, 1992).

“In spite of high economic growth and regular real wages increases during the 1950 and 1976 period, it was calculated that almost 60 per cent of the population was poor, and that almost 35 per cent were living in conditions of extreme poverty” (Hernández Laos, 1992, pp.126-7).

Later, in the 1980s, the Government adopted a liberal economic model without any viable response to the problem of poverty. Since then, Mexico has experienced recurrent economic crises with the need to implement economic adjustment policies that have brought falls in the population’s standard of living. Also, the economic model benefited high income households to the detriment of poorer population groups (Gordon, 1997; Damián, 2012). Gordon (1997) distinguishes inequality as the central factor in poverty and social exclusion in Mexico: *“In 1950, 10 per cent of the highest income groups were 18 times richer than the 10 per cent poorest; by 1970, this ratio had risen to a figure of 27 times, and in 1986 of 36 times”* (Solórzano et al, 1985, p. 3).

Some phenomena related to social exclusion are identified for the Mexican social context, such as extreme inequality; loss or lack of access to employment and/or means of livelihood and lack of access or insufficient access to education and health. Other components of social exclusion should also be taken into account, e.g. social discrimination; lack of access or the exercise of rights, etc. (Gordon, 1997). Gordon (1997) stresses that the process of de-industrialization in metropolitan areas in Mexico, results in the loss of stable and salaried employees and the expansion of the tertiary sector of the economy resulted in a loss in occupational mobility and opportunities in the labour market. Thus, these processes caused the social situation to deteriorate. However, the reintegration of the excluded into society, should be a priority in the implementation of social policies in Mexico and targeting the poor is a challenge, in the application of social

programmes, where the provision of social basic services is required to tackle social exclusion as well (Gordon, 1997; Bayón, 2009).

3.12. Conclusions

This chapter has provided evidence to answer some aspects of the main research question, regarding what is the best way to measure poverty to inform social policy. The different poverty approaches converge towards Townsend's (1979) sociological approach to poverty. This means that social needs should be determined based on the society's own standards. The best way to measure multidimensional poverty is by avoiding arbitrariness, because, value judgements regarding social necessities could be determined based on the feasibility of public policies to tackle poverty, undermining the minimum living standards, required to live decently (Townsend, 1979; Bradshaw, 1972; Altimir, 1979, 1982; Mack and Lansley, 1985; Boltvinik, 2000).

There is also a common stance that the best way to measure poverty, is by capturing living standards through deprivations, or UBN. The different poverty approaches use also lack of resources to estimate multidimensional poverty (Townsend, 1979; Mack and Lansley, 1985; Boltvinik, 1992; CONEVAL, 2010; EU, 2010a). The consensual methods use low income to measure lack of resources to afford the necessities of life (Mack and Lansley, 1985; Gordon, 2006a). Boltvinik's (1992; 2005a) HF approach and the SI framework also considers resources (low income), but as an additional dimension in which people experience multidimensional poverty (Boltvinik, 1992). However, the SR approach in Mexico, considers income because it is defined by the LGDS law (DOF, 2004)²².

This chapter has also provided answers on what is the theoretical-conceptual relationship, underlying the multidimensional poverty measurement methodologies, and the

²² There are other dimensions of poverty or social exclusion, that should be considered for future research directions. Boltvinik's (2005a) HF approach includes time poverty; the CONEVAL's (2010) approach to poverty includes social cohesion and the SI framework includes several indicators regarding to citizen and political participation, etc. However, these dimensions of poverty or social exclusion are not common indicators, between the approaches studied in this dissertation. These dimensions also use other scope of analysis (see methodological chapter). This enquiry is focused on low income and relative deprivation indicators.

measurement criteria which need to be evaluated, to inform social policy. There are four contributions obtained from this theoretical-conceptual analysis, that form the basis to carry out the empirical study.

The first contribution is that the consensual approach can inform the SR approach, about the living standards of the Mexican society and regarding the definition of poverty thresholds. Both approaches have their basis in social consensus. However, the Mexican legislation does not include specific standards for each social deprivation indicator. Moreover, new needs, resulting from social and economic progress, may not be recognised in a timely manner.

The second contribution is that the UBN approach to poverty forms the bases of the HF and the SR frameworks in Mexico. Both frameworks use similar UBN indicators, because they were previously defined from the human rights perspective in Latin America since the 1980s (Boltvinik, 1992; Feres and Mancero, 2001). UBN are also relative to every society as they capture deprivations of social needs (Altimir, 1979; 1982). The UBN or SR approach to poverty can be applied to the UK social context, because the UK has ratified some international treaties that recognise citizens' social rights, such as the International Covenant on Economic, Social and Cultural Rights (ICESCR) (UN, 1966: UN, 2014). Moreover, the UK has a long tradition on estimating deprivations due to poverty, since Townsend's (1979) major research work.

Thirdly, it was found that the SR are implicit in the SI framework to allow people participate in society; the citizens' entitlements should be accomplished in a sense to meet basic criteria for people's integration into society (Levitas, 2006). Particularly, in Mexico, there are high levels of poverty due to lack of access to basic social services, to which all citizens are entitled (Hernández-Laos, 1992; Gordon, 1997; Lustig, 2004).

Fourthly, the failure to alleviate poverty, is due to a lack of realisation of social rights (Boltvinik and Damián, 2003). Therefore, the accomplishment of social needs (social rights), depends on the provision of social services within societies (Bradshaw, 1972; Townsend, 2009). This has implications for antipoverty policies, which is to provide

people fully access to social services, in order to tackle poverty (McNeill and Clair, 2009; Townsend, 2008; 2009).

Furthermore, this chapter has also suggested to evaluate measurement criteria regarding the definition of poverty thresholds. There is a common stance that the objective way to capture poverty standards should be through a social consensus (Altimir, 1979; Mack and Lansley, 1985). The dilemma is to obtain a clear definition on how to define the poverty and deprivation standards. There are normative (Boltvinik, 1992; CONEVAL, 2010) vs. relative (Mack and Lansley, 1985) viewpoints which will be evaluated in the empirical chapters.

Chapter 4

Methodology

4.1 Introduction

This chapter aims to describe the methodological approach and research design used in this research. It also considers ethical issues. The literature review and the discussion chapter have provided the basis to undertake a comparative study, for the evaluation of the official methodologies on multidimensional poverty in two different social contexts. The application of external methodologies in different contexts can be applied and examined according to the standards which prevail in each society. Townsend's (1979) relative deprivation theory provides a theoretical basis for this comparison. The different multidimensional poverty measurement methodologies will be assessed in terms of the ability to achieve a standard of living that represents the customary way to live decently in each society (Townsend, 1979). The outcomes of this research will show how the prevalence of poverty changes, based on different methodological criteria, and whether the methodologies identify the same socio-demographic and economic groups as multidimensional poor, in both the UK and Mexico.

This research also acknowledges that these methods are based on different definitions of poverty which are implicitly related to different kinds of antipoverty policies. This chapter explains how the results of this study can be interpreted according to theoretical debates about multidimensional poverty methodologies, with the purpose of answering the research questions. Finally, this study is guided by Townsend's (1979) major research work, '*Poverty in the United Kingdom: A Survey of Household Resources and Standards of Living*'. This research also gives primacy to Townsend's following statement which provides a basis for its methodology and research design:

“Any attempt to justify a new approach towards the definition and measurement of poverty, so that its causes and means of alleviation may be identified, must begin with previous definitions and evidence” (Townsend, 1979, p. 32).

4.2 Methodological approach

This thesis adopts the Falsificationist view of science, developed by Popper (1969; 1972a; 1972b). Popper is in favour of empirical falsification and states that refutability or falsifiability of a theory is the key property of a scientific theory, rather than theory verification. Popper states that a theory should be scrutinised by decisive experiments. Thus, the theories addressed in this research (Consensual approach, Social Exclusion, Social Rights and Human Flourishment) will be examined and tested empirically, by applying their multidimensional poverty measurement methodologies in different contexts, in an attempt to try to falsify each theory. Furthermore, Townsend's relative deprivation theory and its notion of a customary way of living will be examined objectively, by applying current standards of UK and Mexican societies to the methodologies being used in this research. Gordon and Pantazis (1997) state, based upon different authors (Russell, 1937; 1948; 1959; Godel, 1940; Kuhn, 1962; Popper, 1969; 1972a; 1972b; Lakatos, 1978; Musgrave, 1989; 1999), that scientific theories cannot be proven by inductive logic and measures are theory-dependent. *"There can be no objectively true value to these measurements that are independent of the theories that are used to measure them"* (Gordon and Pantazis, 1997, p. 14).

This study is based upon Popper's (1969; 1972a) Sophisticated Methodological Falsificationism. This means, according to Lakatos (1978), that a series of theories rather than isolated theories should be appraised. Lakatos states that a series of theories can be theoretically progressive in the following circumstances:

"a series of theories is theoretically progressive (or 'constitutes a theoretically progressive problemshift') if each new theory has some excess empirical content over its predecessor, that is, if it predicts some novel, hitherto unexpected fact" (Lakatos, 1978, p. 33).

Lakatos adds that a series of theories can also be empirically progressive:

"Let us say that a theoretically progressive series of theories is also empirically progressive (or 'constitutes an empirically progressive

problemshift') if some of this excess empirical content is also corroborated, that is, if each new theory leads us to the actual discovery of some new fact... Progress is measured by the degree to which a problemshift is progressive, by the degrees to which the series of theories leads us to the discovery of novel facts. We regard a theory in the series 'falsified' when it is superseded by a theory with higher corroborated content" (Lakatos, 1978, pp. 33-4).

Thus, the ultimate purpose of the research is to find an objective poverty measure that allows us to pose scientific criteria, for the measurement of multidimensional poverty. As such, this thesis subscribes to Gordon and Pantazis (1997) and Gordon (2006) who have posed some criteria concerning what every scientific poverty measurement should accomplish. *"For a measurement of poverty to be 'scientific', the theory it is based on must also be 'scientific'" (Gordon, 2006, p. 36).* These criteria are specified as follows:

1. *"The theory must be falsifiable, that is, it must be capable of being shown to be untrue ...*
2. *The theory must be testable.*
3. *'The theory must have predictive value.*
4. *The results of the theory must be reproducible' ... (Gordon, 2006, p 36).*

Gordon adds two more criteria based upon Lakatos (1974), who states that scientific research programmes must also:

5. *'Possess a degree of coherence that involves the mapping out of a definite programme for future research.*
6. *Lead to the discovery of novel phenomena, at least occasionally". (Gordon, 2006, p. 37).*

These strict criteria are built on the basis of continuous empirical research, to corroborate the Consensual approach that has been applied in Poverty and Social Exclusion surveys, across Britain and Northern Ireland at different times: 1983, 1990, 1999, 2002/03 and 2012 (Gordon et al, 2000; Gordon, 2006; Gordon et al, 2013). According to Popper, we

should seek theories with a high degree of corroboration, which can be provisionally accepted until they are finally falsified (Popper, 2009; Thornton, 2014).

Finally, this thesis is based upon Popper's epistemological approach. He argued that "*a theory will be said to be the better corroborated the more severe the tests it has passed (and the better it has passed them)*" (Popper, 1983, p. 244).

4.3 Literature review strategy

The literature review permits us to identify the current debates and scope of previous research, about poverty measurement in the UK and Mexico. It serves to identify the evolution of poverty studies, by exposing the transition from a one-dimensional measure to a multidimensional poverty measurement in both countries. This part of the study is based on the systematic review methods, described by Chalmers and Altman (1995) and Petticrew and Roberts (2005). Systematic reviews are applied as the strategy to undertake a discussion of the scientific literature focusing on the relevant topics for this research. Systematic review helps with the development of a theoretical analysis in this thesis for the purposes of answering the research questions

The study is based on Hendry and Farley (1998) and Timmins and McCabe (2005) to identify relevant information in order to help refine the topic, which consequently helped to pose points of convergence and divergence of interest for this research. The literature review used a logical technique (Blunden et al, 2000), by starting from unidimensional perspectives of poverty to multidimensional approaches of poverty. It follows the evolution of poverty studies in the UK and Mexico and focuses on the original debates, about the concepts and measures of poverty. Then, it goes further to appraise the different theories of poverty and the current debates in the field, as well as the theoretical underpinnings underlying poverty methods.

According to Carnwell and Daly (2001), a literature review can take the approach of discussing the theoretical literature followed by a review of methodological literature to give a basis for an appropriate research design. This literature review identified a number of theoretical and methodological issues in relation to previous research carried out in

Mexico and the UK. The different studies that have been found in this field, for the purposes of this research, expose several debates concerning the criteria used to identify the poor. The literature review strategy helped to find the areas where there is dispute and uncertainty concerning theoretical and conceptual terms. It was useful for investigating the criteria used by theorists to measure multidimensional poverty which, in turn, guides the present comparative study for the evaluation of poverty measurement methodologies.

Sources included databases, such as surveys (Poverty and Social Exclusion Survey, PSE 2012, National Survey of Households Income and Resources, ENIGH 2012 and Survey of Multidimensional Poverty Thresholds, EDUMP 2007), citation indexes, general searches and subject specific searches; reference lists; library searches; internet search engines, grey literature, reports, material produced by international organisations, etc. McManus et al (1998) state the importance of using expert guidance when compiling a systematic review, in particular because electronic databases may uncover only half of all relevant studies. Such expert guidance includes conversations with scholars who have published on issues concerning the multidimensionality of poverty in Latin America, such as Feres and Mancero (2001) and Minujín et al (2006). In addition, conversations with scholars who have devised multidimensional poverty methods being assessed in this study are also significant (Boltvinik, 1992; 2005; Gordon, 2006; CONEVAL, 2010). Reviews of poverty definition and debates on multidimensional poverty measurement also helped to guide the review, such as Alcock (1993); Gordon and Spicker (1999); Van den Bosch, K. (2001); Glennerster et al (2004); Lister (2004); Rio Group (2006), Walker et al (2010).

Furthermore, previous studies carried out by several scholars concerning multidimensional poverty measurements have also guided this study; for instance, Halleröd (1994); Nolan and Whelan (1996a); Kangas and Ritakallio (1998); Bradshaw and Finch (2003); Gordon (2006a; 2010b). These studies highlight how poverty methods can be evaluated, the set of categories selected for analysis, as well as how to combine different dimensions of poverty. The different studies show as well the kinds of surveys that were used/or carried out according to the rationale of specific theories for the measurement of poverty, through analysis of either income, standard of living, or

perceptions of needs. Several studies also provide information on the analysis of poverty at both the individual and household level.

4.4 Research design

This study aims to carry out a comparative, empirical and quantitative analysis on the official multidimensional poverty measurement methodologies applied in the UK and Mexico.

This inquiry is divided into a two-stage quantitative analysis:

1. In the first stage, British methodologies will be applied to Mexican data using the standards appropriate to Mexico. The Consensual Approach (Mack and Lansley, 1985; Gordon, 2006a; 2010b) will be examined in Chapter 5 and the EU2020 poverty measurement (EC, 2010) will be evaluated in Chapter 6.
2. The second stage includes the application of Mexican methodologies to the UK data: The CONEVAL's (2010) MPPM (Methodology for Multidimensional Poverty Measurement), and Boltvinik's (1992; 1999b) IPMM (Integrative Poverty Measurement Methodology), by using the standards appropriate to the UK society, which will be examined in Chapter 7.

The quantitative analysis also implies the comparison of intersection approaches (Consensual approach and the CONEVAL poverty measurement); the union approaches to poverty measurement (the EU2020 poverty measure) and weighted average system methodologies (the IPMM methodology). This analysis permits to find out how these multidimensional poverty measures respond to specific antipoverty policies.

The study is also focused on the analysis of how normative and relative approaches identify poverty thresholds. It also aims to determine the methodological and quantitative contribution of different indicators of social deprivation. The outcomes are the patterns of multidimensional poverty which are also compared with different methodological criteria, i.e. intersection or union approaches to poverty.

4.5 The method: A comparative approach of multidimensional poverty measures

Following Popper's approach, deductive reasoning is applied in this study through the formulation of empirical (quantitative) analysis, of comparative multidimensional poverty measurement methods. Deductive reasoning implies in this research calls for replication of poverty methods in different social contexts (the UK and Mexico), as well as to corroborate empirical content and falsify theoretical-methodological underpinnings, to finally show new facts.

This enquiry innovatively identifies convergent aspects of theoretical and conceptual elements, of the theories supporting the multidimensional poverty measurement methodologies, applied in this dissertation. There is a relationship between the social rights-based approach and the consensual approach; between social inclusion and human flourishing. Poverty methods aim to capture the basic standards needed to live decently, relative to society, based upon Townsend's (1979) approach. These frameworks imply also the notion of social consensus, because entitlements are implicit in this notion, to avoid poverty.

Furthermore, theories are interconnected in the use of two kinds of poverty dimensions: low income and deprivations (UBN), to show relative and prevalent living standards in each society. The importance of the study lies ultimately in the implications, of the union and intersection approaches to poverty, for the design of antipoverty policies in Mexico and the United Kingdom. For this reason, multidimensional poverty measurement methodologies are operationalized in the UK and Mexican contexts.

Then, the consensual approach; the EU2020 poverty measure; the CONEVAL's MMPM index and the Boltvinik's IPMM methodology will be described in the following sections, including the poverty measurement criteria, as well as the way indicators were constructed and applied for different social contexts.

This research considers relevant and general aspects for the evaluation of poverty measurement methodologies, such as issues of reliability, generalizability and validity; the types of surveys selected to carry out quantitative analysis, as well as the statistical

techniques, needed to analyse and compare the results (prevalence of poverty and patterns of poverty), which are obtained from the assessment of methodologies in Chapters 5, 6 and 7.

4.5.1. The comparative approach applied to the UK and Mexico

There are considerable differences between the UK and Mexico regarding economic and social progress; labour market structure; income distribution; age profiles, etc. The purpose of this study is to show whether the multidimensional poverty measurement methodologies, developed in each country (UK and Mexico), can be applied in these significantly different contexts i.e. will UK methods work in Mexico and vice versa? The primary purpose of this comparison is to assess the robustness of both the theory and practice of multidimensional poverty measurement in Mexico and the UK – are these general methods which will work in any country or society or are they country and context specific? Poverty measurement methods in the UK and EU draw on Townsend's theory of relative deprivation, whereas in Mexico CONEVAL's method draws on social and economic rights and Boltvinik's methodology is based on the theory of Human Flourishing. These three different theoretical bases for measuring multidimensional poverty should also in theory be universal and generalizable. This comparative analysis is thus a test of this proposition.

The UK is a constitutional monarchy consisting of four countries and a number of small territories, its legislation consists of statutes; judge-made case law and international treaties but there is no formal written constitution (Garner, 2001; Ward and Akhtar, 2015). The UK Parliament is in charge of approving the Acts of Parliament; however, bills become law only after Royal Assent (Garner, 2001; Ward and Akhtar, 2015). By contrast, Mexico is a federation and the government is representative, democratic and republican. Laws are approved by the Congress of the Union (the Chamber of Deputies and the Senate of the Republic), and laws become part of the Mexican Constitution, through social consensus (DOF, 2014) The current Mexican Constitution was enacted in 1917 and established the rights of Mexican citizens and ratified international treaties are recognized by the Mexican Constitution (DOF, 2014, updated, Art. 133).

Furthermore, the UK is an economically developed country, characterised by advance science and technology (World Bank, 2006; 2012). The UK has the fifth largest economy in the world, measured by gross domestic product (World Bank, 2017). By contrast, Mexico is an industrialised but still developing country with a broad range of social problems, such as poverty, inequality, precarious work, social insecurity, violence, public insecurity, etc (World Bank, 2011; 2012). Mexico was the 15th largest economy in the world in 2012 (World Bank, 2017), however Mexico is the most unequal country amongst the OECD (2017) countries. However, the UK is also characterised by high levels of inequality (OECD, 2017).

Table 4.1. compares the socio-economic conditions in the UK and Mexico. The key characteristics are: 1) the UK is richer than Mexico in terms of GDP (Gross Domestic Product) and GDP per capita; 2) there is greater social expenditure in the UK often targeted at poverty alleviation i.e. social expenditure is 26% of GDP in the UK, whereas in Mexico it is only 7%; 3) inequality is much higher in Mexico than the UK, at 0.46 and 0.35, respectively; 4) the employment rate in the UK is 70%; and, in Mexico, 58% but much of this employment is within the informal economy (35%) in Mexico.

Table 4.1. The UK and Mexican socio-economic contexts

Indicators	UK	Mexico
GDP (millions of US dollars) (international ranking in 2015)	2,861,091 (5 th position)	1,143,793 (15 th position)
GDP per capita 2015 (constant 2010 US\$)	41,183	9,511
Gini (2012)	0.35	0.46
Net social expenditure, in % GDP (2013)	25.6	7.3
Employment rate ¹ (%) (2012)	70	58
Informal sector (%) (2011)	na	35

Source: OECD (2016; 2017) statistics and World Bank (2017).

na. Not applicable.

Notes:

¹ Employment rate is defined as the ratio of the employed to the working age population (OECD, 2016).

The UK is experiencing conditions of in-work poverty and labour market segmentation (Bradshaw et al, 2010). People tend to suffer from in-work poverty when there are children at home and they are low-paid and/or employed part-time. In-work poverty is also associated with not taking up in-work benefits (Bradshaw et al, 2010).

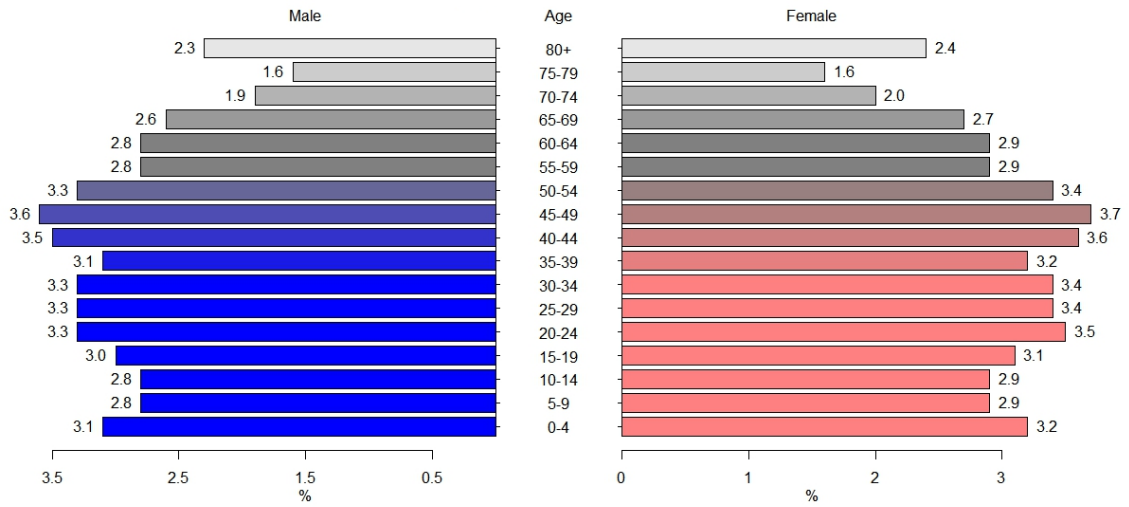
In Mexico, the labour market is characterised by informality; precarious work; child labour; etc. It has some similarities with the UK labour market, such as exploitation; subcontracting and job insecurity, among others (Rojas-García et al, 2010; Bradshaw et al, 2010). Thus, the low work intensity indicator, as a component of the EU2020 poverty measure, will be assessed in the Mexican context, to evaluate its replicability and utility. Low work intensity (LWI) is associated with unemployment, low earnings and low wages in the EU (Cantillon et al, 2017). However, in Mexico, LWI might not reflect a consistent pattern of unemployment because the unemployed population tends to enter into the informal economy, even at very low wages (Rojas-García et al, 2010).

Figure 4.1 shows the age profiles of the UK and Mexican populations by gender in 2012. The two age profiles are very different, the Mexican population is much younger on average than the population of the UK. The Mexican population pyramid is wider at the base, which means that there is a greater proportion of young people who are between the ages of 0 and 24 years. The working age population is also significantly larger in Mexico than in the UK (Figures 4.1.1 and 4.1.2).

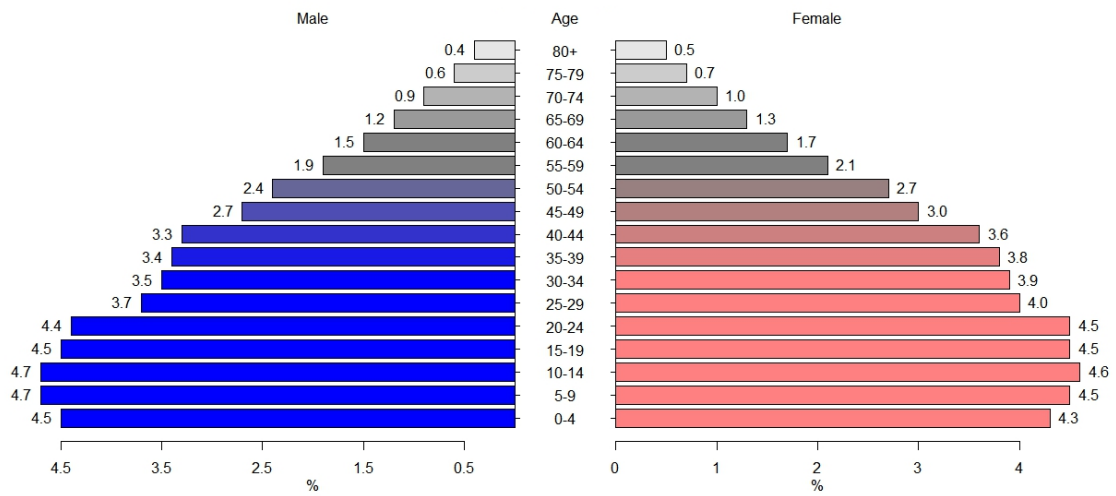
The population dynamics can help us to understand that there might be greater numbers of children and young people experiencing poverty than other population age groups in Mexico. Whereas, in the UK, the poor might be distributed amongst both children and the elderly. The Mexican social security system has not been designed to provide elderly people with adequate pensions provided by the State (Zúñiga and Gomes, 2002). Nowadays, the policy rhetoric in Mexico is to focus on providing more employment for the working age population and take advantage of the demographic dividend, to be able to support the pension system in the future (INEGI, 2016).

Figure 4.1. Age profiles in the UK and Mexico, 2012

4.1.1. UK population pyramid



4.1.2. Mexican population pyramid



Source: ONS (2016) and INEGI (2016). R project was used to plot the population pyramids with Plotrix package (Lemon et al, 2017).

In the UK, social policies have been focused on unemployed people, through active labour market policies and the prevention of social exclusion (SEU, 2004; Levitas, 2006). However, the global financial crisis resulted in cuts in the provision of pensions and child benefits (Taylor-Gooby, 2013). The UK social policy rhetoric is different to that in Mexico, because the UK social security system aims to provide adequate pensions for the elderly population which is increasing in size. The focus of a range of policies is to tackle social exclusion experienced by older people (Smith et al, 2004; Spicker, 2014).

4.6. Defining a scientifically deprivation index for Mexico based upon the consensual approach

In this inquiry, the consensual approach (Mack and Lansley, 1985) is applied to the Mexican case to update the necessities of life, through the 2007 Multidimensional Poverty Thresholds Survey (EDUMP). Social deprivation indicators determined by the CONEVAL's official poverty measurement methodology are used to combine low income, and to obtain a new index of multidimensional poverty measurement, which is based on social consensus.

The approach suggested by Gordon (2006a; 2010) and Gordon and Nandy (2012) will be applied to the Mexican case study. This consists of combining measures of relative income with indicators of deprivation, in order to identify the poverty threshold, and the use of multivariate analysis, such as canonical correlation, Cronbach's Alpha, ANOVA and logistic models (Gordon, 2006a).

The reason to apply Gordon's (2006a) consensual method in Mexico, in this study, is because CONEVAL (2010; 2013a) has not make use of the 2007 EDUMP survey, to update the poverty thresholds and to identify new indicators of social deprivation.²³.

²³ The identification of the socially perceived necessities for the Mexican society (poverty thresholds and new necessities) is carried out in Chapter 5.

This study will follow the criteria presented in Gordon and Nandy (2012) to obtain a reliable, valid and additive index of deprivation for Mexico. According to Gordon and Nandy (2012), to obtain validity, every component of the index (social deprivation indicators and income) should show statistically significant relative risk ratios with independent indicators, such as socioeconomic strata, ethnicity or rurality and dependency ratio. Every indicator of social deprivation will also be tested for reliability (Gordon and Pantazis, 1997). Additivity is tested through looking at the second order interaction effects in ANOVA, by using equalised disposable income as the dependent variable. Social deprivation indicators should be the independent variables (Gordon and Nandy, 2012). Reliability, validity and additivity is further explained below.

Finally, the combined income and deprivation poverty threshold is identified through ANOVA and logistic regression, by obtaining “*the deprivation score that maximizes the between-group differences and minimizes the within-group differences (sum of squares)*” (Gordon, 2006a, p. 66). The general linear models are applied to a succession of groups regarding their deprivation scores. The analysis starts with those individuals that do not present deprivation compared with individuals that experience one deprivation or more, and so forth (Gordon, 2006a).

The application of the consensual approach to the Mexican context is based on the idea of consensus and social rights. The LGDS, in its Article 36, requires that the multidimensional poverty measure includes eight different indicators (DOF, 2004), described in Table 4.4, column A below. However, the current standards for Mexican society were obtained from the EDUMP survey and the index of deprivation was constructed on this basis. These updated standards are used to estimate every indicator of social deprivation. So, new sub-indicators (needs) and updated standards are part of the results in Chapter 5 and were taken from the EDUMP survey. However, these indicators and sub-indicators are applied and used to estimate multidimensional poverty, by using the MCS (Module of Socioeconomic Conditions) of the 2012 ENIGH survey.

Also, the prevalence of income poverty is estimated by deriving the deprivation threshold, from the ANOVA and Logistic analysis. The income poverty threshold is estimated from the average income for those people experiencing deprivation. So, people who show an

equivalised disposable household income below the poverty threshold identified, were categorised as 1, i.e. the income poor, and 0 describes people that do not present income poverty. Similarly, the multidimensional poor are identified by those who are below the income poverty line and below the deprivation threshold. Additionally, the union approach to poverty is also estimated in this study, which is defined by the sum of the deprivation and income poor subsets. For comparative purposes, other indices, such as the IPMM, will be used as external validators to compare prevalence of different poverty measures, as this method is independent because it adopts different criteria.

4.7 Estimating social inclusion indicators to apply the EU2020 approach to Mexico

The Europe 2020 headline indicator is “*the sum of persons who are: at-risk-of-poverty or severely materially deprived or living in households with very low work intensity as a share of the total population*” (EC, 2014b, p 1). The at-risk-of-poverty rate or social exclusion (AROP or SE) is calculated based on the methodology presented by the European Commission (2014b, p 1), described in Appendix 4.1. The EU2020 advocates the union approach of poverty, which should be evaluated in Chapter 6 as a multidimensional poverty measurement methodology.

The EU2020 poverty method responds to the social inclusion framework in the European Union, including the UK, and will be empirically tested in the case of Mexico. The study will show if the EU2020 poverty method produce the same patterns of poverty as those official estimates, provided by the CONEVAL’s (2013a; 2013b) social rights-based approach.

This measure consists of the sum of EU social indicators developed by the Open Method of Coordination (EC, 2014b). Appendix 4.1 shows the formula to calculate the EU2020 poverty measure and their components. The EU social indicators are:

1) **At-risk-of-poverty rate (AROP)**, which refers to the proportion of all persons with an equivalised disposable household income²⁴ below 60% of the national equivalised household median income.

Other measures are defined as follows, which are also required for the analysis of the AROP measure:

a) Disposable income is calculated on the basis of the Canberra's (Canberra Group, 2011) definition, to estimate the AROP income measure. However, Chapter 6 also includes a comparison of the income poverty lines, estimated based upon the CONEVAL's (2010) method and the Boltvinik's (1999b) approach. There are some differences to calculate disposable income between these approaches, which are addressed as follows:

CONEVAL's (2010) household income measure includes both monetary and non-monetary income: labour income, income from self-owned businesses, capital gains, transfers, income from cooperatives, the value assigned to auto-consumption, in-kind payments or gifts, etc. CONEVAL's approach is based upon income definitions developed by the Canberra Group (2011) and ILO (2003). However, only payments and in-kind gifts that are received more than once a year were included in the household income. Appendix 4.2 describes CONEVAL's criterion and the items included to calculate current income. However, the imputed rent is not added to obtain household's current income. The reason is that imputed rent is not fungible and so it is not available for households to make use of, to satisfy their needs (CONEVAL, 2010).

On the other hand, the IPMM methodology estimates disposable income to determine the PL. However, this criterion is not similar to the one established by Canberra Group (2011). Boltvinik states that "*the budget line expresses the purchasing capacity of income as a whole*" (Boltvinik, 2007b, p. 25) and should be compared with a household's disposable income. For instance, if food poverty is measured, we should compare the cost

²⁴ ENIGH reports the income of the last month and the income of the previous five months, as well as an aggregation of the last three-month period. Therefore, an average of the income reported by month was calculated after deflation. Also, the income of the last three-month period was considered to avoid any possible missing values, just in case that people did not report anything in the previous ones.

of the food basket with the household disposable income for food, deducting all non-food items from household income (Boltvinik, 2013a). Once the PL is calculated according to the IPMM methodology, this is compared with the household disposable income related to the items included in the Normative Basket of Essential Satisfiers (NBES) whose cost is equal to the PL-IPMM. Such disposable income is obtained by deducting from the household income, the expenditure not included in the normative PL, like housing and education, which are verified by the UBN approach (Boltvinik, 1992, 2013a). This explanation is part of Boltvinik's (2007b) criticisms of the poverty lines applied in Mexico, addressed in Chapter 2. Household disposable income obtained by the IPMM methodology is compared with the CONEVAL current income in Appendix 4.2. Additionally, Appendix 4.3 shows the items deducted to obtain disposable income according to the Canberra criterion (Canberra Group, 2011).

b) Equivalence scales. The equivalised median income, used to estimate the AROP income measure, was calculated on the basis of the OECD modified scale. The scale attributed coefficients to the members of the households. The coefficient of the head of household counts as 1; additional adults count as 0.50 and children less than 15 years old count as 0.30 (Chanfreau and Burchardt, 2008). Appendix 4.4 also shows the equivalence scales, adopted by the different poverty measurement methodologies for comparative purposes in Chapter 6.

c) The poverty gap is the average distance from the income of the population with an income lower than the wellbeing threshold to that threshold (Foster, Greer, Thorbecke, 1984). CONEVAL (2010) and EVALUA (2011) advocate this approach to inform their figures on poverty in Mexico. The income poverty gap was applied to the AROP measure and is compared with those poverty gaps, calculated based on the CONEVAL's MPPM and Boltvinik's IPMM methodologies, with the purpose of showing differences, in Chapter 6.

2) Population living in very low work intensity (LWI), refers to people aged 0 to 59 years who are living in households, where working-age adults, 18 to 59 years, worked less than 20% of their total work potential, during the past year.

The LWI indicator is calculated for the percentage of people living in households with low work intensity in each age and gender group (EC, 2014b) (Appendix 4.1 shows the methodological criteria). The coefficient of WI is fixed at less than 0.2 in the European Union (EC, 2014b). However, the LWI threshold is defined for Mexico, based on the criterion explained by Ward and Ozdemir (2013), which consists of estimating the proportion of the working age population at risk of poverty, by household work intensity. The LWI threshold is estimated through comparing the percentages of the relative income poor vs. the non poor by work intensity strata, and the LWI threshold is associated to the highest prevalence of the work capacity shown by poor people, i.e. LWI is determined by the relative income poor.

The question that was identified in the MCS 2012 module for the calculation of the WI measure is: how many hours a week did you work the last month? The question in the module refers to the working time in the last month instead of all over the past year, as in the case of the European Union (EC, 2014b). Because, the question in the MCS module reflects the labour market conditions in Mexico, which is more flexible (Negrete Prieto, 2012).

3) The severe material deprivation (SMD) rate estimates the proportion of the population living in households, lacking at least four items out of the nine deprivation items shown in Table 4.2 (EC, 2014b, p 1).

However, indicators of material deprivation (MD) should be adapted for the Mexican social context, because the EU's poverty definition draws upon Townsend's concept of relative deprivation (EC, 1985; Gordon, 2010). Context specific indicators are used to estimate the SMD component of the EU2020 poverty measure for Mexico. This study is based on CONEVAL's (2010) criterion, as this institution has defined indicators to measure deprivation, based on the Mexican law (DOF, 2004). These indicators were

established, on the grounds of social rights and encompass the social and material necessities that are considered as part of the customary way of living in Mexico.

Table 4.2 shows harmonised MD indicators to replicate the measure of SMD for the Mexican context. The EU2020 poverty target use nine context specific indicators of SMD (Table 4.2, column A). On the other hand, CONEVAL (2010) use indicators and sub-indicators that can be associated to material deprivation, such as those that identify deprivation due to quality and spaces of the dwelling; deprivation in access to food; and deprivation in access to basic services in the dwelling (Table 4.2, column B). Then, the nine indicators to calculate SMD for Mexico are shown in Table 4.2, column C, which have been also used by CONEVAL, as part of their multidimensional poverty measurement methodology.

MD indicators cannot be applied literally to the Mexican context, as necessities are relative (Townsend, 1979). For instance, a week holiday away from home, defined by the EC (2014), is not yet considered in the CONEVAL's (2010) MMPM poverty method. Similarly, some durables listed in Table 4.2, column A were not included, because these have taken into account for the normative basket in Mexico, and are used to measure income poverty (CONEVAL, 2010). Alternatively, lack of access to drinking water; non availability to electricity (Table 4.2, column C) were used instead of durables.

Table 4.2. shows the sub-indicators selected for the measurement of SMD in Mexico, enlisted from 1) to 9) in column C. Thus, SMD applied to Mexico is estimated by identifying the people that lack at least four items out of the following nine MD deprivation items:

Table 4.2. Definition of material deprivation indicators, to measure SMD in Mexico

EU2020 MD indicators	CONEVAL MD indicators	
Indicators (A)	Indicators (B)	Sub-indicators (C)
To pay rent or utility bills	I. Indicator of deprivation due to quality and spaces of the dwelling	1) Deprivation due to quality of floor materials ²⁵ 2) Deprivation due to quality of roof materials ²⁶ 3) Deprivation due to quality of walls materials ²⁷ 4) Deprivation due to the lack of spaces in the dwelling ²⁸
To keep home adequately warm		
To face unexpected expenses		
To eat meat, fish or a protein equivalent every second day	5) Indicator of deprivation in access to food ²⁹	
A week holiday away from home, or could not afford (even if wanted to)	This indicator is not defined in the CONEVAL poverty measurement	
A car*	III. Indicator of deprivation in access to basic services in the dwelling	6) Lack of access to drinking water ³⁰ 7) Non availability to drainage service ³¹ 8) Non availability to electricity ³² 9) Type of fuel cooking ³³
A washing machine*		
A colour TV*		
A telephone*		

Source: Information obtained from CONEVAL (2010) and from the EC (2014b).

Note: Indicators marked with an * are part of the normative basket, in the Mexican context, and so, they are used for the estimation of income poverty (CONEVAL, 2010; EVALUA, 2012).

²⁵ Deprivation is measured if the dwelling has dirt floor.

²⁶ Roof made of cardboard sheets or waste are considered to define deprivation.

²⁷ Walls made of mud or daub and wattle; reed, bamboo or palm tree; cardboard, metal or asbestos sheets: or waste.

²⁸ Deprivation is measured if the ratio of the number of members of the household per room (overcrowding) is greater than 2.5.

²⁹ CONEVAL (2010) considers children and adults' deprivation in access to food. It is basically measured by taking into account the lack of money or resources to afford a diet, based on very little food variety. Or if they skipped breakfast, lunch or dinner or if they did not eat for a whole day.

³⁰ There is deprivation if water is obtained from a well, river, lake, stream, or truck; or when piped water is carried from another dwelling or gotten at a public faucet or hydrant.

³¹ Deprivation is estimated if there is no drainage service, or the drainage is connected to pipes leading to a river, lake, sea, ravine or crack.

³² Deprivation is estimated when the dwelling has no electricity.

³³ A household is deprived when there is wood or coal with no chimney for cooking, or to heating food inside the dwelling.

4.8 Mexican multidimensional poverty measures applied to the UK

The next sections explain the criteria used in the two official multidimensional poverty measurement methodologies in Mexico and Mexico City, which are the CONEVAL's (2010) MMPM methodology and Boltvinik's IPMM index (Boltvinik, 1992 and EVALUA, 2009a). Secondly, a harmonisation of social deprivations and UBN indicators was carried out in the following sections. This harmonisation is based on theoretical and conceptual links between the social rights-based approach and the human flourishing framework, already addressed in Chapter 3. This methodological process was developed, in order to apply the Mexican multidimensional poverty measurement methodologies to the UK.

4.8.1 The Integrative Poverty Measurement Method (IPMM)

Boltvinik's (1992; 1999a) developed the IPMM methodology based on his criticism of the initial poverty methods developed in Latin America (Beccaria and Minujín, 1987; Larrea, 1990), which encompass the UBN poverty dimension (addressed in Chapter 2). Boltvinik's (1999b) IPMM method is estimated focusing on the intensity of poverty. Boltvinik (1992) states that households who were poor with n necessities would never lift out of poverty by increasing the number of necessities to m . On the other hand, households that were not poor with n necessities could sink into poverty with every additional need (see formula (2) below, for this exemplification).

Thus, the criterion to identify poor households, based on Beccaria and Minujín (1987) and Larrea (1990), is to have one or more UBN (p'_{ij}), in formula (1) below. Boltvinik (1992) formalizes as follows:

$$p'_{ij} = 1 \quad (1)$$

where:

$$p'_{ij} = \max(p_{1j}, p_{2j}, \dots, p_{nj}) \quad (2)$$

p'_{ij} = Deprivation score for the UBN dimension

This method is normative. In (1), p_{ij} values are defined as 0 if the household is at the norm or above it, and are defined as 1 if the household is below the norm. This is a binary system: meet the norm, 0 – do not meet the norm, 1.

In (2), p_{1j} to p_{nj} refer to the values of the household j regarding necessities 1 to n .

This method of measuring poverty does not calculate the intensity of poverty. To overcome this problem, the UBN dimension implies the construction of a scale in order to differentiate the intensity of both poverty dimensions, in a range of satisfaction and non-satisfaction of needs (Boltvinik, 1992).

Boltvinik (1992; 1999b) developed the IPMM poverty measurement based on this criticism and designed five steps: a) It is necessary, first, to express the natural scale of the variable and thus, construct an indicator of achievement; b) the second step consists in transforming the indicator of achievement into an indicator of deprivation by measuring the household's distance from the norm. With this operation, households who are above the norm will receive negative values, those who are at the norm receive a value equal to 0 and those who are below the norm receive positive values; c) the third step consists in rescaling the variables of deprivation, so that all of them have an equal range of variation. This allows us to obtain comparable scales for all needs in order to make judgments about the satisfaction and dissatisfaction of every need for every household; d) the fourth step combines the scores obtained for each household (and for individuals) in the different basic needs to obtain a global UBN score for every household. At this point, it is possible to know the extent to which a household is poor and the score of the intensity of poverty obtained by every household; e) the last step involves the aggregation of households' scores to obtain the intensity of poverty by UBN score. The result will be poverty stratification. The whole methodological explanation can be seen in Appendix 4.5.

Table 4.3. Poverty stratification criteria according to the IPMM methodology

IPMM strata	Intensity of Poverty I(IPMM)
Indigent	1 to 0.51
Intense poverty	0.5 to 0.34
<i>Extreme poor (Sum of Indigent and Intense poverty)</i>	<i>1 to 0.34</i>
Poor moderately	0.33 to 0.01
<i>Non-Indigent Poverty (Sum of Intense and Moderate Poverty)</i>	<i>0.5 to 0.01</i>
Total poor	<i>1 to 0.01</i>
With satisfied basic needs	0.0 to -0.09
Medium class	-0.1 to -0.49
High class	-0.5 and less
Total non poor	<i>0.0 and less</i>

Source: Boltvinik (1999b) and EVALUA (2011a).

The IPMM multidimensional poverty measurement is obtained by combining the intensity of poverty by income-time I(PLT) and UBN³⁴. The P_j^1 index calculated to obtain UBN was weighted by the cost that each item represented in the total cost of this subset of items. Thus, to combine I(PLT) and UBN we have first to find the equation that represents the total cost in which a household j reaches the standard of needs, in monetary terms, only for weighting purposes and to be able to add these dimensions. The IPMM weighting average system is explained in Appendix 4.6. The final formula to calculate the IPMM is:

$$I(IPM)_j = (a)I^*(PLT)_j + (b)(UBN)_j$$

³⁴ The equation to obtain I(PLT) has a wider range of variation than P_j^1 which has already been rescaled. It is necessary to rescale negative values of I(PLT) to obtain -1 as a maximum value, before we combine I(PLT) and UBN. This can be done with equation (5) (Appendix 4.5) (Boltvinik, 1992).

Boltvinik's (1992; 1999b) IPMM methodology was developed not only to show the prevalence and intensity of poverty but also as a method of poverty stratification. EVALUA DF (2011b) redefined Boltvinik's (1999b) poverty strata. Now there are five strata of poverty and three that refer to non-poverty. Table 4.3 shows the I(IPMM) weights for the stratification of the poor:

Once p_{ij} is obtained for every UBN indicator and income poverty is estimated as well, then, weights should be calculated based upon the costs of the MIS basket, in order to sum up the poverty dimensions of UBN and PL, and to estimate the multidimensional poor in the UK.

Following Boltvinik's (1992) methodology, the average costs in urban and rural areas in 2012, in the UK (Smith et al, 2012; Davis et al, 2012), were taken from the MIS basket to estimate the expenses related to the PL and every UBN dimension (Table 4.4). Thus, the costs of goods and services related to the PL, i.e. those that can be bought with income (Boltvinik, 1999b), such as food; clothing and footwear; other housing costs; household goods and motoring and other travel costs were summed up, to estimate the PL weight.

Additionally, the costs of social and cultural participation in the MIS approach were added together to calculate the relative costs for the Educational gap UBN dimension. Access to health care includes expenses for personal goods and services. Similarly, access to social security includes the combined costs of council tax and household insurances; the quality and living space of the dwelling takes into account MIS costs of rent; the access to basic services in the dwelling includes expenses of water rates and fuel; the access to information includes the costs of household services, all of them based upon the MIS 2012 budget (Davis et al, 2012). Weights were obtained as the proportion of the total average cost (£250 per week) of all UBN related MIS items in 2012. Costs and weights will be shown in Chapter 7.

4.4 Matching MIS items to obtain IPMM (PL and UBN) weights, for the UK in 2012

MIS items	PL and UBN indicators' components
- Food - Clothing and footwear - Other housing costs - Household goods - Motoring - Other travel costs	PL
- Social and cultural participation	Educational gap
- Personal goods and services	Access to health care
- Council tax - Household insurance	Access to social security
- Rent	Quality and living space of the dwelling
- Water rates - Fuel	Access to basic services in the dwelling
- Household services	Access to information

Source: Own elaboration based upon the items used for different budget standards: Boltvinik (1999b); Smith et al (2012); Davis et al (2012).

Note: Childcare was not taken into account for this classification, because the IPMM method does not included it in its normative basket.

4.8.2 The CONEVAL multidimensional poverty measurement methodology

The Methodology for Multidimensional Poverty Measurement in Mexico identifies three main dimensions for the identification of the poor, based upon the General Law of Social Development (LGDS): economic wellbeing, social rights and social cohesion (DOF, 2004). The first two dimensions are considered in this study for their application to the UK context. However, social cohesion will not be included in this research because this indicator refers to a phenomenon that should be studied at area level (Gordon, 2010b), whereas this study measures poverty at the individual and household levels only.

According to CONEVAL's methodology (2010), there are two steps to identify indicators of social rights. Firstly, a binary variable is computed for each social deprivation indicator. The Law establishes, in Art. 36, six indicators of social deprivation: educational gap, access to health services, access to social security, quality and living space of the dwelling, access to basic services in the dwelling and access to food (DOF, 2004). Therefore, every indicator takes either the value of 1, when an individual is deprived, or

the value of 0, when an individual is not deprived. This criterion is based upon the principles of indivisibility and interdependence of human rights (UN, 1948; DOF, 2004). Secondly, an index of social deprivation is computed as the sum of the six indicators of social deprivation.

The wellbeing space is measured by people's current income³⁵, which includes both monetary and non-monetary resources. Furthermore, a household's income is adjusted to reflect differences in its composition, according to its size, age of household members and other characteristics³⁶. Then, household income is compared with the minimum wellbeing thresholds obtained from the costs of a defined food basket and the calculation of the Engel coefficient to obtain non-food basket costs (CONEVAL, 2010). This approach will be applied to the UK by using MIS (Davis et al, 2014), according to the budget standards items considered in the CONEVAL (2010) methodology.

There are differences between the MMPM and the IPMM poverty measurement methodologies. The MMPM poverty method measures the accomplishment/non accomplishment of social rights, based upon the LGDS (DOF, 2004) and advocates the intersection approach to poverty. The MMPM poverty method presents two poverty lines; the wellbeing threshold (WT) and the minimum wellbeing threshold (MWT), which are combined with deprivations. However, the last one jointly with deprivation represent the group of the extreme multidimensional poor (CONEVAL, 2010).

On the other hand, the IPMM poverty method measures basic needs through a weighted average system, according to the degree of satisfaction/non satisfaction of needs. The results are scores that represent a gradual satisfaction of needs or achievements. Although, the judgements are normative, the poverty standards are based on living conditions³⁷ (Boltvinik, 1992). Finally, the scores are classified based upon the poverty stratification criterion of the IPMM methodology (Boltvinik 1992; 1999b).

³⁵ The criteria to calculate current income by CONEVAL (2010) is shown in Appendix 4.2.

³⁶ Equivalence scales adopted by CONEVAL (2010) were estimated by Santana (2009) and are shown in Appendix 4.4.

³⁷ For instance, the Mexican poverty threshold for the educational gap indicator is determined by the Constitution (Boltvinik and Damián, 2003; DOF, 2014).

However, both methods estimate social deprivations/UBN indicators, based upon norms defined by society or established in legal frameworks.

4.8.3 Defining social deprivation indicators or UBN for the UK: a harmonisation process

The poverty measurement methods applied to the UK in this research, require comparability regarding the use of deprivation and UBN indicators. There are differences between the MMPM and the IPMM methods, with regard to the number of indicators included. Although the social deprivation indicators used by CONEVAL (2010) are similar to the UBN indicators used by Boltvinik (1992; 1999b), the latter includes additional indicators; for instance (Boltvinik, 2005a)³⁸:

- a) Time;
- b) Knowledge and information;
- c) Waste disposal;
- d) Care;
- e) Politic participation;
- f) Freedom of expression.

On the other hand, CONEVAL (2010) includes an indicator of social cohesion in their official poverty method in Mexico.

However, this thesis adopts Townsend's relative deprivation approach. This means that only indicators of social deprivations or UBN are used³⁹, and deprivation thresholds are also determined relative to society.

³⁸ Boltvinik (2005a) has stated from the human flourishing view, that essential needs will be modified and enriched by the society itself.

³⁹ It should be noted in this research, that the time dimension included in the IPMM index and the social cohesion dimension, included in the CONEVAL poverty measure, refer to a different scope of analysis and they will not be addressed in this study. Social cohesion and time dimensions requires a thorough theoretical and methodological investigation of their relationship with poverty (Gordon, 2010; Burchardt, 2008). For instance, Bojer (2006) argues that time poverty can be seen as part of an Income

For this purpose, a harmonisation process for poverty measurement in the UK is applied in this analysis. This permits us to empirically and conceptually compare these poverty measurement methodologies. The comparability of results obtained from this analysis will allow us to observe similarities and differences in the poverty results. Additionally, it will allow us to examine how the patterns of poverty and deprivation vary between the MMPM and the IPMM methodologies, in the UK context.

The harmonisation of social deprivation and UBN indicators consists of the following aspects:

- 1) Define the number of indicators for the estimation of social deprivation and UBN, which are to be applied for the UK.
- 2) Identify the norms (legal standards) to calculate the indicators of social deprivation/UBN. Figure 3.3 (Chapter 3) shows that social consensus forms the basis of the MMPM and the IPMM methods. This criterion is applied in this research, to identifying the norms related to social rights/basic needs in the UK. The relative deprivation approach, is used to identify what is regarded by UK citizens, as necessary to live decently and participate in society. Standards were also obtained from official regulations published in the UK.
- 3) Norms and regulations also provide information, regarding the thresholds for the fulfilment of social rights and basic needs.

The social rights-based approach and the human flourishing framework can be applied and compared for the UK social context, because these approaches have been adjusted to measure deprivation or UBN, based upon the UK legal standards. Thus, this comparison

Capability framework. There is also a need to investigate how time poverty is conceived, if this is part of the scope of resources, as Boltvinik (1992) has conceptualised it. Moreover, studies on social cohesion are required to investigate its relationship with poverty (Gordon, 2010; Gordon and Nandy, 2012) and its scope of analysis is at the community level (Jensen, 1998). This study is designed for the analysis of poverty and deprivation at the individual and household levels. In addition, these indicators are not considered part of social rights (UN, 1948; CONEVAL, 2010; DOF, 2014a). Additionally, this study is based on indicators of social deprivation, social rights or UBN indicators, from the viewpoint of the standard of living and its relationship with income, based on Townsend's (1979) relative deprivation theory. The CONEVAL poverty measure and the IPMM index can exclude social cohesion and time poverty, respectively, as these indexes are decomposable (Boltvinik, 1992 and CONEVAL, 2010).

has been formulated through the relative deprivation approach, based on the standards approved by the UK society.

Table 4.5 classifies the set of deprivation indicators and sub-indicators, used in the MMPM and the IPMM methodologies (columns A and B) and it adds a set of conceptually similar harmonised indicators and sub-indicators applicable to the UK social context (column C), i.e. these harmonised indicators are those basic needs that are also acknowledged to be social rights by UK society. The harmonised deprivation indicators can be either be compared, by applying a social rights-based approach or the UBN approach.

The harmonised social deprivations/UBN indicators and sub-indicators were selected on the basis of UK customs and the UK legal framework (CESCR, 2001; 2008; SEED, 2003; 2005; EU, 2011; 2013; Gordon et al, 2013; PSE, 2014). These indicators are related to sources of welfare provided by the State⁴⁰. From the comparative framework, in Figure 3.3 (Chapter 3), the harmonised social deprivations to measure IPMM and MMPM multidimensional poverty in the UK are shown in Table 4.5 (column C), and relate to the following domains:

- 1) Educational Gap,
- 2) Access to health care service,
- 3) Access to social security,
- 4) Quality and living space of the dwelling,
- 5) Access to basic services in the dwelling,
- 6) Access to food.
- 7) Access to information.

Regulations and norms for each indicator are discussed in the following section.

⁴⁰ In Mexico, the State has an obligation to facilitate the access to public and private funding, for the construction and improvement of housing, defined in Art. 2 of the Constitution (DOF, 2014).

Table 4.5. Harmonisation of social deprivation indicators

Mexican multidimensional poverty measurement methodologies		Harmonisation of indicators for the UK
CONEVAL	IPMM	
Poverty dimensions / Indicators / Sub-indicators		
A) Social deprivations (social rights)	B) Unsatisfied basic needs	C) Social deprivations / UBN
1. Educational gap 1.1. Compulsory education. 1.2. Compulsory school attendance.	1. Educational backwardness 1.1. Educational attainment. 1.2. School attendance. 1.3. Illiteracy.	1. Educational gap 1.1. Compulsory education in England, Wales, Scotland and Northern Ireland. 1.2. Compulsory school attendance.
2. Access to health care services 2.1. Person enrolled in public or private health services.	2. Health care access and Social Security 2.1. Direct access to private or public health services (employee benefits).	2. Access to health care 2.1. Access to public or private health care services.
3. Access to social security 3.1. Access to social security through work (disability leave; medical services; AFORE (work based pension scheme). 3.2. Access to social security through kinship 3.3. Access to social security through voluntary enrolment. 3.3. Retirement pension. 3.4. In receipt of PAM (Senior Citizens Program).	2.2. Indirect access to health care, through kinship or voluntary enrolment (IMSS health care institution). 2.3. Pensions. 2.4. Social programs for elderly people.	3. Access to social security 3.1. Jobseeker's allowance. 3.2. Old-age pensions and benefits. 3.3. Sickness cash benefits; Invalidity benefits; Disablement benefit; Income support. 3.4. Family Benefits. 3.5. Maternity and Paternity Benefits. 3.6. Survivors Benefits. 3.7. Long term care. 3.8. Housing benefits.

Mexican multidimensional poverty measurement methodologies		Harmonisation of indicators for the UK
CONEVAL	IPMM	
Poverty dimensions / Indicators / Sub-indicators		
A) Social deprivations (social rights)	B) Unsatisfied basic needs	C) Social deprivations / UBN
4. Quality and living space of the dwelling 4.1. Overcrowding. 4.2. Floor materials. 4.3. Ceiling materials. 4.4. Wall materials.	3. Dwelling (quality of materials and space of dwelling) 3.1. Overcrowding. 3.2. Floor materials. 3.3. Ceiling materials. 3.4. Wall materials.	4. Quality and living space of the dwelling 4.1. Overcrowding
5. Access to basic services in the dwelling 5.1. Access to water. 5.2. Drainage services. 5.3. Access to electricity. 5.4. Fuel for cooking.	4. Sanitary services 4.1. Water. 4.2. Drainage. 4.3. Toilet. 5. Domestic energy 5.1. Electricity. 5.2. Fuel for cooking. 6. Basic assets and durables 7. Waste disposal	5. Access to basic services in the dwelling 5.1. Home heating 5.2. Fuel (cut backs on heating last winter) 5.3. Problems with accommodation (heating faulty; draughts; damp in walls, ceilings or floors; rot in window frames or floors; problems with plumbing or drains; or condensation; and cold home in last winter; and housing problems affected the health of household members) 5.4. People not able to pay bills for electricity, gas, fuel, water, or are not keeping up with these bills.

Mexican multidimensional poverty measurement methodologies		Harmonisation of indicators for the UK
CONEVAL	IPMM	
Poverty dimensions / Indicators / Sub-indicators		
A) Social deprivations (social rights)	B) Unsatisfied basic needs	C) Social deprivations / UBN
<p>6. Access to food</p> <p>6.1. Child food insecurity scale: - If due to a lack of money, a child experienced the following circumstances, during the last 3 months:</p> <p>a) A minor had a diet based on very little food variety. b) A minor ate less than she should. c) A minor had the amount of food served at meals reduced. d) A minor was hungry, but she did not eat. e) A minor went to bed hungry. f) A minor had only one meal or did not eat for a whole day.</p> <p>6.2. Adult food insecurity scale: a) Very little food variety. b) An adult skipped breakfast, lunch or dinner. c) An adult ate less than she felt she should. d) An adult ran out of food. e) An adult was hungry but did not eat. f) An adult had only one meal or did not eat for a whole day</p> <p>6.3. Degree of food insecurity (severe and moderate are considered to be a deprivation).</p>	n/a	<p>6. Access to food</p> <p>6.1. Children's food deprivations: a) Three meals a day. b) Fresh fruit or vegetables at least once a day. c) Meat, fish or vegetarian equivalent at least once a day.</p> <p>6.2. Adult food deprivations: a) Two meals a day. b) Fresh fruit and vegetables every day. c) Meat, fish or vegetarian equivalent every other day.</p>

Mexican multidimensional poverty measurement methodologies		Harmonisation of indicators for the UK
CONEVAL	IPMM	
C). Other poverty dimensions considered		
n/a	8. Communications 8.1. Telephone line or mobile phone.	7. Access to information 7.1. Adult information indicators - TV - Telephone or mobile phone - Access to a computer - Access to the internet 7.2. Child information indicators - Children's books at home suitable for their ages - Computer at home - Computer and internet for homework.
7. Social Cohesion. 7.1. Social polarization (marginalization). 7.2. Gini Index. 7.3. The social networks perception index. 7.4. Income ratio.	n/a	n/a
n/a	9. Time poverty	n/a
8. Income poverty (budget standards)	10. Income poverty (budget standards)	7. Income poverty (budget standards)

Source: Own elaboration based upon UK Parliament (1872; 1880; 1893; 1901; 1923; 1936; 1947; 1957; 1980; 1986; 1989; 1996; 2003; 2008; 2010b; 2011); SED (1977a; 1977b); SCCC (1987; 1999a; 1999b); NICC (1989); Boltvinik (1992; 1999b; 2013a); FAO (1996); Webster, 2002; SEED (2007); CONEVAL (2010); EVALUA (2011); European Union (2011, 2013); Gordon et al (2013); PSE (2014); UK Government (2014); UN (2014).

n/a. Not applicable.

4.8.4 Identification of social deprivations and UBN standards for the UK

The UK legal framework has been reviewed in this research, for the purpose of applying the minimum legal standards and norms, to define threshold criteria for each harmonised deprivation indicator or sub-indicator. This exercise is required to operationalize the measures and identify socially relevant deprivation thresholds. For instance, the indicators to measure educational gap in the UK have been identified and harmonised, based on the UK regulations and current standards. Table 4.4, column C lists the final harmonised indicators and sub-indicators.

A) Educational gap

In Mexico, the educational gap is seen as an indicator of social deprivation. This is measured by considering the gap, between the people who have achieved the compulsory educational standards and those people who have not (CONEVAL, 2010) (Table 4.5, column A). CONEVAL (2010) and Boltvinik et al (2013) include this gap as a measure of deprivation in Mexico at the national level and in Mexico City. Although, Boltvinik (1992) considers educational attainment, school attendance and illiteracy as measures of the degree of educational achievement, in his weighted average method, he identifies the compulsory educational standard as the deprivation threshold (Table 4.5, column B).

In the UK, there are reasons to also consider a lack of compulsory education and compulsory school attendance as measures of deprivation. For instance, Cassen and Kingdon (2007) state that low educational achievement is a considerable social problem because it prevents individuals from participating in society through reduced prospects in the jobs market, vulnerability to unemployment and possible involvement in crime. Furthermore, Hobcraft (2003) argues that low educational achievement is one of the means by which social exclusion is passed across generations.

Evidence from the UK also shows that reducing educational gaps has been one of the most important objectives of the UK Government. For example, Lupton et al (2009) state that tackling inequality was the core of the New Labour Government's policy. Its specific

target, delineated in the 2004 Comprehensive Spending Review, aimed to tackle the attainment gap between more and less advantaged groups, on the basis of a more equal society, i.e. social justice for all (Sibieta et al, 2008).

The UK compulsory education norms can be used to identify the people who are currently experiencing an educational gap. There are some differences in these norms between England, Wales, Scotland and Northern Ireland. The basic legal framework for education in the UK consists of a series of Education Acts, however, there are specific Acts applicable to each country.

Compulsory education in England, Wales and Scotland begins at age 5 until age 16 (UK Parliament, 1880; 1893;1980; 1996; 2008). In Northern Ireland, this begins at age 4 until age 16 (UK Parliament, 1989; NICC, 1989).

Deprivation thresholds to define the educational gap in the UK, refer to the legal requirements regarding to compulsory years of schooling in the different countries of the UK. Therefore, norms are applied and operationalized, based upon the person's age, according to the number of years of compulsory school that was required for their cohort. Appendix 4.8, section 1 lists the years of compulsory schooling norms for survey respondents of different ages. The analysis of social deprivation indicators is for 2012, the year when the PSE survey was carried out.

For instance, the norm for those people born before 1944 in England and Wales, is the school leaving age at 13 years old, i.e. the 1944 Act Elementary Education Act does not apply for them, which raised the school leaving age to 15. So people aged 69 years and more in the PSE 2012 survey, do not present educational gap if they accomplish this norm (Appendix 4.8).

CONEVAL's (2010) criterion defines educational gap as a dichotomous variable, 0 is not deprivation and 1 is deprivation. On the other hand, weights were calculated to estimate educational gap in the PSE survey, based on Boltvinik's (1999b) methodology. For this purpose, a ratio was estimated by dividing the age completed full-time education, reported by the respondent, and the compulsory years of schooling (the norm). This is the indicator

of adequacy of education (explained in Appendix 4.5 and 4.7.1) and is subtracted to 1. So 0 becomes the norm, values less than 0 are not deprived and values more than 0 are deprived. These coefficients are used to determine poverty stratification. Appendix 4.4. and 4.4.1 show an example for the indicator of educational gap.

B) Access to health care services

In Mexico, public access to health care services depends on people's enrolment in public institutions that provide social security, including the institution of Seguro Popular, for those people that do not have any other access to either public or private health services (Laurell, 2013). Laurell (2013) explains that social insurance in Mexico is a contributory system which covers public and private sector employees, as well as their families. Direct access to private or public health services is provided through employee benefits. Indirect access is provided through kinship or voluntary enrolment (Laurell, 2013).

The situation in the UK is very different from Mexico. Dorling and his colleagues (2009) have stated that health inequalities are amongst the most important. Ill health prevents millions of working-age people taking jobs in different affluent countries and results in premature mortality in both rich and poor countries (Dorling et al, 2009). Gordon et al (2003) state that there is serious harm when children are living in severe poverty and this can cause serious illness that may be irreparable. Duncan et. al. (1998) states that poverty increases the risk of mortality for children.

Health care in the UK is provided by the National Health Service (NHS). It is a public system for every permanent resident and every citizen is entitled to receive health care services. It is a free system at the point of use which is paid for from general taxation (Webster, 2002). The National Health Service represents a comprehensive form of the Welfare State, introduced in the UK after the Second World War (Webster, 2002). However, Buck and Jabbal (2014) argue that NHS services are not focused on tackling poverty in England .and there is a need for a redistribution of the health care system to provide increased health care for the poor population. Boyle (2011) highlights the extent of health inequalities, between socioeconomic groups. For instance, there was a seven

year average difference in life expectancy at birth in England and Wales, between children born to parents from unskilled and professional social classes, between 2002 and 2005. Buck and Jabbal (2014) also argue that the NHS requires a social model of health that could eliminate inequalities and tackle poverty.

CONEVAL (2010) and Boltvinik's (1999b) indicators refer to deprivation or UBN indirect and indirect access to health care services. However, Boltvinik (1999b) approaches the measurement of UBN in access to health care services jointly with social security access, and also includes pensions as part of this deprivation indicator. For the UK social context, the IPMM method is applied by measuring separately health care and social security services, because these are provided by different institutions and programs. Table 4.5, column A and B, shows the complete set of indicators, used to measure health services access deprivation used by the MMPM and IPMM poverty methods. The indicators used to measure deprivation in access to health care in the UK have been harmonised (Table 4.5, column C). And the full details of the health-care indicators provided by the PSE 2012 survey are shown in Appendix 4.8, section 2.

The harmonised sub-indicators show whenever a doctor or a health care service is available or unavailable, adequate or inadequate, or if the person does not have it and cannot afford it. Additionally, answers of those who responded that do not use a doctor because they do not want, are considered in relation to whether there are problems in the local area, such as poor street lighting, potholed roads or broken pavements; lack of open public spaces; vandalism and deliberate damage to property; in order to control adaptive preferences, based upon Nussbaum (2001).

CONEVAL's criterion defines health care access deprivation as a lack of any of the items. CONEVAL's criterion focusses on real access. So, people whose health service is available are not deprived, and categorised with 0 for the dichotomous variable. Then, people whose health service is unavailable, unaffordable or inadequate are living in deprivation and are categorised with 1. Those with a private service or who also used a dentist or an optician are not deprived.

Based on Boltvinik's (1999b) methodological criteria, the IPMM method is applied to the UK, by using scores of achievement to measure UBN in access to health care. A ratio could not be calculated, because answers are categorical in this case. In this case the inadequacy of health services is taken into account and is weighted. Responses of variables in the survey were analysed by taking into account three possibilities for weighting: people who use health care services obtain a weight of 1, which is the norm, 0 is applied to people that do not meet the norm, i.e. who do not use health care services, 0.67 is applied for inadequate health care access. Then, these coefficients of inadequacy of health care are subtracted to 1, to obtain the IPMM UBN scores for poverty stratification⁴¹, shown in Table 4.5.

C) Access to social security

In Mexico, Article 2 of the Institute of Social Security (Instituto Mexicano del Seguro Social, IMSS) Law (*Ley del Seguro Social*), establishes that it must ensure the right to health care, protection of citizens' livelihoods and social services necessary for the individual and the collective wellbeing; as well as the granting of a state pension (Dávila and Gujjarro, 2000)⁴².

Laurell (2013) states that social security in Mexico is a segmented system, because citizens that are outside of this contributory system can enrol in the Popular Insurance system (*Seguro Popular, SP*). However, the SP offers a basic service package only, which is called the Universal Health Services Catalogue (*Catálogo Universal de Servicios de Salud, CAUSES*). This provides cover for only a small number of high-cost diseases for

⁴¹ It should be noted that those people who answered to have private health care service plus other kinds of health services, such as the use of a dentist or opticians have a higher weight, which placed them in middle class or higher social class stratification. Also, those people who answered not to use a doctor because they do not want, are only considered as deprived (or do not meet the norm) when there are problems in their local area.

⁴² Only those citizens who are enrolled in the mandatory social security regime, either through a contributory or voluntary affiliation are granted the following benefits: a) Unemployment; b) Sickness and maternity; c) Disability and life; d) Retirement, severance pay due to old age and e) Nursery (DOF, 1995, p. 4).

recipients (Laurell, 2013). Filgueira (1998) also states that the Mexican social regime is unequal in the distribution of resources and also shows forms of exclusion in rural areas.

CONEVAL measures the indicator of access to social security based on the person's access through work, kinship, voluntary enrolment, access to pensions or access to the senior citizens social program in Mexico. These social security sub-indicators are listed in Table 4.5, column A, section 3. However, the IPMM sub-indicators for social security and the access to health care are joined together to construct a single health and social security deprivation indicator (Table 4.5, column B, section 2). The reason for this is that in Mexico health care and social security benefits are provided, by the same Mexican public institutions i.e. public institutions, such as IMSS or ISSSTE (Institute for Social Security and Services for State Workers), which offer five basic areas of social protection for their recipients: health and maternity insurance; unemployment insurance; disability and life insurance; retirement and old age benefits; child care and other insurances (Gómez Dantés, 2011). Therefore, Boltvinik (1992; 1999b) measures health care access and social security access as a single indicator, as this is appropriate for the Mexican context. Boltvinik measures both direct and indirect access to public (including targeted social programs) and private social security schemes in Mexico, as well as the access of retired people to social security benefits and health care (Boltvinik, 2013c; EVALUA, 2014).

In the UK, social security forms part of the Welfare State, which also provides health, education and some employment and housing (Esping-Andersen, 1990; Ferragina and Seeleib-Kaiser, 2011). Esping-Andersen (1990) classified the UK as having a liberal welfare state system because state policy liberates people from the operation of market forces⁴³. However, it is oriented mostly on the possibility of entry into the labour market or on compensation for loss of the ability to enter into paid work (Schulte, 1991). Although, poverty and social exclusion have not been considered as the main focus, conditionality, which is characteristic of the British welfare system, seems to have a relatively minor effect in driving employment outcomes and can result in longer term dis-

⁴³ This view has implicit issues of social rights and de-commodification (Cantillon and Van Mechelen, 2013).

benefits (Etherington and Daguerre, 2015). The reason is that poor people are often excluded from work. They have not been covered by the contributory benefits schemes so they are forced to rely on marginal means-tested benefits (Schulte, 1993).

The European Union (EU, 2011, 2013) classifies the UK social security schemes in five elements:

- a) The National Insurance Scheme (NIS), a contributory system which provides a range of cash benefits.
- b) The National Health Service (NHS), which provides medical care free at the point of use.
- c) The child benefit and Child Tax Credit schemes, these are cash benefits for people who are bringing up children.
- d) Non-contributory benefits for disabled people and carers.
- e) Statutory payments made by employers to employees who are legally entitled to different kinds of leave (e.g. maternity, paternity or adoption).

The EU (2011, 2013) and the UK Government (2014) identify several types of social security rights and benefits, which are defined based upon conditionality and contributions. Table 4.5 lists these benefits in column C, section 3 and these are the social security indicators used for the UK. Appendix 4.8 describes the norms for the operationalization of these sub-indicators, to estimate access to social security indicators for the UK context. The UK social security benefits were all included in the Family Resources Survey (FRS) component of the PSE 2012 survey and were used, to estimate the number of people that live in deprivation, due to a lack of social security

Access to social security is one of the set of indicators used to measure multidimensional poverty in the UK. Table 4.6 show the UK social security sub-indicators. The criteria to select the target population is described in Appendix 4.9⁴⁴.

⁴⁴ However, the complete eligibility criteria for each benefit are explained in Appendix 4.8, section 3.

Table 4.6. UK social security sub-indicators:

1. Jobseeker's allowance.
2. Old-age pensions and benefits.
3. Sickness cash benefits; Invalidation benefits; Disablement benefit; Income support.
4. Family Benefits.
5. Maternity and Paternity Benefits.
6. Survivors Benefits.
7. Long term care.
8. Housing benefits.

Source: Own elaboration based upon information provided by the European Union (EU, 2011, 2013) and the UK Government (2014).

D) Quality and living space of the dwelling

Anzaldo and Bautista (2005) define overcrowding as associated with housing shortages and lacking options to acquire appropriate living spaces. Cattaneo et al (2007) point out that inadequate floors, roofs and walls of the dwelling may result in different harms and could increase the prevalence of diseases and may not sufficiently protect people from natural risks and inclement weather⁴⁵.

The Mexican Constitution establishes the right of all families to live in a suitable and proper dwelling (DOF, 2014, Art. 4). The Constitution states in Art. 123 (section B, subsection XI, paragraph f), that the provision of social security must provide workers with credits for the acquisition of a comfortable and hygienic property or the possibility to build, repair, improve or pay liabilities to achieve this goal (DOF, 2014).

These housing quality indicators have been traditionally used in the UBN research work of ODEPLAN (1975); INDEC (1984); UNDP-CEPAL (1989); Beccaria and Minujín (1987) and Boltvinik (1999b).

⁴⁵ Cattaneo et al (2007) shows evidence that Piso Firme (Concrete Floor) —which is a housing program in Mexico that provides cement floors for poor households with dirt floors, improves child health and cognitive development. It has an important effect of reducing the prevalence of parasites, diarrhoea and anaemia in children.

The housing quality deprivation indicators used by CONEVAL (2010) and Boltvinik's (1999b) are:

- a) Overcrowding, measured by the number of members of the household per room.
- b) Floors materials.
- c) Ceilings materials.
- d) Walls materials.

However, different thresholds are used in the MPPM and the IPMM methodologies. CONEVAL (2010) requests advice from public institutions, to determine the deprivation standards. This advice was provided by the National Council of Dwelling (Comisión Nacional de Vivienda, CONAVI). On the other hand, the EVALUA (2011a; 2012) thresholds drew upon focus group discussions, plus the results from a survey of perceptions of needs in Mexico City, EPASB, 2009 (Encuesta de Percepción y Acceso a los Satisfactores Básicos,), as well as the views of experts⁴⁶ (Boltvinik, 2009).

The Housing Act 1985 provides a legal definition of overcrowding in the UK (UK Parliament, 1986). There are two ways to calculate if people are living in an overcrowded house. The first criterion is the Bedroom standard, which refers to the number of people per rooms used for sleeping. The second criterion is the space standard⁴⁷ and it is determined by the amount of space in the home and the number of people living in it (UK Parliament, 2003). The overcrowding harmonised indicator for the UK is estimated as follows:

The Bedroom Standard used the following rules to calculate the number of sleeping rooms required in a dwelling (UK Parliament, 2003, p. 2):

⁴⁶ Boltvinik (2009) states that the selection of satisfiers is based on a process of research involving consultations with the population through surveys and focus groups, as well as information from experts. So that the identification of necessary satisfiers is based on three features; they should be socially perceived, prevalent in society and should be technically recommended by experts.

⁴⁷ However, the space standard is not included in the measurement of the quality and living space of the dwelling, because the PSE 2012 survey does not provide information regarding the floor area of rooms. Therefore, the bedroom standard was used to operationalization the housing quality indicator.

- a) A couple living together, whether the partner is of the same sex or the opposite sex.
- b) A single person aged 21 years old or more.
- c) Two persons of the same sex aged 10 years to 20 years.
- d) Two children aged less than 10 years old, regardless of sex.
- e) Two persons of the same sex where one of them is aged between 10 years and 20 years old, and the other is aged less than 10 years old.
- f) Any person aged under 21 years old, where he or she cannot be paired with another occupier of the dwelling, in groups c), d) or e) above.

Once the bedroom standard has been defined, the number of bedrooms in the household (N_j) should be greater than or equal to the bedroom standard in the dwelling (B_j), obtained from the criteria above mentioned, in order to meet the standard. If $N_j < B_j$ the standards are not met, then, the household is considered being housing quality deprived. This criterion was used when the MMPM method was applied to the UK. However, when the IPMM poverty method is considered, then N_j/B_j is the overcrowding ratio. The incidence of IPMM UBN, due to the inadequate quality and living space in a dwelling, is calculated based upon the poverty strata criteria, which is calculated by the following formula: $[1 - N_j/B_j]$. Results obtained by applying this formula should range between -1 and 1. So, poverty strata for the overcrowding indicator, were estimated. So, the poor people were estimated by summing the strata of indigence plus intense poverty plus moderate poverty. Appendix 4.7.1 shows an example of these criteria, for poverty stratification.

E) Access to basic services in the dwelling

In Mexico, housing conditions refer also to the access to services in the dwelling. Basic services are considered by CONEVAL (2010), such as: access to water; drainage service; access to electricity and fuel for cooking (Table 4.5, section 5). Boltvinik (1999b; 2013c) has classified these kinds of indicators into four different categories:

- a) Sanitary services, which include access to water, drainage and a toilet that should be available in the dwelling.
- b) Domestic energy, which includes electricity and fuel for cooking.
- c) Basic assets and durables and
- d) Waste disposal

The PSE 2012 survey revealed that 96% of adults consider that heating to warm the home is a necessity. Similarly, 94% of adults believe that a damp-free home is a necessity of life. Based upon the responses to the PSE survey the following indicators have been used to operationalize access to basic services in UK dwellings:

- a) Home heating.
- b) Problems with accommodation, related to heating, damp, condensation, cold home, which can also affect health of household members (full description Table 4.5).
- c) People not able to pay utility bills, e.g. electricity, gas, fuel and water (see Appendix 4.8, section 5 for more detailed explanation).

Deprivation due to a lack of access to basic services in the dwelling is estimated, on the basis of CONEVAL (2010)'s criterion of at least one of the conditions (listed above) are present in the dwelling. However, the IPMM methodology uses a stratification criterion, by ranking access to services, based upon weighted values, from -1 to 1.

F) Access to food

Food security has been defined by the Food and Agriculture Organization of the United Nations (FAO), at the 1996 World Food Summit:

“Food security, at the individual, household, national, regional and global levels [is achieved] when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life” (FAO, 1996, pp. 13-17).

Article 11 of the 1966 International Covenant on Economic, Social and Cultural Rights (ICESCR), and the 1996 Rome Declaration on World Food Security have established the right of every citizen and their family to access safe and nutritious food and freedom from hunger (UN, 1966; FAO, 1996).

In Mexico, the Constitution and the LGDS law establishes that every citizen has the right to access to nutritious food. This law also defines that social programs and public actions should ensure food of sufficient quality to meet maternal and child nutrition requirements (DOF, 2004; 2014).

CONEVAL (2010) views access to food as a social right and a social consensus methodology, is used to define a food deprivation threshold. The lack of access to food should be also estimated, as part of the social deprivation measures in the UK. The UK ratified the ICESCR treaty in 1976 (UN, 2014). However, The Just Fair Consortium (2014) argued that food security in the UK has not been achieved in accordance with the UK's international human rights obligations.

Townsend (1979) included the lack of access to food as one of the indicators of multiple deprivation, to represent the UK living standards. He implemented a relative approach to poverty, by taking into account the typical eating habits in the UK which prevailed at that time. His food deprivation indicators included; fresh meat four days a week; have gone one or more days, in the past fortnight without a cooked meal; and a cooked breakfast most days of the week. Food access deprivation measures must conform with customary ways and nutrition standards in the UK.

The rights of children to an adequate diet are recognised, children need enough food with the correct balance of nutrients to ensure their health and development (CRAE, 2014). If these requirements are not provided to children, there can be irreparable serious harm, which can affect long-term outcomes, such as educational achievement, etc. (Gordon et al, 2003; CRAE, 2014).

There are different methods to measure food insecurity. One of these methods is the food insecurity scale, which was developed in the late 1980s. The food insecurity scale method

is based on a series of questions carried out in household food security surveys, which ask respondents to express situations or attitudes related to their food insecurity experience (Hamilton et al., 1997). These kinds of surveys ask questions, related to perceptions of insufficient quantity or whether any person in the household, has had to eat less than they thought they should, or whether the household's food has run out. Then, responses are summarized in a scale to obtain an indicator of the degree of a households' food insecurity (Coates et al, 2007).

In Mexico, CONEVAL (2010) assesses the right to food by using a food insecurity scale, based on Pérez-Escamilla et al (2005; 2007) and Melgar-Quíñonez et al (2005; 2007). Boltvinik (1999b) opted to estimate access to food based upon a budget standards approach.

The PSE showed that over 90% people agree that children's diet should include three meals a day, fresh fruit and vegetables every day; meat, fish or vegetarian diet at least once a day. Similarly, 75% of respondents in the UK, said that adults' diet should be composed of two meals a day, plus vegetables and fresh fruits every day and meat or fish or vegetarian every other day (Gordon et al, 2013

Table 4.5, section 6 shows the whole set of CONEVAL's indicators of access to food, as well as the UK harmonised indicators used in this research. CONEVAL's criterion of deprivation in access to food is to lack at least one of the deprivation items⁴⁸.

G) Access to information

In Mexico, Boltvinik (1999b; 2013c) has included a set of items related to communications and information rights as part of the UBN dimension of poverty, such as the access to a telephone line (or mobile), TV and radio. However, in his more recent research, Boltvinik (2010) considers that access to the internet is a necessary service. The

⁴⁸ The IPMM method measures access to food within its budget standards approach and so, this has also been applied in the UK using the Minimum Income Standards consensual budgets (Boltvinik, 1999b; EVALUA, 2011a; 2014).

reason is that the EPASB 2009 social consensus survey in Mexico City found that almost 65% of the population thought that internet access was a social need. At the national level, the EDUMP 2007 survey showed that 58% of respondents believed that a computer at home was necessary. CONEVAL (2010) has not included an access to information deprivation indicator in their MPPM poverty method, as this was not one of the multidimensional poverty dimensions required by the General Law of Social Development (LGDS).

However, access to information was added in Article 6 of the Mexican Constitution in 2013, and establishes that the State should guarantee the right of access to information technologies and communication, as well as broadcasting and telecommunications services, including broadband and internet services. The State must also establish conditions for effective competition in the provision of these services (DOF, 2014). The LGDS (DOF, 2004) law in Mexico should also be amended to include information deprivation, as an integral component of the multidimensional poverty measure in Mexico.

The PSE 2012 survey shows that around 86% of the population have access to a home computer and 85% have internet access; 98% of the population has TV at home; 97% have a telephone and 93% have a mobile. Similarly, 80% of children have access to a computer and internet at home and 96% of children have books at home suitable for their ages. Additionally, 50% of children aged 11 years old or more have access to a mobile, but, this sub-indicator was not used as an indicator of deprivation of access to information in this research.

The UK government agreed at the 2003 World Summit on the information society in Geneva, that every person should have access to information and knowledge, in order to enable them and their communities, to achieve their full potential and improve their quality of life. It was also agreed that internet access should be transparent, democratic and multilateral. Providers, such as, governments or the private sector should also ensure an equitable distribution of resources and facilitate access for all (UN and ITU, 2003).

Deprivation in access to information has been added to the measurement of multidimensional poverty, for the UK. There are 4 sub-indicators of access to information for adults and 3 sub-indicators, of access to information for children (Table 4.5, section 7). This indicator is included as per CONEVAL's MMPM method, i.e. deprivation is the lack of at least one of the sub-indicators of access to information. Adult's deprivation in access to information was estimated on the basis of lack of access to TV; a phone; a computer or internet. Children's deprivation in access to information was estimated on the basis of lack of access to computer and internet for homework or no access to books at home suitable for their ages.

On the other hand, the IPMM method estimates information deprivation by calculating weights, to obtain poverty strata (Boltvinik, 1999b). Scores for the IPMM weighting system are based on the stratification criterion (Boltvinik, 1999b), shown in Table 4.3 above. Thus, weights were applied for the indicator of deprivation in access to information, through giving scores if the person lacks one type of service, and subsequently there is another score, related to poverty stratification, if the child or adult lacks two types of services, until lacking four services, in the case of adults' deprivation.

4.9 Reliability, generalizability, validity and additivity

This research addresses issues of reliability, generalizability, validity and additivity of findings, obtained from the multidimensional poverty measurement methodologies, applied to the UK and Mexico. The importance of carrying out these tests is based on Gordon and Nandy's (2012) stance, who argue that a scientific method needs a way to test their indicators of deprivation and dimensions that compose the multidimensional poverty indices. Additionally, these tests will allow me to compare the multidimensional poverty indices and define which of them are scientific, in order to answer the research question on the best way to measure poverty.

a) Reliability

Stanley (1971) has argued that random errors of measurement can never be fully eliminated. However, we can obtain measures with a small margin of error, which should then be reliable (Dunn, 1989). Nunnally (1981), constructed a Domain-Sampling model, where it is possible to find a well-defined population of items and tests, which can be applied by obtaining a random selection of a specified number of measures from a large pool (Nunnally and Bernstein, 1994). Furthermore, Nunnally and Bernstein (1994) state that a “*sample of items is reliable to the extent that the score it produces correlates highly with these true scores*” (Nunnally and Bernstein, 1994, p 217). Gordon and Pantazis (1997) advocate this view and deduce that it is possible to calculate:

“an estimate of the correlation between the set of questions and the true scores that would be obtained if the infinite set of all possible deprivation questions had been asked; and ... the average correlation between the set of questions asked (the deprivation index) and all other possible sets of deprivation questions (deprivation indices) of equal length (equal number of questions)” (Gordon and Pantazis, 1997, p. 17).

Gordon and Pantazis (1997) applied Cronbach’s Coefficient Alpha (Cronbach, 1951, 1976; Cronbach et al, 1972) in the 1990s Breadline Britain study and obtained an Alpha Coefficient score of 0.87, which shows that the deprivation index items have a high degree of reliability (Nunnally, 1981). These tests have been further applied by Gordon (2006a) in the UK and also to the Mexican context by Gordon (2010b) and Gordon and Nandy (2012). These assessments have foundations in the theory of relative deprivation (Townsend, 1979) and the consensual approach (Mack and Lansley, 1985). As stated by Bradshaw and Finch (2003), a person who is deprived is more likely to consider themselves to be subjectively poor, or to be poor with regards other aspects, such as a lower level of household resources or assets (Bradshaw, 1999).

On this basis, the poverty indices in this research are assessed for reliability based on the stance posed by Townsend (1979) and Gordon (2006a), who state that there is a

relationship between low income and deprivation. Townsend (1979) refers to the lack of resources (income) as the cause and deprivation as the consequence.

Therefore, the CONEVAL index will be tested in Chapter 5, by applying Cronbach's (1951) Coefficient Alpha, which Gordon (2010b) and Gordon and Nandy (2012) have already applied to the Mexican context. This research aims to refine the index through considering socially perceived necessities of Mexican society and by applying the population's current standards.

Additionally, the EU2020 poverty measure is assessed in Chapter 6, by incorporating all the sub-indicators: AROP at the 60% equivalised median income, LWI at the 30% of the working capacity and SMD by considering the lack of 4 items and more. It has been shown in Chapter 3 that social-rights form an important component of the social inclusion framework. Therefore, it is expected with the reliability test to obtain a consistent relationship between low income and deprivations, and possibly LWI.

Furthermore, while the IPMM index has not been tested for reliability in other studies, this research aims to test the results, obtained from the application of the IPMM methodology to the UK context, as well as the CONEVAL's MMPM index, in Chapter 7. The components of the IPMM and the MMPM indices of multidimensional poverty were tested for internal consistency. These methods also define a relationship between the two dimensions, income and social deprivations or UBN, when both are integrated into an index, either through a weighted average or intersection approach. After evaluating the components of multidimensional poverty indices, the sub-indicators that encompass the indicator of social security, in the IPMM and the MMPM indices, were also assessed for reliability.

It should be noted that multidimensional poverty indices and their components were constructed with dichotomous variables; except in the case of the IPMM index, which was computed as a scale. So, in cases where indicators are dichotomous, the Kuder-Richarson (K20) coefficient was used to test internal consistency reliability and interpretation is the same, as for the analysis of Cronbach's α coefficient, because it is a

special case of this test (Kuder and Richardson, 1937; Lord et al, 1968; 1980; Cortina, 1993; Traub, 1994).

b) Validity

According to Pantazis et al (2006), the validity of a scale can be tested by obtaining statistically significant association with a set of independent variables known to be correlated with poverty. McGregor and Borooah (1992); Callan et al (1993); Halleröd (1994) and Kangas and Ritakallio (1998) have used canonical correlations to assess to what extent the different poverty measures are related. Different statistical methods can be used, such as Pearson correlation, for the evaluation of the degree of linear dependence between two variables; as well as the use of descriptive associations between several groups of variables and measures of poverty (Pearson, 1900; Plackett, 1983; Cronbach et al, 1972; Webb et al, 2006).

In Mexico, social deprivations indicators have considered by legislation as components of multidimensional poverty (DOF, 2004), so, this recognition represents a-priori evidence of validity (Gordon and Nandy, 2012). Then, Chapter 5 tests the validity of the components of the refined multidimensional poverty index estimated based on social consensus. The assessment is done by applying binary logistic regressions between dependent variables, which are social deprivation indicators and low income, and independent variables of socioeconomic status, rurality and level of dependency ratio. The independent variables were calculated based on previous studies in Mexico that show a relationship between these indicators and income poverty (CONEVAL 2012c; 2013a; 2014c; INEGI, 2013).

Validity is also tested in Chapter 5 by testing the ANOVA (Analysis of Variance) main effects of social deprivations and low income. The purpose of this analysis is to identify main effects when the levels of a factor affect the response in a different way (Stevens, 1999). So, the relationship between the two poverty dimensions, income poverty and social deprivations, is evaluated. The evaluation consists in determining if there are main

effects and if these are consistent with the hypothesised relationship, i.e. deprivation should imply low income.

The use of external validators is essential in this study. Official poverty measures were used to validate and compare the results. Chapter 5 shows comparative estimates of the MMPM and the IPMM poverty methods, with the refined poverty index produced on the basis of the consensual method (Gordon; 2006; Gordon and Nandy, 2012). This comparison includes the vulnerable by income; the vulnerable by deprivation; deprivation scores and union and intersection approaches.

In Chapter 6, tests for evaluating validity are Pearson correlations (using a two-tailed test) and Chi-square, to examine the association of different groups of categorical variables. The EU2020 index will be tested for correlation against the official multidimensional poverty measures in Mexico. The last mentioned indices are constructed by considering a broad range of measures of poverty: income, material and social deprivations.

Also, the LWI indicator was tested by examining the degree of consistency in the relationship with income poverty measures, such as the AROP (60% Mdn.); the CONEVAL's wellbeing threshold, the MMPM method and the IPMM poverty line. This test aims to show if LWI is related to the prevalence of people experiencing low income or social deprivations.

In Chapter 7, there is an analysis of the comparative prevalence of entitled non-recipients of social benefits in the UK, as external validator of the social security's components (Johnston et al, 2015), and estimates produced on the basis of the MMPM and the IPMM poverty methods. Also, there is a comparison of results from the union (weighted average system) and intersection approaches, produced with the application of the MMPM and the IPMM poverty methods to the UK, and measures provided by the PSE team in the UK (Gordon et al, 2013; Main and Bradshaw, 2014). These results also show financial insecurity, multiple deprivation and subjective poverty estimates.

Furthermore, a comparison of the percentage of the multidimensional poor is presented in this study. The union and intersection approaches are compared, which encompass

combined measures of low income and deprivation, as well as subsets of income poor people or people experiencing deprivation only. The percentage of overlaps of being poor in different dimensions are shown in Venn diagrams in Chapter 5, 6 and 7.

It was also useful to consider differences in the income poverty thresholds derived by the different methods and these are shown in Table 4.7. While the Consensual approach makes use of multivariate techniques, such as ANOVA and logistic regression, the EU2020 poverty measure uses the at-risk-of-poverty rate and the Mexican methodologies use budget standards to determine the income poverty threshold.

The use of descriptive statistics will be considered to show how much the income poverty thresholds differ between those defined through relative basis and those from normative basis. Different percentages to obtain the at-risk-of-poverty rate will be contrasted against the income poverty threshold determined through the budget standards approach, in Chapters 5 to 7. The same is so for the comparison of the income poverty gaps in Chapter 6 and the poverty gap index (with the combined measures, low income and deprivation/UBN) in Chapter 7.

Table 4.7: Differences between poverty methods for the identification of the income poverty threshold

UK poverty methods	Methodological criteria
Consensual Approach	ANOVA and Logistic regression
EU2020 poverty measure	At risk of poverty rate
Mexican poverty methods	Methodological criteria
IPMM (Integrative Poverty Measurement Method)	Generalized Normative Basket
CONEVAL's MMPM (Methodology for multidimensional poverty measurement)	Basic food basket. Basic non-food basket.

Source: Boltvinik (1992); Gordon (2006a); CONEVAL (2010); EC (2014b).

c) Generalizability

Quantitative analysis and its results are valid to the extent that the surveys used for the comparative study are representative (Gordon and Townsend, 1993). Moreover, Gordon and Pantazis (1997) affirm that if reliable measures are repeatable, then they have a high degree of precision. Results obtained from this study can be generalized as data used for the analysis is representative (Shavelson and Webb, 1981). Also, the set of variables were appropriately evaluated by the CONEVAL committee and the INEGI (National Institute of Statistics and Geography) in the case of Mexico, to measure multidimensional poverty (CONEVAL, 2010). Similarly, the PSE team carried out research to launch the PSE survey in the UK (Gordon et al, 2013). So, it is feasible to generate information on the patterns of multidimensional poverty in this study.

It has been stated as well that group comparisons is a key design that supports valid conclusions regarding the relationship among variables and generalizability of results (Muijs, 2004). Generalizability can be tested through statistical techniques (Cronbach et al, 1963; Bost, 1995; Brennan, 2000; 2001).

The patterns of poverty are presented in this study, by showing the multidimensional poverty rates for sub-groups of the poor population and the logistic odds ratios of being multidimensionally poor, by different socio-demographic characteristics, in Chapters 5 to 7. It shows how the different prevalences and patterns of multidimensional poverty obtained in this study, differ from those that have been presented officially in Mexico by CONEVAL (2010; 2013a), Boltvinik (2012; 2013c) and EVALUA (2014), and in the UK by the European Union (2011; 2013) and poverty estimates from scholars by the PSE team (Gordon et al, 2013; Main and Bradshaw, 2014).

This will allow the results to be tested and compared and help to obtain objective measures (Carter and Hurtado, 2007). The analysis also represents the degree of interdependence between poverty indices and it can reveal whether the different methodologies of multidimensional poverty, identify the same groups of poor population (Kangas and Ritakallio, 1998). Kangas and Ritakallio (1998) also state the importance of

describing groups of population facing poverty, because it gives information concerning social policy strategies.

d) Additivity

Gordon et al (2003) state that when income is treated in operational terms by also including a wide scope of assets, goods and services in kind, this correlation becomes greater. It can also mean that when a person suffers more deprivations, income is lower. Then, additivity is tested in Chapter 5, to show if a person or household are poorer according to the number of deprivations they have experienced (Gordon, 1995; Gordon, 2006a). Additivity of the social deprivation indicators and low income is evaluated in Chapter 5 to complete the analysis of the consensual method, developed by Gordon (2006a) and Gordon and Nandy (2012).

Additivity is assessed by obtaining all possible second-order interaction effects of an ANOVA model, between the components of the deprivation index, using equivalised disposable household income as the dependent variable (Gordon, 2006a). For testing additivity, both main effects and second order interaction effects are plotted.

4.10. Surveys for secondary data analysis

This study uses secondary data analysis for the assessment of poverty measurement methodologies. Surveys used in this research are representative at national level in the UK and Mexico. Appendix 4.10 shows the UK and Mexican surveys used for the replication of the methods being applied for the measurement of multidimensional poverty in this study, as well as a brief description of these national surveys.

The use of Mexican surveys for the application of the UK methodologies are described as follows:

The ENIGH (Encuesta Nacional de Ingreso y Gasto de los Hogares), National Survey of Household Income and Expenditure 2012 data survey provides information on the distribution, amount and structure of income and expenditure of households. Additionally, it provides information on socio-demographic and occupational characteristics of household members, as well as the infrastructure of housing and household equipment (INEGI, 2013). This survey has been used since the first studies of poverty measurement in Mexico and the prevalence of poverty has been shown at a national level and for rural and urban areas. (COPLAMAR, 1982, 1983; Boltvinik, 1992; CTMP, 2002). This study will use the Module of Socioeconomic Conditions (MCS) of the ENIGH 2012 survey. The MCS 2012 module represents a collaborative effort between the National Institute of Statistics and Geography (INEGI) and the National Council for the Evaluation of Social Development Policy (CONEVAL), to provide a statistical overview of the necessary variables for multidimensional poverty measurement, established by law (General Law for Social Development, LGDS) (INEGI, 2013). The international research team who developed the MMPM methodology in Mexico used the MCS module to obtain valid results with appropriate indicators of social deprivations at the municipal, state and national level in Mexico (CONEVAL, 2010; Gordon, 2010b).

The MCS (Module of Socioeconomic Conditions) 2012 of the ENIGH (National Survey of Household Income and Expenditure), will be used to compute the social deprivation indicators and to compare the multidimensional poverty measurement indices. The MCS module is used for the application of the UK methods: the consensual method (Gordon, 2006a; 2010b) and the EU2020 poverty measure (EC, 2014a; 2014b) to the Mexican context. However, the Multidimensional Poverty Threshold Survey (EDUMP⁴⁹, Encuesta de Umbrales de Pobreza) 2007, carried out by CONEVAL, will be used for the identification of socially perceived necessities, through the replication of the consensual method in Mexico. The EDUMP 2007 survey is representative at the national level and was carried out by CONEVAL (2010) when the MMPM method was launched in Mexico. However, this official methodology does not use data from this survey to compute a

⁴⁹Survey of Multidimensional Poverty Thresholds ('Encuesta para la Determinación de Umbrales Multidimensionales de Pobreza'). This Survey was carried out by CONEVAL in 2007 to measure the perception of needs of Mexican society (CONEVAL, 2010).

multidimensional poverty measure (CONEVAL 2010; 2013a; 2014b; Boltvinik, 2012). There are other previous surveys of socially perceived necessities carried out in Mexico, such as the PROFECO⁵⁰ Survey, representative only for some cities of Mexico, and the EPASB⁵¹ survey, representative at the level of Mexico City (Appendix 4.10). These will not be used for the purposes of this research.

The use of UK surveys to apply the Mexican multidimensional poverty measurement methods are described as follows:

The PSE (Poverty and Social Exclusion) 2012 survey will be used to apply the Mexican methodologies (Appendix 4.10). Gordon and Pantazis (1997) and Gordon (2006a) highlights the use of low income and deprivations –captured in the PSE surveys as the enforced lack of socially perceived necessities, to measure poverty in the UK. The PSE 2012 survey also includes variables related to educational attainment; health care access, etc., indicators seen in Mexico as part of the social rights-based approach. The PSE re-interviewed respondents to the 2010/11 FRS (Family Resources Survey), which includes information regarding pension participation, disability and other benefits (Dermott et al, 2013; PSE, 2014; 2016), used also for the replication of the poverty methods in the UK. The PSE and the FRS surveys are representative at the UK level, including England and Wales, Scotland and Northern Ireland. Similarly, the CONEVAL poverty measure and the IPMM index use indicators of social deprivation or UBN indicators (Boltvinik, 1992; 2012; EVALUA 2009a; CONEVAL, 2010; 2013a).

Moreover, the Mexican methodologies are based upon a social rights approach, as mandated by law. This view represents a consensus established in the Mexican Constitution (Boltvinik and Damián, 2003 and CONEVAL, 2010). Standards that prevail in UK society are considered here. The PSE survey in the UK captured the socially

⁵⁰Perceptions of the Urban Population on the Minimum Standards for the Satisfaction of Basic Needs ('Percepciones de la Población Urbana sobre las Normas Mínimas de Satisfacción de las Necesidades Básicas'). This Survey is representative for urban areas and was carried in 1999 by PROFECO with the collaboration of Boltvinik, Martínez and Beltrán to verify COPLAMAR normative basket in Mexico (Boltvinik and Marín, 2003).

⁵¹Perceptions Survey-Access to Basic Needs ('Encuesta de Percepciones-Acceso a Satisfactores Básicos'). This is the survey used to measure multidimensional poverty in Mexico City, which includes also perceptions of needs in Mexico City (EVALUA, 2009).

perceived necessities according to the standards that prevail in society⁵², i.e. what is considered as the minimum to live well (Gordon and Townsend, 2000; Gordon et al, 2000a). The PSE survey captures consensual needs, for which then, Mexican multidimensional poverty measurement methodologies can be replicated obeying social rights and social basis. Therefore, indicators of social deprivation can be calculated.

Furthermore, the survey provides information on material and social deprivation and exclusion in the UK (Gordon et al, 2013; PSE, 2014). The PSE survey incorporated Townsend's (1979) emphasis on "*the relationship between resources and people's capacity to meet social expectation as full members of society*" (Pantazis et al, 2006, p. 7). This survey considers people's participation in widely expected social activities and the socially determined norms (Pantazis et al, 2006b; Gordon et al, 2013).

Therefore, these surveys offer the set of deprivation or UBN indicators to be applied in both, the Mexican and the UK social contexts.

4.11 Ethical issues

The information provided by the British and Mexican surveys are anonymised and the research analysis will be focused on groups rather than individuals. Ethical approval for the PSE (Poverty and Social Exclusion) 2012 survey was granted by the School for Policy Studies (SPS) Ethics Committee, University of Bristol on the 10th October 2012 and it was not necessary to seek any other form of approval.

The results will be published. This research will benefit scientific debates on poverty measurement and the ultimate objective is to advance poverty measurement methodology to help policy makers design efficient and effective antipoverty policies and programmes.

⁵²Other UK surveys were explored at the beginning of this study, such as the Living Costs and Food Survey (LCFS), the European Union Statistics on Income and Living Conditions (EU-SILC) and the General Household Survey (GHS). These surveys include high percentages of missing values and indicators are focused on durables in the household and access to services in the dwelling, which were not entirely adequate to capture the non-accomplishment of social rights (social deprivations).

4.12 Limitations of Popper's theory on scientific method

There are different limitations and criticisms of the Popperian methodological approach. However, only a few of them are addressed in this section regarding the main criticism, developed by Maxwell (1972). The criticism refers to the problem of demarcation, which consists in not explaining adequately the reason for giving value to scientific theories, more than other sort of theories (Maxwell, 1972). The Popperian approach focuses on the Falsificationist view of science, which implies testing theories, in ways they can be corroborated (Popper 1969; 1972a; 1972b). In contrast, qualitative reasoning is a part of inductive reasoning that is based on using observations to infer explanations and is not part of Popper's viewpoint of scientific method (Popper 1969; 1972a; Snape and Spencer, 2003).

The limitations of Popper's methodological approach, advocated in this study, is that deductive reasoning does not imply qualitative research. This is particularly important for the research process in the inductive reasoning, when the research starts with observations, then continues with explanations of patterns to finally reach conclusions and generate pieces of theory (Snape and Spencer, 2003; Neuman, 2011). In-depth interviews are important in the study of poverty. For instance, to know the time use of poor people who work outside the home and also do domestic work, and how it affects their family lives. Or to update new basic items to be included in normative baskets. An example is why we need to consider coffee as a necessity item in the Mexican basket; is coffee culturally accepted as part of the Mexican diet?

These limitations can be countered by using the updated MIS and the CONEVAL's and Boltvinik's normative baskets (Smith et al, 2010; CONEVAL 2010; Rowlerson, 2010; Davis et al, 2012; EVALUA, 2012). Furthermore, the use of micro data surveys, such as the MCS and the EDUMP survey for Mexico, and the PSE and FRS surveys for the UK, will permit this study to generalize the findings.

There are other limitations of the study, and future research directions will be addressed in the dissertation conclusion (Chapter 8).

4.13 Conclusions

This research is built upon a comparative analysis of multidimensional poverty measurement in the UK and Mexico. The methodological approach and the research design to carry out the present study, have been justified to achieve a thorough, reliable and credible analysis. Methods of multidimensional poverty measurement will be assessed to obtain validity, reliability and generalizability. The research can be seen in general terms as a deductive approach, based upon Popper (1969) and Lakatos (1978). Quantitative analysis is relevant to test not only the methods of poverty measurement but also to try to falsify the theoretical underpinnings underlying these methodologies.

The application of multivariate techniques to test reliability, validity and generalizability permits us to overcome criticisms, of the multidimensional poverty measurement methods studied in this dissertation, and the possibility of clarifying critical points, as well as to add new knowledge based on empirical analysis. This thesis follows Popper's (1969; 1972a; 1972b) approach who states that falsificationism implies overcoming errors of statements of theories or corroborate statements through assessments. The results obtained from the study will allow us to corroborate or to refute the theoretical and conceptual basis, of the multidimensional poverty measurement methodologies.

There are also important contributions resulting from the methodological procedures presented in this chapter. The relative approach to poverty permits us to identify social needs and to appraise social deprivations and low income, for the measurement of multidimensional poverty in the UK and Mexico, from a comparative perspective. Additionally, the conceptual and methodological links –the social rights-based approach and the consensual approach, and the human flourishing framework, as well as social inclusion, permit the application of the multidimensional poverty measurement methodologies in different contexts, and the operationalization of indicators.

Finally, the estimates resulting from the application of these methodologies, will permit us to establish a link with the design and implementation of antipoverty policies in both Mexico and the UK. This chapter has provided the basis to carry out the study and answer the research questions.

Chapter 5

Results I: The consensual approach applied for the measurement of multidimensional poverty in Mexico

5.1. Introduction

The purpose of this chapter is to apply the consensual approach, developed by Mack and Lansley (1985) in the United Kingdom, to measure multidimensional poverty in Mexico. This approach is based upon the combination of low income and direct indicators of living standards, through the use of multivariate analysis (Gordon, 2006a; Gordon, 2010b; Gordon and Nandy, 2012). Mack and Lansley's (1985) approach consists of identifying the enforced lack of socially perceived necessities. In principle, these can be determined by consensus in every society through surveys of public opinion.

The consensual approach draws upon the theoretical basis of Townsend's (1979) conception of poverty, which is seen as the lack of command of resources over time, with deprivation as the consequence. This conceptualisation leads to the intersection approach as the way to combine low income/resources with low standard of living/deprivation.

The importance of applying the consensual approach (Mack and Lansley, 1985) and, particularly, the consensual method devised by Gordon (2006a), to the Mexican case study, is as follows:

- a) Mexican institutions have carried out surveys of socially perceived necessities since 2000⁵³, influenced by the pioneering research works of Mack and Lansley (1985), Gordon and Pantazis (1997), Gordon and Townsend (2000), etc. In 2007, CONEVAL carried out a nationally representative survey of this type, which is

⁵³ The first representative survey, carried out in 2000, was for the biggest cities in Mexico and is the Survey of Perceptions of the Urban Population, on the Minimum Standards, for the Satisfaction of Basic Needs (EPPU, by its acronym in Spanish). This was carried out by the Federal Attorney's Office of Consumer (PROFECO) and other collaborators (Boltvinik and Marín, 2003). There are also surveys carried out by EVALUA (2009b; 2013) for Mexico City in 2009 and 2011, which are the Perceptions Survey-Access to Basic Needs (EPASB) and the Survey-Access to Basic Satisfiers (ENCASB), respectively.

called the Survey of Multidimensional Poverty Thresholds (EDUMP, by its acronym in Spanish). This survey includes not only the social perceptions of needs but also the perceived poverty thresholds in Mexican society (CONEVAL, 2010). However, these data have not been used in the measurement of multidimensional poverty by CONEVAL (2010; 2013), not even to update the poverty thresholds.

- b) The consensual method was suggested by Gordon (2010b) and was evaluated by CONEVAL's scientific committee, together with other poverty methods proposed by different scientists, before devising the final official Methodology for Multidimensional Poverty Measurement (MMPM) in Mexico, which is explained in the CONEVAL (2010) official document. Gordon (2010b) proposed his intersection approach to poverty, to estimate the multidimensional poor by combined dimensions of income with social and material deprivation.

From this proposal, there were also several suggestions made by Gordon (2010b) for the CONEVAL (2010) index, such as:

- b.1.) The use of multivariate techniques to ensure that deprivation indicators are consistent with the statistical principles of validity, reliability and additivity.
- b.2.) The theoretical idea, from Townsend (1979), that there is correlation between low income and deprivation, and an index should show, as people get poorer, those people experiencing a higher level of social and material deprivations.
- c) There has not been an evaluation of the CONEVAL's MMPM methodology, based on the inclusion of the current socially perceived necessities and poverty thresholds, defined by social consensus. It is important to know that CONEVAL (2013a) still uses non-updated thresholds.

5.2. Objectives and expected results

This study aims to apply the consensual method devised by Gordon (2006a) and Gordon and Nandy (2012), to the Mexican context, in order to evaluate the MMPM methodology developed by CONEVAL (2010).

The quantitative analysis carried out in this chapter, will help answer the main research question and the second research question, posed in Chapter 1:

I. What is the best way to measure poverty?

1.1. Do multidimensional poverty measurement methodologies produce divergent estimates of the extent and patterns of poverty? And with what effects for anti-poverty policies?

Thus, the expected results of applying the consensual approach to Mexico are:

- a) The capture of social needs and poverty thresholds that reflect Mexican living standards, through the use of the 2007 EDUMP survey, for the measurement of multidimensional poverty.
- b) The application of the consensual method, to combine measures of relative income with indicators of deprivation, with the purpose of identifying the optimum poverty threshold. This requires a valid, reliable and additive index of deprivation. This methodology will be applied using the micro-data from the 2012 Module of Socioeconomic Conditions (MCS), of the National Survey of Household Income and Expenditure (ENIGH)⁵⁴.
- c) The reduction of arbitrariness in the measurement of multidimensional poverty, by applying multivariate statistical techniques.
- d) Different poor population groups, estimated in this study, will reveal what groups should be targeted by anti-poverty policies.
- e) The analysis will also provide us with knowledge to help identify how the consensual approach and the social rights approach are related.

⁵⁴The 2012 MCS module of the ENIGH survey is representative at the national level and provides information for the first time in Mexico, to generate calculations of multidimensional poverty, as it is established by the LGDS (General Law of Social Development) (DOF, 2004).

5.3. Identification of socially perceived necessities in Mexico

This thesis has argued that there is a link between the consensual approach, developed by Mack and Lansley (1985), and the social rights-based approach developed by CONEVAL (2010) (Chapter 3 and 4 discussed this issue). The reason is that socially perceived necessities can inform about current and new standards of living prevailing in Mexican society, as they capture the social consensus. Therefore, there is a direct link between the consensus of the society and the legal basis of social rights, which also represents a social consensus that is established by the Mexican Constitution i.e. the constitution is seen as representing the will of the people (DOF, 2014).

The Mexican Constitution (DOF, 2014) and the LGDS (General Law of Social Development) (DOF, 2004) defined the social rights to which every Mexican citizen is entitled. These entitlements are measured through indicators of social deprivation by CONEVAL (2010).

CONEVAL (2010) states, in their methodological document, that the 2007 EDUMP survey was helped with the definition of indicators, which could be used for the measurement of multidimensional poverty. However, the following analysis will show that the thresholds have not been updated using the information provided by this survey, because the official criteria to identify thresholds for the measurement of social deprivations were established hierarchically as follows (CONEVAL, 2010): legal norms; knowledge and experience from experts working at public institutions related to any specific indicator; the use of statistical methods; and supporting arguments.

The 2007 EDUMP survey is a variant of the socially perceived necessities survey, proposed by Mack and Lansley (1985). One major difference was that in the EDUMP survey respondents were not asked about which items they lacked. Respondents were only asked to identify, from a set of indicators, the degree to which they consider these items to be necessary or not (Appendix 5.1). There were a range of items related to social and public services and another range of items related to necessary durables in the dwelling (CONEVAL, 2007). Respondents were asked two questions; (1) How indispensable or not is it in your view to have the following things in order to live well?

(2) How necessary or unnecessary do you think it is to have the following items in the dwelling? (Appendix 5.1).

There were six possible answers for to these two questions:

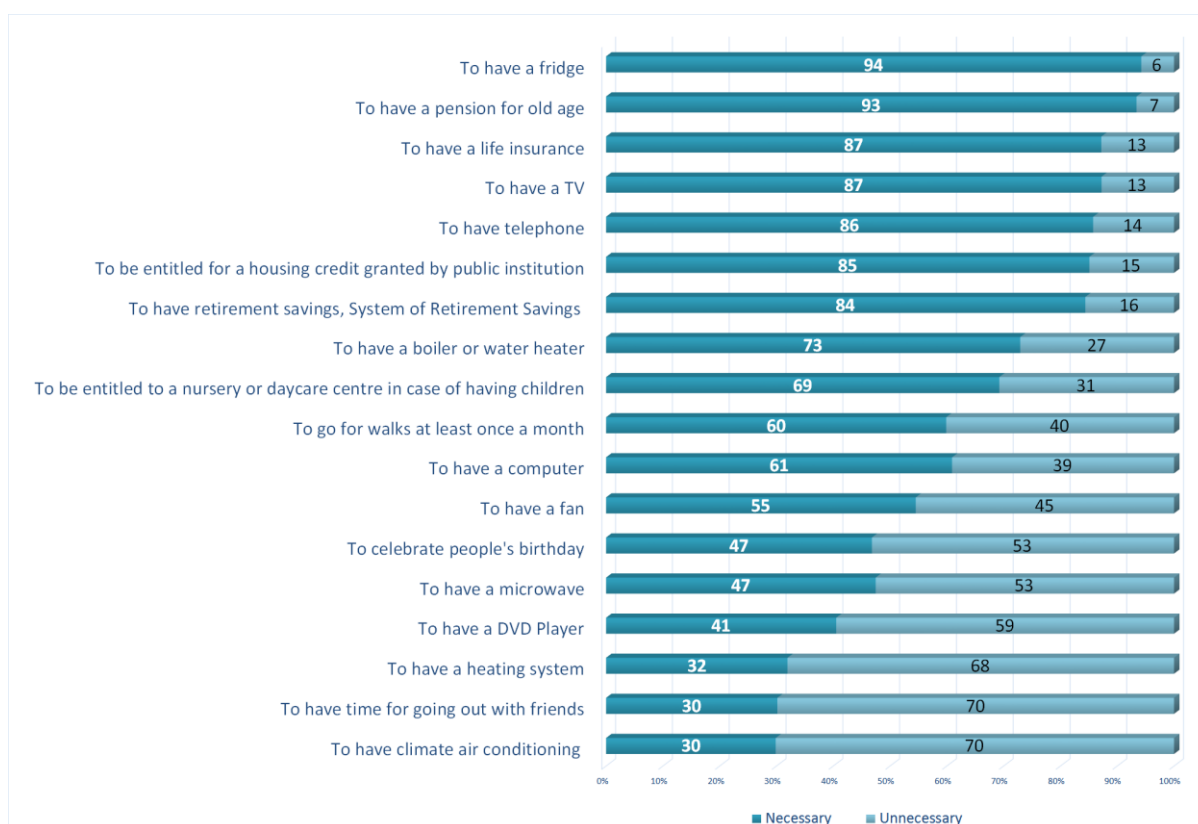
The item is: a) very necessary; b) necessary c) unnecessary; d) very unnecessary; e) neither necessary nor unnecessary; f) do not know; g) did not answer⁵⁵ (CONEVAL, 2007). Figure 5.1 shows the percentage of respondents who answered that items are very necessary or necessary. It also shows the percent who responded unnecessary or very unnecessary. The responses to the 'neither necessary nor unnecessary' option are not shown in Figure 5.1

Figure 5.1 shows that, over 80% of people consider the following items to be necessities: a fridge, a TV, a telephone; and essential services, such as: a pension for old age, life insurance, and entitlement to housing credit granted by public institution and enrolment in a retirement savings system or AFORE (Retirement Fund Management). Those items that received the support of between 50% and 70% of respondents were: a fan, a computer, a boiler or water heater, to go for walks away from home at least once a month and nursery care for young children.

However, less than half of the Mexican population considers the following items to be essential; celebrating birthdays, a microwave, DVD Player, a heating system, going out with friends and `air conditioning. A total of 12 items out of 18 were considered by a majority of respondents (over 50%) to be essential.

⁵⁵ The word indispensable is replaced by the word necessary for the first set of questions. Answers are as follows: a) very indispensable; b) indispensable; c) little indispensable; d) nothing indispensable; e) more or less indispensable; f) do not know; g) do not answer (CONEVAL, 2007).

Figure 5.1. Percentage of respondents perceiving adult activity or household item as necessary or unnecessary, Mexico 2007



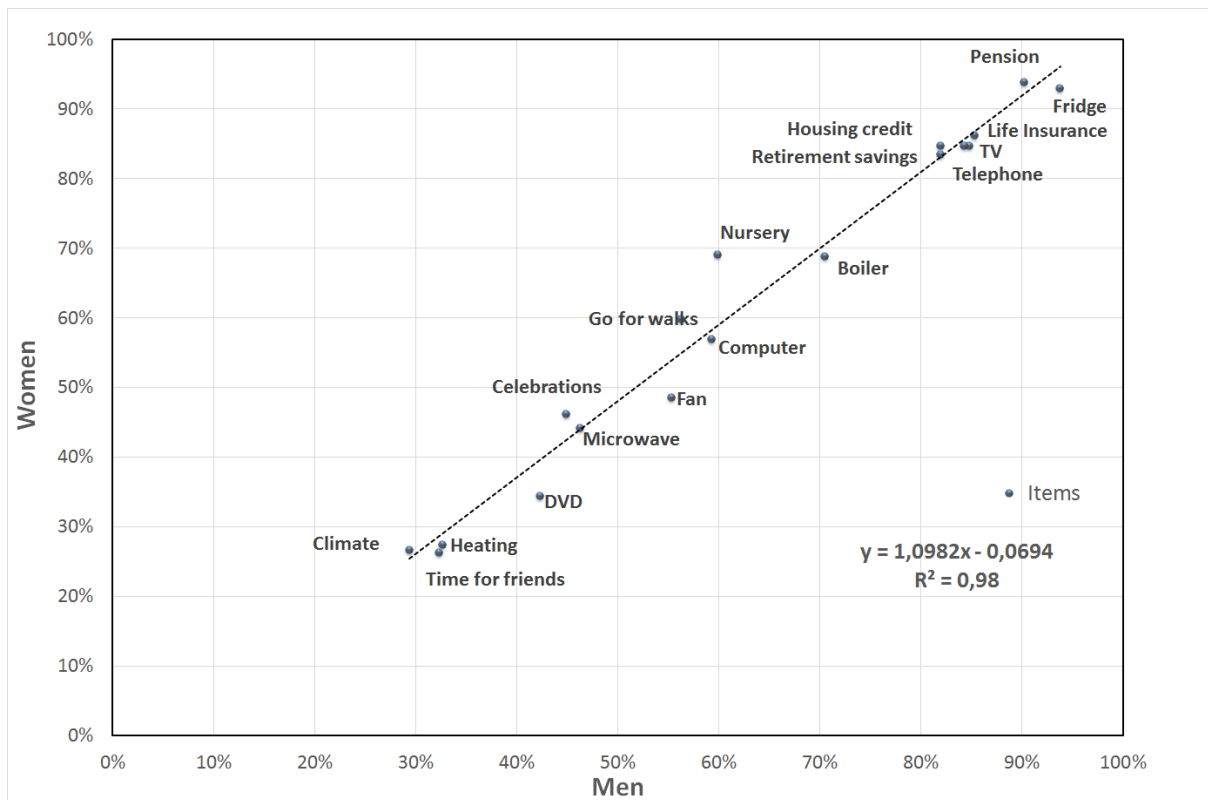
Source: Own elaboration based on information obtained from the EDUMP 2007 survey.

Note₁. Valid responses represent 97% on average for the whole set of questions. Other responses such as: more or less indispensable, or neither necessary nor unnecessary, were not considered as valid responses. These answers represent on average 2% of the total responses. Missing values represent 1% of the total responses.

Halleröd (1994) argued against Mack and Lansley's (1985) decision to use a 50% threshold as the criteria to decide which items constitute the necessities of life in each society. Halleröd has suggested that the idea of the majority of the population is not the same as what is regarded as public consensus to identify the necessities of life. Therefore, Pantazis et al (1999; 2006a) examined the degree of homogeneity in opinions, between different demographic and socio-economic groups in their analyses of British survey data. For this purpose, a linear regression analysis is estimated to show the best fit of the relationship between variables, through the estimation of the straight line where the variation of the data above and below is minimised (Pantazis et al, 2006a; Sokal and Rohlf, 1995).

Figure 5.2 shows the perceptions of social needs in Mexico, by comparing the percentage of men, on the horizontal axis and the percentage of women, on the vertical axis, who consider each item to be a necessity of life. The linear regression model fits the data well, because the differences between the observed values and predicted values are small and unbiased (Seber and Lee, 2003). This is also confirmed by the high R-squared coefficient of 98%, indicating that all the variability of the response data, around their means, is effectively explained by the model (Seber and Lee, 2003). Thus, both men and women in Mexico agree on what constitutes the necessities of life.

Figure 5.2 Perceptions of social necessities: comparing men and women, Mexico, 2007



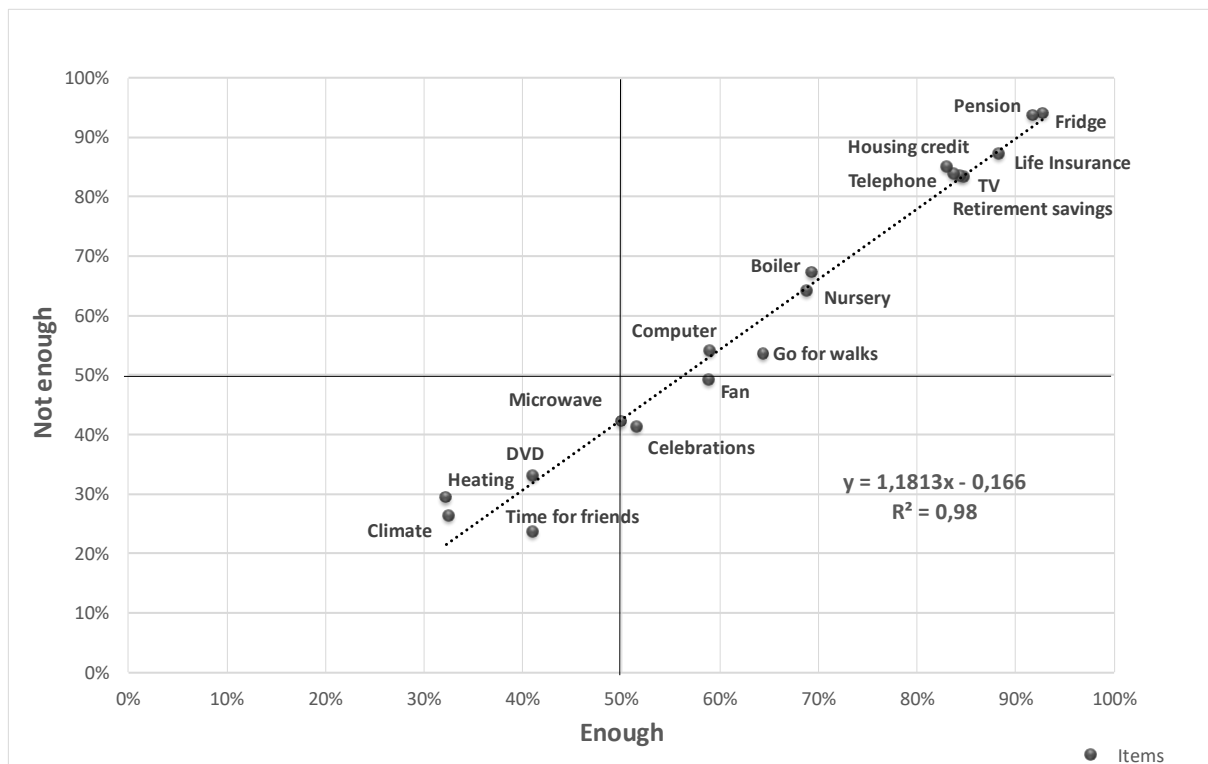
Source: Own elaboration based on information obtained from the EDUMP 2007 survey.

Figure 5.3 shows the socially perceived necessities between groups of households that reported in the 2007 EDUMP survey, that they had ‘enough’ and ‘not enough’ income to live decently. Once again the regression model fits these data with all the observations close to the straight line. The R-squared coefficient is 0.98.

However, there are four quadrants in Figure 5.3. The first quadrant, on the top right, shows that more than 50% of the households with either enough or not enough subjective income, considered it necessary to have a fridge, a pension; a life insurance; a housing credit; a TV; a telephone; retirement savings; a boiler, a nursery; a computer and to go for walks at least once a month. So, these items showed social consensus from both population groups. There is no evidence of adaptive preference by the poorer group of households amongst these data.

However, Figure 5.3 also shows, that richer households are slightly more likely to consider a fan; a microwave and birthday celebration to be necessities.

Figure 5.3 Perceptions of social necessities by comparing households' (enough vs. not enough) perceived income, Mexico, 2007



Source: Own elaboration based on information obtained from the EDUMP 2007 survey.

The consensual approach (Mack and Lansley, 1985) aims at finding a consensus about the socially necessary minimum standards of living and there should also be broad agreement between different groups in society (Townsend, 1979; Pantazis et al, 2006a;

Kelly et al, 2012). This thesis has therefore, made use of the items that the majority of Mexican respondents to the EDUMP survey agreed were necessities.

5.4. Identifying the Poverty Thresholds

The 2007 EDUMP survey also asked respondents to identify the minimum acceptable thresholds for educational attainment, housing quality and basic services i.e. the domains of multidimensional poverty which are included in the LGDS law (DOF, 2004). For example, respondents were asked: What is the minimum educational attainment that a person should have nowadays, to be able to live decently?

Figure 5.4 shows the comparison of the consensual education poverty threshold and the educational attainment threshold used by CONEVAL for the measurement of social deprivations in Mexico.

Figure 5.4.1 shows that 44% of Mexicans thought that high school, or a similar level of attainment, (such as a technical or commercial careers) was the minimum educational attainment to live decently, compared with only 10% of the population who agreed that secondary school or less represents the minimum required. However, CONEVAL's education poverty threshold is set at this low level (i.e. secondary school or less) The poverty threshold adopted in this study, to estimate educational attainment, is the completed high school level⁵⁶.

Figure 5.4.2 shows poverty thresholds regarding drainage and water supply services. The EDUMP survey asks respondents: What are the necessary drainage and water supply services, in the dwelling, for people to live decently? The overwhelming majority of the population, about 98%, answered that it is necessary to have an exclusive use of a toilet in the dwelling. Moreover, 90% of the population said that it is necessary to have piped water into the dwelling. By contrast, only 9% of the respondents said piped water into the

⁵⁶ Secondary school (*secundaria*) in Mexico is from 12 to 15 and is compulsory, High School (*preparatoria* or *bachillerato*) is from 15 to 18 and is not compulsory.

plot, which is the CONEVAL's poverty threshold used in their multidimensional poverty measure.

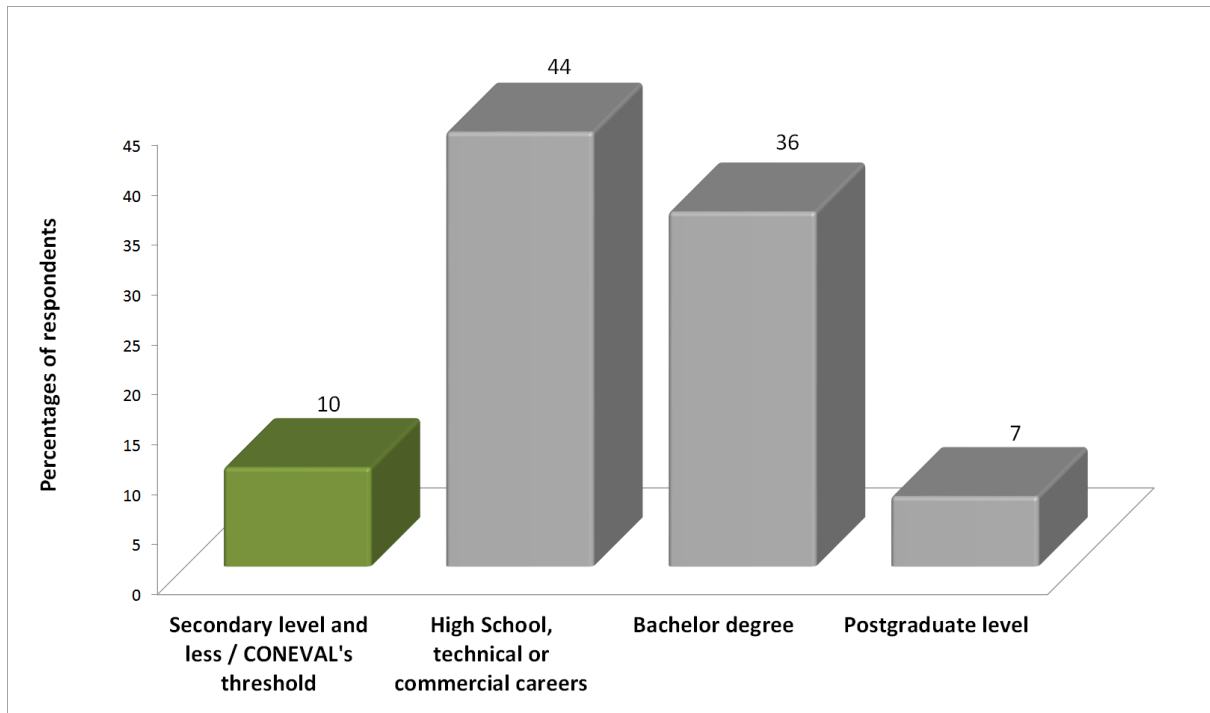
There are other necessities that should be included in the estimation of social deprivation. The majority of respondents, about 94% of the Mexican population, said that it is necessary to have a water supply, every day in the dwelling and 84% said that water should be available during the whole day (Figure 5.4.2). However, CONEVAL (2010; 2013a) only uses piped water for the measurement of multidimensional poverty.

The 2007 EDUMP survey also asked respondents what are the necessary flooring, walls and roofing materials in order to live decently? Figure 5.4.3 shows that in this case the social consensus and CONEVAL's poverty thresholds for flooring materials coincide, i.e. 56% of the population reported that cement should be used.

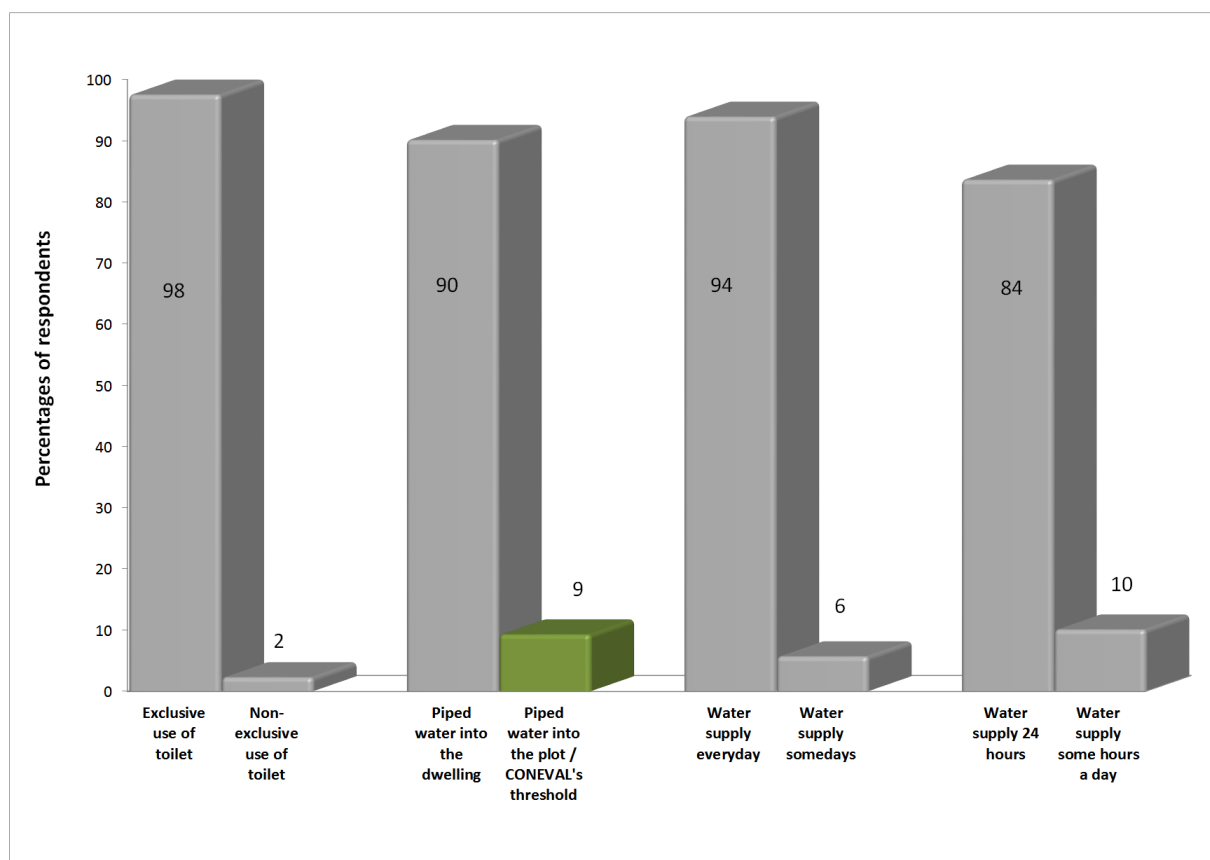
However, CONEVAL (2010; 2013a) has used very restrictive poverty thresholds for walls and roofing materials, which differ from the social consensus in Mexico Figure 5.4.4 shows that only 1% of the population agreed that it is enough to use wood or roofing board, as the walls materials for dwellings which is the poverty threshold used by CONEVAL. By contrast, about 80 % of respondents, said that brick, partition or blocks should be used for this purpose.

Additionally, Figure 5.4.5 shows that, while only 4% of the respondents answered that sheet metal or asbestos should be used for roofing materials in the dwelling, 80% said that the materials should be made of solid concrete slab or similar durable materials. Thus CONEVAL's poverty threshold of sheet metal or asbestos for this sub-indicator is out-of-step with Mexican public opinion.

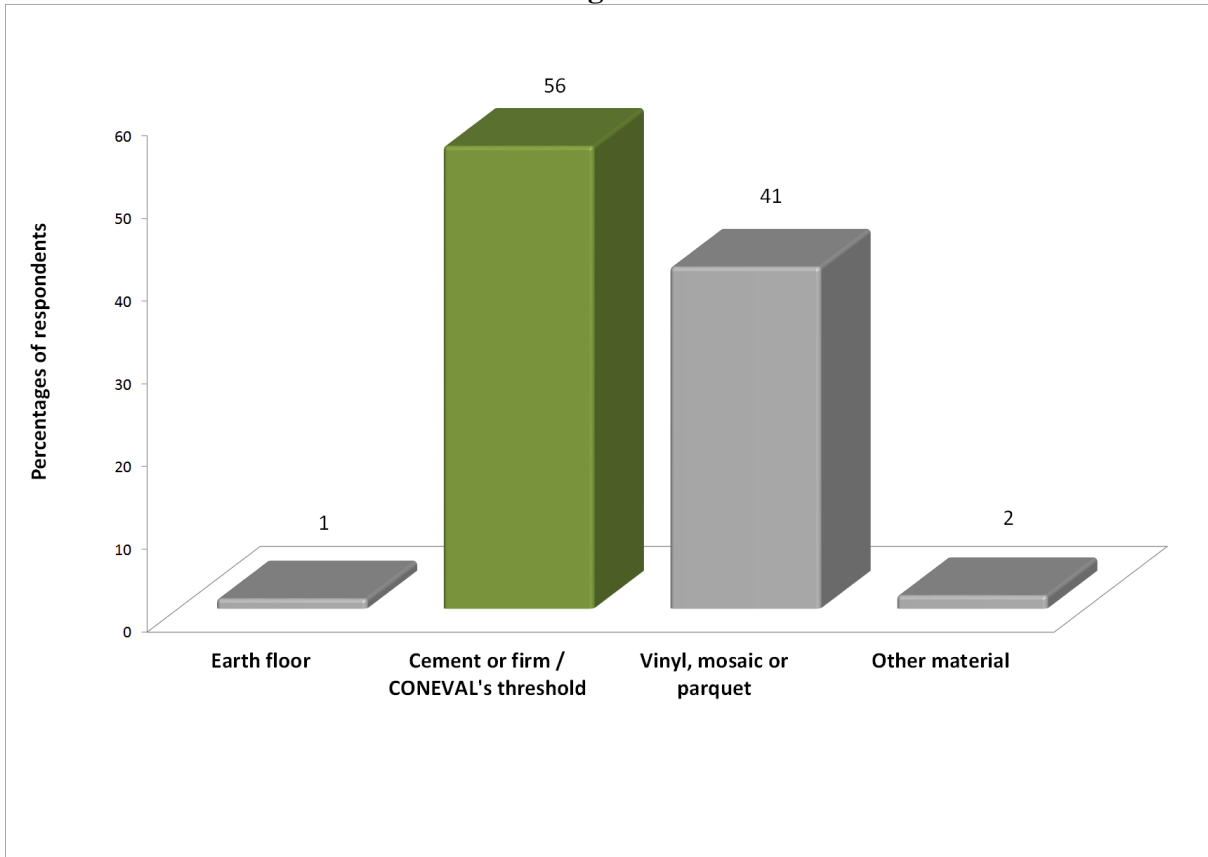
Figure 5.4 Comparison of poverty thresholds between the social consensus, obtained with the 2007 EDUMP survey and CONEVAL's methodology
5.4.1 Educational Attainment



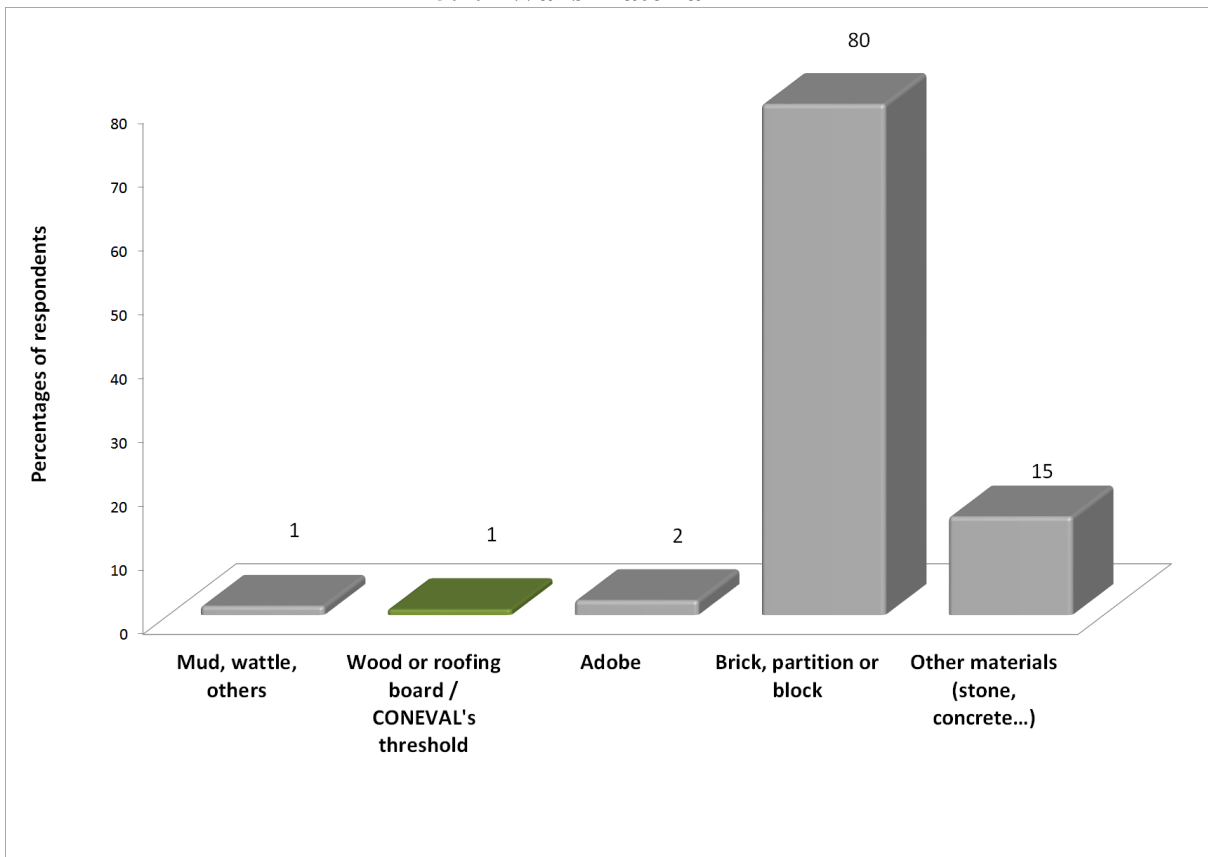
5.4.2 Drainage and water supply services in the Dwelling



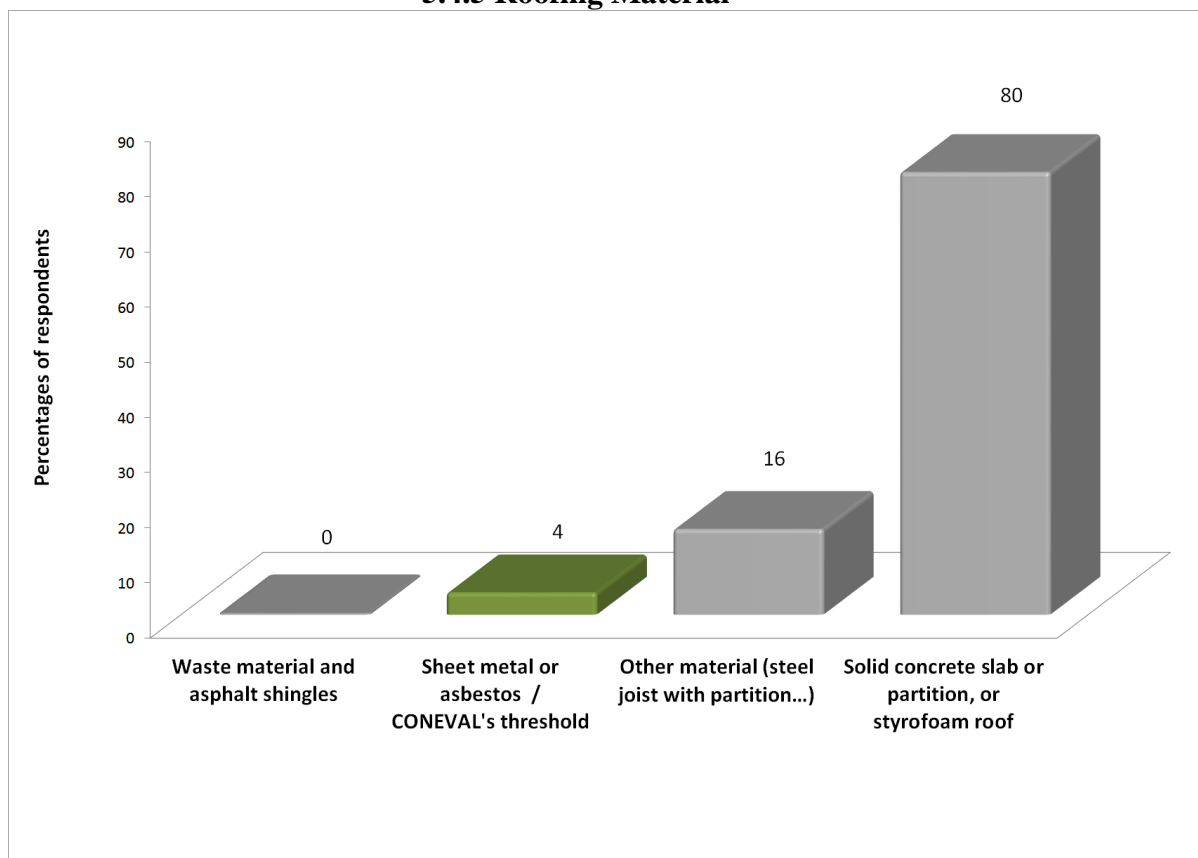
5.4.3 Flooring Material



5.4.4 Walls Material



5.4.5 Roofing Material



Source: Own elaboration based on information obtained from the EDUMP 2007 survey.

The poverty thresholds used in this study will be those that reflect the Mexican social consensus.

5.5. Comparative estimates of social deprivations

Thresholds based on the social consensus in Mexico have not been reflected in the CONEVAL's (2010; 2013a) official multidimensional poverty measurement. Therefore, the prevalence of poverty is likely to increase, if threshold values for the social deprivation indicators are updated to reflect the public consensus.

The socially perceived necessities that showed a broad consensus from the Mexican population were classified into three groups. The regression analysis showed over 50% of the population in agreement, and with broad agreement between demographic groups.

The first group shows the social and public services to which every Mexican citizen is entitled. The second group shows the durables in the dwelling that are considered to be necessary. The third group shows the poverty thresholds related to necessary services in the dwelling. These groups of items will be estimated as sub-indicators for the updated multidimensional poverty measure. Appendix 5.2 gives the measurement criteria used for all indicators. Every social deprivation indicator is scored as 0 when the person does not suffer social deprivation and as 1, when the person suffers social deprivation.

- A. Social and public services:
 - 1. To access to high school, as a mandatory educational attainment.
 - 2. To have a pension for old age.
 - 3. To have a life insurance.
 - 4. To be entitled for a housing credit, granted by a public institution.
 - 5. To be enrolled in a retirement savings system, such as AFORE⁵⁷.
 - 6. To be entitled to a nursery in case of having children.
 - 7. To go for walks away home, at least once a month.
- B. Necessary durables for the dwelling:
 - 8. To have a fridge.
 - 9. To have a TV.
 - 10. To have a telephone.
 - 11. To have a boiler or water heater.
 - 12. To have a computer (or internet).
- C. Necessary services in the dwelling:
 - 13. Exclusive use of toilet.
 - 14. Piped water into the dwelling.
 - 15. Water supply every day.
 - 16. Water supply 24 hours.
 - 17. Cement flooring.
 - 18. Brick walls.
 - 19. Solid concrete roofing.

⁵⁷ AFORE is a job benefit designed to save funds for retirement (CONEVAL, 2010).

Table 5.1 below shows the set of social deprivations, defined by law (DOF, 2004), which are also estimated by CONEVAL (2010; 2013a)⁵⁸. The exception is the deprivation indicator relating to access to information which was included as a new indicator domain for this analyses. So, the sub-indicators were defined and grouped as follows:

- 1. Educational gap:** to have completed upper high school or similar⁵⁹, defined by social consensus. This level of educational attainment is also justified by the fact that it has recently become mandatory due to constitutional reforms since 2012 (DOF, 2014). The consensual approach applied to Mexico reveals that 21% of the Mexican population did not meet this education level in 2012. This is two percentage points higher than the prevalence obtained by the MMPM official education poverty threshold (i.e. secondary school level).
- 2. Access to health care:** Deprivation of access to health care was estimated in the same way as CONEVAL's (2010) MMPM index. There are no sub-indicators identified as socially perceived necessities to include in this estimation. Table 5.1 shows that 22% of the population in Mexico suffer deprivation in access to health care. Overall, the estimation criteria consist of identifying the people and their families who are enrolled in a public institution to receive health care, in accordance with the Constitution (DOF, 2014) and the Social Security Law (LSS, by its acronym in Spanish) (DOF, 1995). Public institutions that provide health care in Mexico are the same ones that provide social security, for example, the Mexican Institute of Social Security (IMSS) or the Institute for Social Security and Services for State Workers (ISSSTE) and others (DOF, 1995; Gómez Dantés, 2011). Therefore, in operational terms, people with access to the health care system in Mexico, by direct enrollment or through kinship or private institutions are considered to be non-deprived (CONEVAL, 2010).

⁵⁸ The indicator of social cohesion was not included in this study, as explained in Chapter 4. The reason is that the comparative research, carried out in this dissertation, is grounded in Townsend's (1979) theory of relative deprivation. It enables a comparison of the UK and Mexico's multidimensional poverty measurement methodologies. Social cohesion is not a deprivation indicator (Boltvinik, 2006) and it is not correlated with low income (Gordon, 2010b; Gordon and Nandy, 2012).

⁵⁹ The mandatory educational attainment includes preschool, elementary, secondary and high school education (DOF, 2014). High school can be replaced by career technical education, as reported by respondents in the 2012 ENIGH data (INEGI, 2013; CONEVAL, 2014b).

3. Access to social security: The inclusion of social services, as sub-indicators of social security, is also justified because they represent entitlements, established in the Mexican Constitution in Article 123, section XI (DOF, 2014); as well as in the LFT (Federal Labour Law) for workers in specific circumstances (DOF, 2012). Also, Article 2 of the LSS law (DOF, 1995) states that access to health care and maternity insurance; unemployment insurance; disability and life insurance; old age benefits; child care and other insurances, should be provided for society's welfare. CONEVAL (2010; 2013a) has included the following sub-indicators in their estimation of the social security deprivation indicator: a) enrollment in a social security public institution; b) access to medical services; c) access to disability leave; d) access to a retirement program (Retirement Fund Management, AFORE) or pension and d) access to social assistance for the elderly people, i.e. the Senior Citizens Program (PAM, by its acronym in Spanish).

There is arguably a need to also estimate the target population who do not have access to other types of social security, such as: life insurance; housing credit; and the access to a nursery⁶⁰. Therefore, the prevalence of people experiencing deprivation, in their access to social security is 61%, reported by CONEVAL (2013a) vs. 65%, obtained from applying the consensual approach to identify social needs (Table 5.1).

4. Quality and living space of the dwelling: The items included here encompass sub-indicators of roofing; walls and flooring materials, previously classified in section C above, as necessary. CONEVAL (2010; 2013a) has also included an index of overcrowding, to estimate the indicator of deprivation in access to the quality and living space of the dwelling, and that is also taken into account in this study. However, Table 5.1 shows an important difference regarding the prevalence of quality and living space deprivation. There is a 21 point difference in deprivation when CONEVALS measure is compared with the consensual measure used in this research (i.e. 14% vs. 35%), This large difference is a result

⁶⁰ The indicator regarding to go for walks away home, at least once a month, is not considered within social security, according to the social security law in Mexico and was not included in this calculation.

of the very restrictive poverty thresholds used by CONEVAL (2010; 2013a) (shown in Figures 5.4.3, 5.4.4 and 5.4.5 above).

- 5. Access to basic services in the dwelling:** The necessities of life included within the estimation of the social deprivation indicator, of access to basic services in the dwelling are; the exclusive use of toilet; piped water into the dwelling; water supply every day and water supply for 24 hours; fridge and boiler or water heater. The items related to water supply were classified in section C above, as necessary services in the dwelling and the other two items were classified as necessary durables for the dwelling, in section B above. In addition, CONEVAL's (2010) sub-indicators for this social deprivation indicator were also included in the consensual measure (Appendix 5.2); which are: access to drinking water, availability of drainage service; electricity and the type of fuel for cooking in the dwelling.

Table 5.1 shows large differences in the prevalence of deprivation for access to basic services in the dwelling: 21% from the CONEVAL's methodology vs. 52%, obtained from the application of the consensual approach. In this case, the reason for the 31 percentage points difference, is due to the inclusion of six sub-indicators, seen as necessities of life by Mexican society.

- 6. Access to food:** Food deprivation was estimated using CONEVAL's (2010) MMPM methodology. The 2007 EDUMP survey did not provide any additional information about food deprivation thresholds. Table 5.1 shows that 23% of the population in Mexico suffer from food deprivation. Overall, the estimation criteria consist of calculating food insecurity scales for children and adults (Appendix 5.3), as defined by Pérez-Escamilla et al (2005). This indicator was included as a social right, based upon international agreements ratified by the Mexican State, such as the International Covenant on Economic, Social and Cultural Rights (ICESCR) in 1981 (UN, 1966; 2014) as well as the adoption of the Rome Declaration on World Food Security (FAO, 1996). Furthermore, Article 4 of the Mexican Constitution, established that every citizen has the right to access to

nutritious food, an adequate quality and sufficient quantity of food, and the State should guarantee this condition (DOF, 2014).

- 7. Access to information:** This is a new social deprivation indicator included in this study, obtained from the array of sub-indicators showed in the classification of necessary durables in the dwelling (section B above). The access to information indicator included: having a computer at home; a TV and a telephone. In operational terms, the sub-indicator related to having a computer at home was measured in the 2012 ENIGH survey, using internet access as a proxy variable. Having a telephone includes those with a mobile phone.

The proportion of households in Mexico that have a computer or internet connection is 38% and 34%, respectively, based on information obtained from the Module on Availability and Use of Information Technology in Households (MODUTIH, 2014; INEGI, 2015). The consensual approach gives the proportions of 33% non-deprived and 67% deprived households, in access to a computer (or internet) at home. The social consensus concerning access to a computer (or internet) and can be also justified based on Article 6 of the Mexican Constitution, which established that access to the internet is a social right (DOF, 2014).

The prevalence of information deprivation in Mexico is 68% (Table 5.1).

Therefore, the consensual approach has provided us with relevant information about current social needs and poverty thresholds and has allowed the estimation of updated social deprivation indicators in Mexico for 2012.

Table 5.1 Percentage of people that experience social deprivation in Mexico, in 2012. Consensual approach vs. the CONEVAL's official estimates

Social deprivation indicators	CONEVAL's estimates (%)	Consensual approach
1. Educational gap	19	21
2. Access to health care services	22	22
3. Access to social security	61	65
4. Quality and living space of the dwelling	14	35
5. Access to basic services in the dwelling	21	52
6. Access to food	23	23
7. Access to information	n/a	68

Source: Own elaboration based on Gordon and Nandy's (2012) methodology, with the ENIGH 2012 survey and official information provided by CONEVAL (2013a).

n/a. Not applicable.

Notes:

¹ The shaded cells highlight the largest differences between the results using CONEVAL's methodology and the consensual approach.

5.6 Defining a scientific deprivation index for Mexico

In this enquiry, the approach suggested by Gordon (1995; 2006a) and Gordon and Nandy (2012) will be applied to the Mexican case study. This consists of combining measures of relative income with indicators of social deprivation, to identify levels of poverty. The use of multivariate analysis for this purpose will also help to elucidate the relationship between income and deprivation, based on Townsend's (1979) theory and Gordon's (2016a) consensual methodology to identify the poor. Gordon and Nandy (2012) argue that a scientific method needs a way to test their indicators of deprivation and the dimensions that comprise a multidimensional poverty index. Gordon and Nandy (2012) state that this evaluation should be approached by assessment of the properties of the index, which are reliability, additivity and validity. Cronbach's Alpha⁶¹ is used to test reliability of the deprivation index. The General Linear Model (GLM), for example ANOVA, is used to evaluate validity and additivity and, jointly with logistic models, to identify the optimum poverty line. This process is essential to validate the index as whole.

⁶¹ The Kuder-Richarson (K20) coefficient is used in cases where indicators are dichotomous (Kuder and Richardson, 1937), such as deprivation indicators.

5.7 Testing validity for the revised social deprivation index

A set of social deprivation indicators, based on a social rights approach, have been defined by law in Mexico (DOF, 2004). The Mexican Constitution (DOF, 2014) also establishes a range of social and economic rights. Therefore, Gordon and Nandy (2012) argue that since these Mexican social deprivations indicators have been enshrined in legislation, “*this provides a-priori evidence for face validity*” (Gordon and Nandy, 2012, p 20).

Validity is further tested by running binary logistic regressions for each social deprivation indicators, as dependent variables, with independent variables, known to be correlated with poverty.

Table 5.2 shows the odds ratio of experiencing social deprivation and low income. The different poverty measures selected as the independent variables have been used by previous studies carried out in Mexico (CONEVAL 2012c; 2013a; 2014c; INEGI, 2013). These studies revealed that low socioeconomic stratus; ethnicity and rurality and level of dependency ratio are factors associated with poverty. These three factors were selected to test criterion validity⁶², The National Institute of Statistics and Geography (INEGI, 2013) in Mexico has traditionally calculated the index of socioeconomic stratus, which is correlated with low income poverty. This index is based on 24 indicators collected in the 2000 Census of Population and Housing. It includes socioeconomic characteristics of people, physical characteristics of their dwellings and household equipment. The index is divided into four socioeconomic strata: low; medium-low, medium-high and high strata.

On the other hand, a new variable was estimated to consider ethnicity and rurality, and was created as a dichotomous variable in the logistic regression model, i.e. 1 is for indigenous people or people living in rural areas and 0, is equal to any other case⁶³. CONEVAL (2012c) refers to the dependency ratio as the distribution of non-working population, people aged 0-14 years and 65 years or more, per every hundred persons of

⁶² The logistic regression models were also estimated by using other independent variables, based on Townsend and Davidson (1988) and Gordon (2006a), who state that poverty causes ill health and is highly associated with low income. Thus, disabilities and limiting long-term illness, which means that people are not able to work, were taken into account but this variable was not significant in the models, for data information provided by the 2012 MCS ENIGH module.

⁶³ These variables are significant in the logistic regression model, when both are taking into account.

working age, i.e. people aged 18- 64 years. The level of dependency ratio is estimated as a continuous variable. Thus, Table 5.2 shows the odds ratio that deprived people have, when they are living with low socioeconomic stratus, are part of an indigenous community or are living in a rural area of Mexico, or are living in a household with a high dependency ratio.

Table 5.2 shows that most of the deprivation variables have large positive associations with the three criterion validators (i.e. socio-economic stratum, rurality and dependency ratio). The notable exception is the low correlations between the indicator of health care and the three validators variables. In particular, health care and social security are inversely related to high level of dependency ratios. One explanation for this is that access to the public health care system is linked to enrolment in any public institution of social security (Gómez Dantés et al, 2011), including through kinship (CONEVAL; 2010). Thus, if the head of household is in receipt of social security benefits, his dependents are also deemed to have received social security.

Table 5.2 Odds ratio for social deprivation indicators and low income, by different poverty measures

Social deprivations	Low socioeconomic stratum	Ethnicity (indigenous) or rurality	High level of Dependency ratio
1. Low income	7.6	2.6	2.4
2. Access to information	10.4	2.6	2.0
3. Access to basic services in the dwelling	6.9	3.4	1.2
4. Educational gap	6.5	1.8	1.0
5. Quality and living space of the dwelling	6.3	2.5	1.5
6. Access to food	4.4	1.5	1.4
7. Social security	3.0	1.8	0.8
8. Health care	1.1	1.0	0.8

Source: Own elaboration based on multivariate techniques proposed by Gordon (2006a; 2010b) and Gordon and Nandy's (2012) for poverty measurement analysis, by estimating data from the MCS of the 2012 ENIGH survey.

Notes:

¹ Low income is a binary dependent variable; 0 is equal to non-poverty; 1 is equal to poverty.

² The shaded cells highlight the inverse relationship between health care and social security and the household dependency ratio.

We can conclude from the results in Table 5.2 that all the social deprivation indicators are likely to be valid except for health care deprivation.

Table 5.2 also shows the relationship between low income and the external validators. Low income was recoded as a binary dependent variable, 0 means no-poverty; 1 means income poverty. There are high associations between low income and the external validators, particularly with the low socioeconomic stratum indicator.

5.8 Testing reliability for the revised social deprivation index

It is necessary to ensure that any deprivation index is reliable. Therefore, social deprivation components will be also evaluated for internal consistency, using Classical Test Theory (Cronbach, 1951; Cronbach and Shavelson, 2004). The overall Kuder-Richardson (1937) (K20) coefficient for the seven deprivation variables is shown in Table 5.3, is 0.61. Table 5.3 column (A) also shows how Alpha would change if individual deprivation items were deleted from the deprivation index. The only unreliable indicator is health care access, if it is removed from the index, then the K20 coefficient increases to 0.63. However, the final social deprivation index would still not reach a reasonable level of reliability, based on Nunnally's (1981) criteria that 0.7 is the minimum alpha recommended for social sciences.

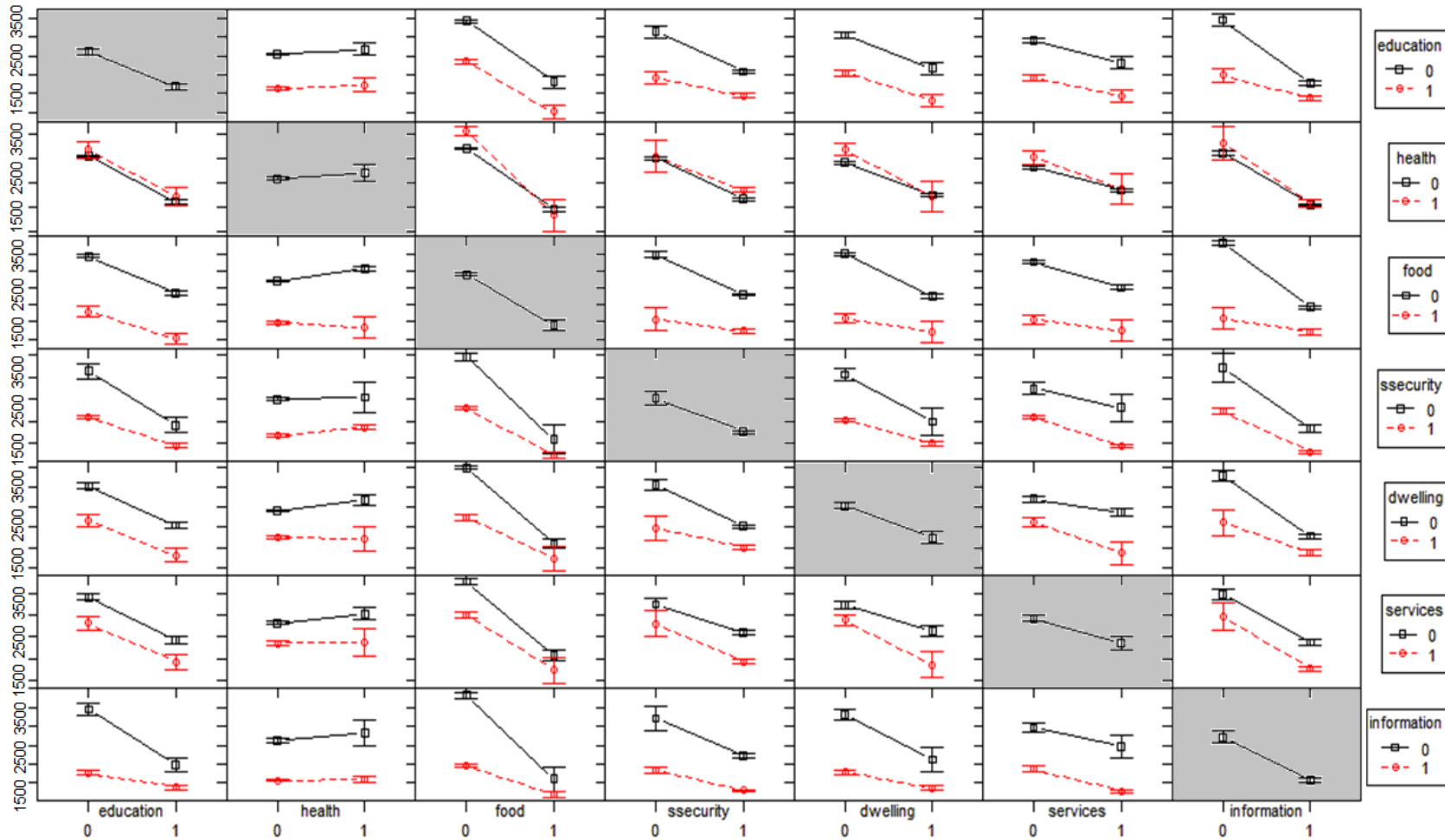
Table 5.3. Reliability analysis of the components of social deprivations

Items / Statistics	K20 coefficient if Item deleted (A)	K20 coefficient (health care item deleted) (B)
1. Educational gap	0.60	0.62
2. Access to health care services	0.63	NA
3. Access to social security	0.56	0.61
4. Quality and living space of the dwelling	0.55	0.56
5. Access to basic services in the dwelling	0.55	0.55
6. Access to food	0.59	0.61
7. Access to information	0.54	0.54

Reliability statistics		
Analysis	A)	B)
N of cases	212,678	212,678
Alpha	0.61	0.63
N of Items	7	6

Source: Own calculation using data from the MCS module of the 2012 ENIGH survey.

Figure 5.5 ANOVA second order interaction plot of social deprivation indicators by income



Source: Own elaboration with indicators estimated based on the CONEVAL (2010) methodology and the consensual method (Gordon, 2006a; Gordon, 2010b; Gordon and Nandy, 2012). Data were plotted by using the Phia package (De Rosario-Martinez, 2015) in the R software version 3.3.1.

5.9 Testing additivity for the revised social deprivation index

The social deprivation index has also been tested for additivity. According to Gordon and Nandy (2012), all the components of the social deprivation index should be additive. This means that a person or household should become poorer as the number of deprivations they suffer from increases (Gordon, 1995; Gordon, 2006a). For instance, it is expected that someone who is deprived due to educational gap and social security is more deprived than the person who only lacks of social security services.

The consensual method applied by Gordon (2006a) defines a relationship between income and deprivation, based on Townsend's (1979) conceptualization of poverty, referring to lack of resources as the cause and deprivation as the consequence. Townsend (1979) and Gordon (2006a; 2010b) have found correlations between these two dimensions.

The second order interaction effect in an ANOVA model were estimated, for the purpose of evaluating the additivity of the deprivation index. The deprivation indicators calculated based on CONEVAL's (2010) methodology and on the information obtained from the EDUMP (2007) survey, were used to estimate the ANOVA model. The equivalised disposable household income⁶⁴ is the dependent variable and factors or independent variables are social deprivations due to educational gap, lack of health care services, food insecurity, lack of social security access, lack of quality and living space of the dwelling, lack of basic services in the dwelling and lack of information.

The ANOVA analysis allows us to see the different combinations of a second order interaction (Gordon and Nandy, 2012), by plotting the social deprivation indicators by income. The second order interaction effects are shown above and below the diagonal, in Figure 5.5. The Y-axis shows the adjusted mean of the equivalised disposable household

⁶⁴ Disposable income was calculated based on Canberra's (2011) methodology. This is the way in which CONEVAL (2010) also estimates income. However, imputed income is not taken into account because it is not fungible and households do not use it to satisfy their needs (CONEVAL, 2010). Appendix 5.4 shows the Canberra's criterion.

income and ranges between 1,500 and 3,500 Mexican pesos. The *X*-axis shows the seven different types of social deprivation. The *X* and *Y* coordinates represent the combined effects (interaction effects) of two factors (social deprivations) on the dependent measure (disposable mean income) (Stevens, 1999). This can be read by analyzing if the impact of one factor, represented in the *X*-axis, with categories of non-deprivation = 0 and deprivation = 1, depends on the levels of the other factor. The levels of other factors are displayed along the right vertical column and represent non-deprivation and deprivation through black and red lines, respectively, and match with their respective small graphs placed on the same line.

The ANOVA model aims to compare the variability of means between groups to the variability within the groups (Stevens, 1999; Rutherford, 2011). The null hypothesis is that there is no difference in the disposable mean income for the different combinations (i.e. there are not interaction effects), H_0 (Stevens, 1999). Figure 5.5 shows that two parallel lines sloping from top left to bottom right are additive indicators (Guio et al, 2012; Gordon and Nandy, 2012). However, if there is intersection between two lines, it implies an interaction effect (Stevens, 1999). In this case, it cannot be determined if a person that experiences two types of deprivations is poorer than another who only shows one of these types of deprivations. Therefore, Figure 5.5 shows that the indicator of deprivation in access to health care is not additive. The reason is that there are interaction effects with each of the other social deprivations indicators. By contrast, all the other possible combinations of the remaining six deprivation indicators appear to be additive.

5.10 Producing a valid, reliable and additive social deprivation index

Once social deprivation indicators have been tested, a valid, reliable and additive social deprivation index can be estimated. The previous analysis showed that the indicator of deprivation in access to health care is not a good indicator (i.e. it is unreliable, invalid and not additive), so it should be excluded from the overall index. A clear conclusion from this analysis is that better indicators of health care access deprivation are needed in Mexico.

The final index of social deprivation consists of six social deprivations, which are:

- 1) Educational gap;
- 2) Access to social security;
- 3) Quality and living space of the dwelling;
- 4) Access to basic services in the dwelling;
- 5) Access to food and
- 6) Access to information.

Table 5.4 shows the social deprivation index score, the prevalence of deprivation and the equivalised disposable mean income, in Mexican pesos. Only 11% have a score of zero i.e. suffer from no deprivations. Therefore, almost 90% of the Mexican population suffers from at least one type of social deprivation. Table 5.4 also shows that, the higher the social deprivation score, the lower is the average equivalised disposable mean income. The mean income for people without deprivations is 6,839 Mexican pesos per month and people who experience the maximum number of six social deprivations, have only one sixth of this income.

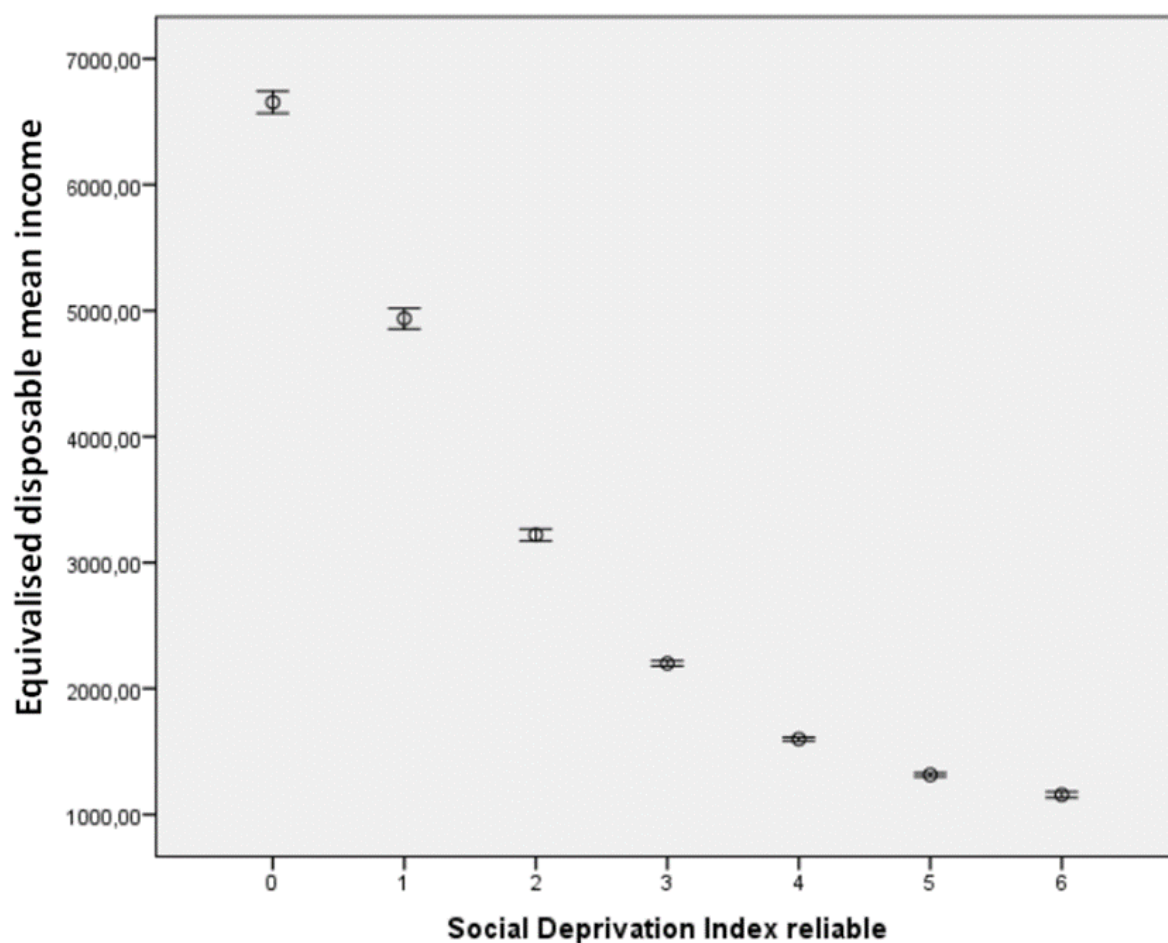
Table 5.4. Proportion of the Mexican Population with each Deprivation Index Score and the average equivalised disposable mean income

Score	Prevalence of deprivation (%)	Mean income
0	11	6,839
1	18	5,118
2	19	3,232
3	19	2,252
4	18	1,625
5	12	1,319
6	3	1,148

Source: Own calculation using data from the MCS module, of the 2012 ENIGH survey, and indicators estimated based on Gordon and Nandy's (2012) methodology and official information provided by CONEVAL (2013a).

Figure 5.6 shows the social deprivation index scores plotted against equivalised disposable mean income. The point where there is a break in slope i.e. where deprivation increases disproportionately for a small fall in income, is considered by Townsend (1979) to represent the optimum poverty threshold. However, it is first necessary to remove the income outliers, (i.e. those people with very high incomes) before the optimum poverty line can be determined.

Figure 5.6 Equivalised disposable mean income, with 95% confidence intervals by social deprivation scores, estimated based on the consensual method

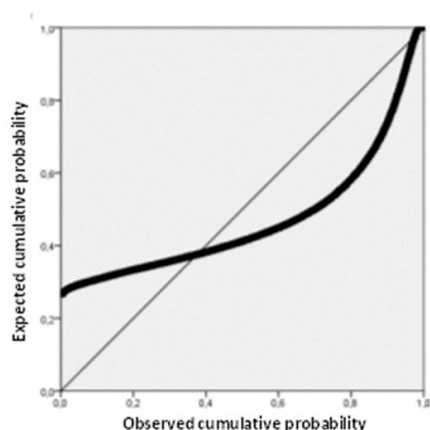


Source: Own elaboration based on social deprivation indicators and income, estimated through applying the consensual method (Gordon, 2006a; Gordon and Nandy, 2012) to Mexico, on the basis of the CONEVAL's (2010) social rights-based approach, with information provided by the MCS module of the 2012 ENIGH survey.

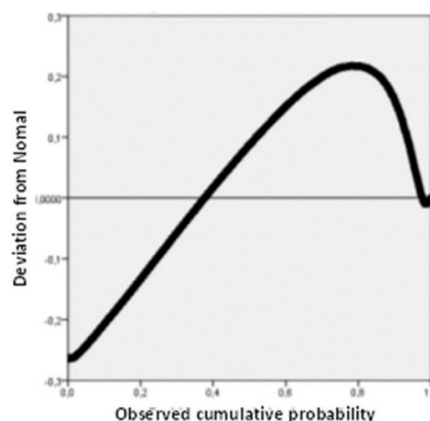
Figure 5.7 shows the probability-probability (P-P) plot to test normality for the equivalised disposable mean income distribution of all households, by comparing their empirical distribution with the theoretical standard normal distribution function. This analysis is also used to evaluate the skewness of the empirical distribution (Jarque and Bera, 1980; 1987). Figure 5.7.1 shows the P-P plot for income revealing that observations are not fitted to the normal distribution, represented by the diagonal line. Also, the de-trended normal P-P plot presents the actual deviations of data observations calculated through the horizontal line at zero (Jarque and Bera, 1980; 1987), in Figure 5.7.2. So, the pattern of the curved line shows the non-normality of income distribution in Mexico.

Figure 5.7. P-P and de-trended P-P plots of the non-normally distributed equivalised disposable mean income

5.7.1. Normal P-P plot of income



5.7.2. Detrended normal P-P plot of income



Source: Own elaboration and income distribution analysis for Mexico, based on Jarque and Bera (1980; 1987), with information provided by the MCS module of the 2012 ENIGH survey.

Moreover, the univariate analysis in Table 5.5 shows that there is a high inequality of income in Mexico. There is a highly skewed income distribution to the right: skewness is equal to 23. Similarly, the presence of extreme outliers in the income distribution is shown by the high value of the fourth moment of the standard normal distribution, the kurtosis, with a value of 1303, indicating that these data are not normally distributed. Also, the Kolmogorov-Smirnov test rejects the null hypothesis of normality at the .05 level (Jarque and Bera, 1980; 1987).

Furthermore, the equivalised disposable mean income of the Mexican population is about 3,190 Mexican pesos per month, in 2012 (Table 5.5.). However, between the minimum value of 0 pesos and the maximum value of 508,679 pesos per month, median income tends to be lower at 2,056 Mexican pesos. This is because the ninth decile includes few households with extreme values of equivalised disposable mean income of 6,371. However, the outliers identified by a stem-and-leaf analysis are those values over 7,308 Mexican pesos and standard deviation, represents an income of 5,086 pesos. The standard deviation represents a standard error of the mean (Barnett and Lewis, 1978; Camilli, 1996). Therefore, those people or households with equivalised incomes over 7,308 + 5,086, i.e. 12,394 pesos are defined as the outliers that should be excluded from the next modelling exercise, to define the multidimensional poverty threshold (Gordon and Nandy, 2012).

Table 5.5 Univariate summary of the equivalised disposable mean income (Mexican pesos per month, in 2012 and approximate US dollar equivalent)

Statistic:	Value:
Mean	3,190 pesos (\$242)
Median	2,056 pesos (\$156)
Minimum	0
Maximum	508,679 pesos (\$38,624)
Extreme data	> 7,308 pesos (\$555)
Standard deviation	5,086 pesos (\$386)
Top decile	6,371 pesos (\$484)
Kolmogorov-Smirnov	0.27*
Skewness	23*
Kurtosis	1,303

Source: Own elaboration and income distribution analysis for Mexico, based on Jarque and Bera (1980; 1987), with information provided by the MCS module of the 2012 ENIGH survey.

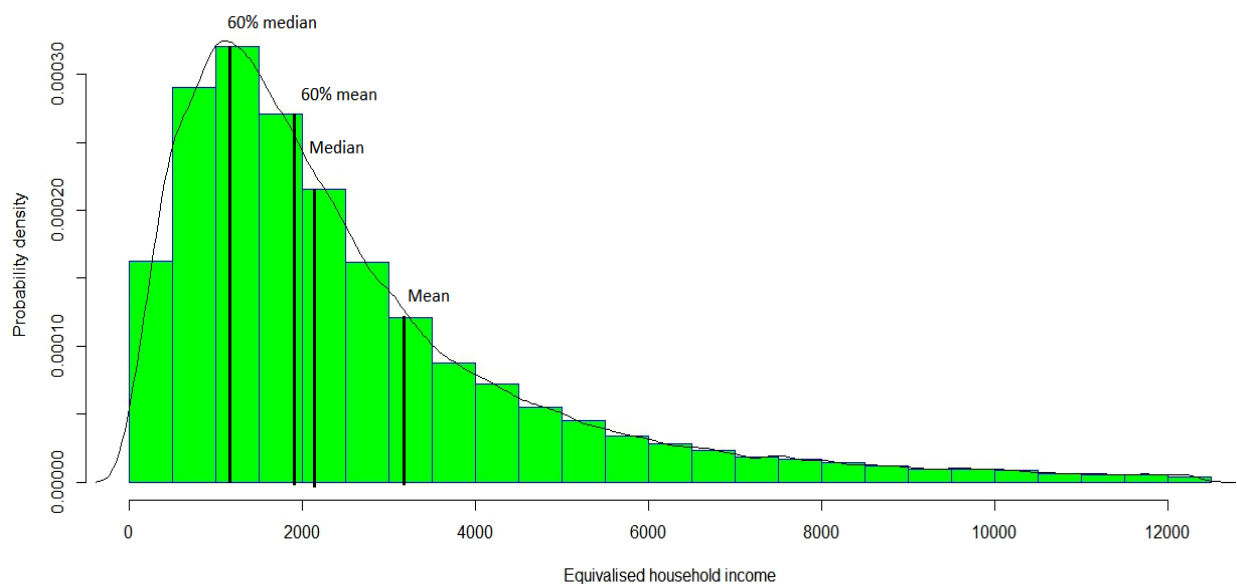
Notes:

¹ Significance at the 0.05 level.

² Values in parenthesis are expressed in dollars. The exchange rate was 13.17 in 2012 (World Bank, 2017).

Extreme values or outliers tend to distort measures of central tendency and so they influence the poverty rates. Large outliers will change the mean significantly. There will also be smaller changes to the median as extreme values influence all four distributional moments (Groeneveld, 1991; Ageel, 2000). The median is defined as the middle value of a data set and commonly lies in between the mean and the mode (Levin and Fox, 2004). However, this rule is broken when the mean moves to the right or to the left, depending on positive or negative skewness (Hippel, 2005). In a skewed distribution, the median can be further out in the long tail than the mean (Hippel, 2005).

Figure 5.8. Income distribution in Mexico, 2012
(equivalised household income in Mexican pesos per month)



Source: Own elaboration based on information from the 2012 MCS-ENIGH survey. R Project version 3.3.1. was used to plot the histogram.

Figure 5.8 shows the equivalised household income distribution in Mexico in 2012. Both the 60% mean and median income poverty lines are shown in Mexican pesos. The 60% median is equal to 1,234 pesos (approximately \$94 US dollars), which is much lower than 60% mean, of 1,914 pesos (circa \$145 US dollars). The median threshold (2,056 pesos,

\$156 US dollars), is also insufficient to afford the necessities of life, as it is a close value to the minimum wages fixed in 2012 by decree by the National Commission on Minimum Wages, at 1,820 pesos⁶⁵ (circa \$138 US dollars) (DOF, 2011). Almost half the Mexican population (41%) receive two minimum wages (Negrete-Prieto and Luna-Ramírez, 2016). This was equal to 3,640 pesos per month (\$276 US dollars) in 2012, which is closer to the mean in Figure 5.8. Thus, the 60% mean and median reflect very restrictive poverty thresholds in Mexico, which will be analysed against budget standards measures in Chapter 6.

5.11 Defining the multidimensional poor for Mexico

The Mexican population living in multidimensional poverty in 2012 were estimated based on multivariate statistical techniques. These techniques were previously applied by Gordon (2006a; 2010b), with data from the Poverty and Social Exclusion (PSE) survey for the UK, and also applied by Gordon (2010b) and Gordon and Nandy (2012) who used the ENIGH survey data for Mexico. Gordon (2006a) estimates the relationship between low income and deprivation and the optimum position of the poverty line, by applying ANOVA and logistic regression models.

This estimation consists of maximizing the between group sum of squares and at the same time, of minimizing the within group sum of squares (Gordon; 2006a; Gordon and Nandy, 2012). The models were formulated by summing the deprivation scores, beginning the analysis with people who do not suffer from any deprivations (null model), and the analysis continues until achieving the maximum deprivation score, which is 6 as the health care indicator has been excluded. So, an ANOVA model is estimated by selecting the equalised disposable mean income, as the dependent variable and the independent variables are the deprivation index scores; the number of children aged less than 18 years old, in each household and the number of adults aged 18 years and more in each

⁶⁵ This value is a monthly average of the minimum wages fixed per day, for the three geographical areas in Mexico (DOF, 2011).

household. Similarly, the logistic regression model is estimated, both of the model results are shown in Table 5.6 (Gordon and Nandy, 2012). The logistic regression uses the deprivation index score as the dependent variable, and the independent variables are the equivalised disposable mean income; the number of children in each household and the number of adults in each household.

Table 5.6 ANOVA and logistic regression models to find the optimum position for the poverty threshold

Model	F Statistic for corrected ANOVA Model	Logistic Regression Model Chi-square
Null model ¹	9,864	1,293
Deprivation score of 1 or more	17,180	3,322
Deprivation score of 2 or more	25,465	4,206
Deprivation score of 3 or more	23,714	3,679
Deprivation score of 4 or more	17,408	2,371
Deprivation score of 5 or more	11,045	851
Deprivation score of 6 or more	7,540	156

Source: Own elaboration with information provided by the MCS of the ENIGH 2012 survey; based upon multivariate statistical techniques used in Gordon (2006a; 2010b) and Gordon and Nandy (2012).

Note: All values are significant at (p<.001).

¹ The independent variables used in the null model are only the number of adults and the number of children in the household.

² The shaded cells highlight the maximum values of the F statistic and the Chi-square statistic used to identify the optimum poverty line/threshold.

Table 5.6 shows that the objective poverty threshold is a deprivation index score of 2 or more. It was estimated by comparing values of the F Statistic of ANOVA (25,465) and the Chi-square from the logistic regression (4,206): these results are also significant at the p<0.001 level. Thus, the income poverty threshold is 2,160 pesos⁶⁶ monthly in 2012. which is the average income for those people experiencing 2 or more deprivations.

⁶⁶ Mexican pesos show real income.

Gordon (2006a) and Gordon and Nandy (2012) aim at identifying the truly poor, based on Halleröd (1995), which is also the level of multidimensional poverty where income is so low that deprivations increase abruptly (Townsend, 1979). Thus, the prevalence of the consensual multidimensional poor for Mexico (Figure 5.9), based on Gordon's (2006a) consensual method is 47%, i.e. those people who have incomes below the objective poverty threshold and who also suffer from two or more deprivations.

According to CONEVAL's (2010) approach, the vulnerable by income and the vulnerable by deprivation can also be estimated. These poor population groups are equivalent to what Gordon (2006a) has called the rising poor and the vulnerable poor. Thus, Figure 5.9 shows the percentage of overlaps of being poor for the different dimensions: the multidimensional poor; the vulnerable by income; the vulnerable by deprivation and the not poor people. Figure 5.9 also aims to show the comparative results produced from the application of the consensual method to Mexico (Figure 5.9.1), and the poverty rates from the CONEVAL's MMPM poverty measure (Figure 5.9.2).

Figure 5.9.1 shows that 47% of the population are multidimensionally poor, this is the intersection approach to poverty measurement. Those vulnerable by income are only 1% of the population. This income poverty population subgroup was obtained from those groups of people that do not experience social deprivations but are below the income poverty threshold. The vulnerable by deprivation or the rising group is about 38% of the population. This last mentioned population group consists of the sum of people experiencing two social deprivations only but who have a relatively high income (24%), and those people who are experiencing one deprivation only (14%).

Figure 5.9.1 also shows the intersection of those people who experience one deprivation and are also below the income poverty line (4%). Therefore, the deprivation rate for people that experience a total of two or more deprivations is 71% and those who experience the total of one deprivation is 18%. The union approach to poverty can also be estimated and is about 90% of the population. The not poor are only 10% of the population. They do not suffer from any social deprivations and do not have a low income.

Figure 5.9.2 shows important differences in poverty and deprivation rates using the CONEVAL's MMPM official poverty methodology in Mexico. The first difference with the consensual methodology, is that CONEVAL (2010; 2012b) uses a more generous poverty threshold, which is defined by the presence of one social deprivations or more and low income (2,329 for urban areas and 1,490 for rural areas). However, the consensual method produced only one income poverty measure, as this approach advocates what the majority of the population express, as a consensus irrespective of where they live (urban or rural area) (Mack and Lansley, 1985). Consequently, this implies measures for achieving social convergence.

Secondly, another major difference lies in the proposals made in this study, which includes the socially perceived necessities (poverty thresholds and new social needs – such as information deprivation), captured in the 2007 EDUMP survey which have not been used for the official poverty measurement methodology.

Nevertheless, there is only a small difference in the multidimensional poverty rates, produced by these two methods: whereas CONEVAL shows that the prevalence of multidimensional poverty is 46% of the Mexican population, the Consensual method reveals that 47% of the population are living in multidimensional poverty (Figures 5.9.1 and 5.9.2).

The CONEVAL multidimensional poor encompasses a subgroup, which is composed of those people who are also below the minimum wellbeing threshold (a more restrictive income poverty line, of 1,125 pesos for urban areas and 800 for rural areas) (CONEVAL, 2012b) and who suffer from one or more social deprivations. This extreme poverty affects 10% of the Mexican population (Figure 5.9.2) (CONEVAL, 2013a). The extreme poor is the population targeted to receive social assistance in Mexico. The eligibility criteria⁶⁷ for the Oportunidades social assistance program, include the requirement that their per capita

⁶⁷ There are several restrictions for poor people to access the Oportunidades social assistance program. The first criteria, for eligible families, is to receive a per capita income below a minimum wellbeing threshold. It is stated that families living in the selected marginal localities are all eligible, independently of their per capita income. They will effectively receive Oportunidades, subject to the households' socioeconomic information and priorities of the Oportunidades operation rules (DOF, 2013).

income is below the minimum wellbeing threshold (DOF, 2013). So, the restricted income thresholds used for these kinds of antipoverty programs, have not helped to overcome the multidimensional poverty of Mexicans with per capita incomes, above the very low minimum wellbeing threshold.

Moreover, the CONEVAL vulnerable by income group represents 6% of the population, five percentage points more than the consensual method (Figure 5.9.2). Also, the vulnerable by social deprivations represent 29% of the Mexican population, based on CONEVAL's MMPM index, which is lower than the 38% obtained from the consensual method. The reason is that the consensual method is more comprehensive in that it captures more social deprivations and also uses updated deprivation thresholds. Thus, this more comprehensive measure captures a higher proportion of the population in the deprivation dimension than CONEVAL's measure (2010).

Furthermore, the union approach to poverty shows that 81% of the population are living in poverty and deprivation as a whole, nine percentages points less than the consensual method's results. The proportion of the population that is not poor, according to CONEVAL (2013a), is 19% (Figure 5.9.2).

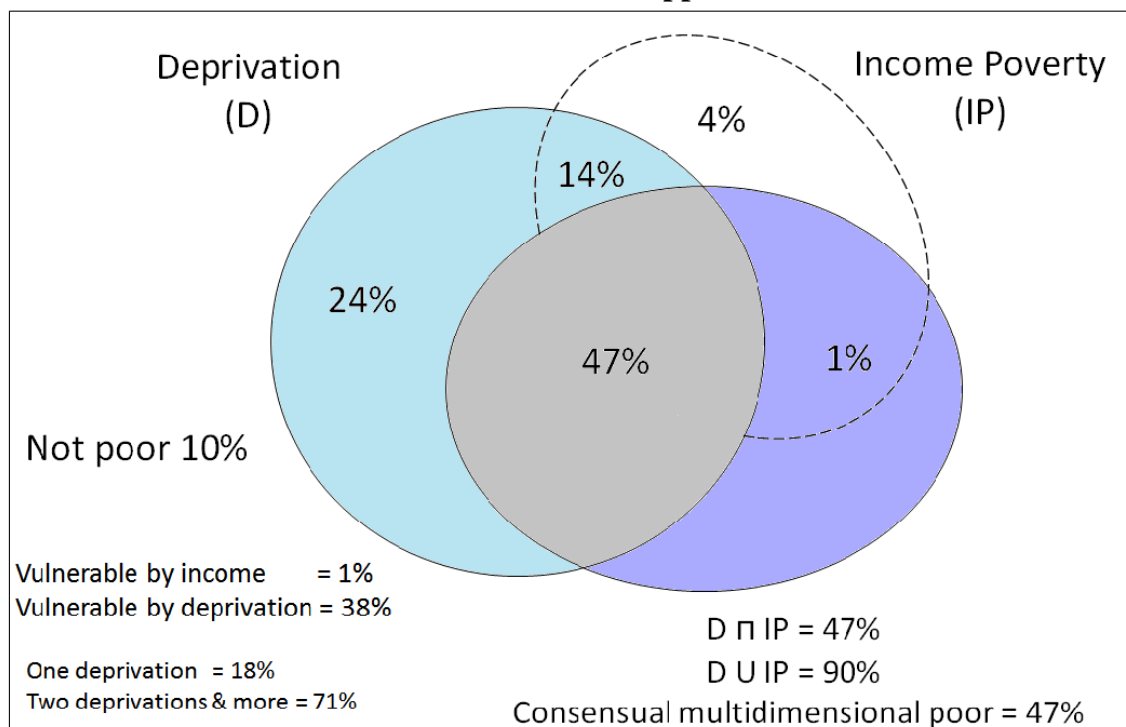
5.12 Validity for the consensual method applied to Mexico

It is important for this study to show consistent results. The process of validating results in this section includes a comparison of the poverty rates produced by the official multidimensional poverty measures applied in Mexico, the MMPM poverty method (CONEVAL, 2010; 2013a) and the IPMM method applied in Mexico City (EVALUA, 2011a). All three methodologies use social deprivations/UBN and low income to estimate multidimensional poverty⁶⁸.

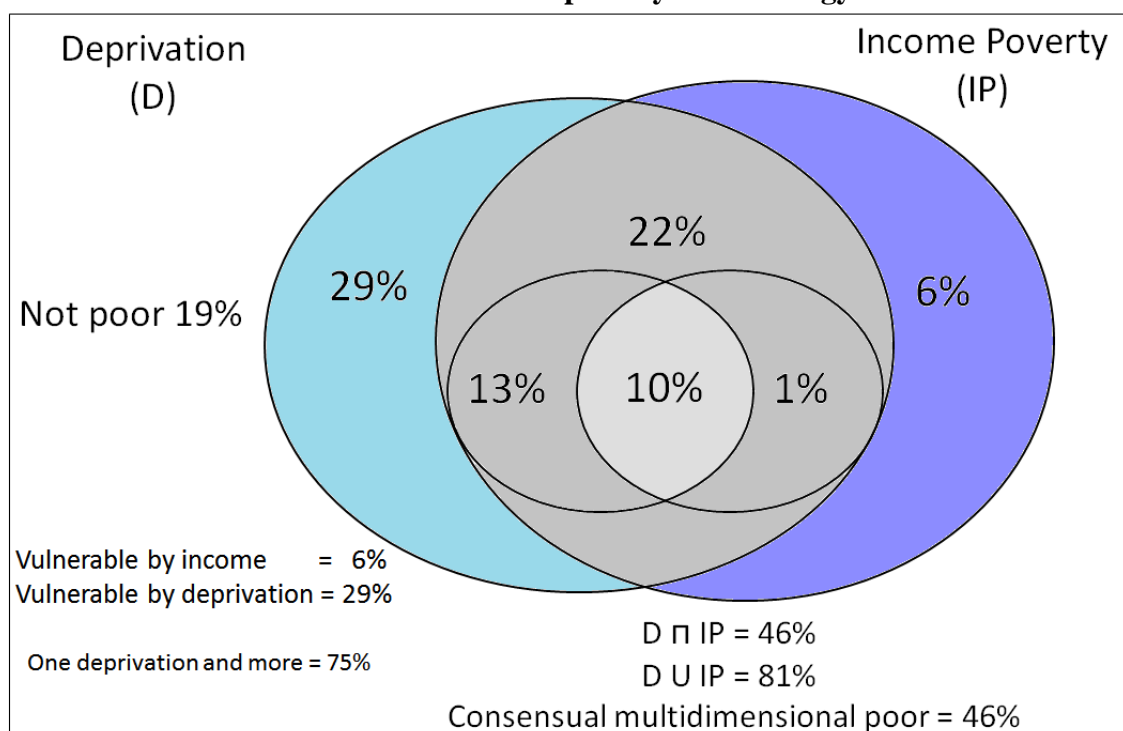
⁶⁸ The CONEVAL's MMPM official method uses social cohesion, as an additional indicator, for the estimation of multidimensional poverty and the IPMM method uses time poverty for the same purpose. This research is carried out on international comparative basis, in order to measure multidimensional poverty in the UK and Mexico, and estimates from the CONEVAL's MMPM and the EVALUA's IPMM indexes do not take into account social cohesion and time poverty, for comparative purposes.

Figure 5.9 Percentage of overlaps of being poor in different dimensions, by different methods

5.9.1. The consensual method applied to Mexico



5.9.2. The CONEVAL's official poverty methodology in Mexico



Source: Own elaboration with indicators estimated based on the CONEVAL (2010) methodology and the consensual method (Gordon, 2006a; Gordon, 2010b; Gordon and Nandy, 2012) applied to Mexico.

Table 5.7 compares the results from the three multidimensional poverty measures applied to the same survey data. The main difference is that the consensual method and CONEVAL's MMPM index use an intersection approach, whereas the IPMM method uses a weighted average system i.e. a part union approach. This explains the difference in poverty rates of 47%, 46% and 82%, respectively. However, if an intersection approach is applied to the IPMM indicators, a higher rate of 65% is still produced. By contrast if a union approach is applied to the CONEVAL indicators (i.e. you are poor if you suffer from either a low income or from deprivation), the multidimensional poverty rate results become similar to those obtained from the IPMM method (81% vs 82%). It should be noted that neither the MMPM method nor the IPMM⁶⁹ index, have included access to information as a deprivation measure. If they had then, the union multidimensional poverty rates would be even higher – circa 90%.

The IPMM method shows the highest prevalence of the vulnerable by income group (8%) and the consensual method shows the highest prevalence of the vulnerable by deprivation (38%) (Table 5.7). Moreover, the consensual method shows that half of the Mexican population were suffering from three or more social deprivations in 2012; a similar proportion is of two or more social deprivations, by the MMPM criteria and almost half of the population suffers four or more deprivations, by the IPMM criteria. However, it is necessary not only to evaluate the deprivation rates, it is also important to decompose these scores and evaluate the contribution of each type of social deprivation to the overall poverty rate (Figure 5.10).

⁶⁹ Access to a computer (or internet) at home, as one of the sub-indicators of the deprivation indicator in access to information, was not included in the IPMM SPSS syntax before 2012 (Boltvinik, 2013c; EVALUA, 2014).

Table 5.7 External validity for the consensual method, using different income and deprivation groups by different methods

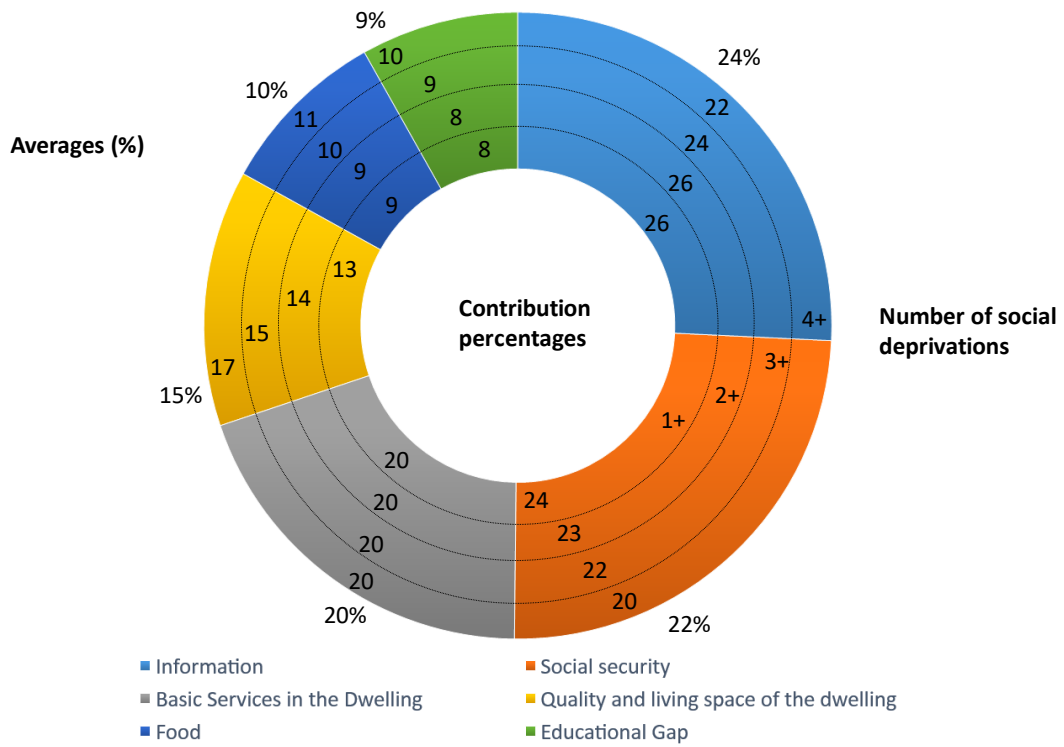
Poverty indicators	Percentage of poor by poverty methods		
	Consensual Method	MMPM method (CONEVAL)	IPMM method
Multidimensional poor	47	46	82
Intersection approach	47	46	65
Union approach	90	81	82
Vulnerable by income	1	6	8
Vulnerable by deprivation/UBN	38	29	12
One deprivation/UBN and more	89	75	77
Two or more deprivations/UBN	71	49	73
Three or more deprivations/UBN	52	23	63
Four or more deprivations/UBN	33	8	45
Not poor	10	19	28

Source: Own elaboration and indicators were estimated based on the CONEVAL (2010) methodology; EVALUA's (2014) methodology and the consensual method (Gordon, 2006a; Gordon, 2010b; Gordon and Nandy, 2012) applied to Mexico, with data information provided by the 2012 MCS ENIGH survey.

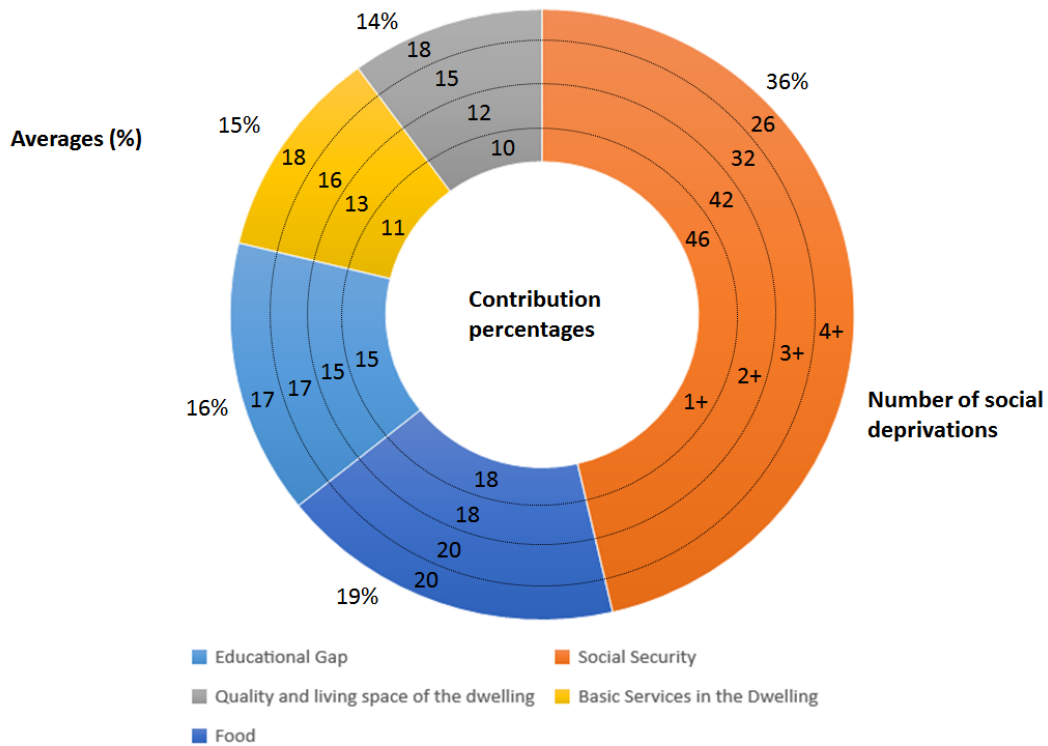
Figure 5.10.1 shows deprivation rates by scores (accumulated number of social deprivations experienced) and types of social deprivations, obtained from the consensual method. The highest deprivation prevalence is a lack of access to information (24%); followed by social security deprivation (22%) and deprivation of access to basic services in the dwelling (20%).

By contrast, the MMPM CONEVAL's official poverty method shows that deprivation of access to social security make the greatest contribution to the overall deprivation rate (36%, see Figure 5.10.2); followed by food deprivation (19%). This suggests that some people in Mexico are still suffering from food insecurity and alimentary poverty.

Figure 5.10. Contribution percentages by scores and types of social deprivations for: 5.10.1. The Consensual Method



5.10.2. The MPM CONEVAL's official poverty method in Mexico



Source: Own elaboration with indicators estimated based on the CONEVAL (2010) methodology and the consensual method (Gordon, 2006a; Gordon, 2010b; Gordon and Nandy, 2012) applied to Mexico.

5.13 The patterns of poverty by population groups, according to the consensual method and CONEVAL's MMPM method

The patterns of poverty were estimated for the Mexican population, based on a comparison of two poverty measurement approaches, the consensual method (Gordon 2006a; 2010b; Gordon and Nandy, 2012) and the CONEVAL's (2010) MMPM method. The patterns of poverty are examined using both the poverty rates and bivariate logistic regression modelling. Different sociodemographic characteristics are used to calculate the poverty rates and odds, based on previous studies by CONEVAL (2013a; 2013b).

Thus, the poverty rates and the odds ratio (OR) are shown in Table 5.8 and the patterns of poverty will be described as follows:

a) Gender

Women and men in Mexico have similar poverty rates (47%) and similar risks of poverty. Studies carried out by Damián (2011) and CONEVAL (2013b) have shown that gender disparities are being reduced in Mexico. Furthermore, both methods, the consensual approach and the MMPM method, confirm this gap reduction. However, it should be noted that both methods measure inter-household poverty rather than intra-household poverty, so the gender poverty gap may be wider than these results show.

b) Age groups

Children aged 0 to 17 years have the highest multidimensional poverty rates and risks of poverty in Mexico, according to both the consensual method and the MMPM poverty methodology. Children have a poverty rate of 56%, according to the consensual method and their risk of being multidimensional poor is 2.3 times larger in comparison with the reference group (65 years and more), with everything else being held constant. Similar results were obtained from the official MMPM index with a 54% poverty rate and 2.2 OR, for the risks of children being multidimensional poor.

Table 5.8 Poverty rates (%) and the logistic odds of being poor in Mexico, 2012, for the consensual approach and the CONEVAL's measure

Sociodemographic characteristics		Multidimensional poverty measurement methodologies					
		Consensual approach			CONEVAL MPPM		
		%	Odds	Sig.	%	Odds	Sig.
Gender	Women	47	1.0	*	46	1.0	*
	Men	47	1.0	*	45	1.0	*
Age Group	0-17	56	2.3	*	54	2.2	*
	18-64	42	1.7	*	41	1.7	*
	65+	48	1.0	*	46	1.0	*
Locality	Rural	78	3.8	*	61	1.4	*
	Urban	38	1.0	*	41	1.0	*
Ethnicity	Indigenous	62	1.6	*	58	1.6	*
	Non-indigenous	42	1.0	*	41	1.0	*
Disabled People at Home	At least one person	54	1.2	*	52	1.1	*
	No person	45	1.0	*	44	1.0	*
Household Size	More than or equal to five members in HH	55	1.4	*	54	1.5	*
	Less than or equal to four members in HH	39	1.0	*	37	1.0	*
Level of Dependency Ratio	High dependency	56	2.4	*	54	2.2	*
	Low dependency	33	1.0	*	33	1.0	*
Gender of Head of HH	Woman	45	0.9	*	45	0.9	*
	Man	47	1.0	*	46	1.0	*
Educational Attainment of Head of HH	Incomplete primary or less	71	4.3	*	67	4.0	*
	Complete primary or secondary incomplete	56	2.5	*	53	2.2	*
	Complete secondary or higher	31	1.0	*	31	1.0	*

Source: Own calculation using data from the MCS of the ENIGH 2012 survey and poverty measures calculated based upon Gordon (2006a; 2010b); Gordon and Nandy (2012) and CONEVAL (2010).

These results are consistent. Children aged 0 to 17 years are the poorest age groups in Mexico. One in two children live in multidimensional poverty in Mexico, i.e. they do not have access to social rights and do not have adequate resources to satisfy their basic needs (UNICEF and CONEVAL, 2013; 2015). A recent joint study by UNICEF and CONEVAL (2015) shows that poor children suffered on average from two social deprivations.

The multidimensional poverty rates for the older age group (65+) were also higher than those aged between 18 to 64 years, 48% vs. 42%, using the consensual method and 46% vs 41% using the MMPM method. However, the logistic regression results showed a higher risk of multidimensional poverty for the 18 to 64 age group once all other variables are held constant.

Poor households in Mexico use a range of survival strategies, for example working age households' members often work longer hours sometime in very precarious conditions, or join the labour market at an earlier age (González de la Rocha, 2006; Saraví, 2009). Additionally, working in the informal economy often results in both a lack of social security entitlement and low household incomes (Oliveira, 2006; Tokman, 2007; ILO, 2009).

c) Locality

Multidimensional poverty rates and the risks of being multidimensional poor, are much higher in rural Mexico. The poverty rate for people living in rural areas is 78% vs. 38% in urban areas, based on the consensual method and 61% vs 41% using the MMPM method

Access to social services is often restricted in rural Mexico (CONEVAL, 2013a) and wages in rural areas are often both low and precarious, with 66% of workers that receive a daily minimum wage concentrated in less urbanized areas (Escobar-Toledo, 2014).

d) Ethnicity

Indigenous people in Mexico have higher multidimensional poverty rates and are at greater risk of being poor. The consensual method shows that 62% of indigenous people are poor compared with 42% for non-indigenous people – the MMPM method produces similar results (58% vs. 41%, respectively).

Indigenous people suffer severe disadvantages that explain their increased probability of living in multidimensional poverty. According to CONEVAL (2014c), the indigenous population is characterised by residence in rural areas; lower educational attainment; limited access to labour markets and other sources of formal employment adequately remunerated and with basic benefits, etc.

e) Disabled people at home

The results from both methodologies are similar. More than half of disabled people are at risk of poverty, 54% based on the consensual method and 52% on the basis of CONEVAL's methodology. Vite-Pérez (2012) argues that there are specific population groups that show greater vulnerability to being poor, including disabled people, when there is a breakdown of social ties⁷⁰, due to a lack of a comprehensive social protection system.

f) Household size

The odds of being multidimensional poor were estimated for two different household sizes. The risks of being multidimensional poor for people that live in households with five members or more is about 1.4 times higher than people living in households with four members or fewer, which is the reference category.

⁷⁰ The term disaffiliation refers to the breakdown of social ties, from the sociological perspective (Vite-Pérez, 2012).

The consensual method gives the poverty rate for people living in households with five or more members as 55%, which is virtually identical to the MMPM poverty estimate of 54%. CONEVAL (2013a; 2013b) has shown, in previous studies, that large family size and household composition are factors which influence the vulnerability for households.

g) Level of dependency ratio

The consensual method and the MMPM official method also show similarities in the risks of being multidimensional poor, when there is a high dependency ratio in the households. The poverty rate is 56% for high dependency ratios, from the consensual method vs. 54% from the official method. Low dependency ratios show a poverty rate of 33% for both methodologies.

CONEVAL (2012c) confirms that a high dependency ratio is a risk factor for people falling into poverty. According to CONEVAL (2012c) there are 63 dependents, among the total population, per hundred working age people. However, the dependency ratio changes significantly, depending on household size and composition and the head of household's poverty status. For instance, there is a higher dependency ratio where the head of household is poor, compared with those where the head of household is not poor. There are also higher dependency ratios in extended families (CONEVAL, 2012c).

h) Gender of the head of household

The results obtained in this study have shown that there are no differences in poverty prevalence, between men and women headed households. Moreover, the probabilities of being poor are similar according to the estimates obtained from both the consensual method and the MMPM official method.

CONEVAL (2012c) states that the gap between male and female-headed households has decreased in Mexico, especially between 2008 and 2012.

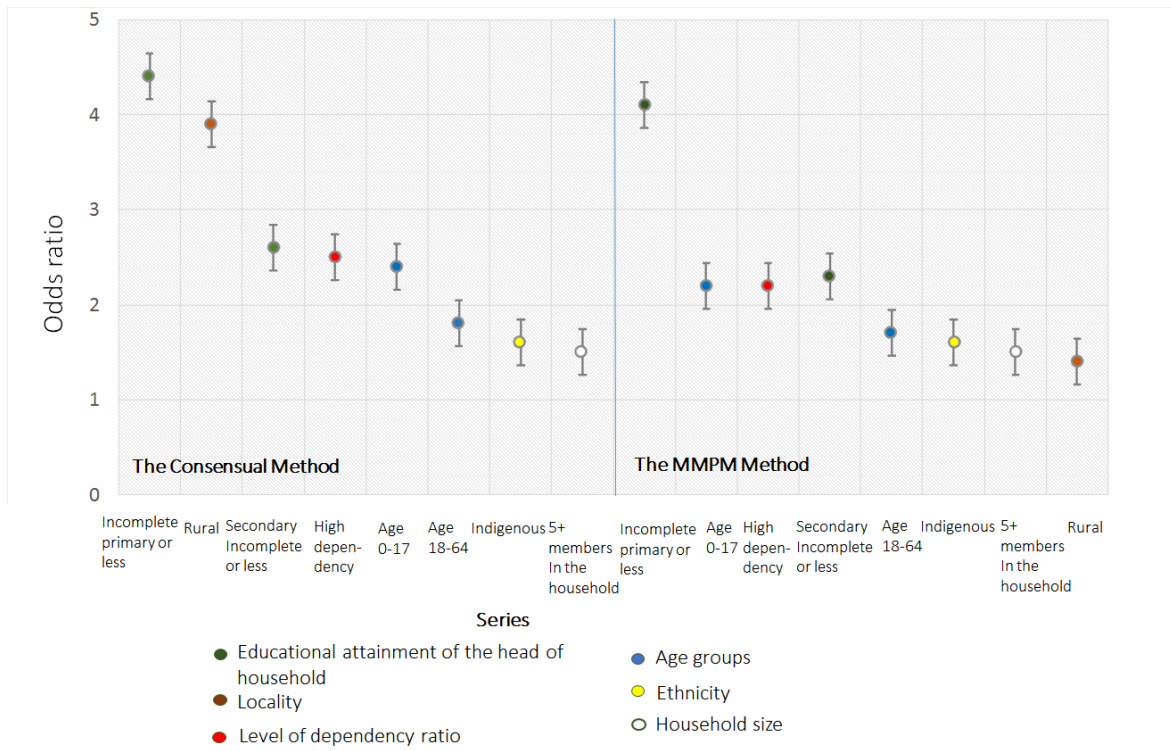
i) Educational attainment of the head of household

Mexicans have a high probability of being multidimensional poor when they have low educational attainment. People that achieved incomplete primary (or below) educational attainment in 2012 have a high poverty rate, of 71% (consensual method) compared with 67% (MMPM official method). The consensual method shows that the OR of being multidimensional poor are 4.3 compared with having completed secondary education or higher (the reference category). The MMPM method shows similar results. There is also a high risk of experiencing multidimensional poverty amongst people who completed primary education but did not manage to complete secondary (or equivalent) education. The poverty rate is 56% (consensual method) compared with 53% (MMPM official method).

ECLAC and United Nations (2010) state that low educational attainment is a high risk for young people to fall into poverty, because they can only get poorly paid and low quality jobs. Low educational attainment is also due to low investment in human capital, inequality and child labor and the indigenous population are especially vulnerable (OREALC-UNESCO, 2013).

Figure 5.11 (above) shows the confidence intervals for the highest odds ratio only, which reflects similar patterns of poverty in overall terms, resulted from the application of the consensual method (Gordon, 2006a; 2010b) to Mexico and its comparison with the CONEVAL's (2010) official multidimensional poverty measurement methodology (MMPM). Both methods identify the same population groups as being at higher risks of suffering from multidimensional poverty. However, there are some differences in the patterns of poverty, particularly with regard to the extent of rural poverty compared with urban poverty.

Figure 5.11 Confidence intervals for the highest odds ratio, of experiencing multidimensional poverty in Mexico, 2012, by the consensual method and by the MPPM official method



Source: Own calculation using data from the MCS of the ENIGH 2012 survey to show patterns of poverty based upon Gordon (2006a; 2010b) and Gordon and Nandy's (2012) approach, for evaluating the CONEVAL's (2010; 2013a) methodology.

5.14 Conclusions

The empirical analysis carried out in this chapter shows that different poverty measurement methods give different results. Consequently, there will be implications for designing and implementing antipoverty policies. Based on empirical evidence shown in this study, the following research questions can be answered:

1. What is the best way to measure poverty?

The best way to measure poverty should use an objective multidimensional poverty measurement that reflects the social consensus, through a democratic perspective, i.e.

what the society recognises as the necessities of life, to achieve a decent way of living, based on Townsend (1979) and Mack and Lansley (1985). Social needs, then, should be captured through objective methods in the first instance, through surveys of socially perceived necessities. Secondly, these surveys should be carried out continuously, at least every five years or so, to ensure that poverty thresholds and social needs have not changed.

Furthermore, the best way to measure poverty is through the estimation of multidimensional poverty, by combining social deprivations (which means the violation of social rights in Mexico) and low income. The best way is by applying multivariate statistical techniques because it can achieve valid, reliable and additive poverty measures. The components of the multidimensional poverty index, estimated on the basis of the consensual method's criteria, met these statistical tests. The consensual method (Gordon, 2006a; Gordon and Nandy, 2012) has allowed this research to obtain an objective poverty threshold for Mexico, because it was based on robust statistical techniques, by minimizing subjective criteria, such as experts' opinion.

For these purposes, the Gordon (2006a; 2010b) and Gordon and Nandy's (2012) consensual method was applied to the Mexican case to update needs as well as poverty thresholds, using the 2007 EDUMP survey microdata. The socially perceived necessities approach has informed us about current standards of living in Mexican society. The socially perceived necessities have been shown to be consistent with the social rights-based approach, which is defined by the LGDS law in Mexico (DOF, 2004). Both methods capture social needs and services to which people should be entitled, based on the social consensus. For instance, the sub-indicator of deprivation in access to a computer or internet at home, has been included in the measurement of multidimensional poverty from the consensual method's perspective. Thus, the consensual approach provides an accurate picture of current poverty and deprivation in Mexico.

The second research question to be answered is:

1.1. Do multidimensional poverty measurement methodologies produce divergent estimates of the extent and patterns of poverty? And with what effects for anti-poverty policies?

The results obtained from the consensual method show that the combination of low income and social deprivations, applied in Mexico resulted in a similar multidimensional poverty rate to that obtained by CONEVAL's MMPM poverty measure (47% vs 46%).

The analysis of the patterns of multidimensional poverty also show similarities between the consensual method and the CONEVAL'MMPM method. The most vulnerable sociodemographic groups, are: children aged 0-17 years; people living in rural areas; people living in households with high dependency ratios and those who are education deprived. Moreover, poverty estimates, obtained from both methods, reveal that similar sociodemographic groups are at risk of being multidimensional poor (with the exception of those in rural areas).

The consensual method showed a higher probability of being multidimensional poor in rural areas. This situation is a significant issue and should be highlighted. Rural areas have not been adequately included in the design and implementation of antipoverty policies and people have particularly been excluded from social and public services in these areas. New needs and new thresholds included in the consensual measurement of multidimensional poverty, explain some of these differences, particularly, the inclusion of more generous thresholds, as identified by respondents to the 2007 EDUMP survey, regarding the dimensions of deprivation including the quality and living spaces (flooring, walls and roofing materials) and basic services in the dwelling (access to piped water into the dwelling; water supply 24 hours, etc.). Also, the inclusion of an information deprivation indicator (computer or internet; TV and telephone), can be considered as an advance in the multidimensional measurement of poverty.

Overall, the Mexican population recognise the need for access to the internet as part of the country's social and economic progress. However, the majority of the population

(68%) do not have such access and this results in high levels of social deprivation, in conjunction with the low levels of social security coverage.

A comparison of the poverty picture using the union approach showed that there is a higher prevalence measured by the consensual method, 90% vs. about 80% using the two official multidimensional poverty measurement methodologies (the CONEVAL's MPPM and the IPMM indexes). The difference is largely explained by the inclusion of information deprivation in the consensual methods deprivation index.

It is deduced from this analysis that the intersection approach to poverty aims at the design of targeted antipoverty policies, such as social assistance programs or conditional cash transfers (CCTs). However, the poverty figures, estimated in this study, highlight a significant problem with current Mexican antipoverty policies. This study has clearly demonstrated that is unlikely to be sufficient to target only the extreme poor, selected with a minimum wellbeing threshold, for receiving social assistance programs, such as the Oportunidades social program in Mexico (DOF, 2013). A greater social policy effort is needed to assist the specific vulnerable groups who are at greatest risk of multidimensional poverty.

In a complementary way, the union approach to poverty measurement highlights that the large majority of people suffer from either a low income or from social deprivation. This illustrated the need for improving the affordability of social and public services for all, as a universal character of social policy implementation. This is because, social deprivations mean the violation of citizens' entitlements, as defined in the Mexican Constitution (DOF, 2014).

On the other hand, it is acknowledged in this study that the CONEVAL's social rights-based approach represents a breakthrough in Mexico and Latin America. For the first time, an official multidimensional poverty measure overcame unidimensional perspectives of poverty (CONEVAL, 2010). However, there are some criticism resulting from this study regarding the CONEVAL MPPM poverty measure:

1) Firstly, there are no scientific criteria established to define the updated poverty thresholds, as well as to include new social needs. The current social context is not adequately reflected in the CONEVAL's (2010; 2013a) MMPM poverty measurement. CONEVAL (2010) criteria to update the multidimensional poverty measure is the application of legal norms. However, the Mexican Constitution (DOF, 2014) and the LGDS (DOF, 2004) do not establish these norms (poverty thresholds), for specific sub-indicators of social deprivation (e.g. flooring, walls and roofing materials, etc.).

CONEVAL (2010) has appealed to experts of specialized public institutions to define these thresholds. It is clear that specialized public institutions do not reveal the current standards of living nor have they carried out updated evaluations, of social living standards, as has been shown through the comparison of the results in this chapter, using the 2007 EDUMP survey microdata.

2) Secondly, CONEVAL (2010) includes the indicator of deprivation in access to health care into the overall social deprivation index. CONEVAL (2013a) has not tested it for validity, reliability and additivity as Gordon (2010b) recommended in his work for CONEVAL (2010). A better health care deprivation indicator needs to be developed to fulfil the LGDS requirements for multidimensional poverty measurement.

3) Access to a computer (or internet) at home is a socially perceived necessity captured in the 2007 EDUMP survey. CONEVAL (2013a) did not include this social necessity in the measurement of multidimensional poverty, nor for the estimation of social deprivations. However, access to the internet is already a social right for all Mexican citizens, as defined in the Mexican Constitution in 2013 (DOF, 2014). It has been included in this study, as part of the deprivation measure and it was found to be a reliable, valid and additive indicator. Unfortunately, the 2012 MCS module of the ENIGH survey does not include specific questions that can allow us to adequately capture the extent of internet access or the frequency of this access, either in a public or private way; or via educational centers; libraries; computer centers, etc. Therefore, CONEVAL and INEGI should make efforts to include appropriate questions, to obtain a more reliable indicator to measure social deprivation in access to information.

Chapter 6

Results II: The Europe 2020 poverty measurement applied to Mexico

6.1 Introduction

The relevance of applying the EU2020 combined poverty measure to the Mexican socio-economic context, is to verify that this measure of multidimensional poverty represents the essential elements, of the social inclusion model. The purpose is to evaluate the methodology and corroborate the empirical content, in order to assure if this measure reflects the social rights of Mexican citizens, for them to satisfy their basic needs and participate in society. Thus, the results will reveal if the EU2020 poverty measure, offers a similar picture of multidimensional poverty to the estimates, provided by the Mexican multidimensional poverty measurement methodologies.

Furthermore, the EU2020 poverty measure and its component are evaluated, based on the broad social inclusion framework and current criticisms of this index (Maître et al, 2013). For instance, according to Lustig (2004), social exclusion refers not only to unemployment but also to other conditions of poverty in Mexico, such as the lack of access to social services. For this purpose, previous findings and explanations of social exclusion in Mexico, will help to illuminate the results obtained in this chapter. The cross-sectional data modules and surveys, MCS⁷¹ and ENIGH 2012⁷², are used in this research to calculate and apply the EU2020 poverty measurement criteria to Mexico.

This analysis will help answer the main research question, as well as one of the specific research questions:

- 1) What is the best way to measure poverty to inform social policy?

⁷¹ MCS is the Module of Socioeconomic Conditions of the National Survey of Income and Household Expenditure (ENIGH, 2012).

⁷² The 2012 ENIGH survey is used to obtain the IPMM estimates of multidimensional poverty, because its estimation of disposable and equivalent income, requires information on some basic expenditures that are only available from this survey in Mexico.

2) Do multidimensional poverty measurement methodologies produce divergent estimates of the extent and patterns of poverty? And with what effects for anti-poverty policies?

6.2 Estimating the at-risk-of-poverty rate, material deprivation and low work intensity households for Mexico

The three SI indicators: a) the number of people who fall below the 60% of national equivalised median income (AROP); b) the number of people in low work intensity households (LWI) and, c) severe material deprivation (SMD), are combined based on the union approach to obtain the EU2020 poverty measure⁷³.

6.2.1 At-risk-of-poverty rate (AROP) applied to the Mexican context

At-risk-of-poverty rate (AROP) is the share of all persons with an equivalised disposable income below 60% of the national equivalised median income (EC, 2009). The official indicator to analyze the risk of poverty in the EU, 60% of the national equivalised median income, indicates that 26% of the population in Mexico were income poor in 2012.

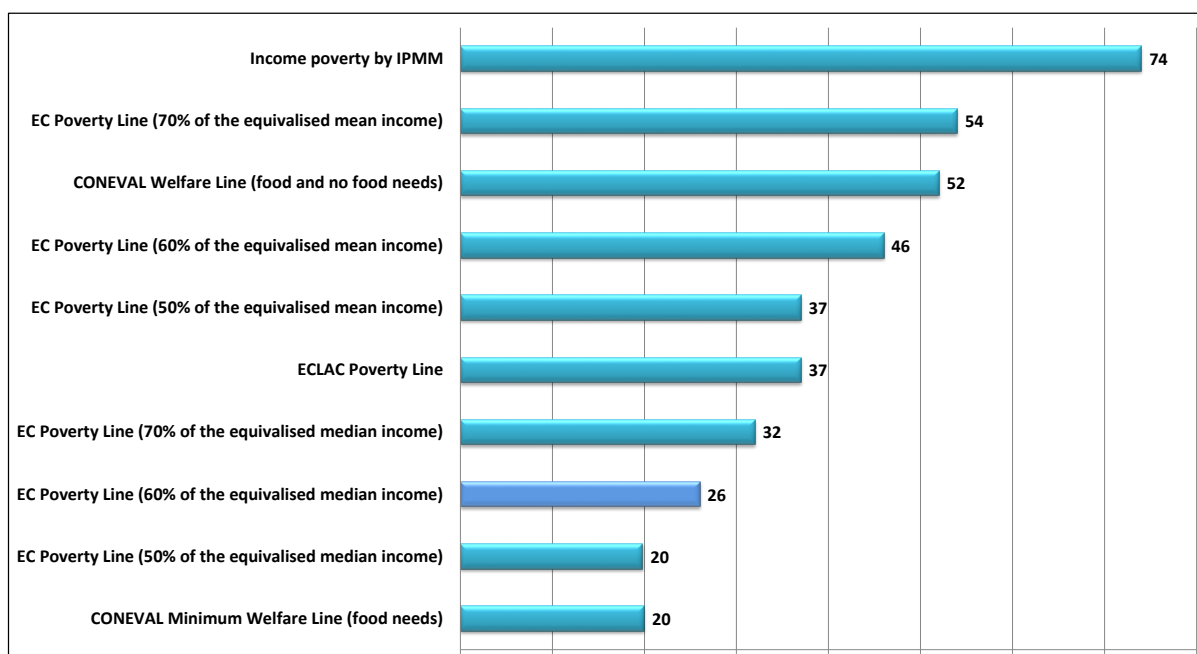
Other poverty rates were applied to Mexico, for comparative purposes. Figure 6.1 shows that the rate of poverty in Mexico in 2012 is only 20%, taking into account a very restrictive criterion, the 50% of the national equivalised median income and the CONEVAL minimum wellbeing threshold (MWT)⁷⁴. However, it increases considerably when higher income thresholds are used. For instance, AROP measured with a 70% equivalised mean income threshold, results in a similar poverty rate to the normative CONEVAL wellbeing threshold (WT), about 53%, on average.

⁷³ Indicators were calculated based on description provided in Chapter 4.

⁷⁴ Appendix 6.1 describes the methodology to calculate the sort of AROP poverty measures. The value of the income poverty lines, are described in Appendix 6.2.

Blakely and Kawachi (2001) state that the criteria of percentages applied to the mean, of the equivalised household income, cause substantial variations on poverty levels and differ from those that are applied to the median, of the equivalised income, showing in general terms, higher levels of poverty. When income inequality increases, the median income decreases, reflecting an association for any positively skewed shape of the income distribution. Thus, mean and median income reflects the total income, but median also reflects the income distribution. Blakely and Kawachi (2001) argue that with a right skewed multi modal income distribution, the mean may be a better measure of the central tendency than the median⁷⁵.

Figure 6.1. Percentage of people living below the income poverty line, different criteria, Mexico 2012



Source: Own elaboration based upon methodological criteria of EC (2014b); and data information provided from Boltvinik (2012, p 9), CONEVAL (2013a, p 22) and CEPAL (2013, p 19).

High inequalities in Mexico cause the AROP poverty measure, estimated by the mean, to increase and vary substantially in comparison with the criterion of the median (Figure 5.7, Chapter 5). This is because relative income poverty lines are highly dependent on

⁷⁵ This is the case of Mexico's income distribution (Figure 5.7, Chapter 5).

income inequality (Ringen, 1988). So, if higher mean income thresholds are used such as 60% and 70% cut-offs, this results in a prevalence of poverty of 46% and 54%, respectively. Mexico has both extreme low levels of income for some people and extreme high levels of income for a few⁷⁶. Thus, income poverty indicators need to reflect, as far as possible, this social reality.

On the other hand, the 50% of the national equivalised mean income criterion, shows that 37% people were living in income poverty in 2012. This is a higher risk of poverty in comparison with the official criterion of the EU, 60% of the national equivalised median income, which only produces a poverty rate of 26%.

Reductions in measures of relative poverty do not mean increases in absolute living standards of poorer households. The reason may be because incomes that are towards the bottom of the income distribution, fell to a lesser extent than those that are in the middle of the distribution. A unique focus on relative poverty measures gives an incomplete picture of the changing material living standards of low-income households (Cribb et al, 2012). Bradshaw and Mayhew (2010a) identify several limitations of the relative income measure. They argue that there is an arbitrary choice of the 60% of the median equivalised income, that it does not relate to any understanding of need.

However, the PL-ECLAC⁷⁷ also identifies 37% of the Mexican population as poor. The ECLAC income poor are identified on a normative basis, by constructing a food basket. The cost of non-food items is obtained through a factor that multiplies up the indigence poverty line (food poverty line). However, the criteria to update this factor is according to the evolution of consumer prices, for rural and urban areas, although the budget standards structure is the same since the 1980s (CEPAL, 2013): “*the information on the structure of household consumption, both food and other goods and services came from the household budget surveys conducted in the countries during the 1980s*” (CEPAL,

⁷⁶ In Mexico, the Gini coefficient was about 48% in 2012, the highest amongst the OECD countries (OECD, 2014a).

⁷⁷ ECLAC, the Economic Commission for Latin America and the Caribbean, uses a normative poverty line (PL-ECLAC).

2013, p. 54). Boltvinik (2013a) argues that ECLAC (CEPAL-PNUD, 1992; CEPAL, 2013) has used the population stratum with the lowest income, whose purchases of food place them only just above the minimum nutritional requirements, in order to obtain the Engel coefficient and estimate the PL.

Overall, the highest prevalence of income poverty is presented by the criteria of full normative baskets, particularly the official Mexican poverty lines, the CONEVAL WT and the PL-IPMM⁷⁸. The PL-IPMM shows that 74% of the population were living in income poverty, in 2012. However, the levels of poverty obtained from the official poverty line (CONEVAL WT) differ considerably from the PL-IPMM criterion.

Atkinson et al (2002) defined some principles for the construction of the EU Social Inclusion indicators. The first principle was that “*an indicator should identify the essence of the problem and have a clear and accepted normative interpretation*” (p 21), which means to have a high face validity and focus attention on the genuine problems of poverty. Also, one of the objectives of SI is to increase the standard of living of a specific population, thus, extreme low levels of income in poor countries must be identified accurately (Atkinson et al, 2002).

Furthermore, income poverty rates using different methods and threshold values are compared in Table 6.1, in Mexico in 2012. Table 6.1 shows the effect that the OECD modified equivalence scale has on the poverty rate in Mexico. Disposable income has been harmonised, based on the Canberra’s criterion⁷⁹, so as to compare like with like income when comparing the EU AROP results with the CONEVAL WT and MWT thresholds, and the PL-IPMM income poverty measure.

There is no substantial variation between the official poverty lines when income is harmonised using the Canberra criteria. (Table 6.1, Columns A and B). The minimum

⁷⁸ PL-IPMM is the income poverty line defined by the Integrative Poverty Measurement Methodology (IPMM).

⁷⁹Chapter 4 shows the methodological criteria to calculate disposable income and the equivalence scales used by each poverty measurement methodology.

wellbeing criterion established by CONEVAL (MWT) does not show any changes and the CONEVAL (WT) results only change by 1% (from 52 to 53%). Moreover, the PL-IPMM poverty line decreases in four percentages points, from 74% to 70%.

Table 6.1. Income poverty by different criteria and results presented, by harmonised households' disposable income and equivalence scales, Mexico 2012

Income Poverty Line / Methodological criteria	Prevalence of poverty (%)		
	No harmonisation (A)	Harmonised by disposable income (B)	Harmonised by disposable income and OECD modified scales (C)
At-risk-of poverty rate (AROP 60% of the equivalised median income)	26	26	26
CONEVAL minimum wellbeing threshold (MWT)	20	20	9
CONEVAL wellbeing threshold (WT)	52	53	30
IPMM income poverty line (PL-IPMM)	74	70	57

Source: Own elaboration based upon (Boltvinik 1992; EC, 2009, 2014b; EVALUA, 2009a, 2014; CONEVAL, 2010; 2014b).

Note: Equivalence scales are displayed in Appendix 4.4 (Chapter 4) by considering each poverty methodology criteria, addressed in this research.

The use of different equivalence scales also determines the figures of poverty. Table 6.1 (Column C) shows how the prevalence of income poverty varies if household income is harmonised according to the Canberra criterion (Canberra Group, 2011) and if the OECD modified scales are applied to the different methodological criteria of income poverty. The percentage of the income poor according to the MWT CONEVAL's threshold decreases from 20% to 9%. The first mentioned poverty prevalence is based on CONEVAL's income criterion and equivalence scales (Santana, 2009); the second one

applies to the harmonisation described above. Besides, if we consider results obtained from the WT CONEVAL's threshold, then the prevalence of poverty decreases 22 percentage points, from 52% to 30%, once income and equivalence scales have been harmonised. Additionally, there is also a substantial reduction if the income poor by the PL-IPMM method is harmonised by disposable income and by the OECD modified equivalence scales. It is shown that the prevalence of poverty in this case is reduced from 74% to 57%.

Bradshaw et al (1987) acknowledge that budgets standards incorporate elements related to social participation because income can be adjusted according to the size and composition of households (Boltvinik and Marín, 2003). Budget standards approaches based on income equivalisation scales are more reliable than an arbitrary equivalisation scale such as the modified OECD scale (Bradshaw et al, 1987).

Table 6.2. Gap of Poverty, according to different income poverty criteria Mexico, 2012

Income Poverty Line	Poverty gap
AROP (60% of the equivalised median income)	0.43
CONEVAL minimum wellbeing threshold (MWT)	0.42
CONEVAL wellbeing threshold (WT)	0.44
IPMM income poverty line (PL-IPMM)	0.51

Source: Own elaboration based on Boltvinik (1992); CONEVAL (2010; 2015); EC (2014b); EVALUA (2014), using data from the MCS 2012.

Note:

¹These estimates are based on the method's criteria regarding to the equivalisation of income.

Table 6.2. shows different income poverty methods and estimates of their poverty gap for the Mexican population in 2012. On average, income poor population show a poverty gap of 0.40, when the AROP income poverty measure and the CONEVAL minimum wellbeing thresholds (MWT) are considered. The CONEVAL wellbeing threshold (WT) shows a poverty gap of 0.44. In contrast, the PL-IPMM poverty gap is the highest (0.51). This may be because the PL-IPMM poverty measure is constructed on a complete

normative basket of basic items and services⁸⁰, so it is fixed at a higher level than CONEVAL and AROP thresholds.

Depth of poverty provides additional information for the implementation of antipoverty policies. For instance, some population groups can show a high poverty prevalence but low poverty gap, i.e. when groups of poor people are just below the poverty line; while other groups may present a low poverty prevalence but a high poverty gap (World Bank, 2005). The last mentioned situation is presented for the population aged 60 years old and more in Table 6.3. This population group presents a prevalence for income poverty of 13% and a poverty gap of 0.44. This gap is placed above the median income poverty gap of 0.41, of the AROP and the CONEVAL MWT; but equal to the median income poverty gap of the CONEVAL WT. We should consider that this population group represents only 9% of the total population in Mexico (INEGI, 2014).

Similarly, children aged 0-17 years (data information is disaggregated by age group in Table 6.3), show a relatively high prevalence of income poverty (AROP, 60% Mdn.) than other age groups. Also, children show high levels of poverty gap, above the CONEVAL MWT poverty gap, particularly for children aged 0-5 years and 6-11 years.

Furthermore, those population groups whose depth of poverty is considerably higher than the median poverty gap are also rural and indigenous populations. Rural and indigenous population also show a relative high prevalence of income poverty.

Indigenous population groups show the highest income poverty gap. Their income poverty prevalence of 38% should not be underestimated, as these population groups represent 11% of the total population in Mexico⁸¹ (CONEVAL, 2014c).

⁸⁰Boltvinik (2011; EVALUA, 2104) applies the Boltvinik-Marín's (2003) equivalence scales to determine the PL-IPMM through a linear regression equation for its application to the ENIGH 2012 data survey. Boltvinik (2011) classifies goods and services as individual and familiar items. Those items that are familiar are in turn classified as fixed and variables. The first mentioned do not increase when family size also increases, and the last mentioned increase, but proportionally less than increases in the household size. Chapter 4 shows the methodology to estimate the CONEVAL (2010) and Boltvinik (1992) normative baskets.

⁸¹The indigenous population is identified according to the following question: According to your culture, do you consider yourself an indigenous person? (INEGI, 2013). The ILO organization states that the

Table 6.3. Prevalence and income poverty gap by socio-demographic characteristics, Mexico 2012

Socio-demographic characteristics	AROP (60% Mdn)	
	Prevalence (%)	Poverty gap
Gender		
Women	10	0.43
Men	10	0.43
Age groups		
0-17	27	0.44
0 – 5	28	0.45
6 – 11	29	0.45
12 - 17	24	0.42
18 - 59	10	0.41
60 - ...	13	0.44
Locality		
Rural	22	0.46
Urban	6	0.41
Ethnicity¹		
Indigenous	31	0.47
Non indigenous	8	0.40

Source: Own elaboration based on the EU2020 poverty measure methodology (EC, 2014b), using data from the MCS 2012.

Notes:

¹ There are 5% missing values for the ethnicity variable. Only valid cases were considered to obtain the figures of poverty.

² The shaded cells highlight the demographic groups with relatively high income poverty rates and relatively high poverty gaps.

On the other hand, women and men do not show differences in their income prevalence and their poverty gap. Also, working age population show similar characteristics to men and women, when both income poverty prevalence and poverty gap are taken into account.

awareness of indigenous identity should be regarded as a fundamental criterion for identifying the indigenous population (OIT, 1991).

The poverty gap of the AROP measure varies little by age groups or by gender (Table 6.3) – all of them show a poverty gap around 0.43, which is similar to the estimate for the whole population (Table 6.2). It should be noted that the AROP 60% median income poverty threshold is similar to CONEVAL's minimum wellbeing threshold, in terms of the prevalence of poverty and the poverty gap. The CONEVAL poverty gap is 0.42 for the minimum wellbeing threshold; 0.44 for their wellbeing threshold and 0.51 for the PL-IPMM income method (Table 6.2) (CONEVAL, 2015; EVALUA, 2014). The AROP 60% median threshold has been criticised in this research as a very restrictive threshold, compared with budget standards measures, and will be also assessed for reliability later in this Chapter.

6.2.2 Low work intensity (LWI)

Firstly, the work intensity (WI) mean was estimated for the working age population, 18 to 59 years old, with an average of 83% in Mexico. However, based upon the Mexican law, we can consider the working age people between 15 and 64 years old (DOF, 2012, Art. 22), that shows for this case a WI mean of 85%. Additionally, the WI mean of people at risk of poverty is estimated at 70%. Those who are not poor by this criterion show a higher WI mean of 86%.

Ward and Ozdemir (2013) has identified the people living in LWI⁸² in the EU, by associating the levels of work intensity with the official relative income measure. These estimates are based on the proportion of people aged 18-59 years old for poor and non-poor populations, by categories of work intensity. Results are provided in Table 6.4 for the EU27 and the UK. Proportions were also estimated for Mexico (people aged 15-64 years), with a group breakdown by poor and non-poor status.

⁸² Chapter 4 describes the methodology to estimate LWI.

It can be observed that the EU27 displays the highest proportion of income poor people (AROP) vs. those non-poor people, when LWI is placed within the range 0-0.2 of work capacity. Thus, 20% is the threshold identified by the EC (2014b), for the Europe 2020 target, in order to measure LWI across the EU27 state members. It was adopted under this predefined correlation criterion. This threshold was chosen by reference to the risk of poverty, for those who tend to live in households with LWI across the EU27 countries (Ward and Ozdemir, 2013).

Table 6.4. At Risk of Poverty Rate (AROP) by Low Work Intensity (LWI). Bands in Mexico in 2012 compared with the EU27 and the UK

Strata of WI	AROP (60% Mdn)			
	EU27	UK	Mexico	
	Poor	Poor	Poor	Non poor
0 < WI <= 0.20	53	34	57	43
0.20 < WI <= 0.30	39	41	53	47
0.30 < WI <= 0.49	28	21	36	64
0.49 < WI <= 0.5	20	15	34	66
0.50 < WI <= 0.99	8	8	22	78
0.99 < WI <= 1	6	4	14	86
WI > 1	nd	nd	17	83

Source: EU27 data information was taken from Ward and Ozdemir (2013, p. 12). And data calculated for Mexico from the MCS 2012, based on the EU2020 methodology (EC, 2014b).

Notes:

¹ nd means no data.

² The question that was identified in the MCS 2012 module for the calculation of the WI measure is: how many hours a week did you work the last month? The indicator of WI is estimated based upon the EC (2014b) methodology. However, the question in the module refers to the working time in the last month instead of all over the past year, as in the EC (2014b). The question in the module reflects a more flexible labour market conditions in Mexico (Negrete Prieto, 2012).

³ The EU27's estimation of LWI includes people aged 18-59 (EC, 2014b).

⁴ The shaded cells highlight that work intensity is different among the income poor and the non-poor population in Mexico. More than half of the poor people have low levels of work intensity (intensity \leq 0.30).

The LWI threshold was identified for Mexico as the WI strata of less than or equal to 30%. This is the criterion selected for Mexico, as more than half the population in the

0.20<WI<=0.30 strata, are also AROP income poor (Table 6.4.). Once this criterion is applied, the percentage of Mexican population experiencing LWI in 2012 is about 4% of the total population.

LWI in Mexico is very low as it does not reflect the labour conditions in Mexico. There are other detrimental labour market factors in Mexico, such as informality, child labour and precarious work (Arnold and Bongiovi, 2013; Mora Salas and Oliveira, 2012)⁸³.

The percentage of people living in households with LWI, fixed in less than 30% of the work capacity, is grouped by gender and age for the case of Mexico (Table 6.5). The most vulnerable population groups, living in households with LWI, are men with a prevalence of 54%. And if we look at the age groups, those who are between 18 and 59 years old, the working population are living in households that present LWI, with a prevalence of 59%. This result is much higher than for children and for people aged 60 years old and more.

Table 6.5. Percentage of people living in households with low work intensity (LWI<=30%) by gender and age, Mexico 2012

Socio-demographic characteristics	Percentage
Gender	
Women	46
Men	54
Age groups	
0-17	35
0 - 5	12
6 - 11	12
12 - 17	11
18 - 59	59
60 - ...	6

Source: Own elaboration based on the EU2020 poverty measure methodology (EC, 2014b), using data from the MCS 2012.

⁸³The EU2020 definition establishes to exclude those household with no working age people (Eurostat, 2013).

6.2.3. Assessing associations between the EU's LWI measure and other poverty measurement criteria

Ward and Özdemir (2013) state that people living in LWI households have a substantially higher persistent risk of poverty than other working age groups. Then, this approach aims to relate the measure of LWI with those households most at risk of poverty whose earnings are relatively low or non-existent (Ward and Özdemir, 2013). Maître et al (2013) used the EU-SILC 2009 survey to show that LWI presents the lowest pairwise intersection of dimensions of the EU2020 components with relative income poverty, among farmers and working class individuals. However, these social conditions may not be the case for economies such as Mexico where unemployment or LWI are only some of the aspects of employment vulnerability, i.e. there are more adjustment mechanisms that are interfering in the labour market (Tokman, 2007). Informality⁸⁴, child labour⁸⁵, flexible labour markets or outworkers represent some of these mechanisms (Arnold and Bongiovi, 2013). For instance, the magnitude of informal employment in Mexico is about 28.9 million, i.e. 58% of the total employed population in 2013 (INEGI, 2014).

The problem in labour markets, especially for the case of Mexico, is precarious work and the increased rate of subsistence self-employment, which also refers a set of conditions as poorly paid work, insecure, and unprotected work that prevent workers supporting a household (García Guzmán, 2012; Mora Salas and Oliveira, 2012). Particularly, Mora Salas and Oliveira (2012) highlight that the problem of precarious work has been

⁸⁴ILO (1972) introduced the concept of informal economy in the 1970's, highlighting the fact that unemployment was not the main problem in the developing world, but largely the lack of jobs with an adequate salary to ensure survival (Tokman, 2007). There are other theoretical approaches that explain informality in less developed countries, for instance, as a political strategy; poor workers are one of the aspects of the informal-sector, but do not represent the totality of this concept (Portes et al, 1989; Tokman, 2001).

⁸⁵The question in the MCS 2012 module of ENIGH asks people aged 12 years old and more about their working time. For the LWI indicator, people aged 15 years old and more were included according to the Mexican law, because it establishes 15 years old as the minimum legal age to work (DOF, 2012, Art. 22). So, a proportion of child labour was included once age for the LWI indicator was identified based on the Mexican law. However, there are specialized surveys in Mexico to identify child labour or vulnerabilities at work, such as: Encuesta Nacional de Ocupación y Empleo (ENOE, National Survey of Occupation and Employment).

increased among young people in Mexico since the last international crisis that has impacted the Mexican economy since 2009. Youth insertion in the labour market, for young people aged 12 and 29 years old, is characterized by high or very high work insecurity, regarding income levels, working hours and employment benefits (Navarrete López, 1998; Rendón y Salas, 1996; Oliveira, 2006).

Table 6.6 shows evidence that LWI is not necessarily a measure related to poverty. Correlations between this indicator, which is fixed at 30% of working capacity, and the AROP relative income measure, display a low association of 15%. As stated above, income (lack of resources) is not necessarily correlated with LWI as people adopt contingency mechanisms in order to avoid unemployment. These workers opt to develop their own informal mechanisms of social protection, when they are lacking access to social protection measures (Canagarajah and Sethuraman, 2001). Therefore, people may face precariousness at work and social insecurity, together with long working hours (Kemal and Mahmood, 1998; Quasem et al, 1998). Blunch et al (2001) affirms that WI (hours of work) in the informal sector also appears to be higher than in the formal sector. Negrete Prieto (2012) shows that 53% of salaried workers, without access to social security, work more than 45 hours a week.

Table 6.6 also shows low correlations between the LWI indicator and the official poverty measures developed in Mexico, i.e. the CONEVAL WT (11%) and the IPMM-PL (8%), plus the CONEVAL MMPM measure (11%). Other thresholds of work intensity were studied to see if correlations with the measures of poverty increase, for this study. However, it can be seen in Table 6.6 that the highest correlation is shown between a LWI estimated over 80% of the labour capacity and the CONEVAL wellbeing threshold, which displays a low correlation of 20%.

Table 6.6. Correlations between LWI and poverty measures based on different criteria

Poverty measures	AROP (60% Mdn)	CONEVAL WT	IPMM poverty line	CONEVAL MMPM measure
LWI (30% of labour capacity)	0.15	0.11	0.08	0.12
LWI (50% of labour capacity)	0.18	0.18	0.16	0.16
LWI (80% of labour capacity and over)	0.16	0.20	0.19	0.18

Source: Own calculation using data from the MCS 2012 and poverty measures calculated based upon Boltvinik (1992); CONEVAL (2010); EC (2014b); EVALUA (2014).

Note1: Correlation is significant at the 0.01 level (2 tailed).

CONEVAL (2014d) has developed a measure called the Index of Employment Trends in Poverty (Indice de la Tendencia Laboral de la Pobreza, ITLP). Time series are estimated using the ENOE survey (National Survey of Occupation and Employment), in order to show the proportion of the population that cannot afford the food basket with their wages and salaries. It is estimated using the proportion of people who have a labour income lower than the minimum welfare line. A ratio is obtained by comparing the values of each quarter with the value of the first quarter of 2010, with the 2010 first quarter set to a value of one (CONEVAL, 2017). CONEVAL (2014d) obtained an ITLP of 1.15 in the third quarter of 2010 and an index of 1.25 in the same quarter of 2012, so this indicates that food poverty (if the person only obtains income from their work) was relatively higher in third quarter of 2012 than 2010. This is not part of the MMPM index. Thus, it provides additional information as to whether labour income increases or decreases over short periods of time (Boltvinik 2013b). Also, it is a proxy variable for income poverty (low resources) in the short run.

6.2.4 Several material deprivation rate (SMD)

The EC (2010, 2014b) has considered severe material deprivation (SMD) as one of the components of the EU2020 poverty measure. Context specific indicators were used to measure SMD in Mexico, which were defined in Chapter 4, as the EU's poverty definition draws upon Townsend's concept of relative deprivation (EC, 1985; Gordon, 2010). SMD indicators were defined on the basis of the law (DOF, 2004) in Mexico.

According to the EC (2010; 2014b), the SMD rate is focused on the ability of individuals to afford certain items. On the contrary, the income approach may be offset by savings, access to credit or other sources. CONEVAL (2013a) reports these SMD indicators in an aggregated level. Thus, people deprived due to the quality and spaces of the dwelling represent 14% of the total population in Mexico in 2012. This type of deprivation shows the lowest prevalence among all types of deprivations experienced by the Mexican population. On the other hand, the prevalence of deprivation in access to basic services in the dwelling is 21%; and in access to food is 23%.

The results obtained in this study show that 4% of the population in Mexico experience these types of deprivations, based on the EU2020 poverty criterion of lacking four or more items. However, if SMD deprivations are considered based on CONEVAL's criterion, by lacking one item or more, then people who are experiencing SMD is about 40% of the population. From those who present SMD, based on the EU2020 poverty criterion, women and men experience similar risk of presenting SMD, a 50% prevalence for both population groups (Table 6.7). Concerning age groups, while the highest prevalence is shown by children aged 0 to 17 years old, of 47%; followed by the working age group (18-59 years old) (45%); the people aged 60 years old and more show the lowest prevalence of SMD of 8%. Among children, those aged 6 to 11 years old are of greater risk, at about 17%.

**Table 6.7. Percentage of people experiencing SMD, by gender and age, Mexico
2012**

Socio-demographic characteristics	Percentage
Gender	
Women	50
Men	50
Age groups	
0-17	47
0 - 5	15
6 - 11	17
12 - 17	15
18 - 59	45
60 - ...	8

Source: Own elaboration based upon methodological criteria of CONEVAL (2010) and the EC (2014b). Data was calculated using the MCS 2012 module.

People experiencing MD (material deprivations) in Mexico, on average, are more vulnerable to experience other types of deprivations than groups in the population that present deprivations due to educational gap, access to health care services or social security (CONEVAL, 2013a). CONEVAL (2013a) obtained the risk factors of people who are experiencing MD, with data provided from the MCS 2012 module. One of the main findings shown by using CONEVAL criteria, is that the average number of social deprivations is 3.4, among people who live in precarious or overcrowded housing, despite their lowest prevalence of deprivation, 14% in 2012. Thus it represents the highest average number of deprivations among groups of people who experience other types of deprivations. The population groups that are experiencing MD deprivations in access to basic services in the dwelling and in access to food are considered in the second and third places of the average number of deprivations, 3.2 and 2.9 deprivations, respectively. The last mentioned shows a similar average to those people who experience social deprivation due to educational gap.

6.3 Identifying the multidimensional poor, by the combination of income plus SE (EU2020) for Mexico

The EU2020 poverty measure is the sum of the people who are at-risk-of poverty or social exclusion, measured by LWI and SMD (EC, 2014b)⁸⁶. The results for Mexico show that 29% of the population experienced AROP (60% Mdn Income) plus SE in 2012. However, the EU2020 multidimensional poverty measure is much lower than the official measures of multidimensional poverty in Mexico. While CONEVAL (2013a, p. 22) shows that the multidimensional poor (income and deprivations) in the same year of analysis are 46% of the total population, the IPMM methodology (weighted average of income, UBN and time) reports that people living in multidimensional poverty are 83% of the population (Boltvinik, 2012, p. 9).

6.4 The patterns of multidimensional poverty by groups of poor people, according to the EU2020 index

Kangas and Ritakallio (1998) state the importance of showing groups of population facing poverty, by acknowledging that the socio-demographic characteristics of the poor have a relevant socio-political significance. A picture of poverty is presented by showing the ratios of sub-groups of poor population by different risk factors, as well as the odds ratios (OR) of being multidimensional poor, as shown in Table 6.8. The risk factors selected to analyse the patterns of multidimensional poverty in Mexico, are justified based on previous studies of CONEVAL (2013a; 2013b), which is the institution in charge of providing the characteristics of the multidimensional poor in Mexico.

Table 6.8. shows evidence that different measures classify different individuals as poor. Which particular groups do the different measures identify, as having the highest risks of poverty?

⁸⁶The formula to estimate the EU2020 poverty measure is described in Chapter 4, based on the EC (2010; 2014b) criterion.

Overall, the EU2020 poverty measure underestimates the prevalence of poverty considerably, for all population categories, when these are compared against the two official multidimensional poverty measures developed in Mexico, the MMPM and the IPMM poverty indices. This can be explained because the EU2020 poverty index represents only a subset of the other two measures of poverty by encompassing solely low income, SMD and LWI. Whilst the MMPM and the IPMM official methodologies encompass social deprivations/UBN poverty dimensions for the measurement of multidimensional poverty. However, the MMPM method and the IPMM poverty indices also show different poverty rates across groups of the population; this is due to different methodological criteria based upon the intersection and union approaches, respectively (Boltvinik, 2007b; CONEVAL, 2010; EC, 2014b).

There are two exceptions that show coincidence according to the levels of poverty. The prevalence of multidimensional poverty, measured by the EU2020 and the MMPM poverty measurement methodologies are similar for two population categories, these are the rural population and households composed of four or less members.

a) Gender

Concerning gender disparities, the three poverty measurement methods reveal a small difference, of one percentage point between men and women. The EU2020 shows poverty rates of 34% for women and 33% for men. The MPMM poverty method shows that the poverty rate for women is 46% vs. 45% for men. The IPMM method produced a higher poverty rate for both, women and men (85% vs. 86%). The EU2020 poverty measure shows a slightly higher probability of being multidimensional poor for women (1.3 OR).

Damián (2011) and CONEVAL (2013b) argue that nowadays the gender-poverty gap has been substantially reduced. Particularly, differences have decreased when women present higher educational attainment.

Table 6.8. Poverty rates (%) and the multi-variate-odds of being multidimensional poor in the UK, 2012, for different poverty measures

Socio-demographic characteristics	Poverty rates and multi-variate-odds / Multidimensional poverty measures		
	EU2020	MMPM	IPMM ⁸⁷
Gender			
Women	34 1.3 NS	46 1.0	85 1.1
Men	33 1.0	45 1.0	86 1.0
Age groups			
0-17	36 0.8 NS	54 2.2	92 2.6
18-64	29 0.7 NS	41 1.7	82 1.1
65 ...	61 1.0	46 1.0	81 1.0
Locality			
Rural	58 1.3	61 1.4	96 1.0
Urban	26 1.0	41 1.0	79 1.0
Ethnicity			
Indigenous	46 1.3	58 1.6	93 1.8
Non-indigenous	29 1.0	41 1.0	81 1.0
Disable people at home			
At least one person	44 1.1	52 1.8	90 3.1
No person	32 1.0	44 1.0	84 1.0
Household size			
More equal to five members in the household	33 0.9 NS	54 1.5	93 2.9
Less equal to four members in the household	34 1.0	37 1.0	78 1.0
Level of dependency ratio			
High dependency	40 1.3 NS	54 2.6	90 2.8

⁸⁷ IPMM measures were calculated using ENIGH 2012 survey, which is the base sample of the MCS 2012 module. IPMM considers additional variables regarding to expenditure for the calculation of the income dimension, not available in the MCS module.

Low dependency	24 1.0	33 1.0	77 1.0
Educational attainment of the head of household			
Incomplete primary or less	52 1.5	67 4.0	97 3.1
Complete primary or secondary incomplete	37 1.4	53 2.2	93 2.2
Complete secondary or higher	23 1.0	31 1.0	74 1.0

Source: Own calculation using data from the MCS 2012 and poverty measures calculated based upon Boltvinik (1992); CONEVAL (2010; 2014b); EC (2014b) and EVALUA (2014).

Notes:

¹ Proportions of categories do not differ significantly from each other at the 0.05 level. NS means that odds are not significant.

² Bold numbers show similar poverty rates between the poverty methods.

³ The shaded cells highlight groups with similar prevalence rates of EU2020 and MPPM poverty.

b) Age groups

The population groups who are at highest risk of experiencing multidimensional poverty are people aged 65 years or more. Among them, 61% of the population are poor, according to the EU2020 poverty measure. The EU2020 poverty measure includes people aged 65 or more, although the LWI indicator is only calculated for the working age population. Zúñiga and Gomes (2002) have shown evidence that older people are at serious risk of income poverty in Mexico, due to lack of adequate pensions. Women aged 60 to 64 and over 75 years old are at greatest risk of experiencing income poverty⁸⁸.

Zúñiga and Gomes (2002) also argue that the lowest level of access to paid employment throughout adulthood is likely to cause extreme poverty in older age. The absence of a waged job implies not having a salary on a regular basis but also it prevents people from obtaining a retirement or pension at the end of their productive life. The lack of both sources of income increase the possibilities of the population of experiencing poverty at different stages of their life-course.

⁸⁸The authors refer to the income poverty lines adopted by the CTMP (2002) committee.

Nevertheless, if multidimensional poverty measures are considered, based on the social rights and UBN approaches (the MMPM and the IPMM poverty methods), then children aged 0 to 17 years old show the highest prevalence, at 54% and 92%, respectively. By contrast, the EU2020 shows a 36% poverty rate for this children's age group, and 0.8 OR of being multidimensional poor, which is lower than the poverty levels displayed by people aged 65 years old and over. Besides, the last mentioned method, shows a 29% poverty rate among people aged 18 to 64 years old, and 0.7 OR.

c) Locality

The EU2020 and the MMPM poverty methods shows similar poverty rates for rural populations, 58% vs. 61%. However, the IPMM method produced a higher poverty rate (96%). The rural population show higher risks of being multidimensional poor compared with urban population (the reference category). The EU2020 poverty measure shows 1.3 OR for rural areas, with everything else being held constant, and the MMPM poverty method shows 1.4 for rural areas.

This can be justified as CONEVAL (2013a) reveals that high percentages of the rural population in Mexico experience deprivation due to social security (82%), deprivation due to the access of basic services in the dwelling (58%) and large population living below the wellbeing (income) threshold (63%). Also, job insecurity and low income are closely related conditions that are concentrated in rural areas and in agricultural activity, because 71% of the agricultural population receive only until two minimum wages and 41% receive no income (Barrón, 2013).

d) Ethnicity

Indigenous populations are also at a highest risk to present poverty: on average, about half are poor in 2012, based on the three different methodological approaches, and present

higher risks (1.3 OR) compared with the non-indigenous population, based on results from the EU2020.

e) Disable people at home

Those households who include at least one disabled person at home present also a high risk of poverty: about 44% of this population group are poor according to the EU2020 poverty index, and more than a half are poor on the basis of the MMPM and the IPMM measures. The EU2020 shows relatively higher probabilities of being multidimensional poor (1.1 OR) for disabled people, in comparison to the reference category.

High probabilities of being multidimensional poor, for disabled people is due to the large educational gap amongst disabled people (55%), disabled people who live with an income below the wellbeing threshold (57%) and lack of social security (45%) (CONEVAL, 2013a).

f) Household size

Furthermore, the ratio of poor households with four or less members is 36% on average, in comparison of those who are not poor, accordingly to the EU2020 and the MMPM poverty measures. However, it is important to acknowledge that the IPMM multidimensional poverty index show that those households composed of five members or more, are poorer in more than a half of this population group.

g) Level of dependency ratio

CONEVAL (2012c) refers to the dependency ratio as the distribution of non-working population, people aged 0-14 years and 65 years or more, per every hundred persons of working age, i.e. people aged 18- 64 years. The level of dependency ratio is estimated as a continuous variable.

The multidimensional poverty methods produced higher poverty rates for people that are living in households with high dependency ratios, compared with low dependency ratios. For instance, the EU2020 shows that the poverty rate for people living in households with high dependency ratios is 40% vs. 24% for low dependency ratios. The risks of being multidimensional poor are 1.3 OR when households have a high dependency ratio, in comparison to the reference category, based on results obtained from the EU2020 poverty measure.

There are higher rates of experiencing poverty, when households present high dependency ratios rather than low dependency ratios, particularly in the periods of crisis in Mexico, 1982 and 1994. This is also the consequence of implementing structural adjustment programs. These policies among other things involved increasing prices of basic items, that have impacted households with high dependency ratios (Damián, 2006).

h) Educational attainment of the head of household

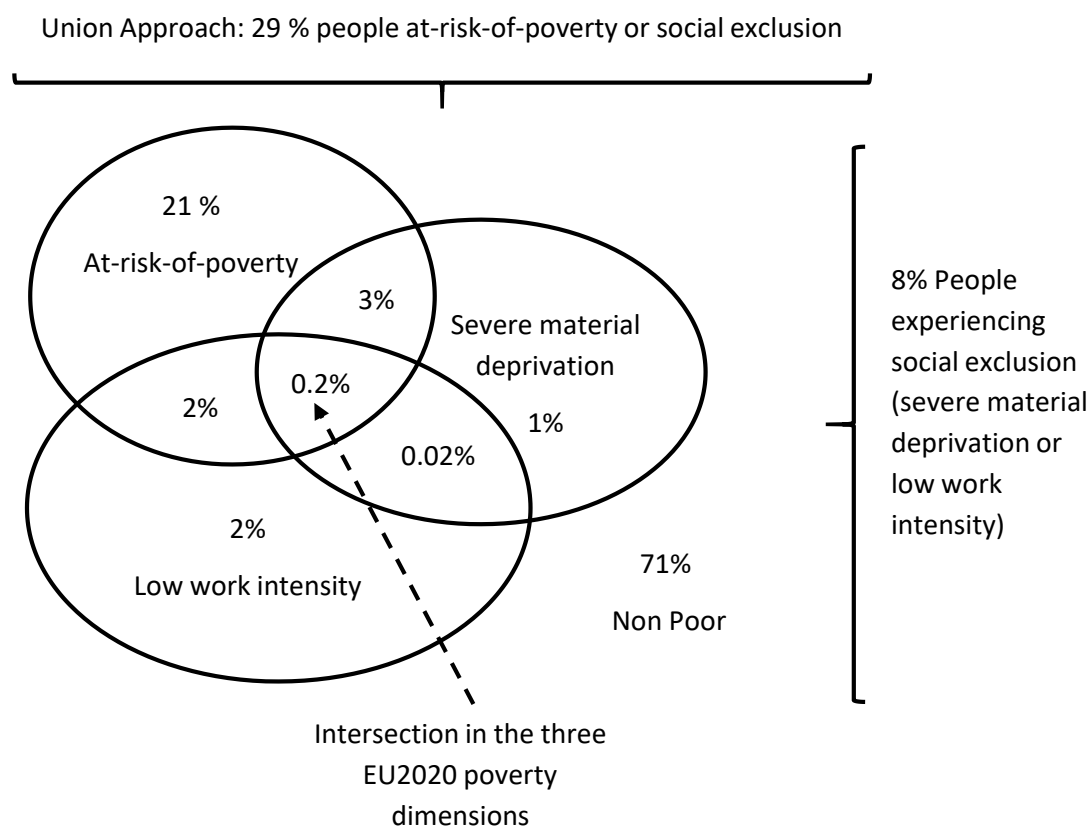
Those with only incomplete primary or a lesser degree of educational attainment present also the highest rates of poverty. More than a half of this population group are poor, 52% according to the EU2020 poverty index; 67% by CONEVAL and 97% by the IPMM methodology. They are 50% more likely to be multidimensional poor in comparison to the reference category, based on the EU2020 poverty measure. On the other hand, the MPPM shows that the risk of being multidimensional poor is much higher in comparison to the reference category (4.4 OR), with everything else being held constant.

Earlier studies confirm the relationship between low educational attainment and a high rate of poverty. Boltvinik (2004) states that this relationship should be seen especially for those children that experience income poverty and are being incorporated into the labour market. Only 53% of people aged 15 to 19 years old are enrolled in any educational institution and is the lowest rate among OECD countries (OECD, 2014b).

6.5 Overlaps between poverty multidimensional measures

The EU2020 poverty measure shows a low degree of overlap between its different components. The Venn diagram (Figure 6.2) represents the percentage where all the poverty dimensions are intersected. The prevalence of the poor by AROP and SE (LWI plus SMD) is very low, about 0.2%. This overlap can be explained by considering three aspects, the LWI poverty measure is correlated in only 15% with the AROP income measure (Table 6.6).

Figure 6.2. Percentage of overlaps between the three EU2020 poverty components applied to Mexico, 2012



Source: Own elaboration based upon the EC (2014b) criteria to estimate the EU2020 poverty target, by using information from the MCS 2012.

Secondly, AROP and SMD measures are estimated based on the most restricted criteria and SMD is composed by only some of the deprivations estimated by CONEVAL (2010). Thirdly, if we consider the PL estimated by CONEVAL and the aggregated index of deprivations, these are correlated in 33%. This reflects a relatively weak connection between low income poverty and other poverty dimensions and it is confirmed by previous studies (McGregor and Borooah, 1992; Callan, Nolan and Whelan, 1993). For instance, Kangas and Ritakallio (1998) showed that only one fifth of low income earners were classified as poor on the basis of scarcity, overdebt and receipt of social assistance in the Finnish population.

On the other hand, among the intersection of poor population groups, the measures of AROP and SMD display a 3% overlap, which is the highest percentage between these groups. There is hardly an area of intersection between population subgroups represented by LWI and SMD. Also, there is little overlap between the dimensions of LWI and AROP, at 2%. 8% of people experience poverty and SE in Mexico.

Figure 6.2 also shows that the EU2020, applied to the Mexican context, does not show the issue of multidimensionality of poverty based on the intersection approach. With this measure, there are hardly any people living in poverty and SE; figures are totally different to the official measurement, which also lies on the intersection approach. The multidimensional poor identified by CONEVAL (2013a) are 46% of the population, against 0.2% reported by the EU2020 poverty measure applied in this study. Similarly, there is a concern regarding the union approach. If the vulnerable by income and deprivations are summed with the CONEVAL's (2013a) multidimensional approach, the poor by the union approach represent 80% of the population in Mexico in 2012. This figure is rather different to the 29% reported in this study, as a result of the EU2020 index.

However, the multidimensional poor can be overlapped according to the different methodologies. This type of analysis represents the degree of interdependence between poverty indices (Table 6.9). This will permit us to evaluate whether the different methodologies of multidimensional poverty identify the same groups of poor population (Kangas and Ritakallio, 1998). Several scholars have correlated income with other robust

validators, which have been previously tested through evidence to be related with poverty. For instance, Gordon (2006) correlated income with health, based on Townsend and Davidson (1988) and based on other authors who show that poverty causes ill health. Gordon and Nandy (2012) correlated the CONEVAL social deprivations with income measures, which are food, capacities and patrimony poverty, developed by the former CTMP (2002) committee for poverty measurement in Mexico.

6.6. External validity

In Table 6.9., overlaps between groups of poor respondents were associated accordingly to multidimensional poverty measurement indexes, which encompass the dimensions of wellbeing (income) and standard of living (deprivations/UBN), either through the union approach or the intersection (CONEVAL, 2010; EC 2014b). Table 6.11 shows the overlaps between the EU2020 poverty index (AROP or SE), the CONEVAL's MMPM measure, the IPMM index and the CONEVAL index to measure deprivations in Mexico.

Rows indicate the overlap, i.e. the first row indicates how many percent of the people who are living at AROP or SE, are also poor, according to the other measures of multidimensional poverty. Thus, we can observe that on average 96% of the poor identified by AROP or SE experience poverty according to the other multidimensional poverty measures.

The high percentage can be explained because the AROP or SE index is constructed through measures of relative income and material deprivation, aspects of poverty that the rest of the multidimensional indexes also encompass. Then, it can be said that the AROP or SE poverty measure is a subset of the official multidimensional measures developed in Mexico, as these include a more comprehensive ideology of social rights. These official poverty indexes are mainly comprised of social deprivations.

Table 6.9. The overlap between the different poverty measures (percentages)

Poverty indexes	AROP or SE	MMPM	IPMM	Deprivations (CONEVAL)
Poor by... (baseline)	Percentages			
AROP or SE	100	94	95	94
MMPM	54	100	100	100
IPMM	41	56	100	86
Deprivations (CONEVAL)	33	61	93	100

Source: Own calculation using data from the MCS 2012 module and the ENIGH 2012 survey. Poverty measures were calculated based upon Boltvinik (1992); CONEVAL (2010); EC (2014b); EVALUA (2014).

On the other hand, prevalences of multidimensional poverty shown by the CONEVAL's MMPM poverty method and Boltvinik's IPMM poverty index are on average, less than 50% correlated with the AROP or SE measure. Similarly, only 33% of the prevalence of people that experience social deprivations are also experiencing AROP or SE. Socially deprived people in Mexico are underestimated when the EU2020 index is measured.

It should be noted that the IPMM poverty method encompass a wider proportion of the people that are living in multidimensional poverty, and shows high correlations, i.e. 100% of the multidimensional poor based on the CONEVAL's MMPM poverty method are also poor by the IPMM; and 93% of those people experiencing social deprivations are also multidimensional poor based on the IPMM method. Mexican multidimensional poverty methods will be assessed further below in Chapter 7.

Therefore, the EU2020 poverty measure is a subset of the MMPM, the IPMM and the CONEVAL social deprivations index.

6.7 Evaluation of the EU2020 multidimensional poverty measure

The EU2020 multidimensional poverty measure should be evaluated for generalizability, validity and reliability. The EU2020 index will be tested for correlation against the official multidimensional poverty measures in Mexico (Table 6.10). The chi-square statistic χ^2 was used in this case to show relationships between categorical variables, once poverty measures are measured by identifying the poor with a value of 1, and the non-poor, with a value of 0. Thus, the correlation between the people identified as poor by the AROP or SE measure, is 0.48 with the official CONEVAL's poverty measure (MMPM); and 0.20 with the IPMM multidimensional poverty index. Also, it shows a coefficient of 0.25 with the CONEVAL's index of social deprivations. Based on Plackett (1983), these correlations show rather a small dependence between the AROP or SE index and the official multidimensional poverty indices.

Table 6.10. Correlations between AROP or SE measure vs. the MMPM index and the IPMM index

Poverty indexes	AROP or SE
AROP or SE	1.00
MMPM	0.48
IPMM	0.20
Deprivations (CONEVAL)	0.25

Source: Own calculation using data from the MCS 2012 module and the ENIGH 2012 survey. Poverty measures were calculated based upon Boltvinik (1992); CONEVAL (2010); EC (2014b); EVALUA (2014).
Note1: Each poverty measure has two categories: 0 refers to the non-poor, and 1 refers to the poor people.
Note2: Correlation is significant at the 0.01 level (2 tailed). The measures obtained a p value of 0.000.

After observing small dependence (correlations) between the EU2020 poverty measure and the rest of the multidimensional poverty indices in Mexico, it is necessary to evaluate if this poverty measurement forms a reliable scale. Table 6.11 shows if we can speak about reliability when we apply the EU2020 poverty measure to the Mexican context. Thus, reliability is tested through the Kuder-Richarson (K20) coefficient. K20 is obtained for every item, which indicates to what extent the multidimensional poverty index would increase the overall Alpha coefficient if any of these items are deleted. However, we can

observe from Table 6.11, column B, that all the items are reliable, since the overall Alpha shown below is 0.28.

Although the overall alpha coefficient is low comparing to the accepted alpha of 0.7 in social sciences (Nunnally, 1981), we can conclude that the EU2020 combined measure, applied to Mexico under these criteria is not reliable.

Table 6.11. Reliability analysis of the EU2020 multidimensional poverty index

Items / Statistics	Scale mean if item deleted (A)	Cronbach's Alpha if Item deleted (B)
AROP (60% Mdn.)	.084	.04
LWI (<=30% of working capacity)	.30	.25
SMD (lack of 4 items and more)	.31	.22

Reliability statistics	
N of cases	212,678
Alpha	.28
N of Items	3

Source: Own calculation using data from the MCS 2012 module. The EU2020 poverty measures were calculated based upon EC (2014b).

The EU2020 poverty measure was also tested for reliability by increasing the at-risk-of poverty rate, from the official 60% equivalised median income to the highest 70% equivalised mean income, which was reported as the highest EC (2014b) poverty line applied to Mexico (Figure 6.1). This AROP measure replaced the official one; but, alpha decreases to 0.216. However, when SMD is measured as the lack of one items or more, then the alpha increases to 0.43 (Table 6.12.). Furthermore, it is shown that the LWI

measure is not a reliable indicator, as this increase alpha in 0.540, when the item is deleted (Table 6.12, column B).

Table 6.12: Reliability analysis of the LWI indicator for the EU2020 index

Items / Statistics	Scale mean if item deleted (A)	Cronbach's Alpha if Item deleted (D)
AROP (70% mean)	.45	.08
LWI (<=30% of working capacity)	.97	.54
SMD (lack of 1 items and more)	.59	.16

Reliability statistics	
N of cases	212,678
Alpha	.43
N of Items	3

Source: Own calculation using data from the MCS 2012 module. The EU2020 poverty measures were calculated based upon EC (2014b).

The Alpha coefficient for the EU2020 in Mexico is extremely low. It is not reliable because it is composed of unreliable components (AROP, LWI, SMD). As discussed previously, the AROP poverty thresholds in Mexico are too low compared with income poverty measures that are based on full normative baskets. Also, the LWI measure is not applicable to the Mexican context as it does not adequately reflect Mexican labour conditions. Moreover, the SMD index is a very restrictive indicator which needs to be made more comprehensive through the inclusion of additional social deprivation indicators. Overall, the EU2020 poverty measure does not work well in the Mexican socio-economic context and fails to provide an accurate picture of multidimensional poverty.

6.8 Conclusions

This chapter has provided us with relevant quantitative analysis and evidence to answer the specific research questions, posed as part of the objectives in this section:

1) What is the best way to measure poverty to inform social policy? The best way to measure poverty is by considering objective criteria, to show the real patterns of multidimensional poverty. The empirical content showed that the EU2020 poverty measure does not show objective criteria, for the measurement of multidimensional poverty in Mexico. It is concluded that the EU2020 poverty measure does not respond to the SI framework. One of the reasons is that the EU2020 does not include the whole range of social deprivations, to show whether a person has accomplished their social rights in Mexico. in 2012. The EU2020 does not respond to the social inclusion ideology, and to the idea of social participation.

Findings also revealed that the EU2020 components show low correlations with different poverty measures. It was shown that the SMD should be more comprehensive to include the rest of deprivations that a Mexican citizen could experience. CONEVAL (2010) has shown other social deprivations, that need to be included in any poverty measurement approach, such as educational gap, social security, etc.

LWI was particularly tested by using correlations with other poverty measures, and there was no significant evidence of association. Also, previous findings carried out by different scholars (Kemal and Mahmood, 1998; Quasem et al, 1998; Negrete Prieto, 2012) show that there are other factors that influence the labour market in developing countries and in Mexico, which also explain the issue of precariousness at work.

Also, the informal sector represents an option for the Mexican population to work and earn an income, and represents a safety net in which poor families seek a refuge due to economic instability (Ozorio de Almeida et al, 1995; Negrete Prieto, 2012). Thus, any analysis of labour conditions may include low income, lack of social security, among other social and economic issues. The measure of LWI was tested for reliability as part

of the EU2020 multidimensional poverty index, and thus, it was shown that this is not a reliable indicator, because it increases the overall alpha when the item is deleted.

Additionally, what it makes a significant difference is therefore the criteria used to define the income poor. Relative income measures tend to be arbitrary. The EU2020 poverty index is based on definitions of relative income, through the use of specific percentages to equalise disposable income (Atkinson et al, 2002). On the contrary, the poverty lines identified in the MMPM and the IPMM poverty measures are constructed on a normative basis, by defining a basket of goods and services (CONEVAL, 2010; Boltvinik, 1992; EVALUA, 2009a), which will be further assessed in Chapter 7.

The figures for income poverty in Mexico differ substantially due to the use of different equivalence scales. The original OECD equivalence scales tend to identify more commonly large households as living in poverty than small households (Chanfreau and Burchardt, 2008). However, the modified equivalence scales do not consider different characteristics which play an important role in the distribution of income between the members of the household, such as weights regarding the distribution of young or elderly populations, or disabled people (Chanfreau and Burchardt, 2008). Also, it does not take into account economies of scale, which consider a household's size and composition by type of variable and fixed costs for goods and services (Boltvinik and Marín, 2003).

Santana's (2009) equivalence scales, which CONEVAL uses to calculate household's equivalent income, and Boltvinik and Marín's (2003) equivalence scales, for the same purpose, used in the IPMM methodology, do consider economies of scale. Thus, for comparative purposes, income measures were harmonised by disposable income and by using OECD equivalence scales (*ceteris paribus*). The results obtained show that income poverty varies significantly. One of the reasons, is that the OECD modified equivalence scales do not consider the socio-demographic characteristics of the Mexican households and so it underestimates the extent of income poverty.

The second question that can be answered based on the empirical results is:

2) Do multidimensional poverty measurement methodologies produce divergent estimates of the extent and patterns of poverty? And with what effects for anti-poverty policies? It can be said that the EU2020, the MMPM and the IPMM poverty measures target different groups of poor population. Thus, these poverty indexes revealed different characteristics and patterns of poverty.

The patterns of poverty were obtained according to the EU2020 poverty index, which differ substantially in the prevalence and the multi-variate-odds, resulting for every sample group, by comparison with the results provided by the MMPM and the IPMM multidimensional poverty indices. There were also differences regarding some population groups that are found more at risk of poverty and SE, in Mexico in 2012. These differences were identified according to age groups, household size and gender of the head of household. However, some consensus is found between the EU2020 poverty index and the CONEVAL's MMPM index, once the prevalence of poverty is similar for rural population and household sizes less equal to four members.

Finally, it can be said that the EU2020 poverty measure does not reflect the broad concept of poverty and social exclusion (Grusky and Weeden, 2007; Levitas et al, 2007; Nolan and Whelan, 2011). Social demands should be considered not only through the income, material deprivation or labour market conditions. Based on Townsend's theory (1979), it is an issue of participating in the benefits provided by the state and the society. This measure has been applied to the social context in Mexico, and has been falsified, because it does not consider social rights to reflect the multidimensional character of poverty. So, antipoverty policies design based on the EU2020 poverty measure will not target the multidimensional poor accurately.

Chapter 7

Results III: The Social rights and the Human flourishing approaches, applied to the UK

7.1. Introduction

This chapter aims to apply the two official poverty measures, developed in Mexico, to the UK social context. The first methodology, for the measurement of multidimensional poverty, is the IPMM (Integrative Poverty Measurement Methodology), created by Boltvinik in 1992. He conceptualized poverty from a human needs viewpoint –the Unmet Basic Needs (UBN) approach plus income poverty (through budget standards) (Boltvinik, 1992; 2013c; EVALUA, 2009; 2011).

The second Mexican official poverty measure was developed by CONEVAL (2008), to identify the multidimensional poor at national level in Mexico. This is called the Methodology for Multidimensional Poverty Measurement (MMPM). CONEVAL (2010) combines the wellbeing approach and the social rights-based approach to estimate multidimensional poverty.

This thesis examines the theoretical and conceptual links between the UBN approach and the social rights approach for the measurement of multidimensional poverty, in order to apply the UBN method to the UK social context. In Mexico, basic needs have formally become a constituted group of social rights. Thus, the UBN approach has become a social consensus, which facilitates the measurement of poverty, based on the rights established in the Mexican Constitution (CONEVAL, 2010; DOF, 2014).

The relevance of applying the social rights approach to the UK lies in the possibility of a similar kind of social consensus. This consensus should be based on the entitlements that are necessary for a decent way of living and participation in society (Mack and Lansley, 1985; Townsend, 1979; 2009; CONEVAL, 2010).

For this purpose, the social deprivation/UBN indicators used in the IPMM and the MMPM methodologies will be harmonised for comparative purposes, in their application to the UK context. However, these poverty measurement methods are applied using the standards prevailing in UK society, rather than the standards which are relevant to Mexico i.e. a conceptual rather than a literal comparison is used to define deprivation indicators that are relevant to the UK. These social deprivation/UBN indicators will be obtained from the Poverty and Social Exclusion in the UK (PSE) 2012 survey, for the measurement of poverty in the UK.

Theoretical frameworks can be falsified through the replication of Mexican multidimensional poverty measurement methodologies, in the UK social context. These Mexican methods will be tested through reliability, validity and generalizability analyses.

7.2. Objective and expected results

The research questions to be answered in this chapter are the following:

- 1) What is the best way to measure poverty to inform social policy?

- 2) Do multidimensional poverty measurement methodologies produce divergent estimates of the extent and patterns of poverty? And with what effects for anti-poverty policies?

The expected results in this chapter are the following:

- a) Firstly, clarification is expected on the debates about the normative and the relative approaches, to define an income poverty threshold. These debates were posed by Rowntree (1901); Townsend (1979); Mack and Lansley (1985); Bradshaw (2008); Boltvinik (2007b, 2010a); Deeming (2010), amongst others, and were discussed in previous chapters of this dissertation.

In this chapter, the UK income poverty line will be estimated through the use of budget standards results. These estimations are based on the application of CONEVAL's (2010) low income poverty criteria and the IPMM criteria (Boltvinik and Marín, 2003). The results will be compared with the commonly used measures of relative income poverty in the UK (EC, 2003; 2014b; EUROSTAT, 2014).

- b) Secondly, findings regarding the combined measures of income and indicators of social deprivation/UBN (Boltvinik, 1992; CONEVAL, 2010) will be compared to identify the multidimensional poor. In addition, differences between the union (weighted average system) and the intersection approaches will be also evaluated.
- c) Thirdly, outcomes about the prevalence of the multidimensional poor will be compared with the official results obtained from the 2012 PSE survey. The PSE scholars make use of the consensual methods to measure poverty and multiple deprivation in the UK (Gordon, et al, 2013). The patterns of poverty are compared to highlight the differences and similarities amongst about who are identified as multidimensionally poor.

7.3. Measuring income poverty in the UK, using comparative budget standards

Mexican studies of poverty have traditionally measured income poverty using normative criteria. Different scholars and institutions in Mexico, such as: COPLAMAR (1982, 1983); CTMP (2002); Boltvinik and Marín (2003); CONEVAL (2010), have defined the poverty line based on a set of minimum satisfiers costed using national budget standards. For example, see Rowleron (2010) and EVALUA (2012) for Mexico City. The costs of these budgets are generally estimated separately for urban and rural areas. Chapter 2 discussed the criticism of the definition of Mexican minimum poverty lines, which have sometimes been defined at below subsistence levels, as in the case of the income poverty line, used by SEDESOL (CTMP, 2002).

However, the research work of COPLAMAR (1982; 1983) and of Boltvinik and Marín (2003), represented a breakthrough regarding the definition of a full normative baskets of satisfiers. The Mexican Government (SEDESOL) had previously only defined official normative food baskets (CTMP, 2002), before CONEVAL's (2010) definition of an official full normative basket, of goods and services that households need/require. The creation of the General Law of Social Development (LGDS) (DOF, 2004) required a move to a multidimensional poverty approach. Nowadays, CONEVAL (2010) and Boltvinik (2013c) for EVALUA, use more comprehensive normative baskets that include not only food items but also non-food items, and combine these income poverty measures with social deprivations. In this research, both are evaluated in relation to their replicability in the UK context.

In the UK, the Minimum Income Standard for Britain (MIS) encompasses a comprehensive set of items for people to achieve an acceptable standard of living (Bradshaw et al, 2008). It represents a socially agreed empirically based minimum income standard (Deeming, 2005; Bradshaw et al, 2008). The income poverty lines defined by CONEVAL (2010) and Boltvinik (2013c) for EVALUA, will be applied to the UK standards, through the IPMM and the MPPM poverty methods, respectively. The assessment of the poverty lines will be carried out on the basis of the costs of the MIS items.

There are three reasons why this criterion was defined in this research, to apply the CONEVAL's (2010) and the Boltvinik's (1992, 2013c) normative baskets to the UK:

- A) To harmonise each of the Mexican normative baskets according to the MIS budget, by matching the items defined in the baskets with the MIS' components and their costs. This approach allows us to incorporate the concept of relative poverty, in order to take into account UK standards, but through the criteria established in the MPPM (CONEVAL, 2010) and the IPMM (Boltvinik, 1992, 2013c) poverty methods. There are MIS items that are not being considered by the MPPM and the IPMM criteria, such as childcare and rent (Boltvinik, 1992; 2013c; CONEVAL, 2010; 2012b).

- B) This harmonisation will allow us to compare the income poverty lines and results for the UK.
- C) There is also a third technical reason. CONEVAL (2010, 2012b) uses an Engel coefficient to estimate the cost of the non-food basket of goods in Mexico. However, the PSE survey does not measure expenditure, so the MIS results were used to estimate the costs of matched items in the non-food basket, in the UK and the combined cost of the matched food and non-food baskets were then applied, to the PSE to measure income poverty.

The normative baskets applied to the UK are called hereinafter, the IPMM normative basket (Boltvinik, 1992; 1999; 2013c) and the MPPM normative basket (CONEVAL, 2010; 2012b). The domains included in both normative baskets were harmonised according to the MIS classification of items, defined by Smith et al (2010) and Davis et al (2012)⁸⁹. However, rent and childcare costs are not included in the harmonised basket, as neither Boltvinik and Marín (2003) or CONEVAL (2010, 2012b) include these expenditures in their normative baskets.

Both normative baskets are calculated for urban and rural areas. Additionally, the IPMM normative basket includes criteria of size and household composition, which have been replicated in the same way for the UK. The estimation of the costs of the IPMM normative basket is based upon an equivalence scale (Boltvinik and Marín, 2003). These were applied to the MIS budgets to calculate the poverty thresholds for the standard household types used in the MIS study (Table 7.1). So, the equivalised disposable household income poverty lines, produced by each method, can be directly compared by household composition.

Table 7.1 shows that the IPMM basket includes 10 domains for 5 types of households in the UK, for urban and rural areas. Overall, the costs of the IPMM budget standards are higher in rural areas in the UK.

⁸⁹ Appendix 7.1 displays the items breakdown for this harmonisation.

Appendix 7.1. shows the harmonised items from a comparison of the MIS basket (Smith et al, 2012; Davis et al, 2012) and the items in the Mexican normative baskets: Boltvinik's (1999b) IPMM basket and CONEVAL's (2010; 2012b) MMPM basket, in order to replicate the Mexican income poverty measurement methodologies in the UK context. The expenditure items have been grouped into ten harmonised categories (Appendix 7.1), which are: 1) Food; 2) Dwelling; 3) Hygiene and basic expenses on personal health; 4) Health care; 5) Education; 6) Culture and recreation, 7) Leisure items; 8) Transport and communications; 9) Clothing and footwear; and 10) Housing maintenance. The MIS expenditures grouped according to CONEVAL's MMPM basket have been further subdivided by urban and rural areas, in order to replicate the Mexican methodology in the UK context.

Using the items shown in Davis et al (2012), costs were summed and for each of the harmonised categories. Thus the MIS costs of food were included in the first harmonised category (food); the MIS costs of fuel; household goods and household services were grouped in the second category (dwelling); the MIS costs of personal goods and services were used to show the costs of the third and the fourth harmonised categories (hygiene and basic expenses on health; and health care); the costs of social and cultural participation were grouped into the fifth, sixth and seventh harmonised categories (education; culture and recreation, and leisure items), and so on.

Table 7.1 shows the MIS costs grouped into the harmonised categories for both urban and rural areas. For instance, the food costs for a single working age households are £48 and £59 per week in urban and rural areas; the health care costs for a single working age households are £12 and £14 per week in urban and rural areas; and so on (Smith et al, 2010; Davis et al, 2012).

Table 7.1. Cost of the MIS basket, based on the IPMM items classification criteria. UK urban and rural areas, 2012

IPMM Domains equivalisation	Size and household composition /				
	Urban / Rural ¹				
	Cost in pounds (Weekly budget)				
	Single Working Age £	Lone with 1 Child £	Couple Pensioner £	Couple with 2 Children £	Couple with 3 or more Children ³ £
1. Food ²	48 59	52 59	60 79	100 115	129 148
2. Dwelling	27 33	48 55	36 47	57 66	74 85
3. Hygiene and basic expenses on health.	12 14	28 32	20 27	41 47	53 61
4. Health care					
5. Education, 6. Culture and recreation	45 55	42 47	50 65	93 107	121 139
7. Leisure items					
8. Transport and communications (private)	22 27	49 55	14 18	74 85	96 110
9. Clothing and footwear	9 11	19 22	12 16	39 45	50 58
10. Housing maintenance	24 30	31 35	31 41	43 50	56 65
Total urban MIS	187	269	223	447	579
Total rural MIS	229	305	293	515	666

Source: Boltvinik (1999b); Boltvinik and Hernández Laos (1999); Smith et al (2010) and Davis et al (2012).

¹ Data for rural areas in 2012, were estimated based on the percentage increases between rural vs. urban budgets in the UK, in 2010. Data information obtained from Smith et al (2012, p. 37).

² Alcohol and tobacco are not included.

³ Data were estimated for this category. The total cost for households with 3 children or more, provided by Davis et al (2012), was broken down for every item, and distributed according to the proportions obtained from the households with 2 children.

The IPMM basket identifies high costs for couples with two and with three or more children. Their weekly costs of avoiding poverty are £447 and £579 in urban areas, and £515 and £666 in rural areas. The income needed to avoid poverty is higher for lone parents with one child than for pensioner couples (£269 pounds vs. £223 pounds in urban areas and £305 vs £293 in rural areas). Single working age people require a minimum of £187 pounds a week, in urban areas, and £229 pounds a week in rural areas according to the IPMM income poverty line criteria applied to the MIS costings for the UK (Table 7.1).

In the IPMM budgets (applied to the MIS) food represents the highest cost for each household type followed by the combined costs of education, culture and recreation and leisure items in general (Table 7.1). However, this is not the case for lone parent families, where the highest costs items are for food, transport and communications and dwelling costs.

Similarly transport and communications costs are relatively high for single working age adults compared with pensioner couples (£22 vs £14 per week in urban areas and £27 vs £18 in rural areas). However, in general pensioner couples require a higher income to avoid poverty than single working age adults (even though their transport costs are lower).

Table 7.2 shows the cost of CONEVAL's budgets applied to the MIS costings for rural and urban areas of the UK in 2012. It clearly costs more to live in a rural area in the UK. Table 7.2 shows a weekly cost of avoiding poverty to be £335 pounds for rural areas vs. £282 pounds for urban areas. In both the CONEVAL MPPM and the IPMM budgets food represents the highest cost item followed by; education, culture and recreation, and leisure items. Dwelling and Transport and communications also represent considerable cost in these budgets.

Table 7.2. Cost of the MIS basket, based on the MMPM (CONEVAL) items classification. Urban and rural areas, UK, 2012.

CONEVAL Domains equivalisation	Average cost of the household types (Weekly budget in pounds) Area classification	
	Urban	Rural ¹
1. Food ²	65	78
2. Dwelling	42	50
3. Hygiene and basic expenses on health.	25	30
4. Health care		
5. Education,		
6. Culture and recreation, and	57	69
7. Leisure items		
8. Transport and communications (private)	40	46
9. Clothing and footwear	20	23
10. Housing maintenance	33	39
Total	282	335

Source: CONEVAL (2010; 2012b); Smith et al (2010) and Davis et al (2012).

¹ Data for rural areas in 2012, were estimated based on the percentage increases between rural vs. urban budgets in the UK, in 2010. Data information obtained from Smith et al (2012, p. 37).

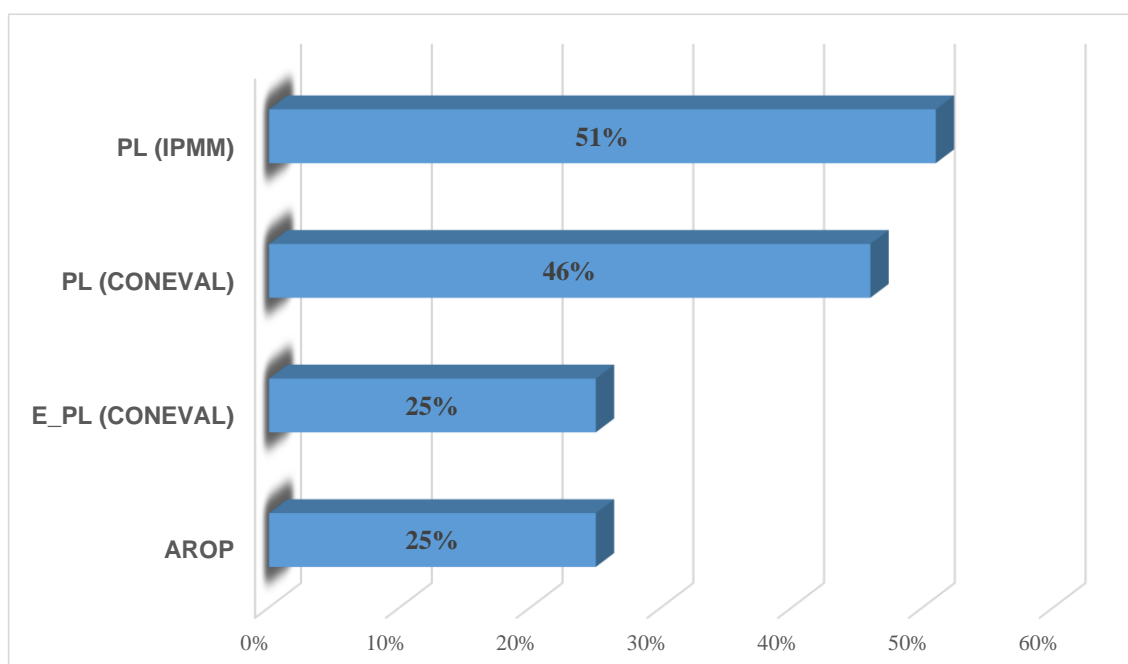
² Alcohol and tobacco are not included.

Figure 7.1 shows a comparison of the prevalence of income poverty in the UK, based on the poverty lines obtained by different methodologies. The PL defined by the IPMM criterion produces the highest rate of income poverty in the UK, at about 51%⁹⁰.

However, the rate of income poverty, calculated by applying CONEVAL's poverty line methodology to the UK, is about 46%, close to the figure obtained by the IPMM poverty line.

⁹⁰ The income poor, defined through the PL on the basis of the IPMM criteria, is the sum of the different income poverty strata obtained. Appendix 7.2 shows that 17% of the people in the UK are moderate income poor; 10% are experiencing intense income poverty, and 23% live in indigence.

**Figure 7.1. Percentage of the income poor people in the UK,
by different methodological criteria**



Source: Own elaboration, based upon Boltvinik et al (1992), EC (2003, 2009) and CONEVAL (2010) criteria.

Notes:

- a) The income poor people, according to the IPMM methodological criteria, were calculated based on the costs of the MIS budget, by considering household size and area of classification, urban and rural.
- b) There are two poverty lines (PL) calculated based on the CONEVAL's (2010) criteria. The first PL refers to the society's wellbeing threshold; and the second one, refers to the extreme poverty line (EPL), determined on the basis of a minimum wellbeing threshold. Both thresholds are determined through the normative baskets (CONEVAL, 2010).
- c) The at-risk-of poverty rate (AROP) was calculated as the 60% of the equivalised net weekly household median income, after housing costs.

Figure 7.1 shows that the AROP measure, calculated as the 60% of the equivalised net household median income, produces a similar prevalence of income poverty in the UK, as the extreme poverty line (EPL), determined by CONEVAL's criteria. CONEVAL (2010) uses a minimum wellbeing threshold to define the EPL, i.e. only the cost of food items are included. Both poverty methods show that 25% of the population experience income poverty in the UK, in 2012. Main and Bradshaw (2014) also calculated a 25% AROP income poverty rate for individuals and households, (i.e. with an income below 60% of the PSE 2012 equivalised median).

The AROP measures, defined as the 60% of the equivalised median disposable income, produce poverty lines near to levels of subsistence. This may seem surprising as AROP uses a relative definition of poverty whereas CONEVAL's EPL could be considered to be an absolute measure of poverty, similar in conception to Rowntree's (1901) primary poverty line. However, it should be noted that as a proportion of national average disposable income Rowntree's 1899 primary poverty line and the contemporary AROP poverty line are very similar (Webb, 2002; Piachaud and Webb, 2004). When the AROP method is applied to Mexico it results in an income poverty line threshold which is similar to the extreme poverty lines defined by both ECLAC (CEPAL, 2013) and CONEVAL (2010).

Therefore, relative poverty lines should be tested frequently and compared against budget standards. Relative poverty lines need to be ethical and should reflect national consumption patterns rather than levels of subsistence. Comparing relative (AROP) and absolute (EPL) budget standards poverty lines in the UK and Mexico, has revealed and clarified the debate about relative income poverty lines (AROP measures) and budget standards, posed in Chapter 2. This research has corroborated the findings of Bradshaw and Mayhew (2010a) which showed that in EU countries, AROP produces much lower poverty lines than full budget standards methods. Bradshaw and Mayhew (2010a) argued that AROP measures have been determined arbitrarily and do not represent a given living standard. Full normative baskets represent one method of capturing the full cost of meeting people's needs, which could be satisfied through income, and conform with the customary patterns of consumption in the society.

Table 7.3. shows the income poverty rates for urban and rural areas in the UK, using different methodological criteria. The income poverty rates were calculated based on the AROP measure (60% equivalised disposable median household income) plus the two Mexican income poverty lines, the IPMM method and the MPPM method. There is consistency between the Mexican income poverty measures that are based upon budget standards, when they are applied to UK data. All the budget standards poverty lines produce higher rates of poverty in rural than in urban areas. By contrast, the AROP measure identifies urban areas as having the highest rates of income poverty. The

CONEVAL extreme poverty line (EPL) produces similar poverty rates in urban UK to the AROP measure (24% compared with 26%), but higher poverty rates in rural areas (27% compared with 20%).

Table 7.3. Income poverty rates by area classification in the UK, 2012, and by different methods

Percentage of income poor people, different methods	Area classification	
	Urban	Rural
AROP (60% of the median)	26	20
Extreme Poverty Line (Coneval)	24	27
Poverty Line (Coneval)	45	48
Poverty line (IPMM)	50	54

Source: Own elaboration based upon Boltvinik et al (1992); Boltvinik and Marín (2003); EC (2003, 2009) and CONEVAL (2010).

Note: These figures were weighted using the individual level analysis in the PSE 2012.

Following Boltvinik's (1992) methodology, the average costs in urban and rural areas were taken from the MIS basket to estimate the expenses related to every UBN dimension (Table 7.4, column A). Thus, the costs of social and cultural participation from MIS were added together to calculate the relative costs for the Educational gap UBN dimension. Access to health care includes expenses for personal goods and services. Similarly, access to social security includes the combined costs of council tax and household insurances; the quality and living space of the dwelling takes into account MIS costs of rent; the access to basic services in the dwelling includes expenses of water rates and fuel; the access to information includes the costs of household services, all of them based upon the MIS 2012 budget (Davis et al, 2012). These UBN expenses serve to estimate weights for every UBN indicator (Table 7.4, column B). Weights were obtained as the proportion of the total average cost (£250 per week) of all UBN related MIS items in 2012.

The weights estimated for the UK and the weights estimated by EVALUA (2011b), based on the 2012 NBES basket for Mexico, are compared in Table 7.4, column C. Both show that the quality and living space of the dwelling indicator presents the highest UBN weight, about 34%. Educational gap has a weight about 25%; access to information about 2%. However, UBN related costs are higher in the UK, when we consider access to basic dwelling services, 19% in the UK vs. 12% in Mexico. Furthermore, there is a big difference for the indicators of access to health care and access to social security. In the UK, weights represent 11% and 9%, respectively (20% in total), but, in Mexico, this represents 28% of UBN related costs. Thus, health and social security are relatively much more expensive in Mexico than in the UK (Boltvinik, 1992; DOF, 2012). By contrast basic dwelling services (e.g. water, fuel, sanitation, etc.) are relatively more expensive in the UK than in Mexico.

The Weights in Table 7.4 are divided by 100 and then applied to each UBN indicator. Additionally, the difference between the total average MIS cost of urban and rural areas are used to adjust the poverty scores in rural and urban areas of the UK. Similarly, the costs related to UBN expenses and the costs related to the PL dimension are used to weight the UBN and PL scores, based upon Boltvinik's (1992) poverty methodology. The last section in Table 7.4, shows that £142 per week were used to obtain a 36% weight of the PL dimension. This is added to 64% of the UBN dimension in the final IPMM formula applied to the UK. Mexico shows inverse weights of dimensions in the final formula, because the Mexican NBES basket takes into account more items for food, and these go directly to the PL dimension (EVALUA, 2011).

Table 7.4. UBN component weights, based on the MIS budget for the UK, and a comparison with Mexico

IPMM Components	UK UBN expenses, MIS costs, 2012 ¹ (A)	Weights estimation (%)	
		UK (B)	Mexico NBES basket, 2012 (C)
1. Educational Gap (<i>EG_j</i>)	63	25	24
2. Access to health care (<i>HC_j</i>)	28	11	28
3. Access to social security (<i>SS_j</i>)	22	9	
4. Quality and living space of the dwelling (<i>D_j</i>)	84	34	33
5. Access to basic services in the dwelling (<i>BS_j</i>)	47	19	12
6. Access to information (<i>I_j</i>)	6	2	3
Sum	250	100	100
UBN weights:			
$I(UBN)_j = EG_j(0.25) + HC_j(0.11) + SS_j(0.09) + D_j(0.34) + BS_j(0.19) + I_j(0.02)$			
IPMM sum of dimensions			
Poverty Dimensions	Costs	Weights	
UBN	250	64	37
PL	142	36	63
Sum	392	100	100
IPMM formula applied to the UK:			
$I(IPMM)_j = I(UBN)_j(0.64) + I(PLT)_j(0.36)$			

Source: Own elaboration based on the IPMM syntax 2010 (EVALUA, 2014) to identify the expenditure derived from UBN, and to replicate UBN costs estimation, obtained from the MIS budget (Smith et al, 2012). Weights used in Mexico were taken from Boltvinik (1992, pp. 335, 349) and EVALUA (2011b, p 21).

Notes:

¹ These costs were estimated as the average costs of urban and rural areas with a weekly budget in pounds.

² Boltvinik's (1992) defines educational gap as a combined measure of educational achievement; school attendance and illiteracy. Boltvinik's (1992) final IPMM index is the sum of weights of each poverty dimension. He estimates UBN weights based on the relative costs of UBN items from the normative basket. For example, the costs related to education in Boltvinik's (1999b) normative basket are used to weight the UBN dimension of educational gap, and so on for the other UBN dimensions.

7.4. Measuring multidimensional poverty in the UK

The social deprivation/UBN index was calculated, for the UK, based upon the methodological criteria of the MMPM (CONEVAL, 2010) and the IPMM (Boltvinik, 1992) multidimensional poverty measures. The MMPM index calculates the percentage of people that experience one or more social deprivations in the UK. The IPMM index calculates weights to obtain a prevalence of poverty. The PSE 2012 survey was used to calculate the prevalence of social deprivation/UBN and data was weighted at the individual level⁹¹ to obtain the results. The social deprivation/UBN indexes and index components are shown in Table 7.5.

The first column in Table 7.5 shows the MMPM methodology results. For example, 2% of the UK population suffer from an educational gap. Other social deprivation indicators with relatively low prevalence are, quality and living space of the dwelling, which affects 4% of the total population. Similarly, 7% of the population are deprived of access to food and of access to information. Only 1% of the UK population are deprived of access to health care. On the other hand, those deprivations with the highest prevalence are access to social security (23%) and basic dwelling services deprivation (18%).

All components of the IPMM index are weighted to obtain stratified data. Then, subgroups of stratified data are summed to obtain the prevalence of poverty for every UBN indicator⁹². Sums of different strata: indigence, intense poverty and moderate poverty, give the prevalence by UBN (Appendix 7.3). So, Table 7.5 shows that there are differences among prevalence of social deprivation or UBN poverty, between the MMPM and the IPMM poverty methods.

According to the IPMM methodology, 2% of the population in the UK is poor due to an educational gap and this is the lowest percentage for the IPMM UBN indicators. Similarly, only 4% are deprived due to the inadequate quality and living space of their dwelling.

⁹¹The weighted population in the 2012 PSE survey is equal to 11,584 individuals.

⁹² The poverty stratification criteria to calculate UBN indicators are shown in Chapter 4.

Table 7.5. Percentage of people that experience social deprivation in the UK, by comparing the MMPM and the IPMM methods

Social deprivation indicators	MMPM	IPMM
	%	%
1. Educational gap	2	2
2. Access to health care	1	7
3. Access to social security	23	20
3.1. Jobseeker's allowance	5	6
3.2. Old-age pensions and benefits	1	1
3.3. Sickness cash benefits; Invalidation benefits; Disablement benefit; Income support	3	3
3.4. Family Benefits	10	10
3.5. Maternity and Paternity Benefits	2	2
3.6. Survivors Benefits	1	1
3.7. Long term care	4	5
3.8. Housing benefits	2	2
4. Quality and living space of the dwelling	4	4
5. Access to basic services in the dwelling	18	19
6. Access to food	7	n/a
Social deprivation index / UBN (1)	40	10
7. Access to information	7	7
Social deprivation index / UBN (2)	42	10

Source: Own elaboration based on the methodological criteria of the Mexican multidimensional poverty measurement methodologies, the MMPM (CONEVAL, 2010); the IPMM (Boltvinik, 1992; EVALUA, 2011, 2014; Boltvinik, 2013c), and norms presented for the UK in EU (2011, 2013).

Notes:

¹ The results were obtained from the PSE 2012 survey.

Furthermore, people deprived due to health care represents 7% of the population. This prevalence is significantly higher than the 1% obtained by the MMPM poverty method. However, the reason is clear as the IPMM method assesses achievement of basic needs while, for CONEVAL (2010), only non-fulfilment of health care access is a deprivation. Thus, receipt of inadequate health care is a deprivation for Boltvinik (1992), but not for

CONEVAL. Although, in the IPMM method this non-fulfilment of health is measured in different poverty strata: indigence (1%) and moderate poverty (7%) (Appendix 7.3).

By contrast there are close similarities between the MMPM and IPMM deprivation prevalence rates for social security, housing quality, basic dwelling services and access to information.

Table 7.5 includes a detailed breakdown for the specific components of the access to social security deprivation indicator. Both methodologies yield similar results for these components. This is due to the fact that social security receipt is often means-tested in the UK's benefits system. Thus low income is the general criteria for gaining access to many of these conditional benefits.

Then, for both poverty methods, the component of family benefits present deprivation or UBN for 10% of the population in the UK ⁹³. By contrast only 1% are deprived of survivors benefits and old-age pensions. These are the lowest prevalence of the social security deprivation component (Table 7.5).

Similarly, only 2% are deprived of maternity and paternity benefits and/or housing benefits and only 3% are deprived of sickness benefits, invalidity benefits, disablement benefit, or income support benefits.

Applying the MMPM poverty criteria of CONEVAL (2010) to the UK shows 40% of the population are deprived of one or more social deprivations. If information deprivation is included, then, the prevalence rate increases to 42% of the population (Table 7.7).

By contrast, the weighted IPMM poverty measurement criteria, shows that 10% of the population in the UK are deprived. The large differences between the final social deprivation and UBN deprivation rates, produced by the MMPM and IPMM methodologies, are a result of the fact that the MMPM poverty method identifies anyone

⁹³ The take up rate of child benefit in 2011/12 was 96% (UK Government, 2014). However, it was found differences from the PSE and the UK Government, that may be due to missing information, e.g. when people forget that they are in receipt of child benefit.

who suffers from one or more deprivations as socially deprived; whereas the IPMM method weights every UBN component using the relative cost of the MIS basket, to obtain a total UBN index score - $I(UBN)$...

Table 7.4 shows costs and weights for every UBN indicator, so, the final formula obtained to compute the UBN index is:

$$I(UBN)_j = EG_j(0.25) + HC_j(0.11) + SS_j(0.09) + D_j(0.34) + BS_j(0.19) + I_j(0.02)$$

It can be seen that the highest weights are for the quality and living space of the dwelling (34%) and the educational gap (25%), whereas Social Security deprivation has a relatively low weight (9%). Since, both the dwelling quality and education gap deprivations have relatively low prevalence rates in the UK (2% and 4%) and social security deprivation has a relatively high prevalence rate (20%) applying the IPMM weights reduces the overall prevalence of UBN deprivation in the UK to 10%.

7.5. External validity for the social security sub-indicators

Table 7.6 make use of external validators. It shows the percentage of claimants entitled to benefits, but not in receipt of them (entitled non-recipients). Column A shows the official benefit take up statistics from the Department for Work and Pensions (DWP) (Johnston et al, 2015). DWP estimated the caseload take-up, by comparing the number of benefit recipients with the total number of people that should have been receiving benefits, including entitled non-recipients using both administrative and Family Resource Survey data. Similarly, Column B and C display the percentage of claimants entitled to benefits, but not in receipt of them (entitled non-recipient), calculated by this research with data from the PSE 2012 survey.

Table 7.6. Comparative percentage of entitled non-recipients¹ of social benefits in the UK, 2012. External validators vs. MMPM and IPMM estimations

Type of social benefit	Percentage		
	Official statistics (DWP) 2012/2013 (A)	CONEVAL estimations with PSE 2012 (B)	IPMM estimations with PSE 2012 (C)
1. Jobseeker's allowance (JSA)	34	30	30
2. Old-age pensions and benefits (OPB) ²	11	3	3
3. Income support (IS); Sickness cash benefits (SSP and ESA); Invalidation benefits (IB); Disablement benefit (DB) ³	21	19	19
4. Housing benefits and Council tax (HB and CT)	12	11	11

Source: Own elaboration based on official information provided by Johnston et al (2015) for the UK. Also, Mexican poverty methodological criteria from CONEVAL (2010); Boltvinik (1992); EVALUA (2011a, 2014); Boltvinik (2013c), and from the norms presented for the UK in EU (2011, 2013) and from the UK Government (2014).

¹ Figures represent the proportion of entitled non-recipients between the number of the total entitled recipients.

² Official statistics consider Guarantee Credit and Savings Credit as part of Pension Credit. Their entitled recipients were summed up to show the respective proportion. Own calculation with PSE data also include other kinds of pensions, listed in Appendix 7.3., section 3.2.

³ The official statistics include Income Support and Employment and Support Allowance (ESA). Estimations from the PSE survey for this research also include Statutory Sick Pay (SSP); Invalidation Benefits and Disablement benefits.

External validators show that there are relatively small differences, between the prevalence rates in UK official statistics and the calculations used in this research, based on the FRS data linked to the PSE 2012 survey. For example, the UK government estimates that 34% of potential JSA benefit recipients are not in receipt of this benefit (Johnston et al, 2015). This non take-up rate is close to the 30% calculated from the PSE survey data. Similarly, the non take-up rates for Income Support and Housing Benefit are similar in both the PSE data and in Official Statistics.

However, the percentage of entitled non-recipients of old age pension benefits are not very close, between the official statistics and the PSE survey estimates (11% compared

with 3%). This is due to definitional differences between the official DWP statistics and the PSE survey calculations, which also include additional pensions such as: widow's pension; war widow's pension; regular payments into an occupational or private pension; smart pension, etc.⁹⁴

7.6. Union and intersection approaches to poverty and results' external validity

The multidimensional poor in the UK were calculated through the combination of two poverty dimensions: income and deprivation/UBN. It should be observed that the different methodologies present different outcomes of multidimensional poverty, as displayed in Figure 7.2.

The MMPM multidimensional poverty rate in the UK is 26%. The IPMM method multidimensional poverty rate is significantly higher at 32%. The MMPM poverty rate is fairly close to the 22% multidimensionally poor (i.e. low income and multiply deprived people) found by the PSE team. In contrast, the IPMM poverty rate is close to the 33% who experience overall multiple deprivation, according to the PSE team, and to the 34% poverty rate found by the PSE subjective poverty measure (Gordon et al, 2013). The multiple deprivation rate of 33%, refers to people living in households lacking three or more of the items and activities seen as necessities in 2012 by the majority of the UK population (Gordon et al, 2013). The subjective measure used in Figure 7.2 refers to the PSE 2012 survey's question that asked: "*Do you think you could genuinely say you are poor now?*" (Dermott et al, 2013, p. 49)⁹⁵.

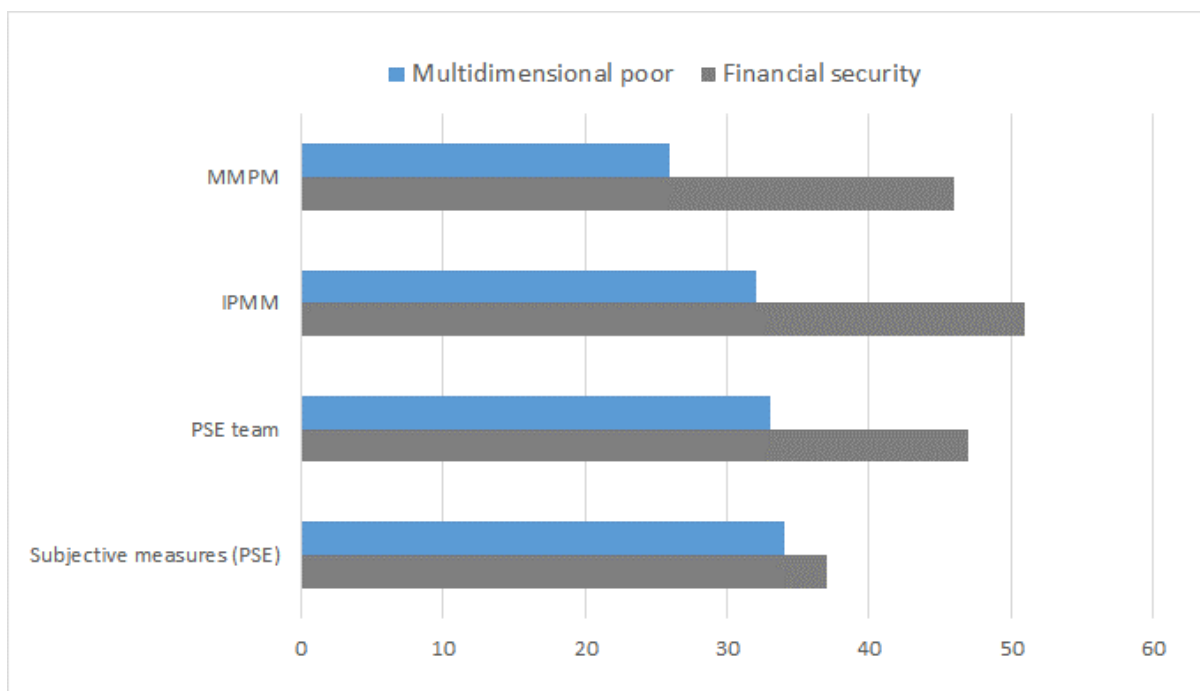
Financial hardship was also calculated by using the MMPM and the IPMM poverty methods (Figure 7.2). Then, prevalence of financial hardship is fairly similar irrespective

⁹⁴ The detailed explanation on how the components of social security were calculated, is in Chapter 4.

⁹⁵ The 34% percentage, reported by subjective measures, is the sum of answers that refer to the situation of being poor all the time, with a prevalence of 8%; and 26% for those who answered sometimes for the PSE 2012 survey.

of the method used - 46% based on the MMPM criteria and 51% according to the IPMM criteria.

Figure 7.2. The multidimensional poor in the UK, 2012. A comparison of different methodologies.



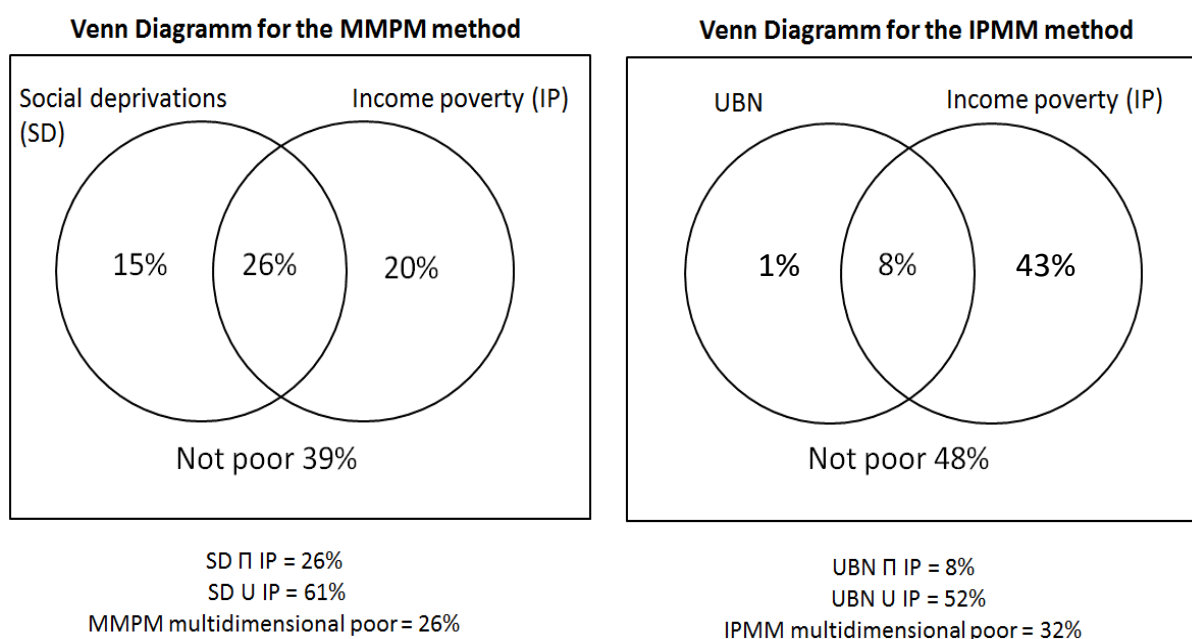
Source: Own elaboration based on the estimation of the multidimensional poor in the UK, through the application of different methodological criteria (CONEVAL, 2010; 2012b; Boltvinik, 1992; EVALUA, 2011; 2014; Boltvinik, 2013c; Gordon et al, 2013).

Note: PSE data were weighted for individual level analysis.

Gordon and his colleagues reported that 30 million people in the UK suffer financial insecurity, referring to those necessities that require cash for emergencies or money for financial planning (Gordon et al, 2013, p.2). The UK total household population was estimated at 63.7 million people in mid-2012, (ONS, 2013). Therefore, the prevalence of people that experience financial hardship was 47% (Figure 7.2). This PSE team result is quite similar to both the MMPM and IPMM financial hardship results. By contrast, the EU subjective measure of financial hardship produced a prevalence of rate of 37% (Figure 7.2), based on the question: : “*Could your household afford to pay an unexpected, but necessary, expense of £500?*” (Dermott et al, 2013, p. 24).

We can deduce that both Mexican poverty measurement methodologies result in low income estimates, which are similar to what is conceived in the UK as financial hardship. The figures for financial hardship can be seen clearly in Figure 7.3 that are composed of the population subsets that experience income poverty, according to both Mexican poverty measurement methodologies. The Venn diagram for the MMPM method shows that 20% of the population experiences income poverty but does not suffer from any deprivation and 26% of the population suffers from multidimensional poverty, i.e. both income poverty and deprivation. So, a 46%, financial hardship is the sum of these two subgroups of the population (i.e. income only poor and multidimensional poor).

Figure 7.3. Multidimensional Poverty in the UK: MMPM and IPMM methodological criteria



Source: Own elaboration based on the estimation of the multidimensional poor in the UK, through the application of different methodological criteria (CONEVAL, 2010, 2012a 2012b; Boltvinik, 1992; EVALUA, 2011, 2014; Boltvinik, 2013c).

The Venn diagram for the IPMM method shows that 43% of people were only income poor, which is more than twice as high as the MMPM result (see Section 7.3 for discussion). The IPMM methodology identifies 8% of people as being multidimensionally poor (i.e. being below the low income threshold and also the UBN

deprivation threshold). Thus according to the IPMM method over half the population of the UK (51%) are income/time poor.

Figure 7.3 shows that 15% of the UK population are only UBN poor using the MMPM method whereas only 1% are only UBN poor according to the IPMM method. If a union approach (rather than intersection approach) is used to identify the poor then the MMPM displays a prevalence of 61% and the IPMM method identifies 52% of the UK population as poor.

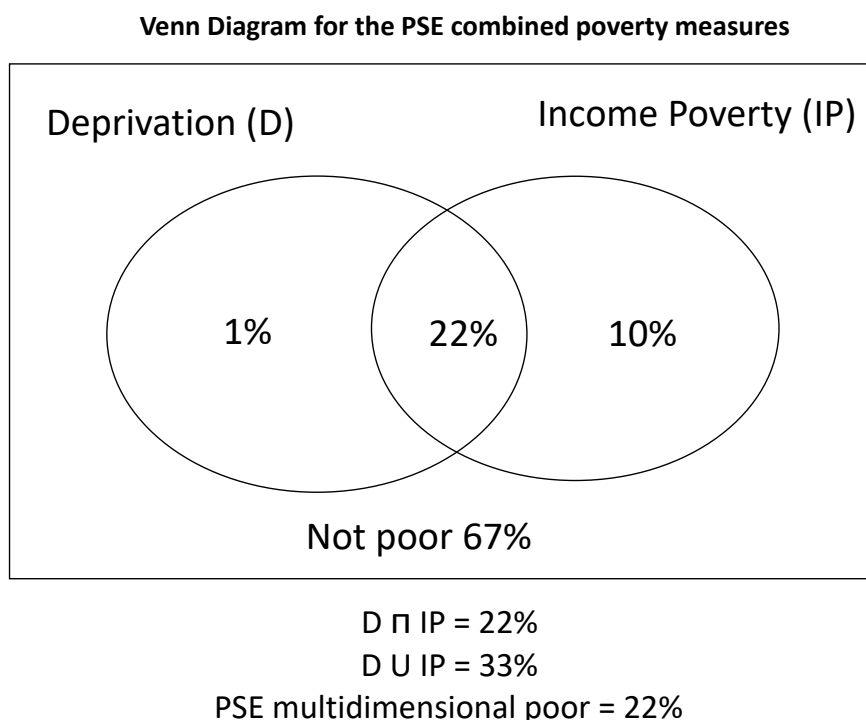
However, according to the methodological criteria proposed by Coneval, the MMPM poverty method considers multidimensionality when the two dimensions are intersected, i.e. 26% in the UK are the multidimensional poor. On the other hand, the IPMM takes into account a weighted average system to obtain the multidimensional poor. This represents 32% of the population. People who are not poor on any dimension represent 39% of the population, based on the MMPM method; and 48% according to the IPMM method (Figure 7.3.).

The intersection and union approaches can be compared with external validators. Figure 7.4 displays the percentage of overlaps of being poor according to the PSE combined poverty measures, discussed by Main and Bradshaw (2014). This methodology considers 22% of poor people in the UK based on the intersection approach. This prevalence is similar to the multidimensional poverty rate of 26%, obtained through Coneval's poverty method. This is not entirely surprising as although the MMPM method was developed by CONEVAL, for use in Mexico, this methodology is based on a conceptual and technical model of poverty developed from the 1999 PSE study (Gordon et al, 2003) as updated by Gordon (2010b).

There are also similarities between the prevalence of people living in deprivation or UBN only, between the PSE combined poverty measures and the IPMM, which is 1% of the people in the UK. Main and Bradshaw (2014) consider this group to consist of people who are rising out of poverty, i.e. who experience deprivation but not low income.

There are however, big differences between the three methods in the number of people identified as experiencing income poverty only i.e. those vulnerable to poverty⁹⁶; which is 10% for PSE team’s method, 20% for the MPPM method and 43% from the IPMM method.

Figure 7.4. Percentage of overlaps of being poor: PSE combined poverty measures as external validators



Source: Figures were taken from Main and Bradshaw (2014, p 8).

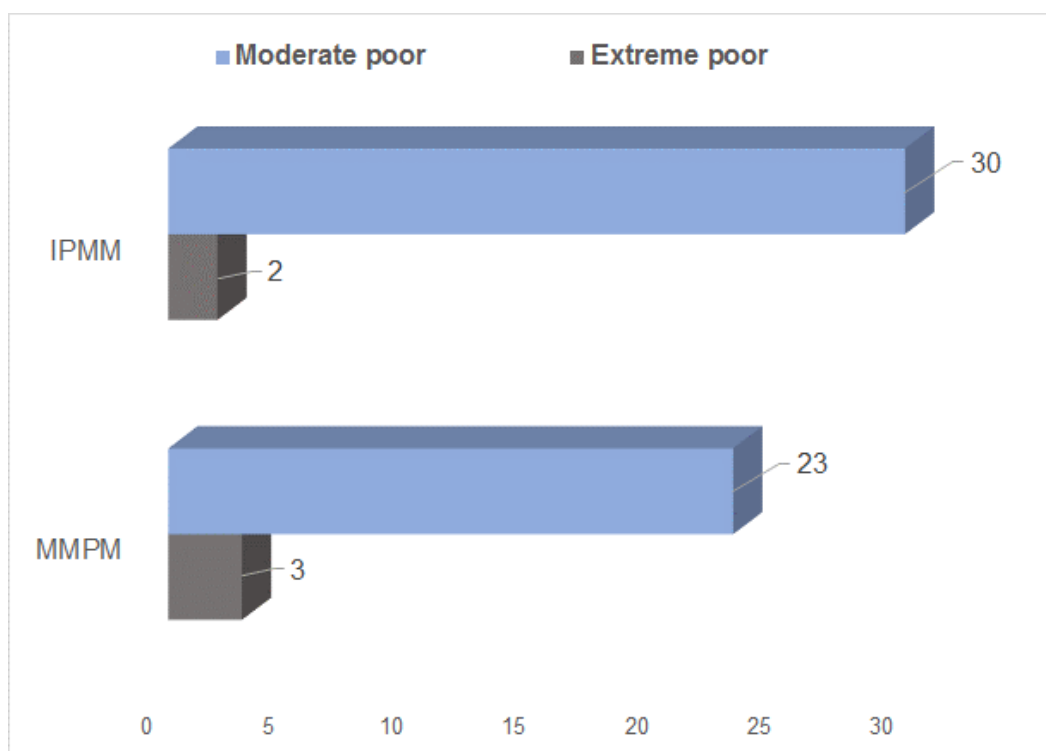
¹The combined low income and material deprivation poverty rate at individual level (intersection approach) is 22%. The Venn diagram also shows, the rising group (i.e. the 1% experiencing deprivation but not low income), and the vulnerable group (the 10% experiencing low income but not deprivation) (Gordon, 2006a), were obtained from Main and Bradshaw (2014, p. 8, Table 5, which reports the PSE combined poverty rates for both individuals and households in the UK in 2012). The poverty rates were calculated by Gordon (2017) who estimates a GLM (General Linear Model) to obtain the optimal poverty threshold i.e. a deprivation threshold of 3 or more (multiply deprived) and an equivalised net household income of less than £304 per week in 2012, in the UK.

⁹⁶ Main and Bradshaw (2014) report poverty analysis based on the work of Gordon (2006a) who discusses a conceptualisation of the dynamics of poverty

However, if we use the union approach to identify the poor, then there is a prevalence of 33% poor people using the PSE team's method (Figure 7.4), which is almost identical to 32% multidimensional poverty rate, obtained from the IPMM method and shown in Figure 7.3. The key difference with the IPMM method is the way the poverty dimensions are weighted.

The multidimensional poor can be further classified into moderate poor and extreme poor groups (see Chapter 4). The IPMM methodology produces a higher prevalence of moderate poverty, 30% compared with 23% produced by the MMPM methodology. However, the MMPM methodology produces a slightly higher prevalence of extreme poverty, 3% compared with 2% produced by the IPMM methodology (Figure 7.5).

**Figure 7.5. Multidimensional Poverty rates for the UK, 2012 (%),
IPMM and MMPM methodologies**



Source: Own elaboration based on the estimation of the multidimensional poor in the UK, through the application of different methodological criteria (CONEVAL, 2010, 2012b; Boltvinik, 1992; EVALUA, 2011, 2014; Boltvinik, 2013c).

The intensity of poverty was also calculated for these poverty strata. The intensity of poverty was conceived by Foster et al (1984) as the average poverty gap in the population as a proportion of the poverty line. However, Alkire and Foster (2009) stated that it would be inappropriate to include the income poverty dimension into the calculation of depth and intensity of the CONEVAL poverty measure. They suggested a method which multiplied the poverty headcount by the depth of poverty (Alkire and Foster, 2009) – this measure is usually called the Poverty Gap Index⁹⁷. Therefore, this measure of poverty is only sensitive to changes in social deprivations among the multidimensional poor (CONEVAL, 2010).

By contrast, the intensity of poverty for Boltvinik (1992) is the average distance of the poor from the poverty line for the two poverty dimensions: income and UBN. The whole IPMM index is a result of average weights, for every UBN indicator and for the income poverty measure. So, there are coefficients obtained from this methodology which are evaluated to stratify the population in different subgroups of poor and not-poor people. The intensity of poverty is implicitly measured in the construction of the IPMM index for every indicator.

Table 7.7 displays the intensity of poverty for the moderate poor and the extreme poor, by the two different poverty methods. The intensity of poverty for the moderate poor is higher when the MMPM criteria are applied, 20% vs. 15% for the IPMM. The extreme poor shows a similar intensity of poverty for both methodologies: 47% based upon the MMPM method and 45% based upon the IPMM index.

However, there is a substantial difference in a poverty gap index (PGI) results the MMPM produces a poverty gap index of 23% and the IPMM methodology produces a PGI of 16%.

⁹⁷ The Poverty Gap Index measures the minimum cost of eliminating poverty with perfect targeting. It is the percent of the poor multiplied by 1-(average income of the poor/poverty line).

Table 7.7. Intensity of Poverty in the UK for each poverty strata, according to the MMPM and the IPMM poverty methods.

Method / Poverty strata	Intensity of Poverty (%)
MMPM	
Moderate poor	20
Extreme poor	47
Poverty gap index	23
IPMM	
Moderate poor	15
Extreme poor	45
Poverty gap index	16

Source: Own elaboration based on CONEVAL (2010, 2012b); Boltvinik (1992, 2013c); EVALUA (2011 a, 2014).

7.7. Assessing reliability and validity of the indexes of poverty

The internal consistency of the MMPM and the IPMM can be assessed using Classical Test Theory. Cronbach's Alpha coefficient can be used to measure if both indices form reliable scales (Cronbach, 1951; Cronbach et al, 1963). Table 7.8 shows the overall Alpha coefficients. The MMPM index has a value of 0.44 and the IPMM a slightly higher alpha of 0.49. According to Nunnally (1981), they are not acceptable coefficients for use in the social sciences, which should be over 0.7.

Table 7.8 shows how Alpha would change if individual deprivation items were deleted from the poverty measure. The unreliable items are highlighted in bold in Table 7.8. Thus, if the Health care access indicator is removed from the MMPM index; then the Chronbach's Alpha increases to 0.46, but the MMPM poverty measure would still not reach a reasonable level of reliability.

The unreliable items in the IPMM index are the Quality and living space of the dwelling and the Access to information indicators. Deleting them would increase the Alpha

coefficient to 0.55 and to 0.50, respectively. However, even if both indicators these are deleted, then the overall coefficient alpha still only increases to 0.58.

Table 7.8. Reliability analysis of the multidimensional poverty indexes

Items / Statistics	Cronbach's Alpha if Items deleted, for different indexes	
	MMPM	IPMM
Income Poverty	0.36	0.31
Educational Gap	0.44	0.47
Health care access	0.46	0.48
Social security access	0.45	0.44
Quality and living space of the dwelling	0.44	0.55
Access to basic services in the dwelling	0.33	0.45
Access to food	0.37	na.
Access to information	0.39	0.50
Reliability statistics / Indexes		
Statistics	MMPM	IPMM
Alpha	0.44	0.49
N of Items	8	7

Source: Own calculation using data from the PSE 2012 survey. The MMPM poverty measures were calculated based upon CONEVAL's (2010) criteria. The IPMM poverty measures were calculated based upon Boltvinik's (1992) criteria.

na. Not applicable.

Table 7.9 shows the reliability analysis of the components of the Social security indicator.

The indicator of social security is composed of a list of sub-indicators that encompasses a set of means-tested benefits, defined by the European Commission (EC, 2011; 2013) and the UK Government (2014) as the social security rights for those residents excluded from the contributory system in the UK. The sub-indicators are: 1) jobseeker's allowance; 2) old-age pensions and benefits; 3) sickness cash benefits, invalidity benefits, disablement benefit and income support; 4) family benefits; 5) maternity and paternity

benefits; 6) survivors benefits; 7) long term care; and 8) housing benefits (Appendix 4.8 and 4.9 define each of the sub-indicators). Social security deprivation forms part of CONEVAL's (2010) MMPM and Boltvinik's (1992) IPMM poverty measurement methodologies. So, the indicator of social security deprivation in the UK was estimated using these Mexican methodological criteria.

Following CONEVAL's methodological criteria; every sub-indicator was calculated as a binary variable, i.e. a score of 0 for no deprivation and 1 for deprivation. Those entitled non-recipients were categorised as 1, i.e., they experience deprivation. Similarly, 0 is assigned to the rest of the population, who do not experience deprivation (those entitled recipients plus people included in the contributory system in receipt of social security). The overall indicator of deprivation in access to social security was estimated as a binary variable as well. Thus, social security deprivation is defined as those people that do not receive one or more means tested social security benefits to which they are theoretically entitled (non take-up) and who do not have access to contributory benefits.

Following Boltvinik's (1992) weighted average methodology; each of the sub-indicators were calculated as a non-take-up rate and recoded into the poverty strata criteria of indigence; intense poverty; moderate poverty; basic need satisfaction; middle class and upper class, as part of the IPMM weighted average methodology (explained in Chapter 4). The purpose of the IPMM criteria is to stratify the population through identifying the people who are not contributing to the security social system and discover whether these people had access to social security benefits. The criteria used to define the social security deprivation thresholds are based on a complex stratification formula (see Appendix 4.7.1 for details). The methodological criteria for each sub-indicator (means-tested benefit) is shown in Appendix 4.9. The final social security indicator based on Boltvinik's (1992) IPMM method uses weights to sum up the prevalence of deprivation for the different sub-indicators (means-tested benefits). So, sub-indicators were ranked according to their frequencies to obtain weights for each component, as these sub-indicators do not have related MIS costs. The final weighted IPMM Social Security deprivation index is defined as follows:

$$\text{IPMM Social security} = 0.20 (\text{JS}) + 0.03 (\text{OP}) + 0.10 (\text{SC}) + 0.33 (\text{F}) + 0.07 (\text{M}) + 0.03 (\text{SU}) + 0.17 (\text{LTC}) + 0.07 (\text{HB})$$

Where:

JS = jobseeker's allowance;

OP = old-age pensions and benefits;

SC = sickness cash benefits, invalidity benefits, disablement benefit and income support;

F = family benefits;

M = maternity and paternity benefits;

SU = survivors benefits;

LTC = long term care;

HB =housing benefits

Table 7.9. Reliability analysis of the Social security sub-indicators based upon the IPMM and the MMPM criteria

Items / Statistics	Cronbach's Alpha if Item deleted	
	IPMM	MMPM
Jobseeker's allowance	0.93	0.71
Old-age pensions and benefits	0.92	0.70
Sickness cash benefits; Invalidation benefits; Disablement benefit; Income support	0.93	0.71
Family Benefits	0.94	0.72
Maternity and Paternity Benefits	0.92	0.71
Survivors Benefits	0.92	0.70
Long term care	0.93	0.72
Housing benefits	0.93	0.72
Reliability statistics		
Alpha	0.94	0.74
N of Items	8	8

Source: Own calculation using data from the PSE 2012 survey. The Social security sub-indicators were calculated based upon Boltvinik's (1992) criteria, and the norms defined in the EU (2011, 2013) for the UK.

The Alpha coefficient for the 8 Social Security sub-indicators of the IPMM is 0.94, for the IPMM method, and 0.74, for the MMPM method, which is highly reliable. None of the IPMM social security sub-indicators are unreliable, i.e. deleting any of the sub-indicators would reduce the reliability of the social security index to below 0.94. In the UK social security is highly targeted, often by a means test, and the high reliability is likely to be a result of this targeting i.e. the eligibility criteria for means tested social security benefits are similar and thus the same groups of people/households in the UK – those benefit units with low income and wealth – may be in receipt of several different types of social security benefits.

7.8. The patterns of poverty by socio-demographic characteristics

The following section provides an analysis of the patterns of multidimensional poverty in the UK, by examining the rates of poverty and the composition of the poor across a range of socio-demographic variables. Additionally, the risk of poverty is estimated, for each sociodemographic characteristic, using bivariate logistic regression models. Dependent variables were obtained from the MMPM and the IPMM multidimensional poverty measures. Independent variables are the sociodemographic factors.

Overall, the MMPM and the IPMM multidimensional poverty measures differ regarding the rates of poverty for every socio-demographic characteristic., Odds ratio (OR) can help to identify greater risks of poverty and the results are shown in Table 7.10. The model was tested for multicollinearity and the variable of gender of the head of household, was highly correlated with the variable of household types. The last one adds significant information to the model, then the first mentioned was deleted.

a) Gender

The MMPM shows that poverty rates for men are higher than women, 28% compared with 25%, respectively. However, the IPMM methodology finds that poverty rates for women are slightly higher than men, 33% vs. 32%, respectively. However, if all other

confounders are held constant both the IPMM and MMPM show that women have a slightly lesser risk of being multidimensional poor – an OR of 0.7.

b) Age groups

The highest poverty rates are for people aged 18-59 years, 30%, based upon the MMPM. However, the IPMM multidimensional measure shows that children, in the UK, experience the highest poverty rate of 61%. Although, coefficients for logistic regression calculated with the MMPM index are not significant, when the OR are estimated, nevertheless, the coefficients provided from the IPMM multidimensional measure are significant, showing that people aged 18 to 59 years increase twice the odds of being multidimensional poor in comparison with people aged 60+ years (reference category) in the UK. And children are 2.6 times more likely to experience the outcome, in comparison with elderly people.

c) Country

The MMPM method shows that Scotland and England have the lowest poverty rates in the UK, 21% and 27%, respectively. However, the IPMM measure shows the lowest poverty rates in Scotland and Northern Ireland, of 29%. The risks of poverty can be compared between both multidimensional poverty measures. There are no significant differences between the MMPM poverty rates in the four UK countries except for Scotland (OR 0.6 compared with England), where people are the least likely to suffer from MMPM poverty.

The IPMM method shows similar risks (OR) of being poor by geography with both Scotland and Northern Ireland being significantly less likely to be IPMM poor than England, after holding all other confounders constant.

d) Household types

Both multidimensional poverty measures show very high poverty rates for couple parents with 3 or more children, 45% based upon the MMPM index and 89% based upon the IPMM index. Both indices also show high poverty rates for lone parents with 1 child, at around 47%. Additionally, the IPMM poverty measure presents a high poverty rate for couple parents with 1 and 2 children, of 43% and 50%, respectively.

The multivariate analyses also show very high risks of poverty for couple parents with 3 or more children being 2.9 and 3.0 times more likely to experience MMPM and IPMM poverty respectively, in comparison with couples with no children (reference category).

Furthermore, lone parent households with 1 child are 2.7 times more likely to experience multidimensional poverty in comparison with couples with no children (reference category), based on the MMPM poverty method; and 2.9 times, based on the IPMM poverty index. In addition, the IPMM index produces very high risks of poverty amongst all households with children.

Lower risks of poverty are found for single working age and couple pensioner households. All results are significant except results for couple pensioners.

e) Area classification

There are no significant differences when rural and urban areas are considered. However, there are higher poverty rates in urban areas according to both measures, 27% based upon the MMPM index and 34% based upon the IPMM index.

f) Ethnicity

The highest poverty rates are found for Black African and Pakistani/Bangladeshi ethnic groups. While, the MMPM index displays the highest rate of 49%, for Black Africans; this is the second poorest ethnic group according to the IPMM (62%). The ethnic group

most likely to be IPMM poor are Bangladeshi/Pakistani (69%). Both multidimensional poverty measures show that both ethnic groups increase by about 1.8 the odds of being multidimensional poor, compared with the White British ethnic groups (reference category). In addition, the Pakistani/Bangladeshi ethnic group are 3.3 times more likely to be IPMM poor than the White British ethnic group.

Black Caribbean and Mixed ethnic groups as well as ‘Asian Other’, show slightly high risks of poverty. Both ethnic groups are 20% more likely to be multidimensional poor, based upon the MMPM index, and are 40% more likely to be multidimensional poor, based upon the IPMM index. The White other and Asian Indian ethnic groups have similar risks of poverty as the White British ethnic group.

h) Head of household employment status

The unemployed headed households show the highest poverty rates. The MMPM multidimensional poverty index shows that 66% of respondents in unemployed headed households are poor; compared with 19% of households with a head in full-time employment. The IPMM shows similar poverty rates for these two groups, 60% and 18%, respectively. Similarly, the MMPM and the IPMM poverty methods show that 56% and 50% of respondents in economically inactive⁹⁸ headed households are multidimensional poor.

Households with unemployed heads suffer from the highest risks of being poor. i.e. respondents are 3 times more likely to experience the outcome. In addition, respondents in economically inactive headed households are 2.8 times more likely to experience multidimensional poverty, in comparison with those respondents in full time employment headed households, based on both the MMPM and the IPMM poverty methods (2.9 OR for the last mentioned poverty method).

⁹⁸ Economically inactive heads of household represent the people who are looking after family or another person, as well as the long term sick.

Table 7.10. Poverty rates (%) and the logistic odds of being poor in the UK, 2012, for different poverty measures.

Sociodemographic characteristics	Multidimensional poverty measurement methodologies					
	MMPM (CONEVAL)			IPMM (EVALUA)		
	%	Odds	Sig.	%	Odds	Sig.
Gender						
Women	25	0.7	*	33	0.7	*
Men	28	1.0		32	1.0	
Age groups						
0-17	25	0.7	NS	61	2.6	*
18-59	30	0.9	NS	31	2.0	*
60 +	20	1.0		8	1.0	
Country						
Northern Ireland	28	0.8	NS	29	0.7	*
Wales	30	1.1	NS	31	0.9	NS
Scotland	21	0.6	*	29	0.8	*
England	27	1.0		33	1.0	
Household types						
Single working age	34	2.2	*	20	2.6	*
Lone parent with 1 child	47	2.7	*	48	2.9	*
Couple pensioner	19	0.9	NS	7	1.6	NS
Couple parents with 1 child	29	2.3	*	43	2.8	*
Couple parents with 2 children	27	1.9	*	50	2.9	*
Couple parents with 3 or more children	45	2.9	*	89	3.0	*
Couple with no children	14	1.0		6	1.0	

Area classification						
Rural	24	1.1	NS	28	1.1	NS
Urban	27	1.0		34	1.0	
Ethnicity						
White other	26	0.9	NS	30	0.9	NS
Black Caribbean/Mixed	31	1.1	NS	35	1.3	NS
Black African/Mixed	49	1.8	*	62	1.7	*
Asian Indian	25	0.8	NS	38	1.1	NS
Pakistani/Bangladeshi	47	1.8	*	69	3.3	*
Asian other	35	1.2	NS	49	1.4	NS
White British	26	1.0		30	1.0	
Head of household employment status						
Part-time employment	23	1.4	*	26	1.7	*
Unemployed	66	3.0	*	60	3.1	*
Retired	20	2.0	*	8	2.8	*
Student	36	2.0	*	34	3.8	*
Economically inactive	56	2.8	*	50	2.9	*
Full-time employment	19	1.0	NS	18	1.0	

Source: Own elaboration based on the estimation of the poverty rates and odds ratios, of being multidimensionally poor. The methodological criteria used for these estimations were the CONEVAL and the Boltvinik's approaches to measure multidimensional poverty (CONEVAL, 2010, 2012b; Boltvinik, 1992; EVALUA, 2011, 2014; Boltvinik, 2013c).

Notes:

¹ The shaded cells highlight the highest risks of falling into multidimensional poverty.

7.9. Conclusions

This chapter has provided us with relevant quantitative analysis and evidence to answer the specific research questions, posed as part of the objectives in this section: 1) What is the best way to measure poverty to inform social policy? The best way to measure multidimensional poverty is by considering combined measures of low income and/or deprivation. However, the methodological criteria of the two multidimensional poverty measurement methods (MMPM and IPMM), applied to the UK social context, were not reliable, based on tests of internal consistency. Both methods use normative criteria to define poverty thresholds.

Furthermore, the weighted average system (IPMM methodology), uses a set of normative criteria, which is not entirely objective. Weights given to the poverty dimensions depends on the definition of normative baskets. The IPMM poverty methodology advocates an iterative viewpoint to apply budget standards, which consists in two steps. It first defines the income poverty line. Secondly, it combines the poverty dimensions, according to weights given by the selection of the budget standard's items, which were previously allocated to characterize each of the poverty dimensions. The results give a higher weight to the indicator of deprivation in the quality and living space of the dwelling for the UK social context, and this indicator was not reliable. On the other hand, the CONEVAL's MMPM methodology uses an unreliable indicator of health care access. It also tends to define poverty thresholds on a normative basis, which has been shown to produce an overall unreliable coefficient.

The dilemma between both methodologies, regarding the combination of poverty dimensions, is that the IPMM method considers that a person is poorer, depending on how far his or her poverty condition is from the poverty threshold (gap of poverty) and produces poverty strata as well. The MMPM method considers that a person is poorer, depending on their number of social deprivations (at least in this space; because then, it is combined with low income). However, this analysis requires future research directions.

The income poverty measures have also been tested, based on the normative criteria adopted by CONEVAL (2010), for the MMPM method; and by Boltvinik (1992), for the IPMM method. Evidence shows in this analysis that income poverty thresholds, measured through the MIS basket, estimated either by the CONEVAL's or by Boltvinik's criteria, are more generous than the income relative approach of the 60% of the median income. The MIS basket represents an approach to define thresholds with the income required to purchase needs in the society (Deeming, 2005; Bradshaw et al, 2008).

The second research question to be answered is: Do multidimensional poverty measurement methodologies produce divergent estimates of the extent and patterns of poverty? And with what effects for anti-poverty policies? The different multidimensional poverty methods do not always identify the same groups of people as poor, and they produce different multidimensional poverty rates and patterns of multidimensional poverty for the UK population.

Overall, the MMPM method's results are fairly similar to Main and Bradshaw's (2014) overlap of dimensions (intersection of low income and three or more deprivations). The prevalence of multidimensional poor through the weighted average system (IPMM) is closer to the proportion of multiple deprived people, showed by the PSE team (Gordon et al, 2013). In statistical terms, the IPMM tend to reflect higher prevalence of poverty. However, this prevalence was lower than the prevalence of financial hardship in the UK. So, the IPMM method is neither the union, nor the intersection approach to poverty.

Both methods also imply different antipoverty policy purposes. The CONEVAL's intersection approach to poverty, aims at targeting the multidimensional poor, i.e. those who suffer low income and deprivation simultaneously. The IPMM aims at targeting a higher proportion of the multidimensional poor.

Chapter 8

Conclusions

This concluding chapter addresses the research findings concerning my evaluation of multidimensional poverty measurement methodologies. The poverty methods were replicated and were tested for reliability by their application to the UK and Mexico. The research procedures allowed falsification of the theories underlying the poverty methods, through empirical examination, based on Popper's (1969; 1972a; 1972b) epistemological approach. This comparative study has provided the knowledge required to answer the research question posed at the start of this study:

What is the best way to measure poverty to inform social policy?

Theories, concepts and measures of poverty responded to the transition, from one-dimensional to multidimensional poverty measurement approaches, in both Mexico and the UK. Evidence has shown that non-objective measurement criteria have not adequately reflected the real picture of poverty in either country. Diverse poverty estimates have implied divergent patterns of poverty and inadequate antipoverty policies.

Townsend's (1979) relative deprivation approach represents a breakthrough in poverty studies and influenced multidimensional poverty measurement methodologies. Townsend's relative deprivation approach to poverty measurement provides the basis for comparing the multidimensional poverty methodologies addressed in this study. Mexican methods have been applied to UK data and UK/EU methods applied to Mexican data. These empirical analyses have elucidated the criteria required to measure multidimensional poverty and provided knowledge to inform social policy.

8.1. Study Findings

The next sections aim to answer the research questions based on the results from this research. There are three specific sub-questions that should be answered before answering the main research question:

1. What are the lessons we should learn from poverty measurement and antipoverty policies, from the UK and Mexican experiences, in their transition from a one-dimensional to multidimensional poverty measurement?

The evolution in poverty studies in the UK and Mexico has shown that multidimensional poverty measurement responds to different definitions of poverty. There are different definitions of poverty and thus, different measurement criteria for the identification of the poor in both countries. However, both countries have in the past measured poverty, using budget standards methodologies (Rowntree, 1901; Altimir, 1979). The criticism of these one-dimensional poverty methods has resulted in the development of official multidimensional poverty measurement methodologies in Mexico and the UK (CONEVAL, 2009; EVALUA, 2009a; EC, 2011; UK Parliament, 2010a).

a) The work of Townsend (1979) has changed the way poverty was conceived and measured in the UK and around the world (EEC, 1985; Gordon et al, 2003). Townsend's (1979) relative deprivation approach contributes to a better understanding of the concept of poverty, which encompasses deprivation of living standards which are customary in our societies.

Drawing on Townsend's work, different scholars have developed statistical techniques to measure poverty, based on the relative deprivation approach e.g. in the UK Northern Ireland, Sweden, Finland, etc. (Nolan and Whelan, 1996a; Halleröd, 1994; Kangas and Ritakallio, 1998; Bradshaw and Finch, 2003; Hylliard et al, 2003). Mack and Lansley's (1985) consensual approach represents another major advance in poverty measurement methods and overcomes the criticism raised by Pichaud (1983), regarding the failure of Townsend's deprivation index to separate choices from constraints. Consensual measures of poverty have been further developed following Townsend's original deprivation index,

for example by Mack and Lansley (1985), Townsend et al (1987), Townsend and Gordon (1991; 2006; 2010) and, more recently, Guio et al (2012) and Gordon et al (2013). All these works have a common purpose to reduce the opinion of experts regarding the definition of social needs and poverty thresholds (Mack and Lansley, 1985; Halleröd, 1994; Gordon, 2006a; 2006b). These methods advocate the relative view of poverty, instead of normative stances.

The UK Government has in the past measured poverty using only relative income poverty measures. During the early 1990's approximately a quarter of the UK population, lived in households with below half average income after housing costs (DSS, 1999), although, Gordon et al (2000a) revealed other aspects of poverty, with information taken from the 1999 PSE survey. He showed that 28% of people were living in multidimensional poverty; about 2% of people had risen out of poverty and 10% were vulnerable to poverty (Gordon et al, 2000a). Certain subgroups of the population had high poverty rates, such as unemployed people; disabled people; lone parents; children living in local authority housing (Gordon et al, 2000a). The UK Government did not provide sufficient social benefits to eradicate poverty (Gordon et al, 2000a; Gordon, 2011). Anti-poverty policies were focused on unemployed people, children living in joblessness households and the elderly, through increased state pension provisions at the end of the 1990s and the beginning of the 21st Century (HM Treasury, 2000).

Some efforts were implemented in the European Union to capture poverty and social exclusion. Atkinson et al (2002) developed the Laeken indicators to facilitate multiple deprivation analysis (Levitas, 2006; Marlier et al, 2007). There was an agreement at the European Council meeting in Lisbon, in 2000, that efforts should be taken in order to eradicate poverty (Gordon, 2011). However, it was not until 2010 that the EU2020 poverty measurement was launched by the European Union. This measure was developed to supplement estimates based on the relative income At Risk Of Poverty (AROP) measure, along with other disaggregated measures of social exclusion (Atkinson et al, 2002; Gordon, 2011). The EU2020 policy aims to reduce EU poverty by 20 million by 2020 (EC, 2010).

The multidimensional EU2020 poverty measure has three components at-risk-of poverty; severe material deprivation and people living in households with very low work intensity, which are combined using a union approach i.e. you are poor if you are below the threshold values on any of these three components (EC, 2011). In 2012, almost one quarter (24%) of the UK population was found to be At-Risk-Of-Poverty-or-Social-Exclusion (AROPSE), according to the EU2020 measure (EC, 2014a).

However, there are other estimates of multidimensional poverty available for the UK, the PSE survey estimated that 22% are multidimensionally poor, based on an intersection approach which combines low income and deprivation (i.e. a score of three or more deprivations) (Gordon et al, 2013; Main and Bradshaw, 2014). Moreover, a third (33%) of the UK population suffered from multiple deprivation, i.e. three or more deprivations, an increased from 21% in 1999. In addition, 44% suffered from some financial insecurity and 30% of the working age population could not afford to pay pension contributions (Gordon et al, 2013). The PSE research team (Gordon et al, 2013) give a more accurate picture of poverty and deprivation in the UK, as it is based on wider number of indicators that reflect the socially perceived necessities of the UK population.

There has been a recognition that the EU2020 poverty target needs to be redefined in order to take into account indicators of social deprivation, social inclusion, and social participation (Maître et al, 2013).

b) There has been a similar evolution of poverty measurement in Mexico. The creation of the General Law of Social Development (LGDS) (DOF, 2004) in 2004, represented a major breakthrough in Mexican poverty measurement and subsequent social policy responses. The law enables the Mexican State to evaluate antipoverty policies based on multidimensional measurement methodologies. CONEVAL (2010), as a mandate by law, has defined the multidimensionally poor in Mexico, as well as several other subgroups i.e. the vulnerable by income, the vulnerable by deprivation; the extreme and moderate poor and those with income that are less than the wellbeing thresholds.

However, antipoverty policies have not yet fully grasped the challenge of fulfillment of citizens' social rights. Social policy in Mexico is focused on targeting people living in severe income poverty, mainly through the Oportunidades social program (CONEVAL, 2012a; DOF, 2013). In addition, there are still Mexicans who lack the public services to which they are entitled, i.e. 74% of the population suffered from at least one social deprivation in 2012, based on official estimates from CONEVAL (2013a).

Before the LGDS law in Mexico, poverty measurement had been solely designed to identify the population living in extreme poverty (Damián 2002; Damián and Boltvinik, 2003; Lustig, 2004).

However, in 2010, when the Multidimensional Poverty Measurement Methodology (MMPM) was launched, CONEVAL (2010) showed that 45% of the Mexican population were living in multidimensional poverty. CONEVAL (2010) uses the intersection approach to poverty for multidimensional poverty measurement – following the PSE methodology. However, Boltvinik (2013a) has criticised CONEVAL's (2010) MMPM methodology because he believes that poverty cannot be eradicated, if only the intersection subset of poverty (i.e. people who suffer from both a low income and social deprivation) are defined as multidimensionally poor. Boltvinik (2012) showed that 83% of people in Mexico were living in multidimensional poverty in 2012, using a modified union approach to poverty measurement. Although, there is no agreement between both methods on how to combine the poverty dimensions; both poverty methods use a normative basis to estimate the income poverty line and use UBN or social deprivations, to estimate standards of living (Boltvinik, 1992; CONEVAL, 2010).

c) Townsend (1979, p64) has argued that “*Any statement of policy to reduce poverty contains an implicit if not explicit explanation of its cause. Any explanation of poverty contains an implicit prescription for policy. Any conceptualisation of poverty contains an implicit explanation of the phenomenon*”. Thus, it is not surprising that different poverty measures should include implied social policy goals. Poverty measures should be tested to obtain objective multidimensional poverty measurement criteria, in order to capture a true picture of poverty. Therefore, an objective definition of poverty will reveal the extent

and nature of poverty, with the purpose to alleviate it and eradicate it (Townsend, 1979; 2009).

2. What is the theoretical-conceptual relationship underlying the multidimensional poverty measurement methodologies, addressed in this study, and the measurement criteria, which need to be evaluated to inform social policy?

This study shows that the different poverty frameworks in the UK and Mexico addressed different concepts of poverty, which implies different poverty measurement criteria and different anti-poverty policies. It has been shown that the poverty approaches aim at identifying not only people experiencing low income and/or deprivation, they also include measures of financial insecurity, material and social deprivations or UBN, indicators related to unemployment; housing conditions, etc. Additionally, the different approaches imply that to overcome poverty, a focus is required on either social rights (SR); social inclusion (SI); human flourishing (HF); consensual needs. These measurement frameworks also encompass viewpoints regarding social participation and the development of capacities (Levitas et al, 2000; 2007; Boltvinik, 2005a).

However, these frameworks have common theoretical foundations, i.e. there is a need to first accomplish citizens' social rights or social necessities, to achieve SI and HF. Also, it should be noted that the SR framework and the consensual approach aim at defining consensual needs. The SR approach alludes to the entitlements established in the Mexican Constitution, which are defined by social consensus (DOF, 2014). The consensual approach captures consensual needs through surveys of public perceptions (Mack and Lansley, 1985).

All these approaches capture basic social needs, which are relative to society, including the estimation of social deprivations and/or low income. An additional level of analysis requires the inclusion of a more comprehensive framework, which is oriented to human development or the development of capacities as social needs change as societies develop (Townsend, 1979; Levitas et al, 2007; Boltvinik, 2005a; 2005c). The HF framework

includes a UBN perspective, which is based on human and social rights (Boltvinik, 1992). However, there is common ground between the consensual approach, the SR approach, the SI framework and the HF viewpoint, which is to capture social needs relative to the norms of society (Townsend, 1979). This study, used UBN and social deprivation indicators for the analysis of multidimensional poverty in both the UK and Mexico. This study showed that social rights represent a social consensus about what citizens require, to achieve the minimum agreed standards in society. This conceptualisation is implicit in the SI and HF frameworks. For instance, people experiencing social deprivations (denial of social rights) would not be able to achieve human flourishing and so they cannot fully participate in society. Similarly, it would be difficult to develop capacities and achieve HF if people were living in poverty. Therefore, we need to first eliminate poverty and deprivation, to achieve SI and HF. There is a need to consider basic social needs (SR or consensual needs), to ensure that poor people can access social and public services provided by the state.

From the social policy perspective, Townsend (2009) stated that a broader social security system needed to be implemented in the developing world, to enable the poor access to the resources required to raise them out of poverty. This would allow people that were living in poverty to become inclusive members of society (Levitas, 1998a). Townsend has made a “*great work of poverty*” (Bradshaw, 2011, p. 92) and has influenced research to raise societal awareness for the eradication of poverty (Ferragina et al, 2013).

Townsend’s (1979) relative deprivation approach is related to the concept of social exclusion in the EU. Levitas (1998a) shows this conceptual relationship and sees social exclusion as a consequence of poverty. Levitas (1998a) considers that social exclusion is a process rather than a state. Social exclusion and poverty can be overcome through people's participation in the customary life of society and access to adequate resources, (Walker and Walker, 1997; Levitas, 1998b). Resources include not only cash income but also access to services (Levitas, 1998a). Public and socially provided services imply the recognition of social rights.

The LGDS law in Mexico is based on a social rights approach. The purpose of the measurement of multidimensional poverty and the implementation of antipoverty policies is to fulfil these rights, particularly the social and economic constitutional rights (DOF, 2004; DOF, 2014a; CONEVAL, 2010). This thesis has argued that social rights have an important link to the idea that there is a social consensus (DOF, 2014), about what is required to achieve the minimum necessary to live in a decent way (Townsend, 1979). This study contributes to the knowledge of poverty measurement in Mexico, by updating the poverty thresholds and deprivation measures, including the identification of new needs (e.g. information deprivation).

The consensual approach is consistent with the Mexican social rights-based approach, as both methods capture the social consensus concerning the current minimum standards required to accomplish citizens' social rights. Townsend (1979) has argued that poverty is the cause and deprivation is the consequence and thus, the proportion of multidimensionally poor has been estimated by assuming this relationship in UK poverty studies (Gordon, 2006a). CONEVAL's (2010) Methodology for Multidimensional Poverty Measurement (MMPM) takes a similar intersection approach and also estimates, the number of people with different deprivation index scores.

By contrast, the EU2020 poverty measure uses a more restrictive number of indicators and is defined by the sum of the poverty dimensions – a union approach (EC, 2010). Similarly, the Integrative Poverty Measurement Methodology (IPMM) (Boltvinik, 1992) shows a stratification of the multidimensionally poor and combines the poverty dimensions, through a weighted average system – a partial union approach. The MMPM, the IPMM and the EU2020 multidimensional poverty measurement methodologies are based on arithmetic formulas. On the other hand, the consensual method (Gordon, 2006a) uses multivariate statistical techniques, to define the multidimensionally poor. The evaluation of methods in this study aimed to show the reliability of these methods for social policy purposes.

An important additional issue with multidimensional poverty measurement is the identification of the correct poverty and deprivation thresholds. The consensual method

(Gordon, 2006a; 2010b; Gordon and Nandy, 2012) aims to reduce the role of experts. However, the Mexican multidimensional poverty measures rely on normative thresholds.

Additionally, use of the relative income basis to define the poverty line has been criticised (Bradshaw et al, 1987), for not including adequate equivalence scales to take into account the family size and household composition. Boltvinik (1992; 2009) and CONEVAL (2010) advocate, the use of budget standards to define the income poverty line. These aspects of poverty measurement were evaluated in this study.

3. Do multidimensional poverty measurement methodologies produce divergent estimates of the extent and patterns of poverty? And with what effects for anti-poverty policies?

The results in this thesis show that different multidimensional poverty measures produce different estimates of the extent and patterns of poverty. Specifically, the proportion of the poor resulting from the intersection approach is lower than the proportion of poor people, obtained from the union approach. The socio-demographic characteristics of the poor also differ between these approaches.

a) Results obtained from the application of the consensual approach to Mexico:

The consensual approach (Mack and Lansley, 1985) was applied to Mexican data (Gordon, 2006a). This methodology produced almost identical multidimensional poverty prevalence rates to the official estimates based on CONEVAL's MMPM method. The consensual method showed that 47% of the population is multidimensionally poor and the official MMPM prevalence rate was 46%, in 2012 (Table 8.1). Both methods aim to identify the multidimensionally poor using an intersection approach and seek to ensure minimum standards, agreed by social consensus. The consensual method produced almost identical multidimensionally poverty rates, despite the fact that it included different deprivation measures and thresholds and used a deprivation index threshold of 2+, and CONEVAL used a threshold of one or more deprivations.

However, the consensual approach (CA) and MPPM methods do produce large differences when comparing the not poor groups. The CA rising group represents 38% of the population, which significantly differs from the MPPM official method that shows 29% as the vulnerable by deprivation. The CA vulnerable by income is 1% of the population, which differs from the MPPM method, of 6%. The union approach was also estimated for both the CA and MPPM methods to compare their results with the IPMM methodology, i.e. all social deprivations were included, as well as the low income poor. The consensual method showed that 90% of the population is poor or socially deprived, which is a much higher percentage by comparison with the 82% shown by the IPMM methodology (Table 8.1).

Table 8.1. Multidimensional poverty rates in Mexico, 2012, by different poverty measures

Multidimensional poverty measures	Poverty rates
The consensual method (intersection approach) (Gordon, 2006a; Gordon and Nandy, 2012)	47
EU2020 poverty measure (union approach)	29
CONEVAL's (2013a) MPPM method (intersection approach)	46
Boltvinik's (1992) IPMM index (weighted average method)	82

Source: Own elaboration based on estimates obtained from the application of multidimensional poverty measures to the UK. And information taken from the CONEVAL's (2010; 2013a) poverty measurement criteria and EVALUA (2011a; 2014).

The main contribution of this research to the estimation of consensual poverty, was the use of updated poverty thresholds and the inclusion of new needs that were identified by respondents, to the 2007 Survey of Multidimensional Poverty Thresholds (EDUMP). This research has shown that the consensual method is valid, reliable, additive and

generalizable and has an important advantage for social policy, which is to provide high quality evidence about the current needs and standards of Mexican society. The indicator of health care deprivation was found to be neither reliable nor additive. By contrast the new information deprivation indicator was reliable, valid and additive. Overall, the consensual method shows a high degree of corroboration and replication for the Mexican case. Therefore, the consensual method is linked to antipoverty policies oriented to a subset of the population. However, in Mexico there are significant numbers of people living in deprivation, whose social rights have not been fulfilled and also people living in low income who are not classified as multidimensionally poor

There are some differences in the characteristics of the Mexican poor identified by the different methods. For example, the MMPM official methodology underestimates the risks of being multidimensionally poor for people living in rural areas compared with the consensual approach. The consensual approach also shows that people with low educational attainment have higher probabilities of being multidimensionally poor by comparison with the MPMM official measure. However, both methods agree that the population groups more at risk of multidimensional poverty are: children; indigenous people; people living in large households (5+ members) or with a high dependency ratio.

b) Results obtained from the application of the EU2020 poverty measure to Mexico:

The EU2020 poverty measure takes a union approach which combines low income, material deprivation and low work intensity. So, the prevalence of multidimensional poverty, resulting from the application of the EU2020 poverty measure to the Mexican social context, differs substantially by comparison with CONEVAL's official estimates. The EU2020 measure reveals that 29% of Mexican population were at risk of poverty and social exclusion in 2012, vs. 46% shown by the CONEVAL's (2012a) official MMPM method (Table 8.1). The EU2020 poverty measure advocates the union approach to poverty and underestimates the prevalence of multidimensional poverty because it uses unrealistically low income thresholds and an inappropriate measure of low work intensity for the Mexican context.

The EU2020 poverty measure underestimates the extent of multidimensional poverty in Mexico. The measure is highly unreliable when applied to Mexican data, with an overall Cronbach Alpha of 0.28, which is much lower than the 0.7 accepted in social sciences (Nunnally, 1981). The EU2020 measure also shows low correlations with the Mexican official estimates, the MMPM and the IPMM multidimensional measures. In particular, the EU2020 poverty measure presents a very low correlation with social deprivations, with a coefficient of 0.25.

The at-risk-of-poverty rate (AROP) also underestimates the extent of income poverty due to the use of inappropriate equivalence scales and unrealistically low income thresholds (in Mexico). The AROP income poverty rate is 26% compared with 52% using CONEVAL's (2014b) wellbeing income threshold. This corroborates what Bradshaw et al (1987) has argued, that a budget standards approach to an income equivalisation scale is more reliable than an arbitrary equivalisation scale, such as the modified OECD scale.

The low work intensity (LWI) indicator shows a correlation of 0.20 with the CONEVAL's wellbeing threshold and a correlation of 0.18 with the CONEVAL's MMPM index. The reason is that there are other factors, such as informality, that influence the labour market in developing countries and in Mexico, which also explain the issue of precariousness at work. Thus, any analysis of labour conditions should include low income and a lack of social security access, among other social and economic issues (Kemal and Mahmood, 1998; Quasem et al, 1998; Negrete Prieto, 2012). The LWI indicator is highly unreliable as the overall alpha coefficient of the EU2020 increases significantly to 0.54, when LWI is deleted.

Moreover, the proportion of people living in severe material deprivation (SMD) in Mexico was only 4% of people, which can be compared with the prevalence of the CONEVAL's (2013a) deprivation prevalence rate, of 40% of the population. The SMD indicator (lacking four or more items) makes the overall alpha coefficient of the EU2020 poverty measure low. However, if the SMD indicator threshold is reduced from lacking four to lacking one deprivation items, the overall alpha coefficient increases to .0.43. The

SMD indicator should include social deprivations to allow for a more realistic picture of deprivation in Mexico.

Furthermore, the EU2020 method revealed differences in the patterns of poverty, when these were compared with the MMPM official measure in Mexico (CONEVAL, 2010; 2014b) and with the IPMM poverty methodology (Boltvinik, 1992; EVALUA, 2014). For instance, elderly people showed the highest poverty rate. These figures are not consistent with the estimates based on the MMPM methodology and the IPMM index, which reveal that children aged 0-17 years are the groups with a greater probability of being multidimensionally poor. Similarly, the EU2020 poverty measure shows that people living in small sized households have higher probabilities of being multidimensionally poor; rather than larger households, shown by the MMPM and the IPMM poverty methods. The EU2020 measure shows that female headed households have higher probabilities of poverty than male headed households. Whereas the MMPM and the IPMM did not identify a significant gender gap.

There are some consistent results produced by the EU2020 index when it is compared with the figures estimated by the MMPM and IPMM methods. People living in rural areas have a higher probability of suffering from multidimensional poverty; as well as indigenous people and people living in households with at least one disabled person. A high dependency ratio is also a risk for being multidimensionally poor, as the incomplete primary educational attainment of the head of household. However, the EU2020 poverty measure underestimates the prevalence of poverty for each of these sociodemographic characteristics.

The EU2020 poverty measure fails to adequately measure multidimensional poverty in Mexico. It would also probably not be useful in any country with a similar level of development to Mexico.

c) Results obtained from the application of the CONEVAL's MMPM methodology and the IPMM poverty index to the UK:

The MMPM and IPMM methods were applied to UK data (i.e. PSE 2012). The MMPM method produced a prevalence of multidimensional poverty of 26% (low income and one or more social deprivations) (Table 8.2.). The MMPM method's results are fairly similar to Main and Bradshaw's (2014) overlap of dimensions (intersection of low income and three or more deprivations), showing 22% of people as poor in the UK. Also, the PSE study, carried out by Gordon et al (2013), shows that 33% of the population are suffering from multiple deprivation (i.e. three or more deprivations) in the UK. Similarly, the MMPM shows that 41% of the population experienced one or more social deprivations in 2012.

The human flourishing framework has also been replicated for the UK social context, through the IPMM index although, the method shows a different percentage of people living in multidimensional poverty, at 32%, by comparison with the proportion shown by the PSE team, of 22% (Main and Bradshaw, 2014). The prevalence of multidimensional poverty through the weighted average system (IPMM) is closer to the proportion of multiply deprived people in the UK (33%) (Gordon et al, 2013). However, the prevalence of presenting one or more UBN (deprivations) is 9% of the population, when using the IPMM methodology.

On the other hand, the MMPM method reveals that 15% of people are vulnerable by social deprivations (the rising group) and 20% are vulnerable by income poverty. The IPMM method shows that the UBN poor represent 1% of the UK population and the income poor represent 43%. Financial hardship was also calculated. The CONEVAL's MMPM method shows a prevalence of 46% for the UK population; similar to the figures estimated by Gordon et al (2013), who show a prevalence of 47%. The IPMM poverty methodology shows a prevalence of 51% for financial hardship.

Table 8.2. Multidimensional poverty rates in the UK, 2012, by different poverty measures

Multidimensional poverty measures	Poverty rates
CONEVAL's MMPM index (intersection approach)	26
Boltvinik's IPMM index (union approach)	32
Main and Bradshaw's (2014) (intersection approach)	22
PSE team multiple deprivations (Gordon et al, 2013)	33

Source: Own elaboration based on estimates obtained from the application of multidimensional poverty measures to the UK. And information taken from the PSE study, from Gordon et al (2013) and Main and Bradshaw (2014).

The Cronbach Alpha coefficients showed that the MMPM and the IPMM poverty measures applied to the UK are not reliable. The MMPM method had a coefficient of 0.44 and the IPMM poverty method produced an alpha coefficient of 0.49. It should be noted that the indicator of deprivation in health care access for the MMPM method is not reliable, as alpha increases to 0.46, when this is deleted. The IPMM method increases its alpha coefficient in 0.55 if the indicator of deprivation regarding the quality and living space of the dwelling is deleted.

Furthermore, the patterns of multidimensional poverty for the UK differ substantially between the CONEVAL's MMPM index and the IPMM index. For instance, whereas the MMPM method shows no significant differences between age groups, the IPMM method shows that children (0-17) have the highest probability of being multidimensionally poor. The IPMM results are consistent with the PSE results on the patterns of poverty by socio-demographic groups (Gordon et al, 2013; Main and Bradshaw, 2014).

The households with higher risks of multidimensional poverty are large families (i.e. couples with three or more children), based on estimates from the MMPM and the IPMM poverty methodologies. The MMPM methodology also shows that lone parents have a

high probability of being multidimensionally poor. This finding is fairly consistent with figures presented by Main and Bradshaw (2014) who showed that lone parents with one or more children have the highest rates and odds of being poor, by family type.

Moreover, the IPMM poverty measure shows that the Pakistani/Bangladeshi ethnic groups present the highest probabilities of being multidimensionally poor. On the other hand, the MMPM index shows similar probabilities of being multidimensionally poor between the Black African/Mixed and the Pakistani/Bangladeshi ethnic groups. The MPMM is more consistent with the PSE results as these show both ethnic groups as the most vulnerable to suffer poverty (Main and Bradshaw, 2014).

Additionally, living in a household with unemployed head of household is also the factor with the highest probabilities of being multidimensionally poor, based on the MMPM and the IPMM poverty indices. However, the economically inactive head of household presents high risks as well. These results are consistent with the PSE research work (Main and Bradshaw, 2014).

The main differences between the MMPM and the IPMM multidimensional poverty methodologies is the way low income and deprivation are combined i.e. intersection vs a partial union approach. The UK results show a lower prevalence produced by the IPMM, than the proportion of people living in financial hardship and a similar prevalence to the multiply deprived group (three or more deprivations), presented by the PSE team (Gordon et al, 2013). The IPMM method considers a person is poorer, depending on how far his or her poverty condition is from the poverty threshold (poverty gap) and produces poverty strata. The MMPM method considers that a person is poorer depending if they experience a higher number of social deprivations.

The IPMM poverty methodology makes use of budget standards, in a two step calculation. It first defines the income poverty line. Secondly, it combines the poverty dimensions, according to weights given by the selection of the budget standard's items, which were previously allocated to characterize each of the poverty dimensions. The results give a

higher weight to the indicators of deprivation in the quality and living space of the dwelling, for the UK social context and were unreliable.

Additionally, both Mexican multidimensional poverty methodologies use income poverty through budget standards, for which the IPMM poverty line is much higher than the CONEVAL's (2010). The main difference is that MIS was applied based on the costs of items, by urban and rural area and size and household composition, based on the IPMM criteria (Boltvinik, 1992; EVALUA, 2014). The MMPM method uses a more restrictive income poverty line and underestimates the prevalence of income poverty, because it applies only urban and rural area criteria (CONEVAL, 2010), to define MIS and does not include economies of scale for size and household composition.

However, there is an important finding. The indicator of deprivation of access to social security is reliable for the UK social context, based on both poverty methods. The IPMM has an alpha coefficient of 0.94 and the MMPM method has a coefficient of 0.74 for the social security dimension. A contribution of this thesis was to identify and define the components of access to social security deprivation, based on the social security rights in the UK (EU, 2011; 2013). So, social security deprivation was defined as those who are outside the contributory system in the UK and are not entitled, to other non-contributory benefits or means-tested benefits.

Consequently, a more robust methodology needs to be devised for the measurement of poverty and deprivation using Mexican methods. The IPMM method has not shown objective criteria for replication because the poverty measurement criteria were not reliable. This method implied poverty thresholds estimated through different scales and depended on a set of multiple value judgements, for every UBN sub-indicator, which tended to make the measurement of multidimensional poverty less robust.

On the other hand, the CONEVAL's MMPM methodology uses an unreliable indicator of health care access. It also tends to define poverty thresholds using a normative basis, which has been shown to produce unreliable coefficients. For the UK study case, the MMPM method used the PSE survey data to estimate social deprivations

Therefore, the findings show that the poverty measurement criteria of the MMPM and the IPMM methods cannot easily be transferred to the UK social context

d) Different poverty measurement criteria and antipoverty implications

It matters how poverty is defined and how multidimensional poverty is being measured because of the consequences that measurement criteria, can bring to target the poor. So, poverty measurement methodologies have a direct link to the implementation of a specific social policy and antipoverty policies.

Governments, national and international institutions and scholars in charge of measuring poverty, should be aware of these differences when they advocate a specific poverty measurement. Moreover, they should also inform the purpose of measuring specific population groups. It should not be expected, for example, that poverty can be eradicated if it is estimated through intersection approaches of multidimensional poverty, as it is a lower proportion of the whole set of multidimensional poverty. We have seen through evidence that CCTs programs aim to reduce poverty according to specific characteristics of the poor population. Thus, the poor population obtained from the intersection approach represents only crossing dimensions. This tells us that the intersection approaches to poverty should be also treated with more accurate antipoverty policies. The intersection method could be a specific way of targeting the population living in poverty and deprivation. The patterns of poverty can help us to identify the poor people most in need by the intersection method, in order to enable the design of appropriate antipoverty policies.

The multidimensional poverty measurement approaches have not had a definite effect to inform antipoverty policies for poverty alleviation purposes. The UK has not implemented social policy to achieve full participation for the members of their society; poverty has not been eradicated and public cuts tend to hurt the people who are in most need (Taylor-Gooby, 2013; Titmuss, 2014). The UK Government has implemented austerity particularly since the economic crisis in 2008 (Gordon et al, 2013). The

implication is that antipoverty policies have been focussed on factors related to unemployment and there has not been comprehensive social benefit to those different groups of poor people in the UK (Maître et al, 2013; Titmuss, 2014).

For instance, the application of the EU2020 poverty measure to the Mexican context revealed a lack of commitment to alleviate poverty. Moreover, the theoretical underpinnings are not intrinsically associated to the way multidimensional poverty is estimated. This framework has been falsified based on Popper's (1972a; 1972b) approach. The SI framework has not been represented through a whole set of indicators to estimate social exclusion. The EU2020 poverty measure does not estimate comprehensively the way in which people do not participate in society, or are socially excluded. Social needs should be considered not only through the income, material deprivation or labour market conditions, based on findings from the Mexican study case. Therefore, the EU2020 underestimates social deprivations and there is not any social policy implied for the accomplishment of social rights.

On the other hand, the union approach aims at eradicating poverty from the view that all citizens should accomplish their social rights/basic needs. Magnitudes of poverty by sociodemographic characteristics are greater than those obtained by the intersection approach, because these proportions encompass people experiencing poverty in at least one of the poverty and deprivation dimensions defined. For instance, the EU2020 poverty measure and the IPMM index aim at estimating the whole set of multidimensionally poor (however empirical findings did not show this) and show different patterns of poverty from intersection approaches to poverty. Therefore, social policy should respond by accomplishing citizens' entitlements. Universal social policies aim to target all the multidimensionally poor.

The Mexican experience in social policy design and implementation has been very limited to alleviate poverty, before and after the LGDS (DOF, 2004) was enacted. There are several limitations according to CONEVAL's evaluation of social policy (2012a), between them, social protection policies as well as social development have not been associated to the full accomplishment of citizens' social rights. For instance, there is no

effective access to health care and social security and other entitlements. Moreover, the coverage of public services and the quality of social protection programs are unequal (Skoufias and Parker, 2001; Laurell, 2013). In Mexico, the multidimensional poverty measurement has been achieved officially but poverty is still tackled through a basis of minimum wellbeing thresholds (income only) (CONEVAL, 2012a).

Furthermore, Banegas-González (2008) states that the objectives to achieve social citizenship (Marshall, 1950) disappear when social policy is only oriented to targeting social policies and does not permit the creation of citizens' entitlements, which represent solely a minimalist concept of the tasks of the State government. This is because targeted policies aim to assist individuals that belong to a particular category of poverty or are experiencing unemployment. So, social rights established in the Mexican Constitution (DOF, 2014) cannot be guaranteed. Therefore, there should be a social and public engagement to design and implement antipoverty policies, based upon the Mexican law regarding to the fulfilment of social rights, in order to alleviate poverty.

Finally, the main research question can be answered:

4. What is the best way to measure poverty?

The best way to measure poverty is through multidimensional terms, by considering all the poverty dimensions, in order to target and characterise the poor for social policy purposes. The poverty measurement should be objective, which could permit us to replicate it in other social contexts, to test it and falsify it. This is because poverty measures should be based on clear and logical criteria, making them be more accurate and reliable for the implementation of social policies and anti-poverty strategies. Townsend and Gordon (1989) argue that, to define a scientific poverty threshold, we should take into account lack of resources (low income) and deprivation (low standard of living). However, both aspects can only be accurately measured through relative norms in society.

This research was a comparative study of the multidimensional poverty measurement methodologies. The poverty measurement methodologies were replicated in another social context and evaluated through empirical analysis. This analysis was based upon Popper's (1969; 1972a) falsification. He states that a set of theories should be empirically tested for high degree of corroboration (Popper, 1983). Therefore, this research throws light on scientific criteria, in order to obtain an objective multidimensional poverty measurement methodology, which should imply the following considerations:

- a) A multidimensional poverty measurement methodology should capture the minimum standards that prevail in society, based upon Townsend's relative view.
- b) A multidimensional rather than a one-dimensional measurement, which can be estimated through levels of deprivation and/or low income.
- c) The union approach to poverty aims at the design of universal policies for eradicating poverty and deprivation, in order to accomplish citizens' social rights.
- d) The intersection approach to poverty aims at the design of targeted social policies, which are also important. Their purpose is to tackle poverty for a subset of the total poor, who present specific socio-demographic characteristics.
- e) Multidimensional poverty measurement methodologies should consider poverty strata, to characterize specific groups of poor population and to implement specific antipoverty policies.
- f) Results obtained from multivariate statistical techniques showed higher levels of reliability and poverty methods that use poverty stratification tend to increase internal consistency.
- g) The importance of multivariate analysis is the possibility of eliminating subjective criteria of people who are responsible for measuring multidimensional poverty. Multivariate statistical techniques allow us to capture objective poverty thresholds.
- h) The consensual method provides relevant information for any poverty measurement, because it informs us about the current standards in society, i.e. updated social necessities and poverty thresholds.
- i) A scientific multidimensional poverty measure should not duplicate the poverty dimensions. Arithmetic methods tend to duplicate them, as they are not based on

multivariate statistical measures that can avoid counting the poor by using similar poverty dimensions. For example, the CONEVAL (2010) poverty method uses deprivation of access to health and social security, which has been shown to reflect the same poverty conditions.

- j) Relative poverty lines show a limited appreciation of the customary way of living in the UK and Mexico, when these are compared with both non-food normative baskets and full budget standards.
- k) Budget standards is an important instrument to measure low income and to test other relative income measures. However, budget standards should take into account appropriate equivalence scales and economies of scale, to define the income poverty line.

8.2. Contributions: The comparative framework of multidimensional poverty measurement from a relative deprivation approach

The evolution of poverty studies in the UK and Mexico do not make use of the same conceptualisations and measures of poverty. However, this study shows that there is a convergence between the social inclusion framework (EU2020), the consensual approach, the social rights approach (CONEVAL's MPPM index) and the human flourishing framework (Boltvinik's IPMM index). Moreover, there is agreement that Townsend's relative deprivation framework is an objective way to measure poverty and deprivation and is applicable in different social contexts because it captures the social standards necessary to live decently. To show this convergence, results obtained from this study allowed me to create a theoretical and conceptual comparative framework, shown in Table 8.1.

The comparative framework in Table 8.1 shows the conceptualisations of poverty for every theoretical approach (columns 1 and 2); as well as the indicators used for this poverty definitions (column 3); the relationship between the poverty dimensions that leads to the way these dimensions are combined and what it has achieve in the empirical analysis (column 4).

Townsend (1979) defined poverty from the relative deprivation approach, as all kinds of resources that are below those commanded by the average households. This restriction placed them as social excluded from the ordinary living patterns (Table 8.1, subsection A). His poverty conceptualisation has influenced other theoretical frameworks. The notion of relative deprivation is implicit and advocated by the consensual approach, by the CONEVAL's social rights-based approach, the SI framework and the HF view. However, the manner in which the poverty dimensions are defined and related are addressed in different ways within these frameworks.

The different theories address the concept of poverty by adding important elements to their definitions and are included in the estimation of poverty. For example, Mack and Lansley (1985) included the social consensus and identified the enforced lack of socially perceived necessities, captured by surveys (subsection B). The social rights-based approach includes the rights that have been established in norms and regulations, through social consensus. This view also defines that income poverty is associated with social deprivation (subsection C). However, the SI and the HF views defined poverty by considering the lack of means to fully participate in society and the obstacles to the development of human capacities, respectively (subsection D and E). These two last notions of poverty do not imply a cause-effect relationship of the income and deprivation dimensions. Low income is seen as an additional poverty dimension. Both frameworks imply a more comprehensive study of poverty and human development. These approaches aim theoretically at measuring poverty through the union method (sections D and E, column 5).

However, Townsend (1979) shows that poverty is the cause of deprivation and deprivation is the consequence. This leads to the use of the intersection method of income and standard of living, as it is also the way estimated by the consensual methods (subsections A and B, columns 4 and 5). Indeed, Townsend (1979) devised an index of deprivation although there is a reassertion, when it is acknowledged that Townsend's concept of poverty refers to other kinds of resources, different from income (Levitas, 1998b; 2006; Gordon, 2006a). Townsend (2009) advocated a social rights approach based on universal policies, especially in the developing world. So, this leads us to measure

indicators of standard of living plus low income comprehensively, as in the case of the EU2020 poverty measure (EC, 2010; Boltvinik, 1999 and EVALUA, 2009a). Similarly, Gordon et al (2003) developed social deprivation indicators to estimate child poverty for UNICEF. In fact, Townsend (1979) opens the panorama to use indicators of income and standard of living, according to what is seen in societies as customary and adequate to live decently.

For instance, CONEVAL (2010) captures the society consensus through the use of the Mexican Constitution and the LGDS and associates low income with social deprivations, leading to the intersection method to poverty (subsection C, columns 4 and 5). However, there is no agreement on the way social rights should be combined to estimate multidimensional poverty (Boltvinik et al, 2010). However, we can advance towards better measures by acknowledging that social deprivations are defined as the violation of social rights (UN, 2004; Pemberton et al, 2005; Donald and Mottershaw, 2009). There is also a task for poverty studies, which is to define income as a social right, because the aim of poverty studies has been to alleviate multidimensional poverty.

The empirical analysis carried out in this study has exposed new facts regarding outcomes obtained from the application of poverty measurement methodologies in different social contexts, the UK and Mexico (column 5). The consensual method (Gordon, 2006a) is consistent with the identification of the multidimensionally poor, through the intersection approach to poverty and aims at targeting people through more specific antipoverty policies, i.e. those people who have fallen into poverty due to economic crisis or have been excluded from parts of the welfare system in the UK (Gordon et al, 2013; Maître et al, 2013).

Table 8.3. Comparative framework of the theories, concepts and measures on multidimensional poverty developed in the UK and Mexico

Theoretical approach (1)	Conceptualisation of poverty (2)	Scope of analysis and indicators: standard of living, income, etc. (3)	The relation assumed between the poverty dimensions (4)	Empirical contributions and criteria to measure multidimensional poverty (5)
A) Townsend's Relative Deprivation approach	<i>"... resources are so seriously below those commanded by the average individual or family that they are, in effect, excluded from ordinary living patterns, customs and activities"</i> (Townsend, 1979, p. 31).	Income and standard of living: Indicators of low income and multiple deprivation.	Poverty is the cause of deprivation, deprivation is the consequence (Townsend, 1979).	It provides with the basis to measure poverty through the intersection approach.

<p>B) Consensual Approach</p>	<p>It identifies the enforced lack of socially perceived necessities to reflect “<i>the views of society as a whole</i>” (Mack and Lansley, 1985, p. 42).</p> <p>The consensual needs aim at reducing the role of experts, in the definition of the poverty standards (Mack and Lansley, 1985; Halleröd, 1994; 1995).</p>	<p>Income, standard of living:</p> <p>It aims at estimating consensual measures of low income and multiple deprivations.</p>	<p>The consensual methods advocate Townsend’s (1979) viewpoint on that there is a relationship between low income and deprivation. For instance, the research work of Halleröd (1994); Nolan and Whelan (1996b); Townsend and Gordon (1993); Gordon (2006a; 2010b); Gordon and Nandy (2012); Main and Bradshaw (2014).</p>	<p>The empirical analysis corroborates a relationship between low income and social deprivations for Mexico.</p> <p>The prevalence of poverty is estimated through multivariate statistical techniques.</p> <p>It implies target populations of multidimensional poverty.</p>
<p>C) CONEVAL’s social rights and wellbeing (MMPM poverty methodology)</p>	<p>Social rights are constitutional guarantees, Multidimensional poverty is defined as those people experiencing social deprivations and low income (CONEVAL, 2010).</p>	<p>Income, standard of living and social cohesion⁹⁹.</p> <p>Social deprivation indicators and low income through the definition of budget standards</p>	<p>Income poverty is associated with social deprivations (CONEVAL, 2010).</p>	<p>The measurement criteria aim at combining poverty and deprivation, to obtain the multidimensionally poor through the intersection approach.</p> <p>However, the empirical approach shows that it underestimates the prevalence of poverty. Also, it is a partial view to accomplish social rights.</p>

⁹⁹ Social cohesion was not included in this research because this indicator refers to a phenomenon that should be studied at area level (Gordon, 2010b), whereas this study measures poverty at the individual and household levels only.

D) The Social Inclusion framework and the European Union 2020 poverty measure	Social Inclusion/Exclusion framework developed in the EU, with its purpose being to provide individuals with the means to fully participate in society (Atkinson et al, 2002; Levitas, 2006).	Income plus standard of living: Social inclusion indicators (at risk-of-poverty rate; low work intensity; material deprivation)	The RED discourse sees social exclusion as a consequence of poverty (Levitas, 1998a). It aims at measuring low income plus standard of living (EC, 2010).	The EU2020 measure advocates the union approach to poverty. However, the empirical analysis shows underestimation of the prevalence of multidimensional poverty, as well as a very restrictive number of deprivation indicators.
E) Human Flourishing and the IPMM poverty method	Human flourishing implies people's accomplishment of their potentialities as human beings (Boltvinik, 2005a)	UBN, income plus time poverty ¹⁰⁰ . Knowledge, information and waste disposal are included in UBN	It defines economic poverty, which is one of the scopes of human flourishing. So, the total set of people experiencing UBN or low income, should be taken into account to measure multidimensional poverty (Boltvinik, 2005c)	The empirical analysis of the UK social context revealed that the IPMM method underestimates the prevalence of multidimensional poverty, which is similar to three or more deprivations, obtained by the PSE research team in the UK (Gordon et al, 2013). The weighted average system is not consistent to the HF approach. The criteria to define weights, to sum up the poverty dimensions relies on the cost of every kind of items in the normative basket. The implications for social policy is restrictive with these poverty measurement criteria. It will not cover the total number of the poor, to accomplish UBN, and then to look towards human flourishing.

Source: Own elaboration based upon definitions provided in Townsend (1979); Mack and Lansley (1985); Atkinson et al (2002); DOF (2004); Levitas (2006); Boltvinik (1992; 2005a; 2005c); Gordon (2006a); Gordon and Nandy (2012); CONEVAL (2010); the EC (2010) and Gordon et al (2013).

¹⁰⁰ Time poverty was not included in the empirical analysis of this comparative framework. Time poverty alludes to other theoretical frameworks, such as the capabilities approach (Bojer, 2006; Burchardt, 2008).

8.3. Implications of applying multidimensional poverty methods in different socioeconomic contexts.

The results of this research show that some poverty measurement methods can have wider applicability in countries with similar socio-economic contexts. For instance, the idea of measuring social deprivations based upon a social rights-based approach is replicable in countries where there is a constitution that can guarantee the entitlements for each citizen. The social rights based-approach in this study case was applied to the UK, however this country does not have a constitution that can officially guarantee the social rights established by law. For this research, the international human rights covenants ratified by the UK government as the basis for the application of the SR framework. Also, the Social Inclusion/Exclusion framework includes some social rights in EU countries, particularly the new European Pillar on Social Rights (Bailey et al, 2017).

In countries where the social consensus is established in a Constitution could more easily implement CONEVAL's (2010) multidimensional poverty measurement methodology. In Latin American these countries include: Chile, Colombia, Brazil, Costa Rica, etc. (CEPAL and IIDH, 1997). Applying CONEVAL's social rights based approach in a country like the UK which does not have a formal written constitution is much more difficult/challenging.

By contrast, the EU2020 poverty measure does not produce credible multidimensional poverty results when applied in Mexico. In particular, the LWI indicator does not seem to work in Mexico where the labour market is characterised by informality, flexible markets, child labour and precarious salaries (Rendón y Salas, 1996; Arnold and Bongiovi, 2013; INEGI, 2014). Furthermore, the SMD, component of the EU2020 poverty measure, is a minimalistic way to capture deprivation, especially in Mexico, given the range of social rights that are guaranteed by law and in the Mexican Constitution (DOF, 2014).

Also, the AROP relative income poverty measure does not produce a credible poverty threshold in a highly unequal country like Mexico – where there are a lot of households which have low incomes, so the median household income is low and the AROP measure

produces too low an income poverty threshold. The AROP relative poverty threshold is much lower than the Mexican budget standards based income poverty measures. Despite the fact that Mexico has a high gross domestic product, the 15th largest economy in the world (World Bank, 2017), this wealth is unequally distributed i.e. there are few rich people and many people with low levels of income (as shown in Chapter 5) and so, central tendency measures, such as the 60% median threshold is insufficient to afford the necessities of life. By contrast, in rich countries with low levels of inequality the AROP measure performs much better and produces a poverty threshold which is a sufficient income to afford the necessities of life (for example Denmark). Thus, the EU2020 poverty measure should only be used in relatively rich countries with low levels of inequality, it should not be used in most countries in the World.

The socially perceived necessities approach can be applied easily in democratic countries where there is a recognition of the will of the people; where social context provides the conditions to accept the consent of the population, and consequently to advocate poverty measures that can update the poverty thresholds and identify the necessities of life, through social consensus. In these contexts, socially perceived necessities can be adopted to reflect the current standards of living accepted by the majority of the population to live decently in society.

8.4. Social policy implications and poverty measurement objectives

Poverty measurement objectives are linked to the design and implementation of social policies designed to tackle poverty. Universal social policies and targeted policies are related to specific poverty measurement definitions and goals. If poverty is conceived as a violation of social rights (ECOSOC, 1998) and international declarations have established that these rights have a universal character (UN, 1948; 1966), then, the non-accomplishment of social rights (which can be measured with indicators of social deprivation (Gordon et al, 2003; Pemberton et al, 2005)) and the reduction of poverty implies universal policy measures.

Universal social policies or broader comprehensive schemes of social security tend to accomplish the mandates of international human rights conventions to fulfil social

security and welfare rights for all citizens. From the European experience, the most important aspect in fighting against poverty has been universal social insurance programmes rather than means-tested social assistance systems which include only general safety nets for the poor: “*social assistance provides benefits only conditionally to persons of small means in amounts sufficient to meet minimum standards of need*” (Cantillon, 2009, p. 235). Cantillon (2009) also explains that, in 2004, in European countries, such as Hungary, Belgium, France, Austria and Sweden, poverty is below the average despite their smaller social assistance systems. This is because social assistance forms only a small part of their social protection system which is largely based on universal provision.

Villanger (2008) argues for the importance of universal policies, by addressing the Norwegian case, where the government provides everyone who wants it with free education and medical care. It is a characteristic of the Nordic welfare system to avoid people sinking into poverty. By contrast, targeted means tested provision aims to provide social assistance only for those who are classified as poor (Villanger, 2008). The intersection method aims to identify the poorest people/households and is thus a useful methodology for targeting. By contrast the union approach identifies everybody who suffers from any dimension of deprivation and is thus useful for measuring the sum of the population which would benefit from universal provision. So, scholars or governments using the union or the intersection approaches, as a way to combine multiple dimensions of poverty, should be aware of the purposes of these different approaches, in order to inform social policy and implement antipoverty policies appropriately.

Despite the fact that Mexican anti-poverty policies have adopted a means tested targeting approach, the Mexican Constitution established the universal character of social rights (DOF, 2014), i.e. access for all citizens.

“All authorities, within the scope of their powers, have an obligation to promote, respect, protect and fulfill human rights in accordance with the principles of universality, interdependence, indivisibility and progressiveness ...” (DOF, 2014, updated, p. 11).

The Latin American school of UBN also has its basis in universal principles. The rationale underlining the UBN framework is anchored in a human rights-based approach (Altimir, 1979). Ghai and Alftan (1977) state that the satisfaction of basic needs is based on the universal character of human rights, proposed in the Universal Declaration of Human Rights (UN, 1948).

Similarly, the EU2020 aims at targeting the whole set of poor population, however, the measure has been narrowed and do not reflect the principle of inclusion and universality of social security access, it also has a pillar on social rights; however, social exclusion has been estimated in relation to three limited indicators – the at risk of poverty measure; material deprivation; and low household work intensity (Bailey et al, 2017).

Similarly, the IPMM method is grounded upon Boltvinik's theoretical framework of Human Flourishing, which aims to include a whole range of human needs in the analysis of poverty (Boltvinik, 2007a). This approach implies a public system of social security for the population as a whole in developing countries, which includes a major role for the state in the promotion of welfare and wellbeing. The union approach is oriented towards a universal antipoverty policy. By contrast, the intersection approach, found in the consensual approach; the Child Poverty Act 2010 combined measure; and CONEVAL poverty methods, implies more targeted antipoverty policies, because these are focused on identifying specific groups of the poor population (Mack and Lansley, 1985; Nolan and Whelan, 1996; Gordon et al, 2000a; Gordon, 2006; CONEVAL, 2010).

8.5. Limitations of the study and future research directions

There are a number of theoretical and methodological aspects considered in this research that have not been addressed and need to be considered by future research, such as the use of better equivalence scales for adjusting household incomes (Buhmann et al, 1988; Boltvinik and Marín, 2003; Santana, 2009). Bradshaw (2006) states that the use of OECD equivalence scales has no basis in science and also may make a difference to the composition of poor households.

Moreover, there are also more robust measures to evaluate poverty measurement criteria, such as structural equation modelling (SEM), with confirmatory factor analysis (CF) or latent class analysis (Shelvin et al, 2000; Fergusson et al, 2001; Jensen et al, 2002). This research has defined the elements that can be used to improve the measurement of multidimensional poverty. For instance, SEM models could help clarify the number of poverty dimensions that are present in the data using objective criteria. It could also avoid duplicating information from the poverty and deprivation dimensions (i.e. double counting). Additionally, it could solve the issue of the way to determine the multidimensionally poor, either through obtaining the poverty gaps, as in the case of the IPMM method, or by taking into account the number of deprivations a person experiences, such as in the case of the MPPM method. SEM models give also the possibility to obtain a more objective poverty stratification.

On the other hand, it is important as well to consider subjective poverty measures (Gordon et al, 2000a; Bradshaw, 2001; Gordon, 2006b) to correlate with the poverty measurement indices but, because of the lack of information in the ENIGH survey, these could not be considered as possible validators for the Mexican poverty measures.

Further research is also needed on social cohesion and time poverty dimensions, which were not included within the methodologies evaluated in this research. Their assessment should be appraised by considering the underlying theoretical approaches (Gordon, 2010b; Burchardt, 2008).

Also, this study was limited by the nature of data surveys collected in the UK and Mexico. Surveys in each country respond to different theoretical or methodological frameworks. It has been acknowledged by different scholars, such as Boltvinik (1992), Beccaria and Minujín (1987) and, more recently, by Gordon (2010b), that Mexican surveys include only a limited number of indicators to capture standards of living for the measurement of poverty. Indeed, the process to develop the UBN methodology in Latin America depends on the variables highlighted in surveys of households' income and expenditure (Feres and Mancero, 2001). In addition, surveys of socially perceived necessities have not been updated in Mexico.

Finally, there are other different approaches to poverty, theories, concepts and measures that have not been addressed in this study. So, based on Popper (1969), any judgement about the adequacy of the approach employed in this study will depend on whether it is possible to corroborate theories through the assessment of methodologies in different contexts. This research uses a quantitative perspective in that reality and social situations are regarded as quantifiable and measurable. Therefore, if something is measured, validated and generalizable, then it can be generalized to all similar populations because reality is independent from personal experience (Gall et al, 2003). However, it is acknowledged that there should also be qualitative research in the field of poverty studies, such as focus groups, to investigate more about the nature of poverty, from the subjective viewpoint (Reichardt and Cook, 1979), such as in the PSE research work (Gordon et al, 2013).

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Appendix

3.1. Social exclusion dimensions and indicators

Authors:	Dimensions:	Indicators (measured by):
1. Burchardt, Le Grand and Piachaud (2002)	1.1. Consumption 1.2. Production 1.3. Political engagement 1.4. Social	1.1. a) Capacity to buy goods and services. b) Savings. 1.2. The participation in economically or socially valued activities. 1.3. Involvement in local or national decision making. 1.4. Regularity and frequency of meeting with family, friends and neighbours.
2. Gordon <i>et al</i> (2000)	1.1. Impoverishment 1.2. Labour market exclusion 1.3. Service exclusion 1.4. Exclusion from social relationship	2.1. Lack of material resources. 2.2. Lack of work, poor conditions or quality of work. 2.3. Lack of access to public and private services. 2.4. a) Non-participation in common activities. b) The extent and quality of social networks. c) The support people can call upon routinely and in a crisis. d) Disengagement from political and civic activity. e) Confinement resulting from fear of crime, disability of other factors.
3. Tsakloglou and Papadopoulos (2002):	3.1. Income poverty 3.2. Living conditions 3.3. Necessities of life 3.4. Social relations	1.5. Incomes below 60% of median equivalised income. 1.6. Scoring below 80% of the median, using a weighted scale based on 22 household items (e.g. lack of space, environment problems, and consumer durables). 1.7. Scoring below 60% of the median, using a weighted scale of activities (e.g. being able to afford heating, holidays). 1.8. Meeting friends, talking to neighbours, membership of clubs or groups including political parties.
4. Nolan and Whelan	4.1. Economic strain 4.2. Consumption deprivation 4.3. Housing facilities 4.4. Housing conditions 4.5. Neighbourhood environment problems	4.1. Food, clothing, holiday a least once a year, being able to replace worn-out furniture. 4.2. Car, phone, colour television, video, microwave and dishwasher. 4.3. Housing services: bath or shower, indoor flushing toilet and running water. 4.4. Leaking roof, dampness and rot in window frames and floors. 4.5. Noise, pollution, vandalism and crime, inadequate space and light.

Source: Millar (2007, pp. 4-5); and Whelan *et al* (2001), cited in Nolan *et al*, (2008, p. 155).

4.1. Methodology to operationalize the EU2020 poverty measure and its components

1. At-risk-of poverty rate or Social Exclusion (AROP or SE)

The formula to estimate SMD according to the EU2020 poverty target is defined as follows (EC, 2014b, p.1):

$$AROP_{at\ age/gender} = \frac{\sum_{\forall i} EQ_INC20 < ARPT60\ or\ SEV_DEP\ or\ WI < 0.2\ at\ age/gender\ RB050a_i}{RB050a_{i\forall i\ at\ age/gender}} 100$$

where:

$AROP_{at\ age/gender}$ is the at-risk-of-poverty or social exclusion rate broken down by age and gender;

$EQ_INC20 < ARPT60$ is the percentage of people (or thousands of people) in each age group and gender who are at-risk-of-poverty;

SEV_DEP is the percentage of people (or thousands of people) in each age group and gender who are severely deprived;

$WI < 0.2$ is the percentage of people (or thousands of people) in each age group and gender who are living in a household with low work intensity;

$RB050a_i$ is the weight variable used as the Adjusted Cross Sectional Weight (in the EU-SILC survey).

a) At-risk-of poverty rate (AROP)

The AROP poverty measure can be estimated as follows (EC, 2014b, p. 3):

Formula:

$$AROP_{at\ age/gender} = \frac{\sum_{\forall i} EQ_INC20 < ARPTXX\ at\ age/gender = j\ RB050a_i}{RB050a_{i\forall i\ at\ age/gender}} 100$$

Where:

$AROP_{at\ age/gender}$ is the at-risk-of-poverty rate broken down by age and gender.

$RB050a_i$ is the adjusted cross sectional weight.

$EQ_INC20 < ARPTXX_at\ age/gender$ refers to the percentage of population in each age and gender group who are at-risk-of-poverty, over the total population in that breakdown.

The formula to obtain the equivalent income is the following, based on CONEVAL (2010):

$$EI = \frac{\text{current or disposable income}}{1+d_j n_j}$$

where:

EI= equivalent income

d_i is the equivalence scale (with economies of scale) corresponding to each age group.

n_j is the number of household members in each age group j.

a.1) The Poverty Gap

The formula to calculate the poverty gap index is as follows (Foster, Greer, Thorbecke, 1984):

$$P_\alpha = \frac{1}{N} \sum_{i=1}^N \left[\frac{G_i}{z} \right]^\alpha$$

$$G_i = (z - y_i) \cdot I(y_i < z).$$

where:

P_α is the is the poverty gap index,

G_i is the poverty gap,

z is the poverty line,

N is the total population or sample,

y_i is the actual income for poor individuals,

$I(.)$ indicates a value of 1 if the bracketed expression is true, and 0 otherwise.

b) Low work intensity (LWI)

The formula to estimate SMD according to the EU2020 poverty target is defined as follows (EC, 2014b, p4):

$$LOW_WI_{at\ age/gender} = \frac{\sum_{\forall i \text{ where } WI < 0.2 \text{ at age/gender}} RB050 a_i}{RB050 a_{i_{\forall i \text{ where } WI < 0.2}}} 100$$

where:

$LOW_WI_{at\ age/gender}$ = Low work intensity broken down by age and gender.

$WI < 0.2$ = Low work intensity.

$RB050a_i$ = Adjusted Cross Sectional Weight.

c) Severe Material Deprivation (SMD)

The formula to estimate SMD according to the EU2020 poverty target is defined as follows (EC, 2014b, p5):

$$DEPR_TOTL_{at\ age/gender} = \frac{\sum_{i \in \{at\ age/gender\} where\ N_ITEM=j} RB050a_i}{RB050a_i \sum_{i \in \{at\ age/gender\}} RB050a_i} 100$$

where:

$DEPR_TOTL_{at\ age/gender}$ is the percentage of people in each group and gender who cannot afford to pay N_ITEM of MD

$RB050a_i$ is the adjusted cross sectional weight.

N_ITEM is the total number of items that a person cannot afford to pay¹⁰¹. It ranges from 0 to 9.

¹⁰¹For the case of Mexico, MD items are part of the social rights established by Law (DOF, 2004) that reflects the consensus of the society.

4.2. Criteria to calculate income by the official poverty measures in Mexico

Concepts	CONEVAL poverty measure: Current income	IPMM: Disposable income less the expenditure of some basic items
Monetary income		
Income from employment	✓	✓
Bonus	✓	✓
Benefits	✓	✓
Profit sharing	✓	✓
Christmas box	✓	✓
Profits	✓	✓
Income from rental of a property or land	✓	✓
Interests, dividends	✓	✓
Royalties	✓	✓
Income from transfers	n/a	✓
Other income	n/a	✓
Non-monetary income		
Auto-consumption	n/a	✓
In-kind payments or gifts from another household	✓	✓
Transfers from institutions	✓	✓
Less expenditure related to basic items*		
Education	n/a	✓
Housing fees (rent)	n/a	✓
Durables	n/a	✓
Vehicles for private use	n/a	✓

Source: Own elaboration based upon CONEVAL (2010; 2014b); INEGI (2013) and EVALUA (2014).

*It is deducted from income, the expenditure on basic items that is not defined in the normative basket, such as that related to health care and education (Boltvinik, 2007b; 2013a).

n/a. Not applicable.

✓ It means that the concept is applied for the estimation of disposable income.

4.3. Calculation of disposable income according to Canberra's criterion

Operation	Income category
+	1. Income from employment Employee income; Income from self-employment
+	2. Property income Income from financial assets, net of expenses; Income from not financial assets, net of expenses; Royalties
+	3. Income from household production of services for own consumption Net value of owner-occupied housing services
+	4. Current transfers received Social security pensions/schemes; Pensions and other insurance benefits; Social assistance benefits (excluding social transfers in kind); Current transfers from non-profit institutions; Current transfers from other households
=	5. Income from production Sum of 1 and 3
=	6. Primary income Sum of 2 and 5
=	7. Total income Sum of 4 and 6
-	8. Current transfers paid Direct taxes (net of refunds); Compulsory fees and fines; Current inter-household transfers paid; Employee and employers' social insurance contributions; Current transfers to non-profit institutions
=	9. Disposable income Subtraction of 7 and 8
+	10. Social transfers in kind (STIK) received
=	11. Adjusted disposable income Sum of 9 and 10

Source: Own elaboration based upon Canberra Group (2011).
n/a. Not applicable.

4.4. Equivalence scales adopted by the different poverty measurement methodologies

Poverty measurement methodologies	Equivalence scales criteria
OECD modified equivalence scales	Headhousehold = 1 Additional adult = 0.50 Children less than 15 years old = 0.30
CONEVAL (Santana, 2009)	Age 0 to 5 years old = 0.70 Age 6 to 12 years old = 0.74 Age 13 to 18 years old = 0.71 Age 19 to 65 years old = 0.99
IPMM methodology (Boltvinik and Marín, 2003)	Adult man = 1 Adult woman = 0.81 Boy 3 to 14 years old = 0.58 Girls 3 to 14 years old = 0.54 Baby = 0.43

Source: Own elaboration based upon Boltvinik and Marín, 2003; Chanfreau and Burchardt (2008); Santana, 2009; CONEVAL (2010) and Boltvinik (2011).

4.5. Methodological steps to calculate the IPMM poverty index.

A. First Step:

The value of the minimum norm is denoted by x_i^0 , for every item i of basic needs, and x_{ij} is the value of the variable i for household j . For instance, the minimum norm for people's educational attainment is $x_i^0 = 12$ (12 years of schooling according to the Mexican Constitution) and x_{1j} could vary between 0 and 25 schooling years (Boltvinik, 1992; EVALUA, 2011b; DOF, 2014).

B. Second Step:

Each variable of achievement x_{ij} is transformed into a variable of deprivation, p_{ij} :

$$p_{ij} = \frac{x_i^0 - x_{ij}}{x_i^0} = 1 - \frac{x_{ij}}{x_i^0} \quad (3)$$

This equation is strictly analogous to the equation of the standardized income gap. In this case, consumption is considered:

$$I_j = \frac{c_j^0 - c_j}{c_j^0} = 1 - \frac{c_j}{c_j^0} \quad (4)$$

where:

C_j represents the consumption by household j .

C_j^0 represents the poverty line defined for the household j .

I_j is the intensity of poverty obtained for the household j .

Thus, when the household is at the norm, (3) and (4) are equal to 0. Every variable can result in different values. Negative values have to be rescaled to have the same scale as the positive values, positive values (below the norm) do not require this procedure because they show the same scale and the same value for the norm in all the variables (Boltvinik, 1992).

C. Third Step:

The indicating scale is constructed with values between +1 and -1, with the norm as 0. It is constructed using the equation below:

$$p_{ij}^* = \frac{|p_{ij}|}{\max|p_{ij}|}, |p_{ij}| < 0 \quad (5)$$

The maximum value can be taken as the maximum observed or as the maximum above which it is considered that marginal wellbeing is zero. The first option has the problem that by adding a higher negative observation, the value of the score changes for all households, without their real situation having changed. In Boltvinik's view, the second option appears more viable because when $|p_{ij}| > \max|p_{ij}|$, p_{ij}^* is always equal to -1 (Boltvinik, 1992).

Boltvinik (1992; 2009) also states that, according to the criteria that identified the poor in the original UBN, households that lack at least one need can be considered as poor. Nevertheless, the improved version of IPMM is based upon a weighted average system and so there is the possibility that, with the weighting scheme, poor households based on the original criteria have a negative global score (P_j), i.e. above the norm. Boltvinik proposed that households in poverty are only those who present an overall score more than 0.1, even though they may have one or more negative values (above the norm). Symmetrically, the same criteria can apply to non-poor households; their criterion is an overall score less than -0.1, despite one or more positive values (below the norm). Therefore, those households with P_j values between -0.1 and +0.1 can be considered as population living at the poverty threshold¹⁰².

D. Fourth Step:

Boltvinik (1992) devised a weighted average system to combine the UBN scores by household and proposed four general categories of UBN for this purpose:

- a) Private investment in basic assets (household patrimony).
- b) Right of access to services which involves public expenditure.
- c) Disposable time for recreation and education.
- d) Disposable time and right of access to educational services in the past that determine adults' educational attainment.

Boltvinik explored different weightings for the UBN. One of these was Desai and Shah's (1988) equation to aggregate specific scores of deprivation using the reciprocal of the

¹⁰²Boltvinik (1992) compares different situations in which households can be above and below the norm for different necessities. For instance, a couple without children living in a small house with only one bedroom, kitchen and bathroom; according to housing quality criteria this household would be above the norm, but with regard to educational attainment the couple were below the norm and in the other items they could meet the norm criteria. So, with only one need below the norm, they could obtain a negative P_j value with an overall score, which defines them as non-poor. Comparing this example with another hypothetical household, for instance, a family of six members who lives in a bedroom of their parental family (high level of overcrowding), but they are building their own house; in the rest of the needs, they present a score of 0, they are at the norm. With an overall weighted score they could be identified as living in poverty. However, if we compare both situations, the first family may be in a more difficult situation to overcome poverty because of their low educational attainment while the other family could be better off after their own house is finished. Boltvinik points out that one has to consider several aspects: 1) the dynamic processes of poverty, e.g. the processes of housing investment; 2) the hidden aspects of the UBN which can be confused with preferences (such as not having children); 3) some domestic decisions, such as to establish the place of residence, involves collating advantages and disadvantages, e.g. the lack of one or more services in exchange for a higher income or other benefits.

proportion of deprived households in each item ($1/h_j$). Another option considered is the one used to calculate the PL, in this case prices are used to weight goods and services included in the basket:

$$PL = C^* = P_1X_1 + P_2X_2 + \dots + P_nX_n = \sum P_iX_i$$

where:

X_i represent the amounts of goods and services included in the basket,
 P_i are their prices which operate as weights.

The variables of the first two groups of UBN, a) and b), will be expressed in monetary terms, only to weight the relative importance of the UBN items. This can be done because they involve current expenditure, as explained above, but their satisfaction has been verified directly to obtain the overall score.

Thus, the index obtained for the UBN items included in the groups a) and b) is P_j^1 which are weighted in current monetary terms:

$$P_j^1 = \sum_{i=1}^m l_i p_{ij}^* \quad (6)$$

$$l_j = \frac{k_j}{\sum_{i=1}^m k_j}; \sum l_j = 1 \quad (7)$$

where:

P_j^1 represents the UBN index for each household for items a) and b) only,

p_{ij}^* represents the scores for each necessity in every household.

l_j is the weighted index for every need.

1 to m are the UBN items transformed into current monetary terms.

k_j is the cost of the item j . Every p_{ij}^* is weighted with the proportion of the total cost (sum of the costs 1 to m) that each item represents.

E. Fifth Step: Intensity and Incidence of poverty by UBN

The intensity of aggregate social poverty by UBN can now be obtained by adding the P_i scores reported by individuals who are living in poverty and calculating a simple average:

$$I(UBN) = P = \frac{1}{q} \sum_{j=1}^q P_i \quad (8)$$

where:

q represents the number of poor people by UBN.

The incidence of poverty can be derived from the measure of the intensity of poverty in the IPMM method; in this case, for the UBN dimension:

$$H(UBN) = q/n \quad (9)$$

where:

$H(UBN)$ is the incidence of poverty by UBN,

n represents the total population.

However, we can also obtain the P_1 index by multiplying H by I (i.e. the Poverty Gap index), which is similar to the equation (7), but the constant factor is $1/n$ instead of $1/q$:

$$P_1(UBN) = [H(UBN)][I(UBN)] = \frac{q}{n(P)} = \frac{1}{n} \sum_{j=1}^q P_j \quad (10)$$

This index can be interpreted as the aggregate gap of the poor, standardized by the number of poor people as well as by the total population.

However, Boltvinik (1992) also states that it is necessary to consider the inequality between the poor, i.e. the aspects of relative deprivation that exist in poverty, to have a more complete view of the phenomenon. This can be achieved by recalculating equation (10) into a weighted average instead of a simple average, with equal weights for individuals. The weighted average can be obtained following Sen (1992) by using the distribution of the poor, considering the poor and the extreme poor. The highest values of P_j will receive a higher weighting. The P_2 index for UBN is:

$$P_2(UBN) = \frac{1}{n} \sum_{j=1}^q r_j P_j \quad (11)$$

Boltvinik called this index ‘Sen’s index of poverty for the UBN’. It takes into account the incidence of poverty, the average intensity of poverty and relative deprivation among the poor.

Source: Own elaboration based on methodological criteria defined by Boltvinik (1992; 1999b); EVALUA (2011b); DOF (2014).

4.6. Weighting average system and estimation of the IPMM index

The IPMM multidimensional poverty measurement is obtained by combining the intensity of poverty by income-time I(PLT) and UBN¹⁰³. The P_j^1 index calculated to obtain UBN was weighted by the cost that each item represented in the total cost of this subset of items. Thus, to combine I(PLT) and UBN we have first to find the equation that represents the total cost in which a household j reaches the standard of needs, in monetary terms, only for weighting purposes and to be able to add these dimensions.

$$K_j^T = K_j^{PL} + \sum_{i=1}^m k_{ij} = k_j^{PL} + k_j^{PD} \quad (14)$$

where:

K_j^T represents the total cost for the household j ,

K_j^{PL} represents the costs included in the PL,

$\sum_{i=1}^m k_{ij}$ represents the sum of the costs derived from needs i to m ,

K_j^{PD} represents the cost derived from the access to patrimony and rights.

Thus, we obtain the weights to combine PLT and UBN (P_j^1) measures:

$$a_j = K_j^{PL} / K_j^T ; b_j = k_j^{PD} / K_j^T \quad (15)$$

where: $a_j + b_j = 1$

Once $I(PLT)_j$ is rescaled we denote it as: $I^*(PLT)_j$ and we use the weights to combine it with $(UBN)_j$. The formula to calculate the IPMM is:

$$I(IPM)_j = (a)I^*(PLT)_j + (b)(UBN)_j \quad (16)$$

where:

$I(IPM)_j$ is the intensity of poverty by IPM for a household j .

Boltvinik (1992) states that there is always doubt, as exemplified above for the UBN dimension, on how to consider the households who present a positive value in one of the dimensions (PLT or UBN) and a negative value in the other dimension. From this, Boltvinik

¹⁰³ The equation to obtain I(PLT) has a wider range of variation than P_j^1 which has already been rescaled. It is necessary to rescale negative values of I(PLT) to obtain -1 as a maximum value, before we combine I(PLT) and UBN. This can be done with equation (5) (Boltvinik, 1992).

defines the criterion to be poor: “a household is poor if given an efficient allocation of their sources of wellbeing they cannot meet all their basic needs” (p 364).

According to Boltvinik (1999b), the criteria to identify the poor by I(IPM) is:

$$I(IPM)_j > 0 \quad (17)$$

The aggregate standardized gap of poverty by IPMM is the average gap of poor individuals and can be expressed as:

$$I(IPMM) = \frac{1}{q} \sum_{j=1}^q I(IPMM)_j \quad (18)$$

We can also obtain P_1 and P_2 for the IPMM measure by multiplying H (incidence of poverty) with I (intensity of poverty), as for the UBN dimension:

$$P_1(IPMM) = [H][I(IPMM)] = \frac{1}{n} \sum_{j=1}^q I(IPMM)_j \quad (19)$$

$$P_2(IPMM) = \frac{1}{n} \sum_{j=1}^q r_j I(IPMM)_j \quad (20)$$

Based on Sen (1992), this eliminates the drawbacks of the aggregate measures of poverty that do not consider the income distribution between poor and that do not take into account the number of poor people.

Source: Own elaboration based on methodological criteria defined by Boltvinik (1992; 1999b); EVALUA (2011b); DOF (2014).

4.7. An example to estimate Educational gap in the IPMM index

Each variable of achievement x_{ij} , is transformed into a variable of deprivation p_{ij} :

$$p_{ij} = \frac{x_i^0 - x_{ij}}{x_i^0} = 1 - \frac{x_{ij}}{x_i^0}, \text{ where } x_i^0 \text{ is the norm}$$

This is the general specification to calculate UBN (deprivation) variables; but every UBN indicator is derived from this general formula. For instance, educational gap can be obtained with the next specific formula:

$$EG_j = 1 - AE_j$$

where:

EG_j is the indicator of educational gap at the household level.

AE_j is the indicator of the adequacy of education for the household j.

Therefore, the prevalence of people that experience educational gap, results from the sum of the IPMM criteria for each poverty strata. The educational gap stratification is shown in Appendix 4.4.1 below. The same criteria apply to the poverty strata for the rest of the UBN dimensions. For instance, the people who are education gap deprived in the UK, according to the IPMM methodology are those suffering from moderate poverty or intense poverty or indigence.

4.7.1. Criteria of poverty stratification for UBN indicators

Range of UBN coefficients	Poverty strata
If ($UBN_j \leq -0.5$) $S_UBN_j = 6$.	6 Upper class.
If ($UBN_j > -0.5$ & $UBN_j \leq -0.1$) $S_UBN_j = 5$.	5 Middle class.
If ($UBN_j > -0.1$ & $UBN_j \leq 0$) $S_UBN_j = 4$.	4 Basic need satisfaction.
If ($UBN_j > 0$ & $UBN_j \leq (1/3)$) $S_UBN_j = 3$.	3 Moderate poverty
If ($UBN_j > (1/3)$ & $UBN_j \leq 0.5$) $S_UBN_j = 2$.	2 Intense poverty.
If ($UBN_j > 0.5$ & $UBN_j \leq 1$) $S_UBN_j = 1$.	1 Indigence.
Where: UBN_j = UBN indicator. S_UBN_j = UBN strata.	

Source: Own elaboration based on the IPMM methodological criteria (Boltvinik, 1992; EVALUA, 2011, 2014; Boltvinik, 2013c).

4.8. Norms used to define each social deprivation indicator, based upon UK legal regulations or customary standards

Social deprivation indicators / sub-indicators	Norms to identify the poverty standards for the UK
<p>1. Educational gap</p> <p>Historical details for the UK:</p> <p>In England and Wales, elementary school and compulsory school attendance was established by the 1880 Elementary Education Act, for all children ages 5 to 10 years old. The Elementary Education Act in 1893 raised the elementary school leaving age to 11 years old. In 1944, the school leaving age was raised to 15 and then raised to 16 in 1972, as now defined by Section 8 of the Education Act 1996. The compulsory age to start mandatory education in England and Wales is when the child attains the age of 5 years old (UK Parliament, 1880; 1893; 1996; 2008). There were other amendments to the Education and Skills Act in 2008 which had effect from 2013 onwards (UK Parliament, 2011).</p> <p>In Scotland, the Education Act of 1872 created a Board of Education. This established the responsibility of parents to see children between the ages of 5 and 13 years old receive education. The age of compulsory education raised in 1901 to 14 years. Subsequently, the 1936 Education Act raised the age to 15 years old. The Scottish Government also determined in the same Act that children were entitled to primary education from the ages of 5 to 12 years old (UK Parliament, 1872; 1901; 1936).</p> <p>There were several changes to secondary education throughout the 1970s and 1980s, plus a rapid expansion of vocational and further education since the 1960s. The process of providing secondary education for all was considered further in two published reports. These are entitled (SEED, 2007):</p> <ul style="list-style-type: none"> a) The Curriculum in the Third and Fourth Years, of the Scottish Secondary School (The Munn Report, 1977) (SED, 1977a), and b) The Assessment for All (The Dunning Report, 1977) (SED, 1977a). Secondary education extends over six years from the age of 12 but education is not compulsory after the age of 16 (SEED, 2007). <p>In Scotland, the Munn and the Dunning Reports led to the introduction of a new curriculum for 14 to 16-year-olds (Croxford, 2009) and this is the age at which pupils take the examinations for the Scottish Qualifications Certificate (SQC) (Berry and Kidner, 2008). The Curriculum Design for the Secondary Stages was introduced in 1987 and updated in 1999 (SCCC, 1987; 1999a; 1999b). However, the 1980 Education Act still defined in Art. 31 (Part II), that a person is of school age if she has attained the age of 5 years old but she has not attained the age of 16 (UK Parliament, 1980). Secondary education beyond school leaving age became more widespread during the 21st Century; about 70% of 16-year-olds stayed on in school (Raffe et al, 2004).</p>	

In Northern Ireland, under the 1923 Education Act, the national schools became public elementary schools for pupils aged 4 to 14 years old (UK Parliament, 1923). The Education (Northern Ireland) Act of 1947 (Art. 33) raised the compulsory age of attendance for basic education and established the ages between five and fifteen years old and this was ratified also in the 1957 Education Act (Northern Ireland) (UK Parliament, 1947; 1957). This Act was closely modelled on the Butler Act¹⁰⁴ and represents the basis for the present public education system in Northern Ireland. Secondary schools were renamed grammar schools and provided full time academic education up to the age of 17 or 18, some became fee paying institutions. Despite the fact that, in the 1960s, the Labour Government in England decided to abandon selection and to adopt a comprehensive system of education, Northern Ireland did not follow suit (Gallagher and Smith, 2000). Schools were divided into a parallel system, whose enrolment reflected the religious divisions in society, each with grammar and secondary schools. It was not until 1971 that the Advisory Council on Education, in Northern Ireland, questioned the validity of the principle of academic selection at the age of 11 (Gallagher and Smith, 2000).

In 1990, the current curriculum structure was established in Northern Ireland, based on the Education Reform Order of 1989 (UK Parliament, 1989). Schools were designed to provide all pupils with a broad education during the compulsory years of schooling, between the ages of 4 and 16 years old (NICC, 1989).

Chronological order:

A) England and Wales¹:

- 1893 Elementary Education Act (School Attendance) raised the school leaving age from 11 to 13 years old.
- 1944 Elementary Education Act raised the school leaving age to 15.
- 1972 Raising of the School Leaving Age (RoSLA) increased from 15 to 16 years old.
- 1996 Education Act ratified the age of 16 as compulsory age. And a person begins to be of compulsory age, when she attains the age of 5 years old.

B) Scotland:

- 1872 Education Act established compulsory education between 5 to 13 years old.
- 1921 Education Act raised the compulsory education leaving age to 14 years old.
- 1936 Education Act raised the compulsory education leaving age to 15 years old.
- 1980 Education Act established compulsory education between 5 to 15 years old.
- 2005 The Scottish Executive established the external formal assessment to obtain qualifications for the S3-S4 curriculum, referring to children aged 14 to 16 years old. This cohort can be only assessed by attending school.

C) Northern Ireland:

- 1923 Education (Northern Ireland) Act established compulsory education between 5 to 14 years old.
- 1947 Education (Northern Ireland) Act established primary and secondary education as mandatory, between 5 to 15 years old.
- 1989 Education Reform (Northern Ireland) Order established compulsory years of schooling, from 4 to 16 years old.

¹⁰⁴The Butler Act refers to the Education Act of 1944, enacted in England and Wales, named after the Conservative politician R. A. Butler. This Act introduced the Tripartite System of secondary education (Jeffereys, 1984).

2. Health care access

- A) The NHS is a public system for every permanent resident. It is a system that is free at the point of use paid for from general taxation (Webster, 2002).
- Deprivation is measured based on respondent's answers to the PSE 2012 survey, regarding to their 'real' health service access – as follows:
- a) Do not use a doctor and service is unavailable or inadequate.
 - b) Do not use a doctor and the respondent cannot afford the service.
 - c) Do not use a doctor and problem in local area (poor street lighting, potholed roads or broken pavements).
 - d) Do not use a doctor and problem in local area (lack of open public spaces).
 - e) Do not use a doctor and problem in local area (vandalism).
 - f) Or the respondent lacks of private health insurance, because he cannot afford it.

3. Social security

General Criteria:

Deprivation due to social security was not estimated for the whole population; only for those who are outside the contributory system in the UK. According to the European Commission (EC, 2011, 2013), all residents are entitled to the National Insurance scheme through a contributory basis in the UK. But, those who cannot contribute are entitled to other non-contributory benefits, or means-tested benefits.

Steps to estimate deprivation in access to social security:

- 1) The target population is identified as those people entitled to means-tested benefits. It is based on EC (2011) and the UK Government's criteria on social benefits (www.gov.uk/browse/benefits).
- 2) Respondents to the PSE 2012 survey, who are part of the target population, and who have not received any type of the social security benefits, are considered deprived.
- 3) The list of social benefits are also defined from EC (2011) and the UK Government's criteria, and identified in the PSE 2012 survey (FRS element).
- 3) The indicator of deprivation in access to social security is estimated according to two poverty measurement methodologies, MMPM and IPMM. The first method calculates deprivation by summing the number of deprivations. The second method uses a weighted average system.

Social security benefits are listed below:

3.1 Jobseeker's allowance

Criteria to select the target population and receive the benefits:

- A) Be 18 or over but below State Pension age;
- B) Not be in full-time education;
- C) Be unemployed, but be actively seeking work, and be available to work;
- D) Work on average less than 16 hours per week.

- E) If the person has a partner, then, the partner must work less than 24 hours per week on average, to obtain the benefit;
- F) Must have £16,000 or less in savings;
- G) Self-employed people can't usually get contribution-based JSA.

Unemployment benefits, identified in the PSE 2011 survey (module of the FRS survey):

- Jobseeker's allowance (JSA).
- Income support.
- New Deal.
- Unemployment / Redundancy insurance.

3.2. Old-age pensions and benefits

Criteria to select the target population and receive the benefits:

- A) State retirement pension can be claimed once the person reaches State pensionable age. The general criterion is to be 65 years old or more, for men and women. However, those women aged 60 years before the year of the reform, 2010, are pensionable. Pensionable age has been rising from 60 to 65 since 2010, for women born after 6 April 1950 but before 6 April 1955 (EC, 2011).
- B) If people have partners who are entitled to a pension, then this benefit is met.

Social security benefits:

- Pension credit.
- Retirement pension/OPP.
- Widow's pension/Bereavement allowance.
- War widow's/Widower's pension.
- Regular payment into an occupational or private pension.
- Smart pension.

3.3. Sickness cash benefits; invalidity benefits; disablement benefit and income support

Criteria to select the target population and receive the benefits:

- A) Employed, self-employed or unemployed people experiencing illness or disability, that has prevented them from working.
- B) The person should experience relative low income. Low income was estimated according to the poverty lines, defined by the MMPM and the IPMM poverty measurement methodologies.
- C) An additional requirement for the SSP benefit is that the person needs to earn at least 112 pounds per week (before tax).

D) The ESA benefit also requires not being entitled to SSP or SMP. Additionally, the person should not have returned to work and should not be entitled to JSA and also be under the state pension age.

Social security benefits:

The EC (2011) defines the following types of benefits with respect to illness or sickness due to work or which prevent work activity:

- 1) Sickness cash benefits (SCB)
 - 1.1) Statutory sick pay (SSP)
 - 1.2) Employment and support allowance (ESA)
- 2) Invalidity benefits (IB)
- 3) Disablement benefit (DB)
- 4) Income support (IS).

Additional criteria:

The people that are entitled to SSP should have been ill for at least 4 days in a row, but also they are required to earn at least 112 pounds per week (before tax) (UK Government, 2014). On the other hand, the ESA benefit also requires not being entitled to SSP or SMP (Statutory Maternity Pay). In addition, the person should not have gone back to work, or should not be entitled to JSA, and should be the state pension (European Union, 2011; UK Government, 2014).

Furthermore, the ESA allowance replaced the IB and the IS, that is paid for new claimants from 27 October 2008 (European Union, 2011). Also, DB are payable if the person becomes disabled due to an accident at work, or if the person contracts a prescribed industrial disease. However, this benefit does not depend on the amount of national insurance contributions paid (European Union, 2011, 2013; UK Government, 2014).

The relevant benefits used from the PSE survey are:

- Severe disability allowance.
- Incapacity benefit.
- Industrial injury disablement benefit.
- Employment and support allowance.
- Income support.
- Permanent health insurance.
- Critical illness cover.
- Disability benefits.
- Any other sickness insurance.

3.4. Family benefits

Criteria to select the target population and receive the benefits:

The (EC, 2011) defines the following criteria:

- A) Adults 20 years or more who are responsible for one or more children, under 16; and under 20 if they are in full time education and are not studying for an advance course (e.g. Higher education course).
- B) Responsible people should reside in the UK.
- C) Responsible person for the children can be either the person or the partner.
- D) Only one person can receive child benefit for a child.

Social security benefits:

The EC (2011) defines the following types of benefits:

- 1) Child benefits.
- 2) Child tax credit.

The relevant benefits used from the PSE survey are:

- Child benefit.
- Guardians allowance.
- Child tax credit.
- Child tax credit lump sum.
- Child maintenance bonus/premium.
- Lone parent benefit run-on/job grant.

3.5. Maternity and Paternity benefits

Criteria to select the target population for receipt of these benefits:

The (EC, 2011) defines the following criteria:

- A) Women and their partners that expect a baby.
- B) They must have been employed or self-employed for at least 26 weeks.
- C) They have minimum average weekly earnings at least equal to the lower earnings limit for NI purposes, i.e. 112 pounds a week. The MA benefit requires minimum earnings to be at least equal to the maternity allowance threshold, which is 30 pounds a week.
- D) Additional criteria define that a person can receive MA, if she does not have SMP.

E) Furthermore, the ASPP benefit establishes that an employee, whose partner is entitled to SMP, MA or SAP, may be able to receive ASPP, if the mother or adopter has returned to work before the end of their maternity or adoption pay period.

Social security benefits:

The EC (2011) defines the following types of benefits:

- 1) Statutory maternity pay (SMP).
- 2) Maternity allowance (MA).
- 3) Ordinary statutory paternity pay (OSPP).
- 4) Additional statutory paternity pay (ASPP).
- 5) Statutory Adoption Pay (SAP).

The relevant benefits used from the PSE survey are:

- MA.
- Maternity grant from social fund.
- Health in pregnancy grant.

3.6. Survivors benefits

Criteria to select the target population and receive the benefits:

The (EC, 2011) defines the following criteria:

- A) Benefits are available to men and women whose partner died after 9th April 2001, or their civil partner died after 5th December 2005.
- B) A single lump-sum should be paid to widows, widowers and surviving civil partners between 45 years old but under state pension age. Or over state pension age, if the late spouse or civil partner was not entitled to a state pension based on his/her own contribution record.
- C) WPA should be paid under the following circumstances:
 - C.1) It is a regular payment for men and women who have a qualifying child, generally for whom they receive is a child benefit.
 - C.2) Women who are pregnant by their late husband/civil partner can also qualify.
 - C.3) WPA cannot be paid beyond state pension age.
- D) AP is based on the earnings-related contributions of the late spouse or civil partner, and can be paid only with WPA.

Social security benefits:

The EC (2011) defines the following types of benefits:

- 1) Bereavement payment (BP).
- 2) Bereavement allowance or widow's pension (BA).
- 3) Widowed parent's allowance (WPA).

4) Additional pension (AP).

The relevant benefits used from the PSE survey are:

- Widow's pension/Bereavement allowance.
- Widowed mothers/Widowed parents allowance.
- Pension credit.
- Retirement pension/OPP.
- War widow's/Widower's pension.
- Widow's payment.
- Smart pension.

3.7 Long term care

Criteria to select the target population and receive the benefits:

The (EC, 2011) defines the following criteria:

- A) This benefit is oriented to people who have certain physical, cognitive or age-related conditions and who require help with their personal care or their daily living activities (EC, 2013).
- B) Long term care benefits are restricted to those with relatively low income and savings, according to the 1993 Health and Community Care Act (EC, 2011, p 29). Low income was estimated according to the poverty lines, defined by the MMPM and the IPMM poverty measurement methodologies.
- C) DLA benefits are for people under 65 years old that have walking and mobility difficulties and care needs, because of a physical or mental disability. It can be paid in addition to other benefits.
- D) AA benefits are for people aged 65 or over that need substantial help with personal care, because of a physical or mental disability. It can be paid in addition to other benefits.
- E) CA is paid to the person who spends at least 35 hours a week, caring for a person receiving a DLA or an AA.

Social security benefits:

The EC (2011) defines the following types of benefits:

- 1) Disability Living Allowance (DLA).
- 2) Attendance Allowance (AA).
- 3) Carer's Allowance (CA).

The relevant benefits used from the PSE survey are:

- DLA (self-care).
- DLA (mobility).

- Severe disability allowance (SDA).
- Invalid care allowance (ICA).
- Attendance Allowance (AA).
- Employment and support allowance (ESA).
- Incapacity benefit (IB).
- Permanent health insurance.
- Any other sickness insurance.
- Critical illness cover.

3.8 Housing benefits

Criteria to select the target population and receive the benefits:

This benefit is not mentioned in the EC's (2011) report; but it is considered as part of the social security scheme by the UK Government (2014).

A) Tenants who rent accommodation² and have a low income or are claiming benefits. Their savings must be below £16,000. Low income was estimated according to the poverty lines, defined by the MMPM and the IPMM poverty measurement methodologies.

B) A person can apply if she is employed or unemployed. But if the person lives with a partner, only one of them can receive HB.

C) The target population is the working age population, but full time students are only eligible if they have a disability or are single parent or under certain other circumstances. Part time students are eligible for housing benefit as are full time students in the following cases: if they are a lone parent; have a partner who is also a student and are responsible for a child; receive income support, income-based jobseeker's allowance, or other income allowances; live in supported accommodation and receive universal credit; have a disability and qualify for any type of disability premium.

D) Single people under 35 years old are generally only entitled to obtain HB at the shared accommodation rate (i.e. the maximum housing benefit they can get is the rate for renting a single room in a shared house). This applies even if they rent a self-contained flat. There are certain specific exemptions to this rule, such as caring for a child or being disabled.

Social security benefits:

- 1) HB only or separately.
- 2) CTB only or separately.
- 3) HB/CTB paid together.
- 5) Number of years that the person receives HB.
- 6) CTB rebates.

4. Quality and living space of the dwelling

Criteria to define overcrowding in the UK:

Overcrowding is defined in the UK using the room standard, which was established in Section 325 of the Housing Act (1985). However, this standard has not been updated since 1935 and is widely considered to no longer be relevant, thus the Office for National Statistics measures overcrowding in the UK using the Bedroom Standard:

The bedroom standard consists in allocating a separate bedroom to the following persons (Wilson and Fears, 2016):

- (a) a person living together with another as husband and wife, or partner;
- (b) a person aged 21 years or more;
- (c) two persons of the same sex aged 10 to 20 years;
- (d) two persons aged less than 10 years. Children included here can be of the same sex or not;
- (e) two persons of the same sex where one person is aged between 10 and 20 years, and the other is aged less than 10 years;
- (f) any person aged under 21 years in any case where he or she cannot be paired with another occupier of the dwelling so as to fall within (c), (d) or (e) above.

The bedroom standard is compared with the number of bedrooms available, which are for the sole use of the household. Bedrooms converted to other uses are not included. However, bedrooms that are not in use can be included, unless they are uninhabitable.

5. Access to basic services in the dwelling

The sub-indicators are based on the PSE 2012 results (Gordon et al, 2013).

A) Heating. If the person cannot afford keep home adequately warm.

B) Cuts in the winter. These cuts are considered if comfort of the household (much colder or a bit colder) is affected, and members of households are affected as well.

C) Problems with accommodation: shortage of space, too dark, heating, draughts, leaky roof, damp or mould on walls, ceilings and floors, rot in window frames or floors, plumbing or drains, condensation, etc.

These problems will be considered if the household members have been affected.

D) Debts. People not able to pay their electricity, gas, fuel, water and sewerage bills.

6. Access to food

The PSE 2012 study, carried out by Gordon et al (2013) reveals the composition of adequate diets, for children and adults.

A) Children deprived in access to food will be identified using the following criteria:

- A.1) Three meals a day.
- A.2) Fresh fruit or vegetables at least once a day.
- A.3) Meat, fish or vegetarian equivalent at least once a day.

B) Adults deprived in access to food will be identified using the following criteria:

- B.1) Two meals a day.
- B.2) Fresh fruit and vegetables everyday.
- B.3) Meat, fish or vegetarian equivalent every other day.

7. Access to information

There are high percentages of people in the UK with good access to information, according to results obtained from the PSE 2012 survey. The following sub-indicators are used to measure access to information in this research:

A) Children

- A.1) Children's books at home, suitable for their ages.
- A.2) Computer at home.

B) Adults

- B.1) Access to TV.
- B.2) Access to phone.
- B.3) Access to computer.
- B.4) Access to internet.

Source: Own elaboration based upon UK Parliament (1872; 1880; 1893; 1901; 1923; 1936; 1947; 1957; 1980; 1986; 1989; 1996; 2003; 2008; 2010b; 2011); SED (1977a; 1977b); SCCC (1987; 1999a; 1999b); NICC (1989); Boltvinik (1992; 1999b; 2013a); FAO (1996); Webster, 2002; SEED (2007); CONEVAL (2010); EVALUA (2011); European Union (2011, 2013); Gordon et al (2013); PSE (2014); UK Government (2014); UN (2014).

¹ The school leaving age raised to 17 years old, with the Education and Skills Act 2008, and came into force from 2013 (UK Government, 2008). This Act also states that young people have to stay in education or training at least part-time, until they are 18 years old. However, these norms have not been considering for the measurement of educational gap, because the PSE survey used for these purposes was carried in 2012.

² Tenants are identified in the PSE survey, as the target population for HB, when they respond that they are paying a rent. Those people that are already entitled to a social benefit or are paying low cost of their rent are not considered, such as those people in receipt of housing association schemes.

4.9. UK social security components, target population and eligibility criteria

Social security sub-indicators:	Methodological criteria
1. Jobseeker's allowance.	This benefit is for low income unemployed people and people who work on average less than 16 hours per week with a minimum level of assistance. (EU, 2011, 2013; UK Government, 2014), plus a range of other considerations detailed in Appendix 4.8, section 3.1.
2. Old-age pensions and benefits.	The basic State Pension is a government-administered pension, payments are based on the number of qualifying years that people have gained through National Insurance contributions (NICs). State retirement pension can be claimed once the person reaches State pensionable age. The general criterion is 65 years old and more, for men and women (EU, 2011, 2013) (Appendix 4.8, section 3.2).
3. Sickness cash benefits; Invalidity benefits; Disablement benefit; Income support.	These four types of benefits are measured in one sub-indicator of social security, because they are all non-contributory means tested out of work benefits (EU, 2011, 2013). The EU (2011) defines the following types of benefits with respect to illness or sickness due to work or which prevent work activity: Sickness cash benefits (SCB); Statutory sick pay (SSP); Employment and support allowance (ESA); Invalidity benefits (IB); Disablement benefit (DB) and Income support (IS) (Appendix 4.8, section 3.3).
4. Family Benefits.	These benefits can be claimed by adults who are responsible for looking after one or more children, under 16 (or under 20 and in full time secondary education) (EU, 2011; UK Government, 2014). These benefits include Child benefit and Child tax credits (EU, 2011; 2013) (Appendix 4.8, section 3.4).
5. Maternity and Paternity Benefits.	Overall, these benefits are oriented to women and their partners that expect a baby. Additionally, they must have been employed or self-employed for at least 26 weeks. There is also a criterion of minimum average weekly earnings, to access these benefits (Appendix 4.8, section 3.5) (EU, 2011; UK Government, 2014). This group of benefits include the Statutory Maternity Pay (SMP); Maternity Allowance (MA); Ordinary statutory paternity pay (OSPP); Additional statutory paternity pay (ASPP) and Statutory Adoption Pay (SAP) (EU, 2011; 2013).
6. Survivors Benefits.	These benefits are paid following the death of a spouse/civil partner to surviving adults and children. (EU, 2011; UK Government, 2014). The European Union (2011, 2013) defines the following set of benefits in this group: Bereavement payment (BP); Bereavement allowance or widow's pension (BA); Widowed parent's allowance (WPA) and Additional pension (AP) (Appendix 4.8, section 3.6).
7. Long term care.	This benefit is oriented to people who have certain physical, cognitive or age-related conditions and who require help with their personal care or their daily living activities (EU, 2013) (Appendix 4.8, section 3.7). The European Union (2011) considers Disability Living Allowance (DLA); Attendance Allowance (AA) and Carer's Allowance (CA), as part of LTC benefits.
8. Housing benefits.	Housing benefits are payable to low income tenants who need financial help to pay all or part of their rent. An additional criterion is to have capital (savings and investments) below the required threshold (EU, 2011; 2013; UK Government, 2014). (Appendix 4.8, section 3.8).

Source: Own elaboration based upon information provided by the European Union (EU, 2011, 2013) and the UK Government (2014).

4.10. UK and Mexican surveys and methods applied for the measurement of Multidimensional Poverty

UK poverty methods	Mexican surveys
Consensual Approach	<p>Surveys of Perceptions of Needs:</p> <p>A) EDUMP 2007, Survey of Multidimensional Poverty Thresholds (Encuesta para la Determinación de Umbrales Multidimensionales de Pobreza). It is a survey carried out by CONEVAL at a national level.</p> <p>B) PROFECO 1999, Perceptions of the Urban Population on the Minimum Standards for the Satisfaction of Basic Needs (Percepciones de la Población Urbana sobre las Normas Mínimas de Satisfacción de las Necesidades Básicas). It is a survey carried out by Boltvinik, Martínez and Beltrán in PROFECO Institution. It is representative for urban areas at a national level.</p> <p>C) EPASB 2009, Perceptions Survey-Access to Basic Needs (Encuesta de Percepciones-Acceso a Satisfactores Básicos). It is a survey carried out by EVALUA and it is a survey representative only for Mexico City.</p>
EU2020 poverty measure	<p>A) ENIGH 2012, National Survey of Household Income and Expenditure (Encuesta Nacional de Ingreso y Gasto de los Hogares). It is a survey carried out by INEGI at a national level.</p>
Mexican poverty methods	UK surveys
IPMM (Integrative Poverty Measurement Method)	<p>A) PSE, Poverty and Social Exclusion in the UK 2012. It is a survey carried out by the PSE, UK project team, which is formed of academics, pioneers in the field of poverty and social exclusion. It is part of the PSE research project funded by the Economic and Social Research Council in the UK. The survey is carried out on the basis of consensual methods for measuring poverty. This survey represents a continuous research of the earlier surveys run in 1983, 1990, 1999 and 2002/03. Respondents were asked about a list of 76 items if they thought items were necessities which nobody should have to do without, as well as which items may be desirable but are not necessary.</p>
CONEVAL MMPM	

Source: Own elaboration based on information from Boltvinik (2001); EVALUA (2009b); CONEVAL (2010); Gordon et al (2013) and PSE (2014).

5.1. Percentage of people claiming items or activities as indispensable or necessary

Questions:	Responses:	
	Indispensable	Not indispensable
How indispensable or not would be in your view to have the following things for people to live well?		
To have a pension for old age	92	7
To have a life insurance	86	13
To be entitled for a housing credit granted by public institution	83	15
To have retirement savings, System of Retirement Savings (AFORE by its acronym in Spanish)	83	15
To be entitled to a nursery or day care centre in case of having children	65	29
To go for walks at least once a month	58	39
To celebrate people's birthday	46	52
To have time for going out with friends	29	67
How necessary or unnecessary do you think is to have the following items in the dwelling...?		
To have a fridge	93	6
To have a TV	85	12
To have telephone	84	14
To have a boiler or water heater	70	26
To have a computer	58	37
To have a fan	52	43
To have a microwave	45	50
To have a DVD Player	38	56
To have a heating system	30	64
To have climate air conditioning	28	66

Source: Own elaboration based on the EDUMP 2007 survey.

Note₁. Valid responses represent 97% on average for the whole set of questions. Other responses such as: more or less indispensable, or neither necessary nor unnecessary, were not considered as valid responses. These answer represent on average 2% of the total responses. Missing values represent 1% of the total responses.

5.2.Social deprivation indicators and sub-indicators, and their thresholds

Indicators / Sub-indicators	Measurement criteria and poverty thresholds
5.2.1. Educational gap	0 = Non-deprived 1 = Deprived
5.2.1.1. Educational attainment	High school is the poverty threshold: In operational terms, the completed high school attainment was considered only for the cohort who were born 15 years before 2007, the year of the survey of social perceived necessities, i.e. in 1992, and also applied for the years thereafter. It is applied then, to those people who had not completed secondary school by 2007 and should continue their high school studies, to achieve the consensual mandatory educational standard. In other words, those people who have completed secondary school before 2007 have met the norm. It should also be noted that deprivation estimates are applied to the 2012 ENIGH survey and so, changes in educational standards were done as if the law had been amended in 2007, i.e. before the 2012 constitutional amendment (DOF, 2014). The justification is because high school was reported as mandatory, by the social consensus, in the 2007 EDUMP survey.
5.2.2. Access to health care	0 = Non-deprived 1 = Deprived
5.2.2.1. Health services	The poverty threshold is being enrolled in a public or private institution that provides with health care services. There are three kinds of enrolment, by direct access, which refers to the person that contributes directly. The second is through kindship and the third is through voluntary affiliation (CONEVAL, 2010).
5.2.3. Access to social security	0 = Non-deprived 1 = Deprived
5.2.3.1. Medical services 5.2.3.2. Disability leave 5.2.3.3. To be enrolled in a retirement savings system, such as AFORE or to have a pension for old age. 5.2.3.4. To be entitled to the Senior Citizens Program (PAM), for the elderly people. 5.2.3.5. To have a life insurance. 5.2.3.6. To be entitled for a housing credit, granted by a public institution. 5.2.3.7. To be entitled to a nursery in case of having children.	The measurement criteria to estimate the indicator of deprivation in access to social security, is being enrolled in a public or private institution that provides with social security services. There are three kinds of enrolment, by direct access (the working age people), i.e. the people that contribute directly. The second is through kindship and the third is through voluntary affiliation (CONEVAL, 2010). Retired and pensioned people accessing to these services, are also taken into account to estimate the indicator of deprivation in access to social security. A social assistance program for the elderly is also taken into account to evaluate social security access. Moreover, the variable of income pension was added in this study, as the 2012 ENIGH survey includes this information. However, it is calculated as a dichotomous variable, i.e. if the elderly people received pension income or not.

<p>5.2.3.8. To go for walks away home, at least once a month.</p>	<p>The poverty threshold for each of the sub-indicators defined in the left column, from number 5.2.3.1 to 5.2.3.8, is to have access to each of them, if the person is included in the target population.</p> <p>So, the access to social security should be estimated by adding every type of benefits to the indicator of deprivation in access to social security, when people are entitled.</p> <p>The sub-indicators enlisted from 5.2.3.5 to 5.2.3.8 were added based on socially perceived necessities, information taken from the 2007 EDUMP survey.</p> <p>Moreover, the last sub-indicator was included in this estimates, because is related to holiday bonus and is also an entitlement, on the basis of the law (DOF, 2012, 2014).</p>
<p>5.2.4. Quality and living space of the dwelling.</p>	<p>0 = Non-deprived 1 = Deprived</p>
<p>5.2.4.1. Flooring materials 5.2.4.2. Walls materials 5.2.4.3. Roofing materials 5.2.4.4. Overcrowding index</p>	<p>The poverty threshold for flooring materials is cement or firm; for walls materials is brick, partition or block and for roofing materials is solid concrete or similar.</p> <p>The poverty threshold for the overcrowding index is ≤ 2.5, based on the CONEVAL's (2010) criterion. It is the ratio between the number of residents in the dwelling and the number of rooms in the dwelling (CONEVAL, 2010).</p> <p>All sub-indicators are dichotomous and take the value of 0 = Non-deprivation and 1 = Deprivation. The final indicator of deprivation due to the quality and living space of the dwelling is calculated, if there is at least one deprivation in any of these sub-indicators.</p>
<p>5.2.5. Access to basic services in the dwelling.</p>	<p>0 = Non-deprived 1 = Deprived</p>
<p>5.2.5.1. Type of access to drinking water 5.2.5.2. Availability of drainage service 5.2.5.3. Electricity 5.2.5.4. Type of fuel for cooking 5.2.5.5. Use of toilet 5.2.5.6. Water supply every day 5.2.5.7. Water supply 24 hours 5.2.5.8. Have a fridge in the dwelling 5.2.5.9. Have a boiler or water heater in the dwelling</p>	<p>The poverty threshold for the sub-indicator of drinking water, is to have access through piped water into the dwelling.</p> <p>The poverty threshold for the sub-indicator of drainage service, is to have access to drainage connected to a septic tank or connected to the public system. It should be noted that CONEVAL (2010) uses this threshold.</p> <p>The poverty threshold for electrical service is to have all kind of sources for this purpose, either solar panel, private generator or public service. The exception is not to have electricity at home. CONEVAL (2010) also uses this poverty threshold.</p>

	<p>The poverty threshold for the type of fuel for cooking is any source, either the use of wood or coal, gas or electricity. The exception should be the use of wood or coal with no chimney for cooking. CONEVAL (2010) uses this threshold. However, it was included in the same way in this study, because the 2007 EDUMP survey does not capture information, regarding this sub-indicator.</p> <p>The poverty threshold for the sub-indicator of the use of toilet is its exclusive use in the dwelling.</p> <p>The poverty threshold for water supply in the dwelling is daily and 24 hours a day.</p> <p>The poverty thresholds for the last two sub-indicators is to have a fridge and to have a boiler in the dwelling.</p> <p>All sub-indicators are dichotomous and take the value of 0 = Non-deprivation and 1 = Deprivation. The final indicator of deprivation in access to basic services in the dwelling is calculated, if there is at least one deprivation in any of these sub-indicators.</p>
5.2.6. Access to food	<p>0 = Non-deprived 1 = Deprived</p>
<p>For children, under 18 years old (CONEVAL, 2010):</p> <p>5.2.6.1. A child has a diet based on very little food variety</p> <p>5.2.6.2. A child ate less than he should</p> <p>5.2.6.3. A child had the amount of food served at meals reduced</p> <p>5.2.6.4. A child in the household was hungry, but did not eat</p> <p>5.2.6.5. A child in the household went to bed hungry</p> <p>5.2.6.6. A child in the household had only one meal, or did not eat for a whole day</p> <p>For adults, people aged 18 years or older</p> <p>5.2.6.7. An adult has a diet based on very little food variety</p> <p>5.2.6.8. An adult skipped breakfast, lunch or dinner</p> <p>5.2.6.9. An adult ate less than he felt he should</p> <p>5.2.6.10. An adult ran out of food</p>	<p>The sub-indicators enlisted on the left column are all part of the CONEVAL's (2010) methodology, to estimate deprivation in access to food. This study takes this approach without any amendments.</p> <p>The MCS module of the 2012 ENIGH survey asks about these food diet situations, referring to the last three months and due to the lack of resources (INEGI,2013).</p> <p>The values of the sub-indicators were integrated in different indicators for children and adults. The value obtained for each sum resulted in different strata of food insecurity. These strata are: severe; moderate; mild and food security.</p> <p>The poverty threshold, to estimate the final indicator of deprivation in access to food, is mild food insecurity. It means that adults and children experiencing deprivation, in access to food are those who present moderate or severe food insecurity (CONEVAL, 2010).</p>

<p>5.2.6.11. An adult was hungry, but did not eat</p> <p>5.2.6.12. Any member of the household had only one meal or did not eat for a whole day</p>	
<p>5.2.7. Access to information</p>	<p>0 = Non-deprived 1 = Deprived</p>
<p>5.2.7.1. To have a computer or access to internet at home</p> <p>5.2.7.2. To have a TV</p> <p>5.2.7.3. To have a telephone or mobile.</p>	<p>The indicator of deprivation in access to information was devised and estimated in this study, due to data information provided by the socially perceived necessities in the 2007 EDUMP survey.</p> <p>The poverty threshold for every sub-indicator, in access to information, is to have access to these items at home. It was defined in this way by social consensus, in the 2007 EDUMP survey.</p> <p>Data information regarding the access to internet, as well as to have a mobile, are also provided in the MCS module of the 2012 ENIGH survey. So, these variables were taken into account for the estimation of the access to a computer at home and the access to telephone service, respectively. The calculation of each of these sub-indicators implies then, if the person has either one or the other item (e.g. access to a computer or internet at home), then she does not present deprivation; only if neither the two items are available for her.</p> <p>So, the final indicator of deprivation, in access to information, is estimated if the person in the household, lacks at least one of these necessary items: computer (or internet); TV; telephone (or mobile).</p>

Source: Own elaboration with information provided by the CONEVAL's (2010) methodology and indicators estimated, based on the updated information of socially perceived necessities of the 2007 EDUMP survey. Poverty thresholds were also obtained from the EDUMP survey.

5.3. Equivalence scales adopted by the CONEVAL's methodology for multidimensional poverty measurement

Equivalence scales criteria
Age 0 to 5 years old = 0.70
Age 6 to 12 years old = 0.74
Age 13 to 18 years old = 0.71
Age 19 to 65 years old = 0.99

Source: Own elaboration based upon Santana (2009) and CONEVAL (2010).

5.4. Calculation of disposable income according to Canberra's criterion

Operation	Income category
+	1. Income from employment Employee income; Income from self-employment
+	2. Property income Income from financial assets, net of expenses; Income from not financial assets, net of expenses; Royalties
+	3. Income from household production of services for own consumption. Net value of owner-occupied housing services*
+	4. Current transfers received Social security pensions/schemes; Pensions and other insurance benefits; Social assistance benefits (excluding social transfers in kind); Current transfers from non-profit institutions; Current transfers from other households
=	5. Income from production Sum of 1 and 3
=	6. Primary income Sum of 2 and 5
=	7. Total income Sum of 4 and 6
-	8. Current transfers paid* Direct taxes (net of refunds); Compulsory fees and fines; Current inter-household transfers paid; Employee and employers' social insurance contributions; Current transfers to non-profit institutions
=	9. Disposable income Subtraction of 7 and 8
+	10. Social transfers in kind (STIK) received
=	11. Adjusted disposable income Sum of 9 and 10

Source: Own elaboration based upon UNECE (2011) and INEGI (2013).

*The value of imputed rent is not considered.

5.5 ANOVA results for the second order interaction of social deprivation indicators by income

Social deprivation indicators and interactions	F value	Pr(>F)
Ei	3768	2.2e-16*
Hi	149	2.2e-16*
Fi	5367	2.2e-16*
Si	7222	2.2e-16*
Qj	3048	2.2e-16*
Bj	2177	2.2e-16*
Ij	8815	2.2e-16*
Ei * Hi	9.7	0.002
Ei * Fi	216	2.2e-16*
Ei * Si	284	2.2e-16*
Ei * Qj	54	1.7e-13*
Ei * Bj	18	1.9e-05*
Ei * Ij	219	2.2e-16*
Hi * Fi	9	0.003
Hi * Si	0.8	0.372
Hi * Qj	2	0.146
Hi * Bj	0.5	0.487
Hi * Ij	0.04	0.849
Fi * Si	221	2.2e-16*
Fi * Qj	180	2.2e-16*
Fi * Bj	107	2.2e-16*
Fi * Ij	433	2.2e-16*
Si * Qj	22	3.2e-06*
Si * Bj	39	3.6e-10*
Si * Ij	78	2.2e-16*
Qj * Bj	3	0.072
Qj * Ij	139	2.2e-16*
Bj * Ij	16	6.6e-05*

Note₁: The symbol * indicates significant values at the 0.001 level.

Note₂: Social deprivations are: Ei; = Education; Hi = Health Care; Fi = food; Si = Social Security; Qj = Quality and living space of the dwelling; Bj = Basic services in the dwelling; Ij = information.

Note₃: A subscript *j* indicates every household in the survey and a subscript *i* indicates every person of the household in the survey, applied to social deprivation variables.

Source: Own elaboration based on ANOVA analysis using disposable income as the dependent variable and social deprivation indicators as the independent variables in the R software version 3.3.1, with data information provided from the 2012 MCS, ENIGH survey.

6.1. Indicators computed to obtain the EU2020, the MMPM and the IPMM poverty measurement indexes

Variables	Categories	Measurement Criteria
1. AROP	0 = No poor 1 = Poor	50%, 60%, 70% of the mean or median of the equivalised disposable income, after taxes and transfers. OECD modified equivalence scales (Haagenars et al, 1994; OECD, 2005) were used to equivalise household's disposable income.
2. CONEVAL poverty lines (MWT = minimum wellbeing threshold and WT = wellbeing threshold)	0 = No poor 1 = Poor	Determined through normative criteria. A food basket is constructed to define the minimum wellbeing threshold (MWT). A non-food basket obtained through the method of Engel coefficient represents the cost of the non-food basket. The cost of the baskets are identified for rural and urban areas (CONEVAL, 2010) These thresholds were harmonised by using the Canberra's criterion on disposable income, and also harmonised by using the OECD modified equivalence scales, for poverty measurement comparison.
3. PL-IPMM	0 = No poor 1 = Poor	Determined through normative criteria. A food and non-food basket was elaborated by EVALUA (2012) and the cost of the basket is updated by estimating a linear regression equation. The cost of the baskets are identified for rural and urban areas (Boltvinik, 2011). The PL is also harmonised by using Canberra's disposable income and/or by the OECD equivalence scales, for comparative purposes.
4. IPMM Income strata*	0 = Indigent 2 = Intense poverty 3 = Moderate poor 4 = Person with satisfied basic needs 5 = Medium class 6 = High class	The IPMM is a stratified method and the income poor are also obtained from stratification (Boltvinik, 1992). The income poor are estimated with the sum of categories 0 to 3. This measure was harmonised based on the Canberra's criterion to estimate disposable income. And it was also obtained based on the OECD equivalence scales, for comparative purposes.
5. Intensity of income poverty	Continuous variable	It is estimated through the average distance from the people with an income lower than the AROP poverty threshold to that threshold. It was also computed to obtain the poverty gap, according to the CONEVAL income poverty measure and to the PL-IPMM.

6. LWI	0 = Do not experience LWI 1 = Do experience LWI	Low work intensity was computed based on the number of working hours for the population aged 15 to 64 years old. The period of reference is the last month. And the criterion to determine the LWI threshold is A WI less equal to 30%.
7. SMD	0 = Do not experience SMD 1 = Do experience SMD	It refers to the share of population living in households that lack at least four out of nine items. The nine items were selected on the basis of CONEVAL's deprivation indicators.
8. AROP or SE	0 = Do not experience poverty or social exclusion 1 = Do experience poverty or social exclusion	It is the sum of the people that are living with a low income plus those people who experience LWI or SMD.
9. Intersection	0 = Non-poor 1 = Poor	This measure is computed by identifying the people who are poor by the three poverty dimensions, AROP, LWI and SMD.
10. MMPM**	0 = Non-poor 1 = Multidimensional poor	CONEVAL's (2010) methodology is calculated through the intersection formula between income and social rights (deprivations).
11. Deprivations**	0 = Do experience deprivation 1 = Do not experience deprivation	People deprived according to CONEVAL (2010) are those who are experiencing the no accomplishment of one or more social rights.
12. IPMM*	0 = Non-poor 1 = Poor	Poor people are identified through the sum of those who are experiencing income poverty plus UBN (Boltvinik, 1992).
13. UBN*	0 = Non-poor 1 = Poor	Poor people are those who present at least one or more deprivations (Boltvinik, 1992).

Source: Own elaboration based upon multidimensional poverty measurement methodologies described in Boltvinik (1992); CONEVAL (2010; 2014b); EC (2014b); EVALUA (2014).

Note1: Software used to compute variables is IBM SPSS Statistics version 21. Other variables were computed to obtain final indicators and are described in SPSS syntax.

*Measure obtained from EVALUA's (2014) SPSS syntax.

**Measure obtained from CONEVAL's (2014b) SPSS syntax.

6.2. Income poverty lines in monetary terms, by different criteria

Methodological criteria	Amount of money per month (Mexican pesos)
AROP (60% equivalised median income)	\$3,142
CONEVAL MWT	Urban: \$1,125
	Rural: \$800.26
CONEVAL WT	Urban: \$2,329
	Rural: \$1,490
PL-IPMM: The PL is estimated through linear equation, based upon the cost of normative basket of basic goods and services and equivalence scales (Boltvinik and Marín, 2003; Boltvinik, 2011).	Urban: number of inhabitants > 2500 $1448 + (239 * \text{number of household members}) + (2656 * \text{adult-equivalent scales})$
	Rural: number of inhabitants < 2500 $1465 + (239 * \text{number of household members}) + (2326 * \text{adult-equivalent scales})$

Source: Own elaboration based upon methodological criteria of Boltvinik (1992); CONEVAL (2010); EC (2014b); EVALUA (2014).

**7.1. Harmonisation of items by comparing different normative baskets,
UK 2012**

Normative baskets / Harmonisation of items			
MIS items	IPMM basket	MMPM basket	Items harmonised
- Food	- Food	- Basic food basket	1. Food
- Fuel - Household goods - Household services	- Furniture	- Glassware, linens and domestic utensils - Other expenses	2. Dwelling
- Personal goods and services	- Hygiene and medicines for children - Personal care and other needs	- Home cleaning and care - Personal care - Health care	3. Hygiene and basic expenses on health. 4. Health care
- Social and cultural participation	- Education - Culture and recreation: reading material; fun and recreation; electronic devices	- Education, culture and entertainment - Recreational items	5. Education 6. Culture and recreation, and 7. Leisure items
- Motoring - Other travel costs	- Transport and communications	- Public transportation - Communications and vehicle services	8. Transport and communications
- Clothing	- Clothing - Shoes and accessories	- Clothing, shoes and accessories	9. Clothing and footwear
- Water rates - Council tax - Household insurances - Other housing costs	- Water rates - Electricity rates - Council tax	- Housing and conservation services - Domestic possessions and housing maintenance	10. Housing maintenance

Source: Own elaboration based upon the items used for different budget standards: Boltvinik (1999); CONEVAL (2010; 2012b); Smith et al (2012); Davis et al (2012).

Note: Childcare and rent are not taken into account for the harmonisation of items. These items are not part of the IPMM and the MMPM normative baskets.

7.2. Income poverty strata for the UK, IPMM methodology

Income Poverty strata	Percentages
Upper class	3
Middle class	23
Basic needs	24
Moderate poverty	17
Intense poverty	10
Indigence	23
Total income poverty	50

Source: Own elaboration based on the IPMM methodological criteria (Boltvinik, 1992; EVALUA, 2011; 2014; Boltvinik, 2013c).

7.3. Percentage of poor people according to the UBN poverty strata

UBN indicators / Poverty strata	Indigence	Intense poverty	Moderate poverty	Basic need satisfaction	Middle class	Upper class
1. Educational gap	0	0	2	65	29	4
2. Access to health care	1	0	6	81	2	10
3. Access to social security	0	1	19	58	11	11
3.1. Jobseeker's allowance	1	1	4	72	11	11
3.2. Old-age pensions and benefits	0	0	1	76	11	12
3.3. Sickness cash benefits; Invalidity benefits; Disablement benefit; Income support	0	0	3	74	11	12
3.4. Family Benefits	2	2	6	67	11	12
3.5. Maternity and Paternity Benefits	0	0	2	75	11	12
3.6. Survivors Benefits	0	0	1	76	11	12
3.7. Long term care	2	1	2	72	11	12
3.8. Housing benefits	1	0	1	74	12	12
4. Quality and living space of the dwelling	0	2	2	14	15	67
5. Access to basic services in the dwelling	2	0	17	24	57	0
6. Access to food	n/a	n/a	n/a	n/a	n/a	n/a
7. Access to information	0	0	7	76	17	0

Source: Own elaboration based on the IPMM methodological criteria (Boltvinik, 1992; EVALUA, 2011, 2014; Boltvinik, 2013c).

n/a Not applicable.