



**“A MULTIDIMENSIONAL QUALITY OF EMPLOYMENT  
INDEX PROPOSAL USING A LABOUR SURVEY  
IN CENTRAL AMERICA”**

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degree of MSc in Public Policy

**Verónica Arriagada**

**Advisors:**

**Nicolás Grau**

**Kirsten Sehnbruch**

**Santiago de Chile**

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# **“A Multidimensional Quality of Employment Index Proposal Using a Labour Survey in Central America”**

## **Abstract**

The quality of employment is a much-neglected issue in developing countries, especially in Latin America. However, the increased awareness on the importance of the qualitative dimensions of employment for well-being has pushed for a renewed attention on this issue in the Region. This new interest on a broader understanding of employment changing profiles faces the challenge of creating a conceptually accurate, empirically plausible and policy-relevant measurements. To address this challenge, this work builds on the Alkire and Foster's (2011) method to construct a composite Quality of Employment Index (QoE) and explore on its outcomes across six Central American countries based on a labour survey dataset. The dataset used for this empirical illustration is the Encuesta Centroamericana sobre Condiciones de Trabajo y Salud (ECCTS) a regional labour conditions and health survey applied in the selected countries in 2011.

This paper aims to reflect the complex and multidimensional nature of the quality of employment by addressing key dimensions identified in the literature and promoted by different stakeholders. In particular, the index encompasses four dimensions considered to be crucial to this concept, and that can be measured based on the data available: quality of labour earnings, employment stability, employment security and employment conditions.

The Index results allow ranking the countries according to their quality of index performance. The QoE Index results enable us to list the selected countries according to their different performance; with Guatemala and Honduras presenting poor results in the overall measurement, El Salvador and Nicaragua in the middle range of achievement, and Panama and Costa Rica with the highest performance.

The QoE Index presents several advantages as it delivers a measure simple to estimate and easy to understand. This Index is also decomposable in subgroups and according to each dimension and indicator contributions to the overall quality of employment results. At the same time, this work comprises a discussion of the limitations regarding data availability to extend this methodology to other countries, and debate on the advantages of the index in comparison to other indicators.

## I. INTRODUCTION

The quality of employment's vital role in fighting poverty and achieving human development has been increasingly recognised and promoted by many international agencies (OECD, 2015; ILO 2012). Much public policy attention has been directed to the challenge of providing good quality jobs for those participating in the labour market. However, what quality of employment means is poorly defined. As work affects and involves multiple dimensions of a person's life, a unique definition of what a "good" job is and its essential components has remained elusive (Muñoz de Bustillo, Fernández-Macías, Antón, & Esteve, 2009). In consequence, controversial ideas of the dimensions and minimum standards which define high-quality employment coexist in the academic and public policy arena. This conceptual looseness and the scarcity of internationally comparable data on employment conditions influence the lack of reliable synthetic measurements on quality of employment. Critically, political willingness may also play an essential role on this lack of theoretical and empirical coherence, as singular and sometimes oppose labour market stakeholders support different perspectives (Sehnbruch, Burchell, Agloni, & Piasna, 2015). This context constitutes a significant drawback for actively pursuing employment conditions improvements beyond income and pecuniary variables.

In recent decades, academia and the leading international institutions who advocate for workers' rights started devoting some efforts to overcome this problem in developed countries. Since then, different answers to understand and measure the quality of employment have emerged (For an in-depth discussion see: Burchell, Sehnbruch, Piasna, & Agloni, 2013). Among the theoretical approaches, the objective perspective has stood out because it offers better options for policy analysis by observing at worker's needs (Arranz, García-Serrano, & Hernanz, 2018). Besides, different international institutions have pursued policy-based definitions and measurements of quality of employment. For instance, the International Labour Organisation's (ILO) engaged on a discussion and empirical research to create a measurement based on their Decent Work concept (See: Anker, Chernyshev, Egger, Mehran, & Ritter, 2003; Bescond, Chataignier, & Mehran, 2003; Bonnet, Figueiredo, & Standing; Ghai, 2003), which resulted on suggested indicators combining micro-level and macroeconomic data (International Labour Office, 2012). The European Union (EU) and the Organisation for Economic Co-operation and Development (OECD) also have proposed distinctive quality of job indexes

based on different frameworks and using selected dimensions (Eurofound, 2012; OECD, 2014; OECD, 2015). Most of these efforts still present little consistency and have only put forward dashboards' indices, especially in developing countries. In these countries, many of these indices fail to be measured as regional data is often not systematic, comparable or updated on a regular basis, but also because of the differing labour institutional arrangement that these countries present.

In light of this debate and borrowing from the capability approach, Sehnbruch, Gonzalez, Apablaza, Mendez and Arriagada (2018) proposed a multidimensional Quality of Employment Index to measure this concept in Latin America, using household surveys. This Index encompasses three dimensions, namely, labour income, employment stability and employment conditions. These dimensions were considered to be crucial to understand quality of employment in the Region, but also empirical feasibility was considered, due to the lack of comparable data on this issue.

The present work expands this previous theoretical and empirical analysis by using a regional survey applied in six Central American countries. Based in the available data from the ECCTS and regional labour markets structure and characteristics, this study considers four dimensions to measure the concept of quality of employment and redefines some of the indicators selected based on Nussbaum (2003) propositions on bodily health and bodily integrity capabilities. The dimensions selected are the quality of labour earnings, employment stability, employment security, and employment conditions. The index follows Alkire and Foster's (2011) multidimensional poverty measure structure, delivering a synthetic measure of the quality of employment which is open to policy analysis, as it is decomposable into subgroups. Therefore, this document explores the relations between these four dimensions and the workers' characteristics, such as gender, education and age group.

The results suggest that the proposed index can contribute to understanding the quality of employment, by delivering a much profound view of the labour market dynamics in developing countries. The results suggest that the countries can be categories into three groups of performance according to its outcomes on the H and  $M_0$  measurements of the QoE index. One of low performance, composed by Guatemala and Honduras, a second of middle achievement, in which we find El Salvador and Nicaragua, and a final of good performance, formed by Costa Rica and Panamá. Albeit these differences a common pattern can be discerned, in which the contribution of the quality of income and employment security dimensions to the QoE Index general result stand

out. Even though the income dimension is critical in defining the Index results, in these countries 60% of the contribution corresponds to other non-income related dimensions. Finally, differences between subgroups are relevant, especially for women, for those less educated and for the young and old working population.

This work contributes to the quality of employment literature, firstly, by providing a unified and coherent theoretical approach to the quality of employment, based on Amartya Sen and Martha Nussbaum capabilities and functioning discussion. Second, by delivering information about Central American countries that other indices have not been able to provide and by offering policy-relevant evidence on this Region labour markets. The document organises as follows. First, it presents the policy and theoretical background to this work, followed by the methods used on the construction of the index, a description of the dataset and the results for the six Central American countries. Finally, some conclusions are presented, along with new challenges.

## **2. Concepts and Measures of Quality of Employment**

The first challenge that arises when researching the quality of employment is to understand its different definitions and the debates that surround these understandings. The academia has seen the quality of employment mainly from two different perspectives. The first conceived the quality of employment as a subjective phenomenon that is determined by workers' preferences regarding work characteristics. This approach critique states that individuals' preferences vary greatly among individuals. Therefore, results show high variability from one individual to another and comparison may be impossible. Based on this critique, a new interest in 'objective' aspects of employment quality arises (Warr, 1987). This literature strand has directed its efforts to delimit the dimensions that affect workers' well-being, encompassing multiple interdisciplinary contributions (Muñoz de Bustillo, Fernández-Macías, Antón, & Esteve, 2009). For instance, occupational psychologists study the employment characteristics related to job satisfaction, employment conditions, work environment and worker's health (Burchell, Sehnbruch, Piasna, & Agloni, 2013). Contributions from the sociological field consider additional dimensions such as prestige, control and autonomy over work and social stratification at the workplace (Dahl et al., 2009). These interdisciplinary contributions have gradually increased the number of dimensions under considerations and proposed ad hoc measurements. At the same time, the existence of a more diverse range of

dimensions and indicators without a coherent approach to the quality of employment has led to an unsystematic and inconsistent use of these.

International organisations have contributed significantly to the renewed attention on the quality of employment and its measures. One of the most far-reaching definitions has been the concept of decent work, proposed by the International Labour Organization (ILO). This institution defines decent work as a development strategy whose purpose is 'to promote opportunities for men and women to obtain decent and productive work in conditions of freedom, equity, security and human dignity' (ILO, 1999: p.3). This definition considers both quantitative and qualitative aspects of work jointly, by promoting a set of characteristics under which jobs are decent and productive. So far, this institution has recognised various dimensions as an integral part of the decent work concept. Among these, the most notable are: productive and fair labour income, hours of work, work and family conciliation, work stability and security, work environment and social security (Anker, Chernyshev, Egger, Mehran, & Ritter, 2003; International Labour Office, 2012).

Nonetheless, the ILO has failed to achieve a unique way of measuring the decent work, coexisting various proposed measurements (See: Anker, Chernyshev, Egger, Mehran, & Ritter, 2003; Bescond, Chataignier, & Mehran, 2003; Bonnet, Figueiredo, & Standing; Ghai, 2003). Then, the impact of decent work concept remains limited by its broad definition and the multiple aspects that encompass (Burchell, Sehnbruch, Piasna, & Agloni, 2013; Sehnbruch, Burchell, Agloni, & Piasna, 2015)

Another institution that has contributed extensively to the understanding and analysis of the quality of employment is the European Union. The most significant contributions of the EU have been proposing a more focused quality of job definitions and the use of a cross-national comparable survey applied in the region since 1990, the European Working Condition Survey (EWCS). However, these efforts have gone through a series of problems that have limited its impact in the delineation of the employment policy, even at a regional level. After the 2000 Lisbon treaty and the 2001 European Council meeting, a set of 10 core dimensions and 25 indicators were selected to monitor the progress on the EU's employment policy objectives (European Parliament, 2009). These dimensions and indicators were considered to be highly disorganised and to encompass various aspects of job and related distributional issues (Burchell, Sehnbruch, Piasna, & Agloni, 2013). Furthermore, the EU has been unable to harmonise the different

interest inside its organisation regarding the quality of job. Different actors involved in the process of articulating job quality in the EU represented divergent views on what constitutes the desired aspects of jobs, with wages and non-standard contracts being among the most contentious issues between employers and workers' representatives.

Nonetheless, EWCS has been a useful source of data, which have enriched the discussion over the quality of employment. Based on this survey, the Eurofound report 'Trends in job quality in Europe' (2012) delivers a dashboard index using four dimensions. The first, 'Earning', account for the earnings per hour of a worker. The second dimensions called 'Prospects' considers measurements over job security, career progression and contract quality. The third dimension is more complex and tries to address the issue of the intrinsic job quality, as it names indicates. This index contains information over skills and autonomy (p.e. on-the-job training), the existence of a good social and physical environment (p.e. absence of abuse, hazard and risk) and work intensity (p.e. pace of work). Finally, an index dedicated to the 'Working Time Quality' measures the hours of work and work flexibility, among other features. In sum, these four dimensions are composed of seven weighted sub-dimensions and 68 variables and rely on self-reported features of jobs associated with the individual's well-being (Eurofund, 2012). On the subsequent version of the survey, the 6th EWCS, the same dashboard index and sub-dimensions were analysed separately (Eurofund, 2015). Even thus the employment strategy has failed to achieve its purpose, the existence of the EWCS has been a significant contribution to the understanding of this issue and a model for implementing labour surveys employment in less developed countries.

Finally, a third institution that has assessed the problem of quality of employment is the Organisation for Economic Co-operation and Development (OECD). This organisation launched in 2014 a three-dimensions dashboard index for measuring the quality of employment. The first dimension characterises the European countries regarding earning levels and its distribution, including absolute (i.e. minimum legal wages) and relative (i.e. 60% of the median labour income) income measurements. The second dimension refers to the risk of unemployment and unemployment protection system coverages and generosity. This final aspect relates to the conditions in which work occurs, and the work environment features, including the analysis of job strains and health-related problems. The job strain concept seeks to recognise the unbalance between job demands and the physical, organisational and social resources at the workplace that



help workers to deal with those demands (OECD, 2014). The inclusion of job strains aims to complement the occupational health analysis, which has been considered somehow restrictive. The index shows some significant advantages since it is simple and includes a delimited range of variables, compared to a large number of variables contained in the decent work and the EU's quality of job measures. However, a further discussion of its applicability in developing countries contexts shows that some indicators are not easy to measure without specialised labour surveys, which are unavailable in these settings (OECD, 2015).

What the reviewed initiatives to measure the quality of employment have in common is a lack of a coherent theoretical framework that informs the selection of variables used. Instead, pre-existing policy objectives and data availability data drive this selection, rather than any explicit reference to a socio-theoretical framework (Green, 2006; Sehnbruch, Burchell, Agloni, & Piasna, 2015). Many essential dimensions of work quality thus tend to be omitted, for political or practical reasons. The complexity, lack of transparency and flexibility in accommodating many of the proposed thematic indicators are partly to blame for the limited impact of these initiatives, whether as an advocacy tool or in the academic debate (Ward, 2004).

This brief overview of the job quality literature also reveals the extent to which multiple and relatively diffuse concepts have developed in parallel. The terminology used creates additional confusion: expressions such as 'decent work', 'quality of working life', 'job quality' or 'quality of work' (often focusing on the job content and work environment), and finally 'quality of employment' (usually also including a broader overview of labour relations, policies, participation or equality in income and job distributions) are often used interchangeably and without precise definitions. This inconsistency reflects the conceptual complexity of the subject. There are multiple facets of jobs to consider, jointly with various levels of analysis of these jobs. These different levels include from the subjective evaluation of a particular working environment to the study of employment performed in broad labour market systems. Furthermore, the definition of quality of employment and the selection of indicators with which to measure it depends on the perspective adopted: the meaning attributed to the quality of employment will be different based on whether it is viewed from the standpoint of individual workers, families, employers, or from a societal or policy-making perspective.

Also, most job quality measures have been conceptualised and developed for industrialised countries, which do not have the same characteristics as the highly segmented dual labour markets of developing countries (see, for example, Cárdenas et al. 2010 and Posso, 2010). Developing indicators suitable to the Latin American reality must, however, consider not only data limitations but also differing local regulatory frameworks, a culture of informality and regulatory in compliance, as well as relatively more confrontational labour relations. These challenges partly explain why the institutional initiatives taken by the ILO and the EU have not been taken up by policymakers in developing countries although many governments now appreciate the economic and social problems associated with poor quality jobs.

### *2.1. The use of the Capabilities Approach to understand and measure the Quality of Employment*

In shed of light of the limitations presented above, this section briefly reviews an alternative theoretical framework based on Amartya Sen's capability approach. The starting point of Sen's (1999) ideas is the insufficiency of the basic needs satisfaction approach to achieve well-being. He posits that the single access to goods and services do not ensure the actual achievement of the desired well-being levels because it is determined by how people freely use these commodities. In other words, wealth does not guarantee a person's well-being because it is only useful to other 'things' rather than income. So, what does matter is the possibility to access to those other 'things'. Then, it is necessary to consider people capacity and freedom to make use of wealth in ways that could contribute to peoples' chosen lifestyle.

Under these general ideas, Sen's notions of capabilities and functionings are vital to regaining freedom centrality in the achievement of well-being. The author defines functionings as the ways of being and doing that a person has and values, while a person's capability refers to a combination of functionings that he or she can achieve, and that reflects their freedom to choose a particular lifestyle. Then wealth, or employment quality, for instance, can be evaluated as a mean for enhancing people's lives only if they are capable of generating capabilities and functionings for individuals. An example of wealth failure to ensure well-being is the existence of the 'working poors'. In this particular case, the presence of a labour income source does not prevent the experience of poverty.

The question of how to operationalise the capabilities approach as a useful policy-making tool has mostly remained open (Alkire, 2008). The problem to define what capabilities are essential to a just society lies on Sen's idea that each nation must determine these, then no real guidance of the minimum set of capabilities is outlined by the author (Nussbaum, 2003). Nonetheless, the development of theoretical frameworks and measurements within the capability approach that could help understand specific application on different well-being dimension has advanced in recent years. A remarkable example is the Multidimensional Poverty Index used by the United Nations, which includes aspects such as health and education in most countries (Nussbaum, 2003).

From the feminist perspective, Martha Nussbaum (2003) argues that a core list of capabilities should be defined if sex equality, and moreover, social justice, aims to be achieved. Under a universal approach, she understands human capabilities as political tools and posits that efforts to develop a list of central human capabilities should be unfolded to pursue a just society, where necessary levels of capabilities could be granted to citizens (Nussbaum, 2001). Also, to have these central capabilities list enables policy-makers and researchers to compare well-being results at the individuals, groups and national level. At the same time, she maintains that this perspective relies upon the idea that each set of capabilities are essential and nations should promote them, and this core list may play a valuable role in this endeavour. Nussbaum list encompasses ten capabilities that refer to different human life aspect. This list includes life itself, to be able to have good health (bodily health), to be able to move freely and to own our bodies (bodily integrity), to be able to use sense, imagination, think and reason (sense, imagination, and thought), and other capabilities linked to social interaction, emotions and play, among others (Nussbaum, 2003). This list of central capabilities is used as the basis to define variables that act as proxies of these concepts, as it is more plausible to measure functionings than capabilities (Alkire S., et al., 2015)

The discussion over the application of the capability approach to the labour market had also led to a set of capabilities reflected in specific variables. Following Sehnbruch (2004) on her discussion of the application of the capability approach to the labour market proposes considering qualitative dimensions of the employment rather than earnings and income. The reason for looking into the quality aspects of employment is that these characteristics can better describe the functioning and capabilities available to the individual. Some of the dimensions to observe under this proposed approach overlaps

with the ones considered by the occupational literature and international organisations revised in the previous section.

The first aspect discusses the role of the stability of employment, where high turnout reflects small possibilities of staying in a job, therefore, higher risk to fall in unemployment and the subsequent loss of income and insurances associated with it (Sehnbruch, 2004). Then, low employment tenure measured as the time (years or month) that an individual's stays in a particular job and the presence of unemployment risk can be understood as a downside to ensure stability at work. This low stability can promote fears of losing one's career and the impossibility to sustain the desired lifestyle jeopardising nuclear capabilities, mostly linked with being able to develop as humans in the absence of fears and anxiety and to have control over one's physical environment (Nussbaum, 2003).

Another significant aspect related to these capabilities is the worker's security at work, which includes being protected in case of a future adverse event, helping to avoid anxious feeling. In this line, social security is a vital dimension for the provision of health insurance and future income when on retirement. Also, the type of contract connects to workers' legal protection. Then, a worker under a written contract can expect to be more protected if they experience an accident at the workplace or, in most countries, are entitled to receive compensation if fired.

Third, for Sehnbruch (2004) income is also considered as an essential feature, but it is only valid if it refers to something else that enables a person to achieve their life project, such as, for instance, the acquisition of a set of goods that allow them to be well nourished and pursue a family plan.

Finally, borrowing from Nussbaum's (2001) propositions, this paper recognises the importance of bodily health and bodily integrity for ensuring good quality employment. According to the author, bodily health capability associates with being able to have good health. Health status at work depends on the labour demands that a worker has to face, such as long shifts, extended hours of work, intense working pace and posture related risk, among others. Moreover, excessive working hours reduce the workers' ability to develop a life project beyond the workplace and has been demonstrated to have detrimental results on health (Harrington, 2001). On the other hand, the bodily integrity capability is related to "being able to move freely from place to place; having one's bodily

boundaries treated as sovereign" (p. 78). The bodily integrity capability links to being secure against assault, violence and sexual assault. These aspects are part of some labour surveys as the absence of harassment and sexual abuse in the workplace. Then, it is crucial not only to cover the named dimension but also one that could refer to the control and protection of the body at the workplace, mainly if we aim to account for women's experience of employment conditions.

Based on this approach this document aims to develop and empirically test an international measurement of the quality of employment in developing countries. The primary objective of this measure is to go beyond quantitative indicators towards an analysis that considers human capabilities. The reason to explore the qualitative dimensions of employment is the limited scope that labour demand and pecuniary variables offer to assess the complexity of labour markets dynamic accurately. These variables do not consider how higher income (or employment rates, etc.) can help to acquire capabilities that promote workers' human development (Sehnbruch, 2004). Sen's capability approach detaches itself from utilitarian perspectives. Therefore, it is deemed as an adequate framework to develop an effective policy-making tool for assessing a critical dimension of human development, such as quality of employment. Also, the objective measures of employment and the international organisations' experiences inform the definition of this work.

Then, in this work, the quality of employment from a capability perspective encompasses the dimensions of quality of income, stability, security and employment conditions. The aspects considered in this revision cluster around different dimensions based on the literature review and the data available on the Central American labour survey. The dimensions selected were found to be vital to the creations of human capabilities and measurable in many countries, as international organisations experience indicates. The next section details the data set selected, the index structure and the chosen dimensions.

### **3. The Multidimensional Quality of Employment Index (QoE) for Central America**

The Alkire and Foster's index posits a central premise, that is: poverty is multidimensional (Alkire S., et al., 2015). This recognition has consequences on poverty alleviation policies because it implies that governments should look beyond income related indicators, observing the existing gaps in multiple dimensions. By signalling

critical areas that contribute to poverty surge and perpetuation, multidimensional poverty measures can allow policy-makers to improve the allocation of resources in the fight against poverty. In the same line, the Multidimensional Quality of Employment (QoE) Index constructs on the Alkire and Foster (2011) Multidimensional Poverty Index (MPI) structure. The index replicates the MPI structure to provide a more detailed picture of what constitutes quality in employment in Central America, beyond labour income and to acknowledge which are the most vital areas.

Following the MPI structure, this index has the same foundations, properties and follows its methodology. Then, this paper observes the headcount ratio identification of the poor measurement ( $H$ ) and the adjusted measurement of poverty intensity ( $M_0$ ), but this analysis explores on the quality of employment, rather than poverty. Then, the index comprises employment related dimensions, indicators, and weights to account for the studied phenomena. These components follow the theoretical approach detailed in the second section of this article and a feasibility criterion.

### *3.1 The MQoE index methodology: An adaptation of the Multidimensional Poverty Index.*

Under the MPI index structure, the QoE index observes a number of  $d$  dimensions or attributes for  $n$  individuals that define a  $d \times n$  matrix. Let  $x_{ij}$  denote the attributes presented by an individual  $i$  in each dimension  $j$  of the quality of employment. Following these Alkire and Foster (2011), it is possible to define a deprivation cut-off  $z_j$  for each dimension  $j$  under consideration that sets the minimum attributes that should be present to be non-deprived in each QoE index dimension selected. Then, let's assume that a person  $i$  is deprived in a dimension  $j$  if  $x_{ij} < z_j$  and that a person is not deprived if  $x_{ij} > z_j$ . Based on this cut-off point defined by  $z_j$  and applied to each individual  $i$  and dimension  $j$  in the  $d \times n$  matrix, we create a deprivation matrix  $g^0$  that summarises each individual's  $i$  deprivation for any given dimension  $j$ . This matrix shows  $g^0_{ij} = 1$  values when  $x_{ij} < z_j$  and  $g^0_{ij} = 0$  otherwise. On this matrix, different weights can be applied to each dimension, being the sum of these weights equals to one. These weights are assigned according to their importance within the quality of employment definition.

In the same way that is done on the MPI methodology, the QoE Index calculates both the headcount identification measurement of the people with a low quality of employment ( $H$ ) and the adjusted measurement of the low quality of employment intensity ( $M_0$ ). The  $H$  measure derives from an identification function that summarises

each person deprivations in a range of selected quality of employment dimensions and contrasts this score to a determined cut-off point  $k$  below which a person is considered to have low-quality employment. A counting vector computes a deprivation score that is the sum of the weighted number of deprivations suffered by an individual, denoted as  $c_i$ . Next, this score is compared to the different thresholds  $k$ , below which a person is considered to have a low quality of employment if  $c_i < k$ . Hence, the  $H$  measurement is the sum of the identified individuals having a low quality of employment (i.e. having at least  $k$  deprived dimensions) compared to the total population of workers under consideration.

On the other hand, the  $M_0$  measurement is produced by an aggregation function that considers a given  $H$  and it associates it with the averagely weighted deprivations suffered by  $n$  individuals in  $d$  dimensions across the  $g^0$  matrix. Hence,  $M_0$  summarises information about the occurrence and extent of the low-quality employment. In other words, it is the weighted sum of the fraction of the population in low-quality employment status. This measurement has the advantage of satisfying the dimensional monotonicity property. It is also decomposable into subgroups and according to each dimension and indicator contributions to the overall quality of employment result (Alkire & Foster, 2011). The decomposability property allows us to know which group has higher rates of low quality of employment and which score of employment characteristics contributes more to obtaining this result. This property can be useful in defining policy priorities for improving employment conditions.

### 3.2. Dataset

To estimate the quality of employment levels in Central America, this analysis use data from the Encuesta Centroamericana sobre Condiciones de Trabajo y Salud (Central American Health and Working Conditions Survey, or ECCTS from its Spanish acronym). The ECCTS is a cross-sectional labour and health conditions survey applied in 2011 in six Spanish speaking countries in Central America, namely, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, and Panama. This survey comprises information on workers aged 18 or more in the formal or informal economy and across all economic sectors. The survey questionnaire was design based on the European Working Conditions Survey, along with the ILO Manual of Occupational Injury Statistics and the 12-item General Health Questionnaire (Benavides, et al., 2014).

The survey's sample encompasses 12,024 cases that are distributed equally among these six countries (2,004 each). The sample was randomly selected based on information from the last census available in each country (or electoral registers if the census was unavailable), by using a two-step stratified sampling method. The resulting sampling is representative at national and regional levels, and weights were applied to correct differences between the sample and the population (Benavides, et al., 2014). Also, the survey was designed to measure labour conditions experienced by workers; then the indicator can more accurately reflect workers achievement at the individual level, which is a valued property when using multidimensional measurements (Alkire S., et al., 2015). This labour-focus design is an advantage over households' surveys, which generally account for this unit average achievements instead of the individual level. Finally, an essential characteristic of this survey is that covered a broad range of topics and applied the same questionnaire in the six countries with a few context related changes. The use of a single questionnaire implies that there is no need to harmonise the selected variables across countries. The primary challenge is then to understand the local context and labour market institution to interpret the results correctly.

Still, the ECCTS survey presents certain limitations for measuring the quality of employment. The survey focuses on security and health conditions of workers in each Central American country. This emphasis on occupational health derives into the lack of some other significant employment-related variables, included in the EWCS and OECD measurements. Then, even though the ECCTS incorporates a significant set of the 5th and 6th EWCS indicators and some of the OECD measures, it is impossible to replicate these institutions measures on quality of work. For instance, many variables that compose the EWCS's intrinsic job quality dimension, such as skills and social support indicators, are not part of the survey questionnaire. Also, the survey has little information regarding resources available at the workplace defined in the OECD methodology, such as management practices and learning opportunities. An additional challenge is the distribution of the answers in the survey, as independent workers did not respond specific question. For instance, the ECCTS asks for the availability of information and training, which is a valuable input for workers' capabilities, but less than the 40% of the sample answers this question. From the 12,024 cases in the Central American dataset, only 4.529 cases record an answer other than not applicable (7,302 cases) or missing values (193 cases). To measure these dimensions in a way that could include the experience of



independent and informal workers is vital in the context of developing countries, where a significant proportion of worker do no work in formal settings.

Despite these limitations, the ECCTS represents a unique source of information for a comparative analysis of the quality of employment in the six selected countries, because it is nationally representative, has a precise unit of identification and uses a single questionnaire with a rich set of variables. Under the light of the survey advantages and limitations, the next section details the selected index dimensions.

### *3.3. Dimensions and Indicators.*

The quality of employment index described intends to use the available information in the ECCTS survey, resulting in an index composed of four dimensions and nine indicators. The dimensions constructed were the quality of labour earnings, employment stability, employment security and employment conditions. As discussed before, most of the literature and the international experience consider essential the selected dimensions for understanding the quality of employment situation (See: Eurofound, 2012; OECD, 2014; OECD, 2015). Moreover, these dimensions can adequately reflect the capability approach reviewed above. Even though these dimensions are not exhaustive because of data constraints, they serve as an illustration of workers' achievements in fundamental labour conditions dimensions.

A more accurate QoE index should include other dimensions and indicator from Nussbaum and Sen's capability discussion and the EWCS and OECD methodology. Especially valuable would be to incorporate the OECD dimension on unemployment protection, along with some measurement of labour income inequality. Also, it would be of significant advantage to integrate indicator that could account for additional labour conditions at the workplace, such as training availability, workplace relationships quality and the presence of intimidation at the workplace, among others, reflecting more accurately the bodily concept. Although this work intended to measure these dimensions and indicator, we define the dimensions and indicator illustrated in Table 1 based on data availability.

**Table 1:** Quality of Employment Index dimensions, indicators and weights.

<b>Dimension and Indicators (weights %)</b>	<b>Deprivation Cut-off: A person is deprived if he or she...</b>
<b>Quality of Labour Income (25%)</b>	
Low income compared to Six basic food baskets (25%)	Income is lower than 6 times the national Basic Food Baskets (monthly calculations based on ECLAC dataset)
<b>Employment Stability (25%)</b>	
Tenure (12,5%)	Less than 36 months in the current job
Unemployment (12,5%)	Being unemployed at least once in the previous 12 months
<b>Employment Security (25%)</b>	
Social Security (12,5%)	No affiliation to a social security system
Occupational Status (12,5%)	Self-employed (non-professional) or employed with no contract
<b>Employment Conditions (25%)</b>	
Excessive Working Hours (6,25%)	More than 48 hours per work week
High Work intensity (6,25%)	Frequently experiencing at least two labour demands in the following dimensions: 1) working at very high speed, 2) working to tight deadlines more than half of the workday or 3) not having enough time to finish tasks
High Posture Related Risk (6,25%)	Experiencing at least two labour demands for more than half of the workday in the following aspects: 1) working in a tiring and painful positions 2) carrying or moving heavy loads or 3) performing repetitive movements
High Enviromental Physical Risk (6,25%)	Experiencing two labour demands related to the working environment for more than half of the workday in the following aspects: 1) being exposed to high noise and 2) being exposed to extreme temperatures

### *Quality of Labour Income*

The first dimension refers to the quality of earnings. This dimension moves beyond the idea of minimum income level and includes a labour income threshold that can maximise the probabilities of carrying a family project. Therefore, the primary intention of the threshold chosen for this dimension was to move beyond poverty measurements (two basic food baskets), which only ensures one person has enough to subsist. Differently, the QoE index purpose is to account for the possibilities to carry the desired lifestyle. This life project includes being well nourished, having adequate shelter, but also being able to do more than subsist, such as engage in critical reflection about the planning of one's life (Nussbaum, 2003). Also, this threshold considers that around 87% of the sampled workers have at least one dependant, with a median of 2 dependents per worker. Then, if we consider a minimum of one dependant per worker, the worker and the dependant would need at least four basic need baskets to avoid falling into poverty. However, this threshold would no guarantee the possibility to endorse one's capabilities.

Subsequently, the threshold chose is six times the national basic food basket in the year 2011, based on the idea that going beyond the minimum to subsist allows individuals to choose between different functionings according to the life plan they want to pursue.

The value of the six national basic food baskets was expressed in the country's currency and extracted from the data estimated by the Economic Commission for Latin America and the Caribbean (2016). When this information was unavailable for the survey year, we used data from the closest year available or information coming from the national statistics department. This case happened only in the case of Guatemala.

It worth noting that this work tested alternative income measurements and different cut-off points. Based on the OECD's (2014) relative poverty measurement, this document tried to include a relative labour income indicator that could complement the information coming from the absolute income measurement. The relative labour income indicator considered the 60% of the median labour income as the deprivation threshold, following the idea that an individual's utility depends on both its income and the income of others (Duesenberry, 1949). Nonetheless, the indicator was not appropriate for the developing countries context as high inequality levels biased the results (See the results of this alternative indicator in Appendix A).

Besides, this work also examined alternative cut-off points to define the selected indicator threshold. Initially, the cut-off point equalled the legal minimum labour income value, but this threshold resulted in large deprivations rates. This result is possibly attributed to the legislation inefficacy to regulate the informal sector, working only at a symbolic level. Finally, we tested if the indicator rank was robust to the different cut-off point, setting the threshold at four, six and eight times the national basic food basket in the year 2011. The ranking groups were robust and stable to the different parameter values. These groups were composed by countries that ranked better QoE index, such as Panama and Costa Rica, one composed by Nicaragua and El Salvador, which presented middle achievements, and a group with low results, composed by Honduras and Guatemala. All the previous results are detailed in Appendix A, section (i).

### *Employment Stability*

The second dimension considers the importance of having a stable work and not living under unemployment risk. Therefore, this dimension encompasses two indicators. On the first indicator, a person is deprived if have worked for less than three years in the

current work. The three years threshold was selected based on an explorative analysis of the duration of employment in the six selected countries. This analysis shows that on average workers in Central America have worked for their current work for more than nine years, with a median of 6 years (See Appendix A, section ii). However, neither high or low rotation levels are good for the labour market. Some rotation is needed to allocate worker in jobs that match their skills and experience, becoming more productive. However, extremely high rotation without advancing to a better position does not entail an advantage for workers prospects or their productivity levels (Rebollo, 2011; Gagliarducci, 2005; Dolado and Stucchi, 2008; Bassanini et al., 2008). High turnout is also costly for the firm, as the recruiting process entails expenses (Gittings & Schmutte, 2016). Then, we selected a three years cut-off point as it allows workers to acquire some training and experience, still enabling some labour dynamism.

The second indicator shows that a worker is deprived if has been unemployed during the previous twelve months to the survey. This indicator reflects the employment volatility, or how high is the risk to fall into unemployment, but not unemployment itself. The unemployment spell previous to the actual employment recorded on this survey encompasses periods of short-term unemployment (0 to 3 months) and longer unemployment spells (3 to 6 month, 6 to nine months and nine months to a year). However, most of the people that have been unemployed for less than nine months (See Appendix A, section ii). Then, the cut-off point selected distinguishes those employed during the whole previous year from those that experienced some periods of unemployment.

### *Employment Security*

A third dimension relates to how able to overcome shocks the worker is, in other words, how much institutional protection is available for him or her. Then, the first indicator considered on this dimension aims to reflect pensions system contribution, which effectively ensures income during retirement. Nonetheless, the survey only reported the registration into the social security system. Then, the QoE Index uses this aspect of social security affiliation instead of social security contribution. The limitation of this measure is that the mere registration that not ensures regular contributions to the pensions system, and then the pension income could be limited under mixed and individual savings pensions schemes. However, we consider that a person is deprived in this dimension if the worker is not registered in the national social security system.

The second indicator defines the deprivation threshold under the idea that a worker with no contract is considered to have reduced security in their legal employment conditions. Likewise, those who report being self-employed and have no professional qualification are considered to have a less secure job, as they depend on the economy fluctuation and have little insurance in case of unemployment.

#### *Employment Conditions*

Finally, the fourth dimension aims to reflect the discussion around the quality of the working environment, as defined in the OECD methodology, and using Nussbaum's bodily well-being capabilities concept. Under this approach, indicators relate to body discipline through the use of time and space. Then, variables such as work pace and hours of work were considered, along with actual health risk at the workplace.

The presence of extensive working hours reduces the spare time spent at home or in other activities that could contribute to the personal realisation. Also, it is considered a stressor in the occupational health literature and source of work-family unbalance (Harrington, 2010; Lawton & Tulkin, 2010) Therefore, people that work for longer than 48 hours a week, were considered experiencing excessive hours of work, following the cut-off point recommended by the ILO (2013). Also, the working time distribution and a worker's capacity to organise working time is relevant. Following the OECD concept and threshold of labour demands, a worker that experience at least two labour demand on this aspect were considered deprived. The labour demands measured are: 1) Working at very high speed, 2) working to tight deadlines more than half of the workday or/and 3) not having enough time to finish tasks.

Aiming to reflect the bodily health capability, on this index two indicators regarding health risk were included. The first indicator measures labour demands exposure to tasks that could be detrimental for physical health, such as, working in a tiring and painful position, carrying or moving heavy loads or/and performing repetitive movements. The threshold represents experiencing at least two of these labour demands.

The final indicator considers a worker to be deprived if he or she experiences labour demands related to the working environment for more than half of the workday in two of the following aspects: being exposed to high noise or being exposed to extreme temperatures. On this indicator, the threshold was set at two labour demands.

Finally, the selected indicator and dimensions correlations were revised and no high correlations exist with theoretically unrelated dimension (See: Appendix D: correlations by countries)

#### *3.4. Weighting Structure, Cut-offs and robustness.*

The weighting structure of multidimensional indices arises much debate because assigning weight to these different dimensions implies valuing its importance in achieving general well-being. Therefore, is crucial to open the debate on the selections made around weights to public discussion (Alkire & Foster, 2011; Foster & Sen, 1997), although measures should be robust to different weights structures (Alkire, Santos, Seth, & Yalonetzky, 2010). On the processes of selecting weights, different perspectives encounter. On the one hand, it possible to choose a structure upon normative, empirical or an equal weighting criterion (Belhadj, 2012; Decancq & Lugo, 2013).

This research weighting structure attributes equal importance to the quality labour income, employment stability, employment security and employment conditions dimensions, being all weighted  $\frac{1}{4}$  each. Even though the Index uses the weighting structure describe in Table 1, in the index definition process this work tested alternatives weighting structures (Appendix B: Robustness test).

Regarding the quality of employment cut-off point, this is the number of dimensions under which a person is considered to have low-quality employment; we follow the Alkire and Foster (2011) discussion over the union and intersection approach. As these authors discuss three different approaches to cut-off points coexist, the first refers to the percentage of individuals who are deprived in at least one dimension of our QoE-CA index, which is in harmony with the union approach. The union approach identifies a person being poor if there is at least one dimension in which it is deprived. This approach is based on the idea that the lack of one deprivation is sufficient to consider the person being poor. When we adopted this approach to the measurement of the quality of employment, it would be equal to saying that a person deprived in one dimension is not achieving a good quality of employment.

Nonetheless, this paper focus is on recognising those who have a low QoE index result. Therefore, it does not seem to suit our research purpose. Additionally, the union approach had been criticised for not allowing to prioritise on public policy and reaching high rates of deprived population.

On the other hand, the intersection approach considers a person to be poor if they are deprived in all the dimensions under consideration, which is very demanding and allows low rates of deprived population. This approach would be correct for our research if the index measured the extremely poor-quality jobs, which does match with the aim of this paper.

This work tries to address a more nuanced understanding of the quality of employment; therefore, it uses a dual approach as defined by Alkire and Foster (2011), which means this dissertation considers a deprived worker regarding quality of employment at  $k=0.5$  (at least two deprived dimensions or 0.5 sums of index indicators weights).

#### 4. The Multidimensional Analysis of the Quality of Employment Indicator: Calculations and Results

##### 4.1. Deprivations rates by each indicator

Table 2 shows the uncensored headcount ratio outcomes in each of the nine indicators of the Quality of Employment index for the six countries considered in the survey. In other words, this table shows the proportion of people deprived in each of these selected indicators. In this way, it resembles a dashboard indicator, which shows the country achievement and allows to compare between countries on each indicator.

**Table 2:** Uncensored headcount ratio by indicator of the Quality of Employment Index and country in 2011, with  $k=0.5$ .

Dimension and Indicators	Costa Rica	Panamá	El Salvador	Nicaragua	Honduras	Guatemala	Average
<b>Quality of Labour Income</b>	45,8	31,1	66,1	73,9	75,1	72,5	60,8
<b>Employment Stability</b>							
Tenure	37,0	34,3	22,1	31,4	22,8	28,6	29,4
Unemployment	9,8	10,2	6,6	15,6	7,7	10,0	10,0
<b>Employment Security</b>							
Occupational Status	26,1	13,6	43,8	21,2	46,9	49,5	33,5
Social Security Registration	35,8	42,2	77,8	71,8	88,1	85,0	66,8
<b>Employment Conditions</b>							
Excessive Working Hours	39,9	30,7	31,3	33,9	37,7	42,1	36,0
High Work intensity	81,1	70,0	63,0	80,8	79,5	63,8	73,0
High Posture Related Risk	9,4	5,3	9,6	5,5	12,9	16,3	9,8
High Enviromental Physical Risk	7,2	4,0	14,2	6,0	9,8	6,6	8,0

Source: Own calculations based on ECCTS survey data on 2011.

The data show that the dimensions which present the highest levels of deprivation are those related to work intensity, income and social security affiliation. The work intensity high deprivation rates reflect the poor working conditions face by worker. In the income dimension, deprivation levels are close to 70% in more than half of the countries studied while the social security indicator presents an average rate of deprivation of 66.8% and exceeds 70% in four out of the six countries. Being deprived in these indicators suggest a very discouraging scenario. The lack of labour income may entail higher risk for the working population in developing countries, as these countries have incomplete welfare states to support individuals who experience adverse shocks. The high levels of deprivation regarding the social protection system importantly reflect this institutional void and lack of insurance for workers. On the other hand, the lowest average deprivation rates are the one associated with the high posture related risk, high environmental, physical risk and employment volatility indicator, which reaches near 10%. Altogether these trends indicate that in Central America the quality of employment is strongly marked by the lack of protection and income sufficiency to carry the desired life project and that these conditions are sustained in time as employment is stable in time.

Even though these patterns present a coherent picture of the dynamics occurring in Central America, within each country puzzling differences emerge. An in-depth look at each country performance shows contradictory results that suggest that the described picture might be misleading. This picture is somewhat disconnected and lacks coherence, suggesting that looking at a single indicator limits the understanding of the complicated quality of employment phenomenon. For instance, puzzling analysis emerges in the case of El Salvador, Honduras and Guatemala. In these countries, the tenure indicator is lower than the regional average, indicating low turnout and more extended stay of workers on the current employment. However, these countries show very high deprivation rates on the occupational status indicator, which associates with informal employment. These results are contra-intuitive as employment informality should expose workers to unemployment, by making workers without a contract more likely to be fired. A plausible explanation might be the increasing precariousness of formal employment, leading to less marked differences between the formal and informal sector (Ramos et al., 2015). This distinction between the formal and informal sector might be even more blurred in developing countries with weak institutional arrangements and low capacity of legal enforcement of workers' rights.



Also, the results suggest that some trade-offs could exist between the component indicators of the QoE index. These trade-offs imply that we may be observing jobs with different combinations of deprivations. As discussed above, jobs in El Salvador, Honduras and Guatemala might be more stable, but are also more informal. This situation contrasts with jobs in Panamá and Costa Rica, which have higher job rotation rates, but lower levels of deprivation in the dimension employment security. Another trade-off occurs between labour income and extended hours of work. In Central America, a worker may have a high wage but works for extended hours, under an uncertain occupational status or harsh working conditions. (Correlations between the different indicators of the QoE Index are presented in Appendix C.)

Nonetheless, the results in Table 2 are ineffective in delivering a ranking of the countries performance on quality of employment. For instance, Honduras obtains the worst place on the quality of income dimension and social security registration indicators. The country also presents the second-worst position on the occupational status, high work intensity and posture related risk indicators. Following a similar pattern, Nicaragua has the most unfavourable results on the employment volatility and high work intensity dimension. Nicaragua also gets the second-worst results on the quality of labour income indicator. However, based on these results, it is not possible to state which of these countries ranks better in general terms.

This inability to rank countries' performance in quality of employment is a limitation that is common to dashboard indexes, as they do not provide any synthetic measurement that summarises the general results of the countries under consideration. The main problem is that the general picture is blurry, and does not allow to establish which areas are more urgently needed for public policy interventions. Besides, it does not allow international comparison. Then, by looking at the uncensored headcount ratio indicators, the need to elaborate aggregated measures that could overcome these drawbacks emerges.

#### *4.2. Multidimensional results: The H and $M_0$ measurements of the Quality of Employment Index for Central America.*

The proposed QoE Index introduces different measures and properties that are useful in allowing international comparison, elaborating policy-relevant results and understanding the trade-off between indicators and dimensions. Table 3 presents the Multidimensional Head Ratio (H), the average deprivation shares among the people with

a low quality of employment or intensity ( $A$ ) and the Adjusted Headcount Ratio ( $M_0$ ) for the constructed QoE index in the six countries considered in the ECCTS survey in 2011, at  $k=0.5$ .

**Table 3:** Multidimensional Headcount Ratio ( $H$ ), Adjusted Multidimensional Headcount Ratio ( $M_0$ ) and the Intensity ( $A$ ) of the Quality of Employment Index for Central America in 2011, by  $k=0.5$ .

	Average	Costa Rica	Panamá	El Salvador	Nicaragua	Honduras	Guatemala
$M_0$	0,26	0,16	0,12	0,30	0,27	0,35	0,36
$H$	0,44	0,27	0,21	0,50	0,46	0,59	0,61
$A$	0,60	0,60	0,59	0,59	0,60	0,61	0,60
S.E. $M_0$	n.a.	0,01	0,01	0,01	0,01	0,01	0,01
S.E. $H$	n.a.	0,01	0,01	0,02	0,01	0,02	0,01

Source: Own calculations based on ECCTS survey data on 2011.

These trends suggest that the quality of employment varies substantially among the Central American countries under consideration. Regarding the 0.5 cut-off point, the  $H$  measurement shows that Guatemala and Honduras have poorer results, with almost 60% of their population deprived in at least two dimensions. Broadly considered, in Nicaragua and El Salvador the percentage of workers who are deprived in at least two dimensions does not fall far from these two first countries, but differences are still significant. On the other hand, in Costa Rica and Panama, 26% and 19% of workers show a low quality of employment with at least two deprived dimensions. These results define three groups of countries according to their results on the QoE Index. One of higher performance regarding the quality of employment, composed by Panamá and Costa Rica, the second one of middle achievement, including El Salvador and Nicaragua, and a third of low performance, in which we can locate Honduras and Guatemala. These three pairs are robust to results standard error and different parameter estimations (See Appendix C: Robustness Tests).

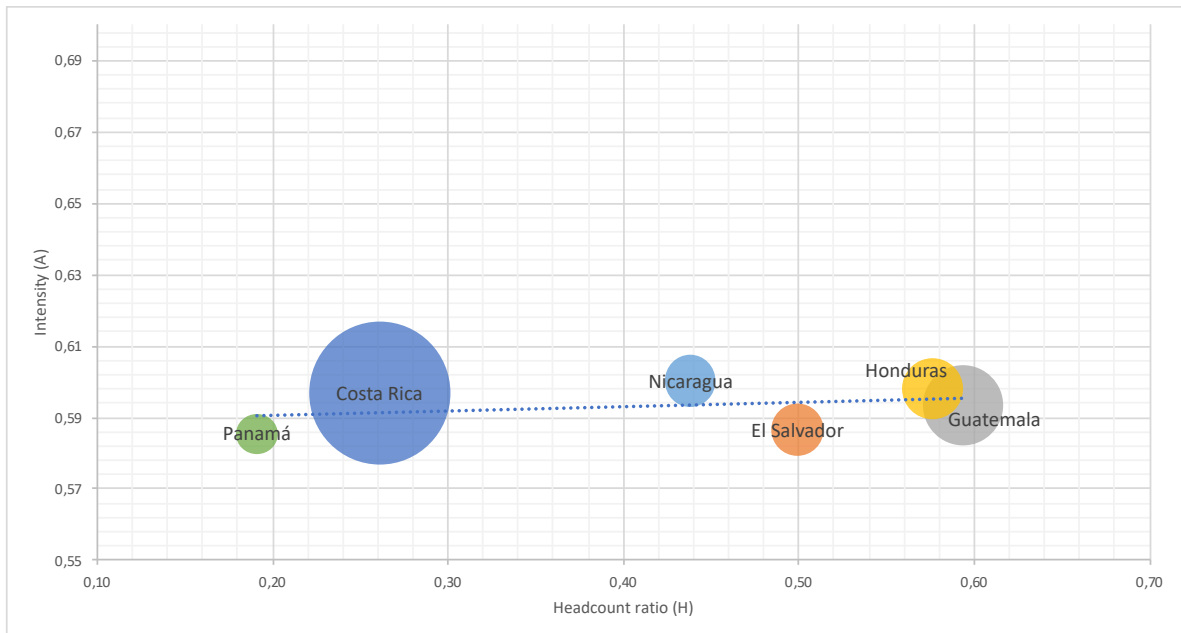
In sharp contrast to the differences between countries the  $H$  measure, the intensity of low quality of employment is similar in all countries, which means that the average deprivation among those with low QoE is around 60% in all countries, at  $k=0.5$ . This finding suggests that notwithstanding the differences among Central American countries there are regional similarities in their labour markets structure. This idea might contribute

to thinking in the opportunity to promote common policies in Central America, as the breath of low quality of employment is experienced with a similar intensity.

The adjusted headcount ratio ( $M_0$ ) results augment the information coming from the H measurement by considering the joint distribution of achievements.  $M_0$  replicates the results of the three groups: the average deprivation shares among those who have at least two deprived dimensions in Central America is 0.25. The adjusted rate of deprivations is greater in Guatemala (0.36) and Honduras (0.35) compared to the rest of the countries in the region and lower for Panama (0.12) and Costa Rica (0.16). Again, El Salvador (0.30) and Nicaragua (0.27) fall in the middle distribution of performance. Differences are significant, except for Guatemala and Honduras, where levels of  $M_0$  are similar. It is important to say that as the A measurement is stable in all countries, the main variation between countries derives from the proportion of people deprived in at least two dimensions, which is central to understand low quality of employment in the country.

Figure 1 depicts the relationship between the Headcount ratio (H) and the Intensity (A) of the deprivation described above. This figure represents each country working population (aged 15 to 65) represented in the dot size, which allows understanding the scale of the deprivation. The graph below shows that even though the six Central American countries hold similar values for the A measurement, the proportion of deprivations vary greatly.

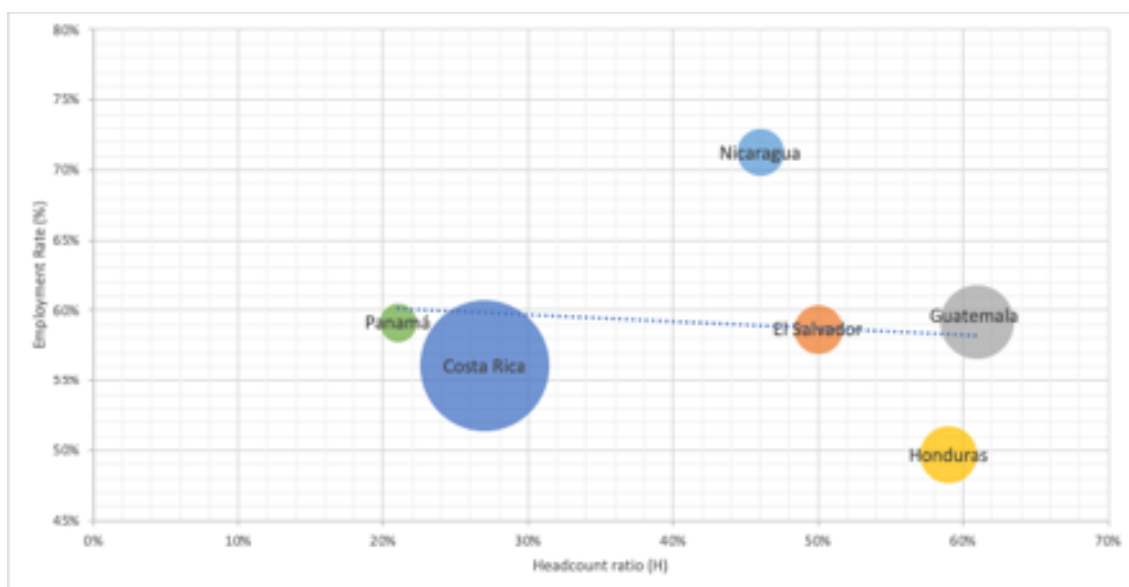
**Figure 1** The Headcount Ratio (H) and Intensity (A) of the deprivation and country population size, at  $k=0.5$ .



Source: Own calculations based on ECCTS survey data on 2011.

When looking at the  $M_0$  results in contrast with other labour market indicators, it is possible to understand the qualitative attributes of employment along with its quantitative ones. For instance, Figure 2 shows the low multidimensional quality of employment ( $M_0$ ) and the employment rate for the six countries under consideration. All countries present similar unemployment rates, ranging from 56% to 59%, except from Nicaragua (71%) and Honduras (50%). However, they have a different level of employment quality and not a clear pattern can be discerned, only a slight negative relationship between higher quantity employment (employment rate) and levels of quality of employment (See Appendix B for more indices comparison).

**Figure 2** The Adjusted Multidimensional Headcount Ratio ( $M_0$ ), employment rates and country population size, at  $k=0.5$ .



Source: Own calculations based on ECCTS survey data on 2011.

The multidimensional measurements introduced in this section allow defining countries ranks according to their achievement on the QoE index. In this way, it is possible to establish international comparison and to track changes on the ranking over time. Another advantage of these indicators is that the A measurement shows the intensity of the deprivations, suggesting that suffering deprivation in more than one indicator is highly possible in the Region. Besides, some compelling analyses emerge when comparing the QoE index results to other employment indicators.

#### *4.3. Dimensions and Indicators contribution to the Quality of Employment Index results*

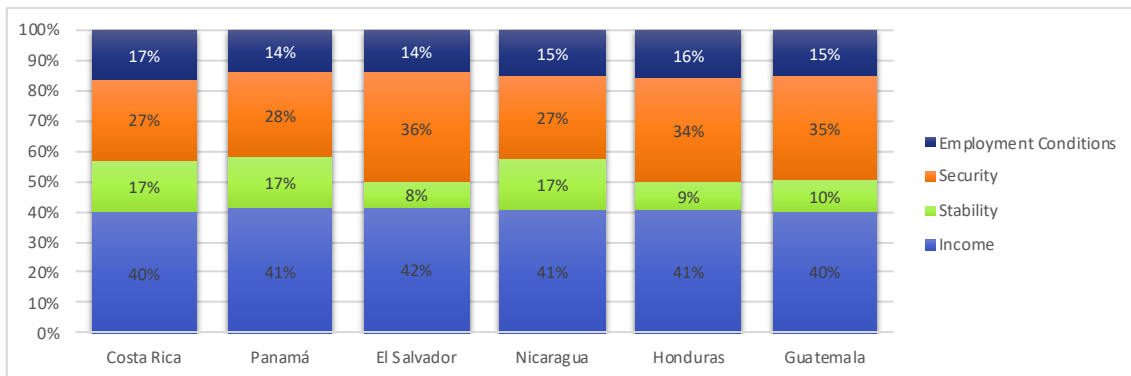
The measurements described above show a more coherent international and national picture of the quality of employment achievements in Central America. The results also allow establishing ranking and comparison between countries that have similar quality of employment structure and dynamics. Then, even though at a regional level there are some similarities, a more precise comparison can be established when looking at the groups of countries that present similar QoE index results delineated before.

Taking advantage of the Alkire and Foster methodology features, this section presents the contribution of each dimension and indicator to the QoE index results. The subgroup decomposability property allows describing each dimension or indicator contribution to the overall result, where this result should be equal to the weighted sum

of all subgroups (Alkire S., et al., 2015). Then, when the contribution of a particular subgroup, dimension or indicator is higher than its weighted sum, suggests that there is a higher deprivation within that dimension or indicator.

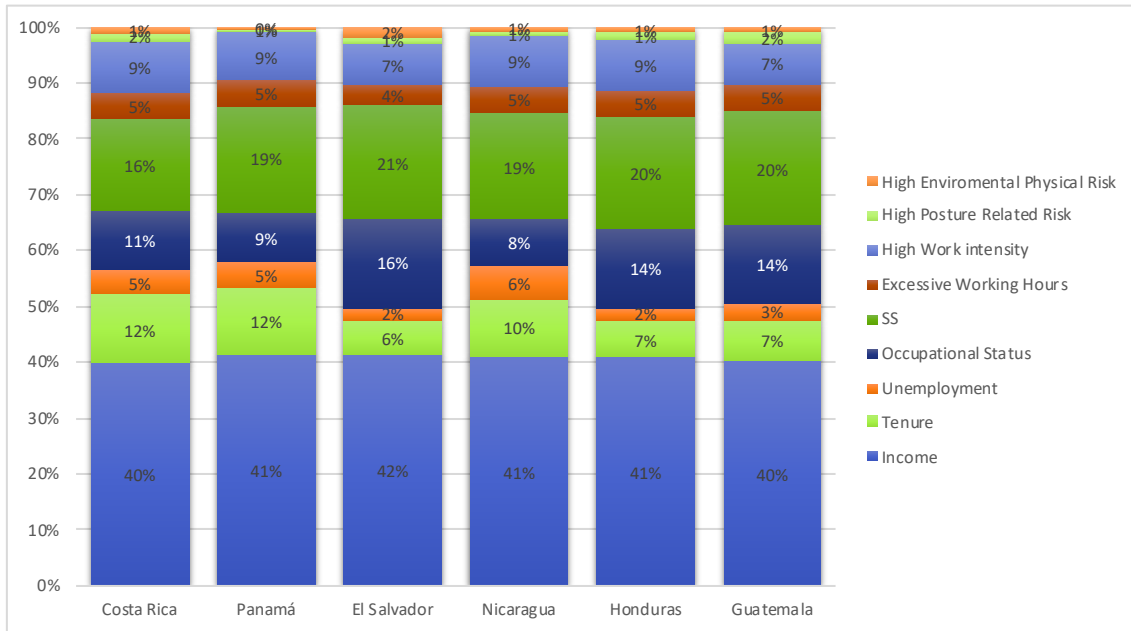
In the case of the QoE Index application to the Central American countries here considered, the dimensional decomposition of the index shows that the main contribution to the overall results comes from the income dimension, being unusually high on the Nicaraguan case (Figure 3). The second most important dimension is the one associated with the security aspect of the quality of employment, where the social security affiliation indicator plays a significant role within this dimension. Stability and employment conditions dimensions play a secondary role, meaning that quality of employment in Central America importantly relies on institutional disadvantages rather than the characteristics of work itself. The lack of income is especially significant in developing countries where a failed welfare system does not provide all the needed goods and services to develop a fulfilling life. Also, not having insurance against different types of shock means that people are highly dependable in their ability to ensure resources through work.

**Figure 3:** Dimensional decomposition of the Quality of Employment Index for Central America in 2011, at  $k=0.5$ .



Source: Own calculations based on ECCTS survey data on 2011.

**Figure 4:** Indicator decomposition of the Quality of Employment Index for Central America in 2011, at  $k=0.5$ .



Source: Own calculations based on ECCTS survey data on 2011.

This general analysis is interesting, but a more in-depth analysis surges when comparing countries that present a similar result on the H and  $M_0$ . For instance, El Salvador and Nicaragua achieve relatively equal in the multidimensional results, but their contributions differ significantly. The security dimension is more important in El Salvador than in Nicaragua, particularly the indicator of occupational status contributes to the general result in a stronger way in the first country than in the second. This result suggests that employment formality might be more critical on quality employment attainment in the first country than in El Salvador. Another difference arises by looking at Costa Rica and Panama contributions structure. Panama presents a higher contribution to the general  $M_0$  result from the social security deprivation, implying less protected work in the country compared to Costa Rica.

Another advantage of the QoE Index is that it allows understanding how different groups experience deprivations. In table 4 it is possible to look at the same QoE Index parameter by gender, age group and educational level. Regarding women and men performance on these results, the  $M_0$  and H parameters show that women are more deprived than men in all counties. However, men seem to present a higher average of deprivations than women, which may seem contradictory. To understand these results, it is necessary to look closer to the types of jobs men do, where men's jobs seem to have more unsafe employment conditions than the ones of women (Figure 4). Table 4 divides

the age subgroup in three. The first account for workers aged 18 to 33, the second, those aged 34 to 49, and, the third, 50 to 65 years old. The younger group consistently presents higher deprivation rates and in the adjusted indicator, and most of the times present the highest intensity of deprivation, being El Salvador the only exception to this trend. Similar trends can be observed among the primary studies subgroup, in which this educational level always ranks worst on regard to the H and M<sub>0</sub> measurements, compared to the other two groups (secondary studies and university or higher studies). The intensity of the low QoE index varies between countries. In the case of El Salvador, Honduras and Guatemala, it coincides with the primary studies groups. However, it is higher for the secondary studies group in Costa Rica, Panamá and Nicaragua. This trend may reflect the case in which more flexible markets cannot guarantee stable and secure jobs to educated workers, in a highly fluid market.

**Table 4:** Multidimensional Headcount Ratio (H), Adjusted Multidimensional Headcount Ratio (M<sub>0</sub>) and the Intensity (A) for the Quality of Employment Index for Central America in 2011, by gender, age group and educational level, at  $k=0.5$ .

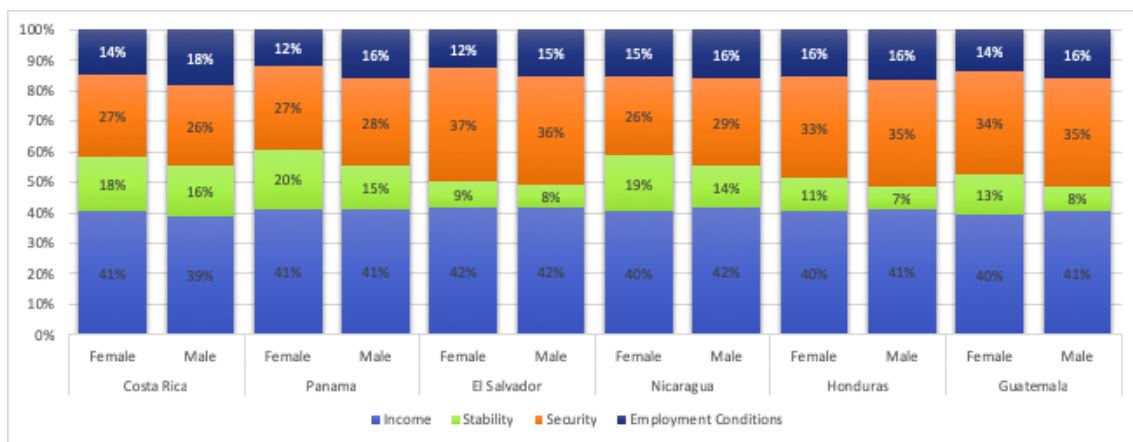
	k=0,5	Costa Rica	Panamá	El Salvador	Nicaragua	Honduras	Guatemala
Female	H	0,30	0,24	0,58	0,49	0,60	0,63
	A	0,42	0,38	0,41	0,49	0,43	0,37
	M0	0,18	0,14	0,35	0,30	0,37	0,38
Male	H	0,25	0,18	0,45	0,43	0,58	0,59
	A	0,58	0,62	0,59	0,51	0,57	0,63
	M0	0,15	0,11	0,27	0,25	0,35	0,35
18-33	H	0,33	0,24	0,54	0,50	0,60	0,62
	A	0,43	0,43	0,38	0,48	0,45	0,50
	M0	0,20	0,15	0,33	0,31	0,37	0,38
34-49	H	0,24	0,15	0,48	0,42	0,56	0,58
	A	0,39	0,41	0,39	0,36	0,34	0,34
	M0	0,14	0,09	0,28	0,24	0,33	0,34
50-65	H	0,23	0,25	0,48	0,41	0,61	0,57
	A	0,18	0,17	0,23	0,16	0,20	0,17
	M0	0,14	0,14	0,28	0,24	0,37	0,34
University studies or higher	H	0,07	0,06	0,15	0,27	0,25	0,21
	A	0,14	0,23	0,10	0,20	0,06	0,05
	M0	0,04	0,04	0,09	0,16	0,15	0,12
Secondary studies	H	0,25	0,23	0,46	0,48	0,49	0,55
	A	0,46	0,68	0,43	0,42	0,33	0,38
	M0	0,15	0,14	0,27	0,29	0,30	0,34
Primary studies or less	H	0,37	0,37	0,62	0,53	0,68	0,67
	A	0,40	0,10	0,47	0,38	0,61	0,58
	M0	0,22	0,22	0,37	0,29	0,41	0,40

Source: Own calculations based on ECCTS survey data on 2011.



Now, turning into subgroups contribution to the QoE Index results. It is possible to state males, and women dimension contributions follow a similar pattern in all the considered Central American countries (Figure 4). A different pattern is present in the case of El Salvador, where the security dimension contribution is considerably higher than in the other countries. Also, slight differences can be read by looking at each country. For instance, women's QoE poorer result in Costa Rica, Panamá and Nicaragua seem to depend on employment stability importantly.

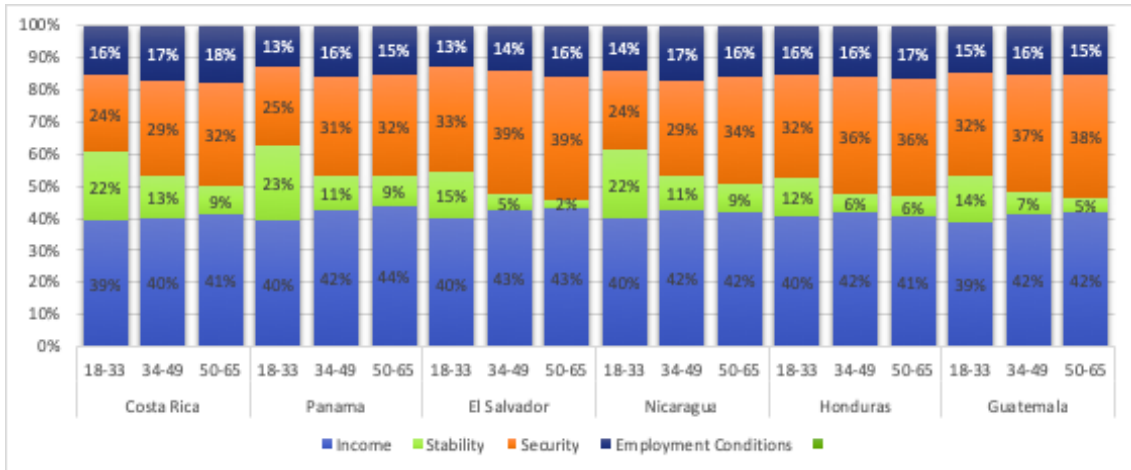
**Figure 5** Dimensional decomposition of the Quality of Employment Index for Central America in 2011, by gender, at  $k=0.5$ .



Source: Own calculations based on ECCTS survey data on 2011.

It is possible to observe a similar pattern when looking into age group dimensional decomposition (Figure 5), where income contributes in a prominent way to the results for all age groups, and the security dimension becomes more important with age. Maybe possible to associate this trend on security dimension with greater dependability in older ages on the social security system.

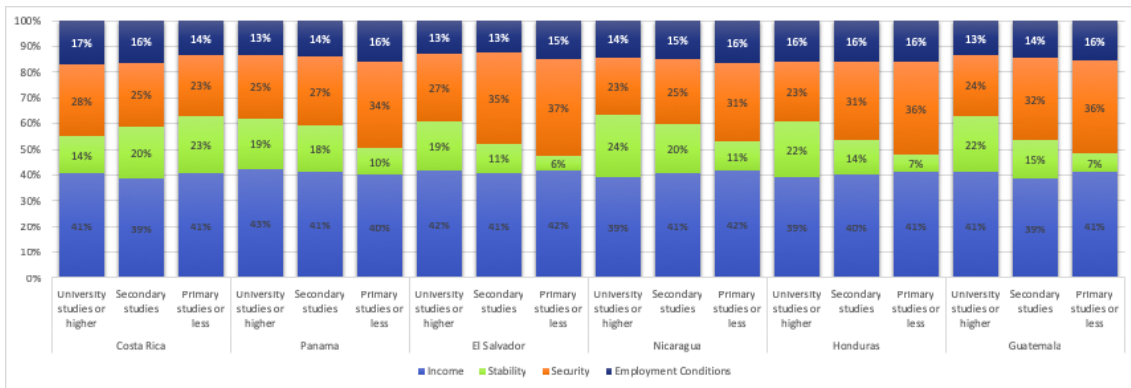
**Figure 6** Dimensional decomposition of the Quality of Employment Index for Central America in 2011, by age group, at  $k=0.5$ .



Source: Own calculations based on ECCTS survey data on 2011.

Finally, contributions of dimension by educational levels show again very similar patterns across countries, where income is the most crucial dimension, and the security dimension seems more relevant to those with primary studies or lower.

**Figure 7** Dimensional decomposition of the Quality of Employment Index for Central America in 2011, by educational level, at  $k=0.5$ .



Source: Own calculations based on ECCTS survey data on 2011.

## 6. Concluding remarks

This paper proposes the use of Alkire and Foster methodology for measuring a multidimensional index of quality of employment. This index was based on the capability approach and had under consideration objective dimensions of quality of employment and previous international organisations attempts to conceptualise and estimate the qualitative dimensions of employment. The dimensions selected were considered to be

relevant to the general discussion of the quality of employment and to respond to the capabilities approach, giving a broader picture of the quality of employment in the labour market.

Based on this index we provided an in-depth study of the quality of employment in six countries in Central America in 2011, comprising Guatemala, Honduras, Nicaragua, El Salvador, Costa Rica and Panama. The results show different levels of quality of employment among these countries, with Guatemala and Honduras presenting poor results in the overall measurements of the index, El Salvador and Nicaragua in the middle range of achievement, and Panama and Costa Rica obtaining better results. The aggregated measures of the Index allowed to construct this list of countries, based on their M0 outcomes. This opportunity to deliver an internationally comparable results constitutes an advantage over other methodologies, such as dashboards index.

At the same time, the multidimensionality of the index constitutes an opportunity to look in-depth at how countries achieve in different aspects of the quality of employment and the interaction between these dimensions. The inclusion of different dimensions allowed us to look in detail how countries uncensored rates vary in each dimension. For instance, even though Costa Rica and Panama had the lowest rates of low multidimensional quality of employment, they still presented high rates of deprivations in some dimensions like employment stability. Especially relevant are Costa Rica and Panamá results regarding the tenure indicator.

However, the main result coming from the main measurements of the QoE Index (H, A and M0) show a more rich picture of the labour dynamics in these countries. First, notwithstanding the previously stated differences, the Intensity (A) of the deprivations shows a common pattern among these countries, holding very similar values. This similar intensity of deprivations means that people that are deprived regarding their employment quality in these countries are deprived on average slightly less than three-fourths of their dimensions. Also, the dimensional contribution analysis shows a common structure for all the countries. This pattern indicates the vital contribution of income in the Index results, challenged only by the security dimension, especially the indicator related to social security. These findings contribute to understanding the Region in a unified manner, which can help when addressing common labour market policies.

Another advantage of the methodology proposed is to allow policy-makers to evaluate the importance of indicators not related to income and in different groups, which is essential for focalization. Although income contributes importantly to the overall quality of employment, it is essential to note that in sum around 60% of the low quality of employment contributions comes from other dimensions rather than income. Also, variations in the ranking and contributions when  $k$  changes show that inequality profoundly influences these achievements. Then, the general picture confirms the idea that is relevant to look not only to income but to turn into the qualitative dimensions of employment. Thanks to the same decomposability property, it was also possible to analyse the index results on different population subgroups. In general terms, women presented a more deprived situation than men, especially in El Salvador and Nicaragua. Also, the young, old and less educated workers had a lower quality of employment. Contributions of these group to the index results were also analysed, and a more detailed analysis can contribute to focus on the populations that experience more deprivations intervening in the dimension that is more important in determining this situation.

All in one, the contributions of this work are varied. First, to our knowledge, this is the first attempt to use a capability approach-based index that replicates Alkire and Foster methodology to measure the quality of employment in developing countries. The use of this unified theoretical approach and the selections of objective variables at the individual level helps to overcome some of the incongruences of the previous attempts to measure the quality of employment. Second, the use of different variables rather than income augments the information available for better-understanding labour markets in Latin American and the Caribbean (LAC). This enhanced information is something that the other revised indicators and measurements are not able to do in Latin America, because of the lack of data availability to replicates them (as discussed on the methods section). To achieve a more detailed panorama of LAC labour markets is vital, as 2011's unemployment rates drop, along with other economic and social transformations, signalled significant economic and labour changes, which have been insufficiently studied. Third, the decomposability property augments the information from specific policy-relevant groups. Fourth, the indicator delivers a policy-relevant measurement, which relies on a synthetic measurement that is easy to communicate.

However, this work is an empirical illustration, and further steps should be taken to deliver an index that is empirically plausible and relevant in the public policy arena.

First, a relevant consideration of this work is related to the need to develop new and enhanced international comparable surveys that contain the fundamental variables for understanding the quantity and quality of employment in developing countries. The ECCTS makes a significant contribution to this, but its focus and design are oriented to measures related to occupational health, missing some critical variables in the labour market analysis. Therefore, a substantial gap in information stills needs to be filled, mainly if we aim to respond to capabilities and functioning rather than goods and services.

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## Appendix A: Alternative cut-off points and indicators

On this section, the different cut-off points and indicators tested for the income and stability dimensions are summarised. The aim of this section is to provide information about alternative definitions of the Index parameters and inform with greater detail on the methodological and normative decisions made on this work. As stated before, the main goal of this dissertation is to empirically test an application of the Alkire and Foster (2011) methodology to the labour market to measure the quality of job. Thenceforth, the indicators selection is based on normative definitions that comply with the capability approach and the data available to perform a cross-country comparison. However, this selection can be adapted at the national level, choosing different dimensions, indicators and cut-off point based on the political and social discussion developed in each country.

The different sections listed below expose the different alternative indicators and cut-off point under consideration along this work for each dimension.

### (i) Quality of Labour Income

Two different indicators were tested on this work. First, an absolute income indicator that measured the deprivation rate of workers regarding a fixed labour income value and, second, a relative indicator that considered the 60% percent of the median. Besides, different cut-off points were tested. All the different thresholds values are summarised in Table 5.

**Table 5:** Quality of Labour Income cut-off point by country.

<b>Quality of Labour Income Indicators Cut-off point</b>	<b>Costa Rica</b>	<b>Panamá</b>	<b>El Salvador</b>	<b>Nicaragua</b>	<b>Honduras</b>	<b>Guatemala</b>
<b>Relative Indicators Cut-off points</b>						
60% of the median	150.000,0	270,0	120,0	1.800,0	2400,0	900,0
<b>Absolute Indicators Cut-off points</b>						
Legal minimum wage**	228.057,6	432,0	182,6	2.004,8	3.280,2	1.808,3
Eight times the basic food basket	307.583,4	497,6	384,0	6.278,5	9.158,4	2.920,0
Six times the basic food basket	230.687,6	373,2	288,0	4.708,9	6.868,8	2.190,0
Four times the basic food basket	153.791,7	248,8	192,0	3.139,2	4.579,2	1.460,0

Source: \*ECCTS methodology report, \*\*Decreto No 36636-MOPT (Costa Rica), Decreto No 56 (El Salvador), Acuerdo Gubernativo No 388-2010 (Guatemala), Decreto núm. 189 del 15 de julio de 1959 y Acuerdo No STSS-223-2011 (Honduras), Código del trabajo Ley No. 185 y Acuerdo Ministerial JCHG-06-08-11 (Nicaragua) , Decreto Ejecutivo No. 263 y Código del Trabajo (Panamá) and \*\*\* own calculations from ECCTS . (1) Fishing, agriculture, mineral extraction (2) Industry manufacturing, electricity, gas and construction (3) Commerce, transport, finance, public administration, defense, health, education, social services and other activities. (a) Generic workers in the legislation (b) Maquila industry and clothing (c) SMEs and turistic industry (d) Central government and council workers

Based on the result summarised on Table 6, the theoretical approach used and rank robustness test, the cut-off point selected was six times the national basic food basket on each country.

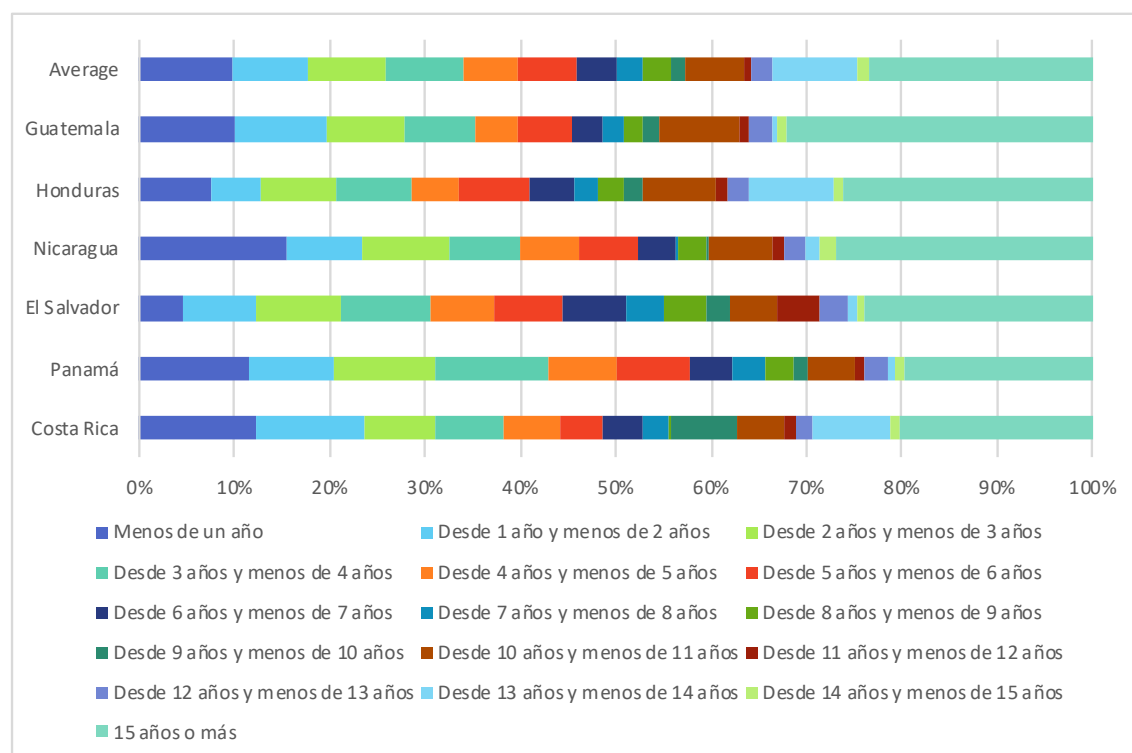
**Table 6:** Quality of Labour Income cut-off point uncensored Headcount ratio results.

Quality of Labour Income cut-off point results	Costa Rica	Panamá	El Salvador	Nicaragua	Honduras	Guatemala
<b>Relative Indicators Cut-off points</b>						
60% of the median	18,7	14,4	14,0	16,6	19,6	20,8
<b>Absolute Indicators Cut-off points</b>						
Legal minimum wage	44,7	46,4	38,73	31,6	40,2	59,8
Eight times the basic food basket	72,6	56,8	84,4	89,0	88,7	84,7
Six times the basic food basket	45,8	31,1	66,2	73,9	75,1	72,5
Four times the basic food basket	22,5	11,4	39,4	53,7	52,8	45,1

Source: Own calculations based on ECCTS survey data on 2011.

## (ii) Employment Stability

**Figure 7** Employment duration distribution in years by country.



Source: Own calculations based on ECCTS survey data on 2011.

**Table 7** Mean, percentile 25 and median of employment duration in years by country.

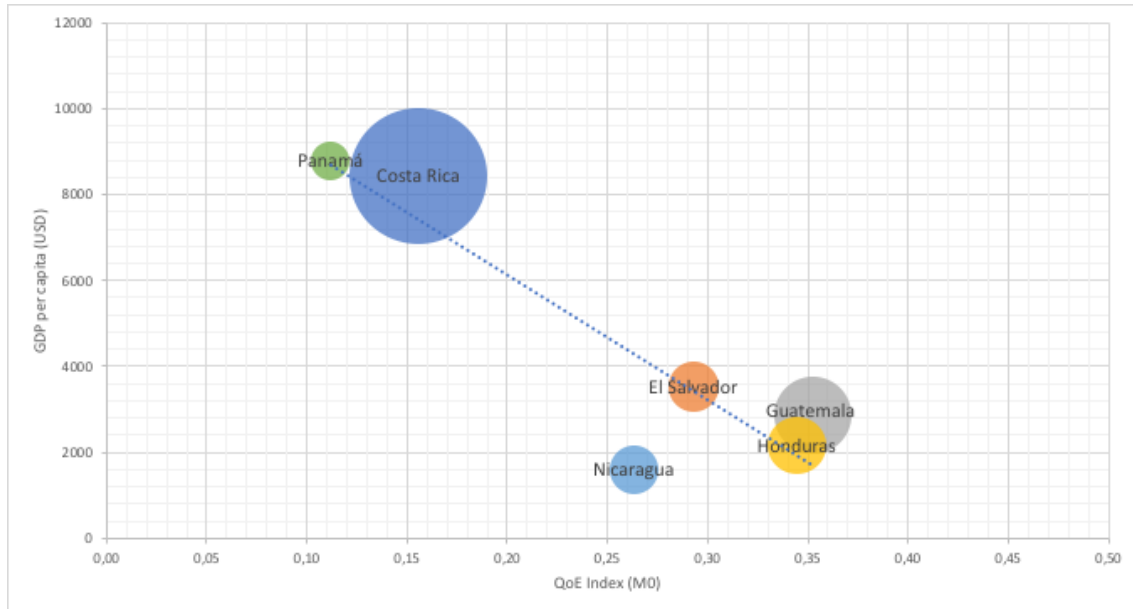
Statistics	Costa Rica	Panamá	El Salvador	Nicaragua	Honduras	Guatemala
Mean	11,0	7,0	9,5	12,9	13,0	12,7
p25	2,0	2,0	3,0	3,0	3,9	2,2
p50	6,0	4,3	6,0	8,0	10,0	8,0

Source: Own calculations based on ECCTS survey data on 2011.

## Appendix B: Quantity versus Quality

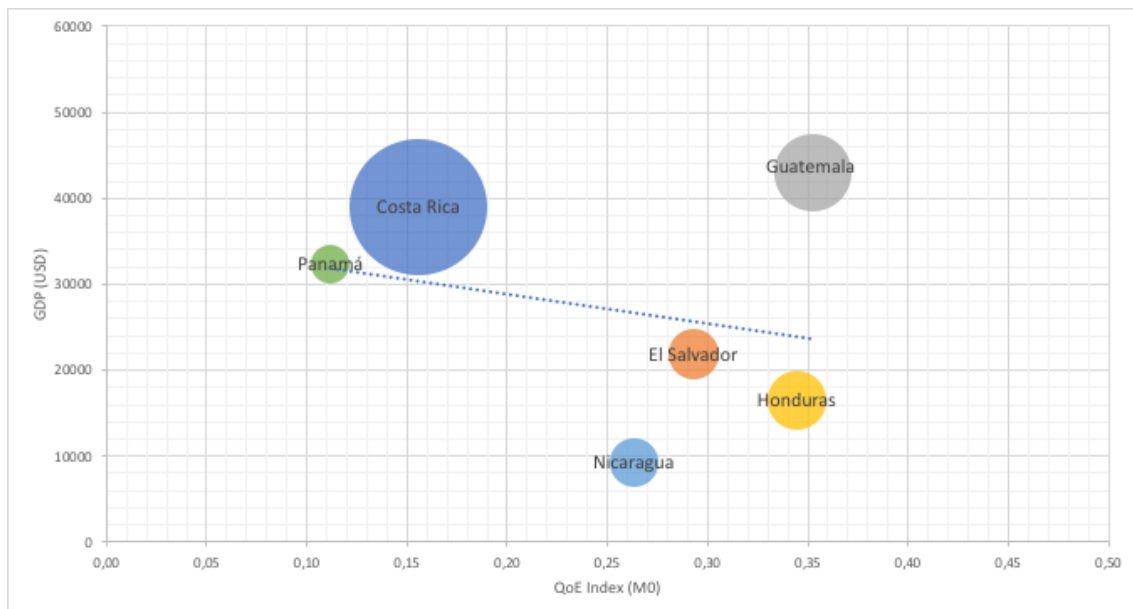
In this section other relations explored are presented in Figures 8, 9 and 10.

**Figure 8** The Adjusted Multidimensional Headcount Ratio ( $M_0$ ), GDP per capita and country population size, at  $k=0.5$ .



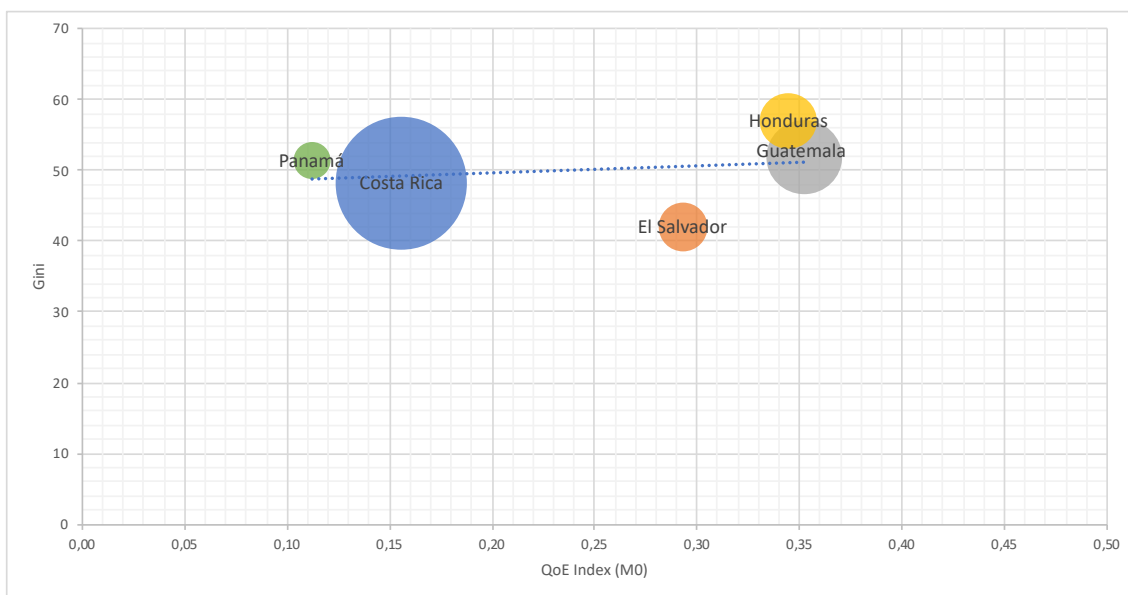
Source: Own calculations based on ECCTS survey data on 2011.

**Figure 9** The Adjusted Multidimensional Headcount Ratio ( $M_0$ ), GDP and country population size, at  $k=0.5$ .



Source: Own calculations based on ECCTS survey data on 2011.

**Figure 10** The Adjusted Multidimensional Headcount Ratio ( $M_0$ ), Gini indicator and country population size, at  $k=0.5$ .



Source: Own calculations based on ECCTS survey data on 2011.

## Appendix C: Robustness Tests

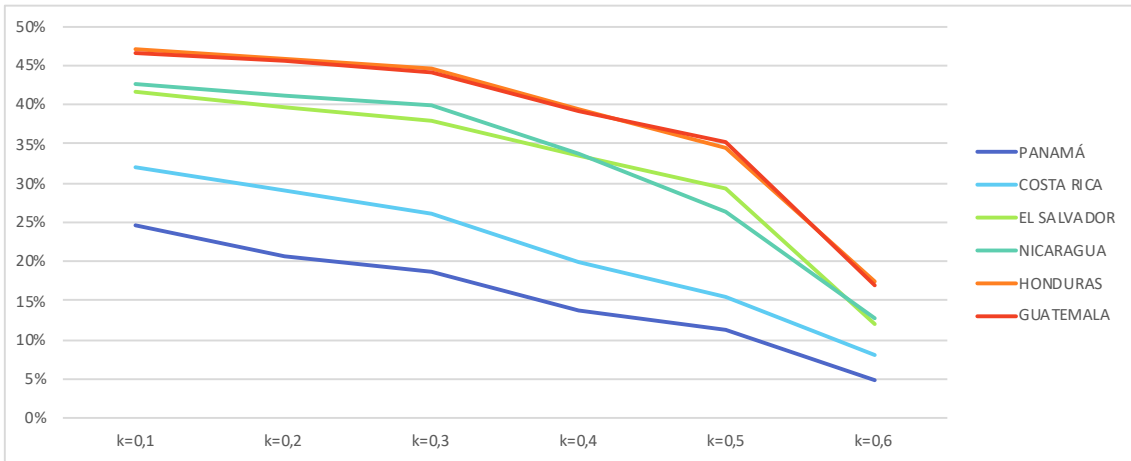
The QoE Index follows the weight structure described in Table 1, which gives an equal relative  $\frac{1}{4}$  weight to each of the four dimensions. This weighting structure is nested, and the indicators weights are described in Table 1, ranging from 0.0625 to 0.25. This structure allows us to rank countries in the three subgroups discussed before: one of low achievement regarding the quality of employment, composed by Honduras and Guatemala, one of middle achievement, composed by El Salvador and Nicaragua, and a last of high performance, in which Panamá and Costa Rica are located. A robust and policy-relevant ordering is one that holds to different parameter specifications (Alkire et al., 2015). Then, this section estimates the QoE Index using five alternative weighting structures to test the rank robustness of the indicator. These alternative weighting structures applied are summarised in Table 8.

**Table 8** Robustness check alternative weighting structures

Dimension and Indicators	Equal weighting	Income weighting preponderance	Stability weighting preponderance	Security weighting preponderance	Employment Conditions weighting preponderance
<b>Quality of Labour Income</b>	<b>1/4</b>	<b>1/2</b>	<b>1/6</b>	<b>1/6</b>	<b>1/6</b>
<b>Employment Stability</b>	<b>1/4</b>	<b>1/6</b>	<b>1/2</b>	<b>1/6</b>	<b>1/6</b>
Tenure	1/8	1/12	1/4	1/12	1/12
Unemployment	1/8	1/12	1/4	1/12	1/12
<b>Employment Security</b>	<b>1/4</b>	<b>1/6</b>	<b>1/6</b>	<b>1/2</b>	<b>1/6</b>
Occupational Status	1/8	1/12	1/12	1/4	1/12
Social Security	1/8	1/12	1/12	1/4	1/12
<b>Employment conditions</b>	<b>1/4</b>	<b>1/6</b>	<b>1/6</b>	<b>1/6</b>	<b>1/2</b>
Excessive Working Hours	1/16	1/24	1/24	1/24	1/8
High Work intensity	1/16	1/24	1/24	1/24	1/8
High Posture Related Risk	1/16	1/24	1/24	1/24	1/8
High Environmental Physical Risk	1/16	1/24	1/24	1/24	1/8

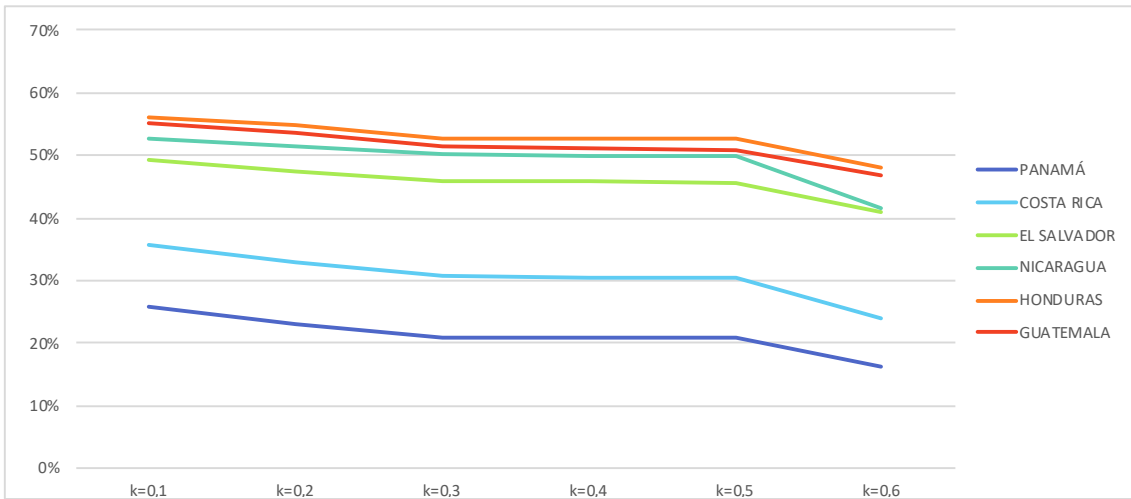
As discussed before, these weights are assigned based on normative decisions that follows the rationale behind the capability approach. However, it is necessary to empirically check the robustness of these selection, to see if results hold under different weighting structures selections. The results are presented below.

**Figure 11** The Adjusted Multidimensional Headcount Ratio ( $M_0$ ) using equal weighting structure, at  $k=0.1$ ,  $k=0.2$ ,  $k=0.3$ ,  $k=0.4$ ,  $k=0.5$  and  $k=0.6$ .



Source: Own calculations based on ECCTS survey data on 2011.

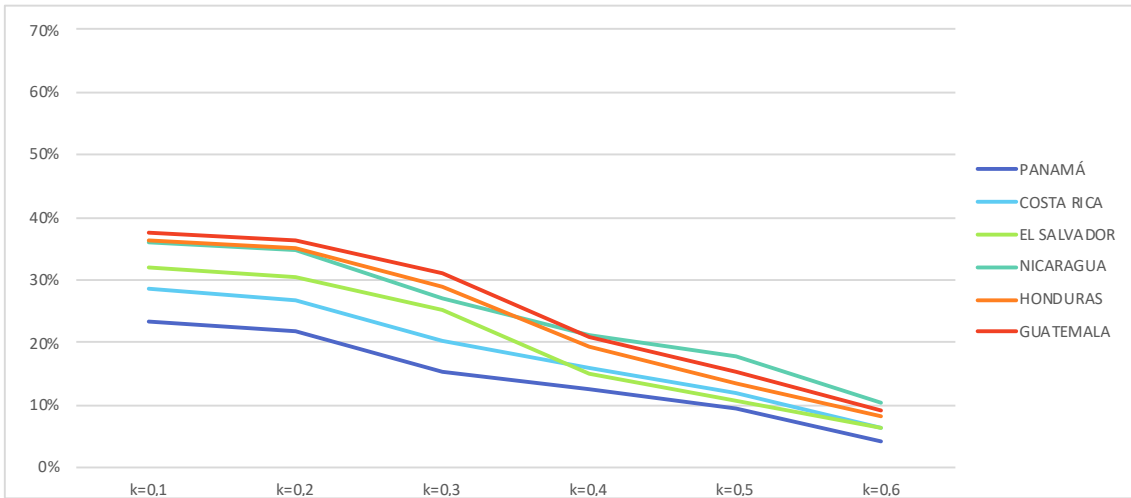
**Figure 12** The Adjusted Multidimensional Headcount Ratio ( $M_0$ ) using income preponderance weighting structure, at  $k=0.1$ ,  $k=0.2$ ,  $k=0.3$ ,  $k=0.4$ ,  $k=0.5$  and  $k=0.6$ .



Source: Own calculations based on ECCTS survey data on 2011.

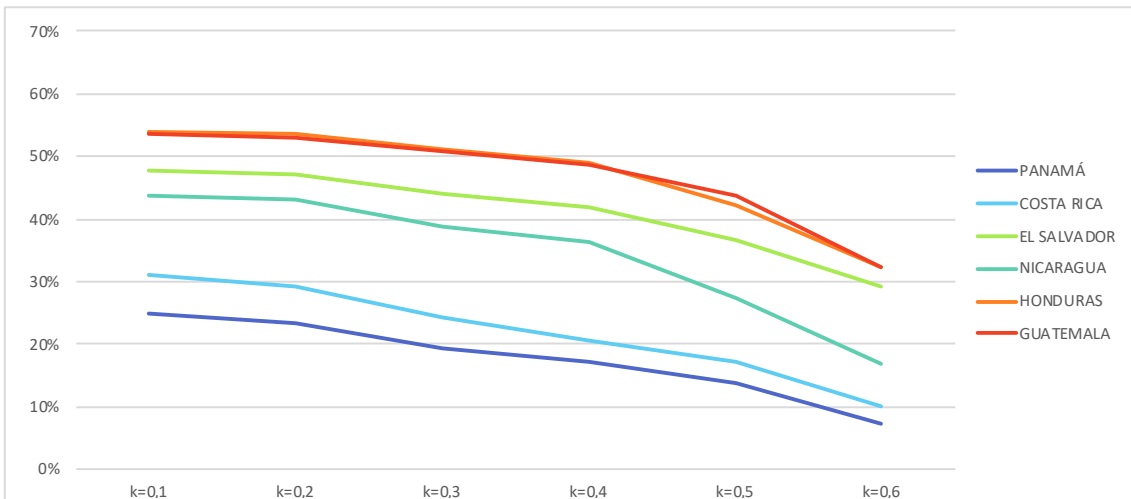


**Figure 13** The Adjusted Multidimensional Headcount Ratio ( $M_0$ ) using stability preponderance weighting structure, at  $k=0.1$ ,  $k=0.2$ ,  $k=0.3$ ,  $k=0.4$ ,  $k=0.5$  and  $k=0.6$ .



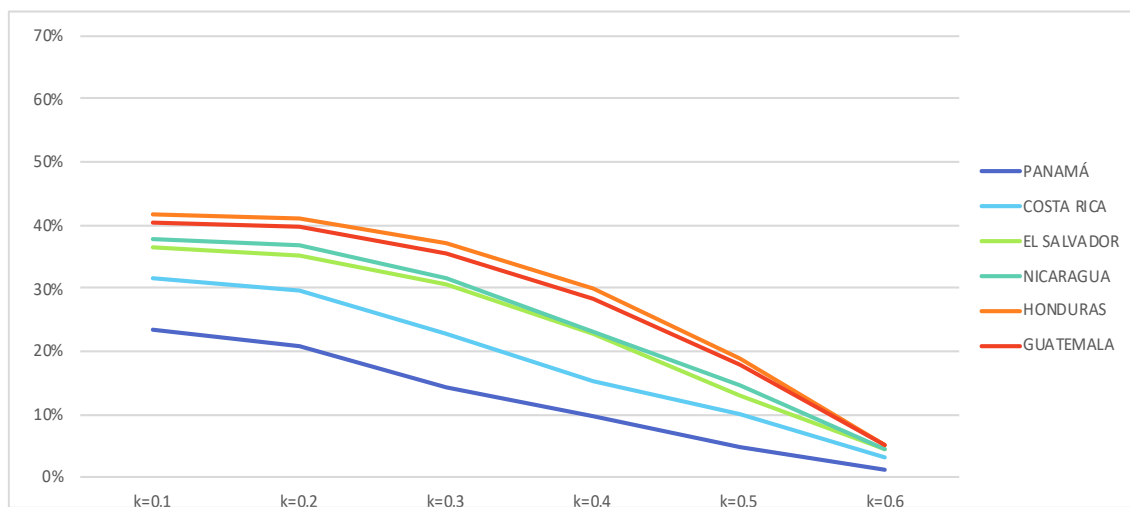
Source: Own calculations based on ECCTS survey data on 2011.

**Figure 14** The Adjusted Multidimensional Headcount Ratio ( $M_0$ ) using security preponderance weighting structure, at  $k=0.1$ ,  $k=0.2$ ,  $k=0.3$ ,  $k=0.4$ ,  $k=0.5$  and  $k=0.6$ .



Source: Own calculations based on ECCTS survey data on 2011.

**Figure 15** The Adjusted Multidimensional Headcount Ratio ( $M_0$ ) using employment conditions preponderance weighting structure, at  $k=0.1$ ,  $k=0.2$ ,  $k=0.3$ ,  $k=0.4$ ,  $k=0.5$  and  $k=0.6$ .



Source: Own calculations based on ECCTS survey data on 2011.

## Appendix D: correlations by countries

### Costa Rica

6 Canastas básicas	SBLI_Dep rived	TEN_Dep rived	UNE_Dep rived	OSD_Dep rived	SS_Deprived	WH_Dep rived	HWI2_Dep rived	HPR_Dep rived	EPR_Dep rived
SBLI_Dep rived	1.000								
TEN_Dep rived	0.0968 (0.0006)	1.000							
UNE_Dep rived	0.0638 (0.0230)	0.2736 (0.0000)	1.000						
OSD_Dep rived	0.1112 (0.0001)	-0.1228 (0.0000)	-0.0454 (0.1064)	1.000					
SS_Deprived	0.2749 (0.0000)	0.0137 (0.6263)	0.0499 (0.0756)	0.2885 (0.0000)	1.000				
WH_Deprived	-0.0991 (0.0004)	-0.0796 (0.0046)	-0.0495 (0.0783)	0.0557 (0.0475)	0.0988 (0.0004)	1.000			
HWI2_Deprived	0.0727 (0.0097)	-0.0483 (0.0855)	0.0168 (0.5500)	0.0644 (0.0219)	-0.0188 (0.5031)	-0.0549 (0.0508)	1.000		
HPR_Deprived	-0.0067 (0.8104)	-0.0497 (0.0767)	0.0412 (0.1424)	-0.0490 (0.0814)	0.1169 (0.0000)	0.1068 (0.0001)	-0.1172 (0.0000)	1.000	
EPR_Deprived	-0.0362 (0.1981)	0.0223 (0.4280)	0.0172 (0.5400)	-0.0463 (0.0994)	0.0274 (0.3293)	0.0863 (0.0021)	-0.1153 (0.0000)	0.1665 (0.0000)	1.000

Source: Own calculations based on ECCTS survey data on 2011.

### Panama

6 Canastas básicas	SBLI_Deprived	TEN_Deprived	UNE_Deprived	OSD_Deprived	SS_Deprived	WH_Deprived	HWI2_Deprived	HPR_Deprived	EPR_Deprived
SBLI_Deprived	1.000								
TEN_Deprived	0.13234 (0.0000)	1.000							
UNE_Deprived	0.0857 (0.0005)	0.2425 (0.0000)	1.000						
OSD_Deprived	0.2587 (0.0000)	-0.0742 (0.0024)	-0.0158 (0.5187)	1.000					
SS_Deprived	0.3646 (0.0000)	0.0042 (0.8635)	0.0497 (0.0424)	0.4304 (0.0000)	1.000				
WH_Deprived	0.0253 (0.3022)	-0.1525 (0.0000)	-0.0887 (0.0003)	0.1968 (0.0000)	0.1796 (0.0000)	1.000			
HWI2_Deprived	0.1019 (0.0000)	-0.0318 (0.1944)	-0.0977 (0.0001)	0.0969 (0.0001)	0.0948 (0.0001)	0.1324 (0.0000)	1.000		
HPR_Deprived	-0.0495 (0.0432)	-0.0022 (0.9275)	-0.0176 (0.4728)	-0.0066 (0.7881)	0.0423 (0.0842)	0.0294 (0.2301)	-0.0683 (0.0053)	1.000	
EPR_Deprived	-0.0745 (0.0023)	0.0365 (0.1357)	0.0265 (0.2788)	-0.0172 (0.4819)	-0.0553 (0.0239)	0.0330 (0.1776)	-0.1096 (0.0000)	0.1475 (0.0000)	1.000

Source: Own calculations based on ECCTS survey data on 2011.

## El Salvador

6 Canastas básicas	SBLI_Deprived	TEN_Deprived	UNE_Deprived	OSD_Deprived	SS_Deprived	WH_Deprived	HWI2_Deprived	HPR_Deprived	EPR_Deprived
SBLI_Deprived	1.000								
TEN_Deprived	0.0637 (0.0054)	1.000							
UNE_Deprived	0.0161 (0.4816)	0.3064 (0.0000)	1.000						
OSD_Deprived	0.3753 (0.0000)	-0.0398 (0.0818)	-0.0638 (0.0053)	1.000					
SS_Deprived	0.3937 (0.0000)	-0.0843 (0.0002)	-0.0202 (0.3766)	0.4570 (0.0000)	1.000				
WH_Deprived	-0.0770 (0.0008)	0.0333 (0.1458)	-0.0207 (0.3663)	-0.0925 (0.0001)	0.0086 (0.7087)	1.000			
HWI2_Deprived	0.0948 (0.0000)	0.0065 (0.7781)	0.0353 (0.1229)	0.0485 (0.0342)	0.1192 (0.0000)	-0.1405 (0.0000)	1.000		
HPR_Deprived	0.0184 (0.4228)	-0.0657 (0.0041)	-0.0000 (0.9989)	0.0754 (0.0010)	0.0445 (0.0520)	0.0490 (0.0322)	-0.0936 (0.0000)	1.000	
EPR_Deprived	-0.0298 (0.1936)	-0.0582 (0.0109)	-0.0157 (0.4916)	0.0025 (0.9131)	0.0115 (0.6157)	0.0953 (0.0000)	-0.1606 (0.0000)	0.4192 (0.0000)	1.000

Source: Own calculations based on ECCTS survey data on 2011.

## Nicaragua

6 Canastas básicas	SBLI_Deprived	TEN_Deprived	UNE_Deprived	OSD_Deprived	SS_Deprived	WH_Deprived	HWI2_Deprived	HPR_Deprived	EPR_Deprived
SBLI_Deprived	1.000								
TEN_Deprived	0.0520 (0.0256)	1.000							
UNE_Deprived	0.0284 (0.2235)	0.3389 (0.0000)	1.000						
OSD_Deprived	0.0881 (0.0002)	-0.0723 (0.0019)	-0.0107 (0.6464)	1.000					
SS_Deprived	0.1422 (0.0000)	-0.1254 (0.0000)	-0.0469 (0.0442)	0.2849 (0.0000)	1.000				
WH_Deprived	-0.0448 (0.0547)	0.0740 (0.0015)	0.0670 (0.0040)	0.0055 (0.8125)	0.0395 (0.0897)	1.000			
HWI2_Deprived	0.0345 (0.1387)	-0.0730 (0.0017)	-0.1341 (0.0000)	0.0964 (0.0000)	0.1024 (0.0000)	-0.0824 (0.0004)	1.000		
HPR_Deprived	-0.0240 (0.3026)	-0.0055 (0.8139)	0.1495 (0.0000)	-0.0093 (0.6898)	0.0313 (0.1789)	0.0634 (0.0065)	-0.1053 (0.0000)	1.000	
EPR_Deprived	-0.0996 (0.0000)	0.0620 (0.0078)	0.1339 (0.0000)	-0.0349 (0.1347)	-0.1050 (0.0000)	0.0443 (0.0574)	-0.1342 (0.0000)	0.1949 (0.0000)	1.000

Source: Own calculations based on ECCTS survey data on 2011.

## Honduras

6 Canastas básicas	SBLI_De prived	TEN_De prived	UNE_De prived	OSD_De prived	SS_Depri ved	WH_De prived	HWI2_De prived	HPR_De prived	EPR_De prived
SBLI_De prived	1.000								
TEN_De prived	0.0401 (0.0891)	1.000							
UNE_De prived	0.0313 (0.1844)	0.3118 (0.0000)	1.000						
OSD_De prived	0.2390 (0.0000)	-0.1302 (0.0000)	-0.1138 (0.0000)	1.000					
SS_Depri ved	0.2446 (0.0000)	-0.0485 (0.0394)	-0.0544 (0.0210)	0.2732 (0.0000)	1.000				
WH_Dep rived	-0.0493 (0.0365)	0.1043 (0.0000)	0.0235 (0.3198)	0.0129 (0.5837)	-0.0199 (0.3977)	1.000			
HWI2_D eprived	0.1486 (0.0000)	-0.0205 (0.3851)	-0.0499 (0.0342)	0.2123 (0.0000)	0.1217 (0.0000)	-0.0073 (0.7584)	1.000		
HPR_De prived	-0.0678 (0.0040)	-0.0758 (0.0013)	-0.0187 (0.4271)	-0.0541 (0.0217)	0.0568 (0.0159)	-0.1258 (0.0000)	-0.0973 (0.0000)	1.000	
EPR_De prived	-0.1590 (0.0000)	0.0096 (0.6834)	0.0004 (0.9881)	-0.0864 (0.0002)	-0.0723 (0.0021)	0.0358 (0.1289)	-0.1813 (0.0000)	0.1840 (0.0000)	1.000

Source: Own calculations based on ECCTS survey data on 2011.

## Guatemala

6 Canastas básicas	SBLI_De prived	TEN_De prived	UNE_De prived	OSD_De prived	SS_Depri ved	WH_Dep rived	HWI2_De prived	HPR_De prived	EPR_De prived
SBLI_De prived	1.000								
TEN_De prived	-0.0087 (0.7439)	1.000							
UNE_De prived	0.0026 (0.9229)	0.2905 (0.0000)	1.000						
OSD_De prived	0.2086 (0.0000)	-0.1774 (0.0000)	-0.1193 (0.0000)	1.000					
SS_Depri ved	0.2623 (0.0000)	-0.0908 (0.0006)	0.0136 (0.6064)	0.3375 (0.0000)	1.000				
WH_Dep rived	-0.0200 (0.4508)	0.0329 (0.2133)	0.0032 (0.9031)	0.0372 (0.1603)	0.0487 (0.0658)	1.000			
HWI2_D eprived	0.0353 (0.1826)	0.0130 (0.6247)	-0.0309 (0.1470)	0.0567 (0.0320)	0.0214 (0.4182)	-0.0230 (0.3841)	1.000		
HPR_De prived	0.1268 (0.0000)	-0.1154 (0.0000)	-0.0447 (0.091)	0.0885 (0.0008)	0.1112 (0.0000)	-0.0687 (0.0094)	-0.1011 (0.0001)	1.000	
EPR_De prived	-0.0043 (0.8721)	0.0653 (0.0135)	0.0382 (0.1485)	-0.0513 (0.0525)	-0.0161 (0.5421)	-0.0076 (0.7727)	-0.0931 (0.0004)	0.0994 (0.0002)	1.000

Source: Own calculations based on ECCTS survey data on 2011.