

DISCUSSION PAPER SERIES

IZA DP No. 15565

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Employment across Developing Countries**

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**Shoghik Hovhannisyan**  
*International Finance Corporation*

**Carlos Rodríguez-Castelán**  
*World Bank and IZA*

**Veronica Montalva-Talledo**  
*World Bank*

**Kersten Stamm**  
*World Bank*

**Tyler Remick**  
*The George Washington University*

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IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9  
53113 Bonn, Germany

Phone: +49-228-3894-0  
Email: [publications@iza.org](mailto:publications@iza.org)

[www.iza.org](http://www.iza.org)

## ABSTRACT

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# Global Job Quality: Evidence from Wage Employment across Developing Countries\*

Measuring job quality across countries has been challenging and has relied typically on a single indicator, such as formality or wages. To contribute to this critical policy issue, this paper presents a first global estimate of job quality departing from microdata. It assembles a harmonized global data set of labor force and household surveys to produce a measure of job quality across four dimensions: sufficient income, access to employment benefits, job stability, and adequate working conditions. The results for 40 developing countries show significant variation in job quality across countries, economic sectors, and sociodemographic characteristics, including age, location, and educational attainment. Countries in the Latin America and the Caribbean region have relatively higher levels of job quality, while countries in Sub-Saharan Africa display the lowest levels of job quality. Most workers in the sectors of finance and business services, public administration, and utilities have, on average, better jobs. Higher education matters in securing greater job quality, while the average job quality of wage employment is relatively similar between men and women but with some variation in income and working conditions.

**JEL Classification:** J30, J81, I31, O10, O15

**Keywords:** job quality, working conditions, wage employment, private sector, global

**Corresponding author:**

Carlos Rodríguez-Castelán  
World Bank  
1818 H Street N.W.  
Washington, DC 20006  
USA

E-mail: [crodriguez@worldbank.org](mailto:crodriguez@worldbank.org)

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## 1. Introduction

Good jobs are associated with greater productivity and better living standards and are critical to achieving sustainable growth and poverty reduction (World Bank 2012). However, most working poor in developing countries do not have access to good jobs with enough earnings and benefits to allow them to meet their basic needs or with adequate working conditions to improve their well-being (Fields 2012). Global studies measuring job quality across countries have typically relied on a single indicator, such as formality or jobs. Likewise, only a few multicountry studies have examined job characteristics beyond a single indicator. They have also usually focused on single regions, such as Latin America, Europe, and Africa, particularly because of the difficulty in harmonizing microdata across countries (Bocquier, Nordman, and Vescovo 2010; Brummund, Mann, and Rodríguez-Castelán 2018; Leschke and Watt 2014; Sehnbruch et al. 2020).

To close this knowledge gap and to support global efforts to measure and monitor trends in job quality across developing countries, particularly in light of Sustainable Development Goal 8 (SDG 8) on “fostering sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all,” this paper proposes a multidimensional measure of job quality that can track and benchmark the quality of employment across developing countries. In the presence of the increased availability and improved quality of the labor force and household surveys in many developing countries (Lewandowski, Góra, and Lis 2017), this paper also contributes to a growing body of literature on the quality of jobs by producing all indicators from microdata, which also allows meaningful disaggregation across sociodemographic groups, industries, and locations in multiple countries. This flexibility is important in uncovering the characteristics of employment that may be correlated with poverty, especially among disadvantaged groups, such as women and low-skill workers.

The analysis follows well-established international conventions in the selection of job quality characteristics. Indicators to assess decent work for all under SDG 8 include disaggregated measures (including by sex, age, occupation, and persons with disabilities) on informal employment, hourly earnings, unemployment rates, the share of youth not in education and of children engaged in child labor, the frequency of occupational injuries, and compliance with labor rights.<sup>1</sup> Similarly, the International Labour Organization (ILO) defines “decent work for all” as productive work that delivers a fair income, with workplace security and social protection, prospects for development and social integration, freedom to organize, and equality of opportunity.<sup>2</sup> Overall, most frameworks that measure job quality agree that a good job requires sufficient earnings to improve living standards, adequate benefits, appropriate security and safety provision, and satisfaction. Beyond these desired characteristics of a good job, jobs may also affect the well-being of others through positive spillovers. This is the case, for instance, of women’s employment, which often results in improvements in children’s well-being, or jobs in firms with

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<sup>1</sup> Specifically, the indicators for measuring progress toward SDG 8 related to “decent work for all” are the share of informal employment in nonagriculture employment by sex; average hourly earnings of women and men employees by occupation, age, and persons with disabilities; the unemployment rate by sex, age, and persons with disabilities; the share of youth (ages 15–24) not in education, employment, or training; the share and number of children ages 5–17 engaged in child labor, by sex and age; the frequency of fatal and nonfatal occupational injuries; and the national compliance of labor rights (freedom of association and collective bargaining) based on International Labour Organization (ILO) textual sources and national legislation, by sex and migrant status. See SDG Tracker, Sustainable Development Goal 8, Decent Work and Economic Growth, Our World in Data, Global Change Data Lab, University of Oxford, Oxford, UK, <https://sdg-tracker.org/economic-growth>.

<sup>2</sup> See “Measuring Job Quality: Difficult but Necessary,” ILOSTAT, International Labour Organization, Geneva, <https://ilostat.ilo.org/measuring-job-quality-difficult-but-necessary/>.

expertise that raises productivity in other firms (World Bank 2012). While jobs with positive spillovers have the highest value for society, the focus of this paper is individual job quality.

The measure of job quality presented in this study is practical without compromising the intended purpose. The selection of dimensions and indicators to determine the quality of employment considers availability and comparability across developing countries. The proposed approach includes four dimensions of job quality that can be found in most countries: sufficient income to overcome poverty, access to job benefits, employment stability, and adequate working conditions. These dimensions are broadly consistent with previous multicountry approaches (Brummund, Mann, and Rodríguez-Castelán 2018; Sehnbruch et al. 2020). Departing from these four dimensions, the paper adopts the Alkire-Foster method—originally conceived to measure multidimensional poverty—for aggregating the characteristics of good jobs into a single index. Limited data availability on the self-employed and casual workers in most developing countries (generally in agriculture) prompted a focus on wage employment. Because the analysis focuses on wage employment, the proposed measure could then be interpreted as a lower bound of job quality, whereby the job quality score for other employment categories is equal to zero. Given all these factors and based on a robust effort of collection and the ex-post harmonization of household and labor force surveys, the proposed job quality measure (JQM) for wage employment in this paper includes a common set of indicators across 40 developing countries and six geographic regions.<sup>3</sup>

The main results of the analysis show that the quality of wage employment displays strong heterogeneity among economic sectors. In the public administration, finance and business services, and utilities sectors, most workers have stable jobs and earn a wage above the poverty line, and about two-thirds receive job-related benefits and are linked to higher job satisfaction. The quality of wage employment also varies by education, sex, age, and location. Older workers (ages 25 or more) have higher job quality than workers ages 16–24. A significant education premium (tertiary education versus primary education) is found in most sectors, suggesting that higher education secures greater job quality in the form of higher benefits and stability. Women and men show similar levels of job quality at the aggregate and sectoral levels. However, there are some differences across JQM dimensions. Thus women fare especially well in the working conditions dimension, while men perform better in terms of the income dimension. These results may be driven by self-selection among highly skilled women into wage employment across developing countries. The results show a significant gap in job quality between urban and semiurban or rural areas in all four dimensions.

This paper contributes to policy debates and the literature in four ways. First, the analysis covers 40 countries across all regions of the world, providing a valuable benchmark for international comparisons. The global geographic scope also allows the main correlates of quality of employment to be identified, such as economic growth and private sector investment. Second, the proposed index complements and expands the traditional proxies of good quality jobs, such as informality or wages, to include both monetary and nonmonetary dimensions of jobs, augmented by criteria capturing working conditions. The multidimensional nature of the JQM and its well-defined individual characteristics allow users to identify the main drivers behind the aggregate measure. Third, the JQM can be disaggregated by economic sector, demographic and socioeconomic characteristics (including sex, age, educational attainment), and

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<sup>3</sup> These regions are used by the World Bank for administrative purposes. The countries are geographically located as follows: 12 in Sub-Saharan Africa, six in East Asia and the Pacific, 12 in Latin America and the Caribbean, two in Europe and Central Asia, six in South Asia, and two in the Middle East and North Africa.

subregions. This is useful in identifying vulnerable populations and lagging sectors and regions to inform policy and target private sector investments more effectively. Fourth, the harmonized data constitute a global public good and should be useful in conducting additional analysis on the predictors and effects of job quality.

The rest of the paper is organized as follows. Section 2 reviews the literature on job quality and examines previous applications based on microdata at the country and regional levels. Section 3 describes the methodology adopted to measure job quality and describes the data used and the assumptions made to carry out the empirical analysis. Section 4 presents the main results, heterogeneous analysis, and robustness checks. Section 5 concludes.

## 2. Literature Review

The notion of job quality has become increasingly prominent in the international policy debate. The concept of decent work was introduced and declared an institutional priority in 1999 by the International Labour Organization (ILO) (Burchell et al. 2014). The United Nations promoted “sustained, inclusive and sustainable economic growth, full and productive employment, and decent work for all” as Sustainable Development Goal 8 (SDG 8) in the 2030 Agenda for Development (United Nations 2015). This was adopted by all United Nations member states in 2015. That same year the Organisation for Economic Co-operation and Development (OECD) released a framework for measuring job quality. The notion of job quality is also part of broader OECD agendas related to people’s well-being and inclusive growth (Cazes, Hijzen, and Saint-Martin 2016).

Many academic studies have examined job quality and its aspects (Dahl, Nesheim, and Olsen 2009; Green 2005; ILO 2008; Muñoz de Bustillo et al. 2012). It has long been recognized that there are desirable characteristics of a good job other than income (Smith 1776, 1937). Moreover, evidence shows that differences in these other dimensions are not always offset by income differentials (Brown 1980; Sullivan and To 2014). Job formality is an indicator widely used to proxy for job quality in developing countries. However, this measure has important limitations. For example, definitions of formality vary substantially across countries, making it difficult for comparisons. Formality also does not necessarily correlate with job satisfaction, and the formal sector wage premium may disappear after controlling for individual and employer characteristics (Pagés and Madrigal 2008; Pratap and Quintin 2006).<sup>4</sup> Expanding the measurement of a good job beyond single indicators is therefore critical in understanding job quality as a multidimensional phenomenon, crucial for improving the welfare of the individual and reducing poverty.

The literature on measuring and benchmarking job quality across countries can be partitioned into two groups based on the data used, as follows: (1) studies that aggregate indicators at the macro level and (2) approaches exclusively based on microdata. Within the first type of literature, the ILO proposes 18 main indicators in the areas of employment opportunities, social security, worker representation, adequate earnings, equal opportunity and treatment in employment, work that should be abolished, decent hours, and a safe work environment. This includes country-level indicators, such as unemployment

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<sup>4</sup> Pagés and Madrigal (2008) find suggestive evidence that formal status correlates poorly with job satisfaction, particularly among low-skill workers. These workers may have a low valuation of social benefits because these benefits may be low quality, especially in the case of poor individuals (Levy 2008). Poor workers may also value the old-age pension less given their shorter life expectancy and their greater reliance on family support.

rates and micro level indicators based on information from labor surveys (ILO 2008). The ILO put forward profiles on several countries reporting these indicators.<sup>5</sup> The OECD also offers a valuable proposal based on microdata with some indicators presented at the aggregate level, such as average earnings (Cazes, Hijzen, and Saint-Martin 2016). More recently, the Inter-American Development Bank has developed a methodology to measure job quality in the Latin America and Caribbean region that relies solely on macro level indicators (Busso et al. 2017). Leschke and Watt (2014) propose a JQM for 27 countries in the European Union using a combination of indicators defined at the individual level and aggregate measures on wages, collective bargaining coverage, and trade union density. One of the challenges with these measures is their inability to uncover heterogeneity in job quality across sectors and groups. They thus cannot help identify vulnerable subpopulations or study determinants of job quality in developing countries.<sup>6</sup>

Researchers have addressed these challenges by constructing measures of job quality based exclusively on microdata from labor force and household surveys. Many of these studies focus on a single country or on a selected group of countries. Studies on developed countries include Australia (Ribar and Wooden 2020), Canada (Chen and Mehdi 2019), Spain (Díaz-Chao, Ficapal-Cusí, and Torrent-Sellens 2016), and the United States (Horowitz 2016). Olsen, Kalleberg, and Nesheim (2010) explore perceived job quality in four dimensions in West Germany, Norway, the United Kingdom, and the United States. The literature on developing countries includes Poland (Lewandowski, Góra, and Lis 2017), Türkiye (Del Carpio, Gruen, and Levin 2017), and several papers on Latin American countries, including Brazil (Huneus et al. 2015), Chile (Huneus, Landerretche, and Puentes 2012; Sehnbruch 2006), Colombia (Gómez-Salcedo, Galvis-Aponte, and Royuela 2016), Ecuador (Villacís and Reis 2016), and Mexico (Ortega Díaz 2013). The job quality studies on poor countries are scarce (For example, on Benin, see Kponou and Kamga 2019).

Given the paucity of indicators and the difficulty in harmonizing micro level data across countries, the existing cross-country literature is thin. Instead, studies predominantly focus on developed countries with more granular data or on a single region with comparable surveys. There have been several attempts to benchmark job quality across European countries, commonly using the European Working Conditions Survey (EWCS) (Eurofound 2012; Muñoz de Bustillo et al. 2012; Simões, Crespo, and Pinto 2015; Smith et al. 2008). The main advantage of the EWCS is that it provides comparable micro level data for European countries that encompass a wide range of information on job quality. In addition to more common job characteristics, such as earnings and job security, the EWCS also includes information on less common features, such as career progression, level of autonomy, and pace of work (Eurofound 2012). Nonetheless, a major disadvantage of this dataset is the limited sample size and the inability of researchers to use the data to explore heterogeneity in job quality across sociodemographic characteristics, such as age, educational attainment, sector, or region (Leschke and Watt 2014). To circumvent this issue, Erhel et al. (2012) use the European Union Statistics on Income and Living Conditions dataset to explore within-country inequalities in three dimensions (nonstandard employment, working time and skills, and career development) in 24 European countries.<sup>7</sup> Brisbois (2003) uses the EWCS dataset, together with the Ekos

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<sup>5</sup> See Measuring Decent Work (dashboard), International Labour Organization, Geneva, <https://www.ilo.org/integration/themes/mdw/lang--en/index.htm>.

<sup>6</sup> Multidimensional poverty indexes often include good quality employment as one of the dimensions considered (Dirksen 2020). Employment is not part of the World Bank's multidimensional poverty measure because, in the surveys considered for that aim, the relevant indicators of employment are not sufficiently harmonized (World Bank 2018).

<sup>7</sup> EU-SILC (European Union Statistics on Income and Living Conditions) (dashboard), Eurostat, European Commission, Luxembourg, <http://ec.europa.eu/eurostat/web/microdata/european-union-statistics-on-income-and-living-conditions>.

Rethinking North American Integration Survey that replicated six questions from the 2000 EWCS for Canada and the United States, to compare these two countries with 15 European countries in five dimensions of job quality.

There have been notable efforts to measure multidimensional job quality at the regional level in developing countries, especially in Latin America, where relatively high-quality survey data are available (Brummund, Mann, and Rodríguez-Castelán 2018; González et al. 2021; Sehnbruch et al. 2020). Brummund, Mann, and Rodríguez-Castelán (2018) use harmonized data on 15 Latin American countries to focus on four dimensions that can be consistently identified in the literature: income, stability, benefits, and job satisfaction. This study includes both wage employment and self-employed workers. Sehnbruch et al. (2020) include nine Latin American countries and focus on the three dimensions proposed by the OECD (Cazes, Hijzen, and Saint-Martin 2016): income, stability, and employment conditions. González et al. (2021) focus on six Central American countries and follow a similar approach to Sehnbruch et al. (2020), but include job security as a fourth dimension. All three studies include similar indicators (contract work and tenure) in their stability or security dimension.<sup>8</sup> Benefits indicators (social security receipts, health insurance, or retirement benefits) are included as indicators in the benefits dimension by Brummund, Mann, and Rodríguez-Castelán (2018), in the security dimension in González et al. (2021), and in the employment conditions dimension of Sehnbruch et al. (2020). Bocquier, Nordman, and Vescovo (2010) have conducted the only other study that looks at developing countries (West Africa region), but, because of the data limitations, they only include capital cities in seven countries.

The limited attempts to measure multidimensional job quality in developing countries reflect the lack of comprehensive quality data in these countries. This paper contributes to the literature by developing a multidimensional JQM that is global in scope and applicable to developing countries across all regions. Similar to Brummund, Mann, and Rodríguez-Castelán (2018), it proposes four dimensions of job quality: income, stability, benefits, and working conditions. Given the data limitations, especially in the poorest countries, the proposed JQM measure allows a greater flexibility in the choice of indicators, which is discussed in the methodology section. It also focuses only on wage employment because information on the self-employed is lacking in many countries.

### **3. Job Quality Measure Methodology**

#### **a. Dimensions of job quality**

Over the past decade, there has been a proliferation of job quality frameworks proposed by international panels of experts both on the macro and micro levels. Prominent efforts include decent work indicators (ILO 2013), the job quality index (Eurofound 2012), indicators of job quality (European Union Employment Committee), good jobs for development (World Bank 2012), quality of employment (UNECE 2015), and the OECD job quality framework (Cazes, Hijzen, and Saint-Martin 2016).<sup>9</sup> The main dimensions that overlap across these frameworks are (1) earnings, (2) benefits (social protection), (3) job security, and (4) working conditions (physical and mental well-being). Table 1 shows the types of indicators at both the micro and macro level that are common in the literature on the measurement of these dimensions.

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<sup>8</sup> In González et al. (2021) having a contract applies only to wage employees, while, among the self-employed, the indicator is measured as lack of higher education.

<sup>9</sup> For the indicators of job quality, see “Annex 1: Definitions of Job Quality: EMCO Indicators” (EC 2015, 172–73).

Table 1. Common Dimensions and Indicators of Job Quality

<i>Dimension</i>	<i>Areas</i>	<i>Indicators</i>
Earnings	Wage income	<ul style="list-style-type: none"> <li>• Wage income above a threshold*</li> </ul>
Job benefits	Social protection	<ul style="list-style-type: none"> <li>• Job registered with social security administration*</li> <li>• Job provides health insurance*</li> <li>• Job provides pension*</li> <li>• Job provides eligibility for unemployment insurance*</li> </ul>
	Employment benefits	<ul style="list-style-type: none"> <li>• Paid annual leave*</li> <li>• Paid sick leave*</li> <li>• Paid parental leave*</li> </ul>
Job stability	Formal employment	<ul style="list-style-type: none"> <li>• Employment is bound by written contract*</li> <li>• Employment is permanent, not temporary*</li> <li>• Employer is formal entity*</li> </ul>
	Tenure	<ul style="list-style-type: none"> <li>• Employed in current job more than a certain number of years*</li> </ul>
Working conditions	Work-life balance	<ul style="list-style-type: none"> <li>• Excessive working hours*</li> <li>• Work intensity</li> <li>• Unsocial hours / shift work</li> <li>• Involuntary part time</li> <li>• Would like to work more*</li> <li>• Has a second paid job*</li> </ul>
	Physical health and safety	<ul style="list-style-type: none"> <li>• Dangerous work environments (noise, vibrations, drastic temperatures, and so on)</li> <li>• Manual labor (moving heavy loads, painful or tiring positions)</li> <li>• Accidents a work</li> </ul>
	Job satisfaction	<ul style="list-style-type: none"> <li>• Skills Match</li> <li>• Work autonomy</li> <li>• On-the-job learning and training</li> <li>• Good relationships with colleagues</li> </ul>

\* These indicators are available in most household and labor force surveys across regions of the world and are used in the proposed job quality measure.

The earnings dimension measures whether a job pays sufficiently to lift a family out of poverty and into the lower-middle class. Labor earnings are the main source of material well-being among most individuals, especially in developing countries. This dimension not only captures whether a job generates income, but also whether labor income can support a minimum standard of living among workers and their families (World Bank 2012). As a measure of minimum living standards, this paper adopts the World Bank international poverty line of US\$1.90 a day per capita (2011 purchasing power parity [PPP] US dollars). Focusing only on the well-being of individual workers, however, is not sufficient for understanding the welfare implications of employment among the population at large. A poverty headcount around the world is measured based on household and not individual income, and it is thus imperative to consider the needs of workers as well as their dependents, especially in developing countries where labor earnings are the main source of household income. For the harmonization exercise, the dependency ratio is

standardized across all countries and set equal to an average household size of four with 1.5 full-time workers, following the extensive methodological review of Anker (2011).<sup>10</sup> This gives a wage threshold of US\$5.07 (US\$1.90 at 2011 PPP, multiplied by the ratio 4.0/1.5). If individuals are above this threshold, their labor earnings are sufficient to lift a family out of poverty, assuming other working household members contribute at least the same amounts.

Previous studies that measure job quality using microdata have proposed other income cutoff points. For example, Brummund, Mann, and Rodríguez-Castelán (2018) use as a threshold whether the job pays above the Latin America regional poverty line of US\$2.50 a day (2005 PPP), while Ortega Díaz (2013) uses the minimum wage in Mexico, and neither considers any adjustment for dependents. Sehnbruch et al. (2020) choose a level of income that reflects minimum living standards defined by a vulnerability line of US\$10 a day (2005 PPP) for a set of Latin American countries. They consider one dependent for each worker. Moreover, it has also been argued that a definition of a good job depends on a country's level of development and that the income received should enable at least a middle-class lifestyle by the country's standards (Rodrik 2019). Based on all these other options considered in the literature, this paper conducts sensitivity analysis with alternative income thresholds, dependency ratios, and other specification changes. The analysis shows that the main results are robust to these alternative specifications (see section 4).

Many surveys do not explicitly distinguish among income components, but instead report total labor income, including payments in kind. Given this and the fact that food payments in kind are the most common form of payment in kind, the income dimension includes not only wages, but also food payments in kind in the calculation of daily income if reported separately in a survey. To evaluate whether a job pays above the threshold, the income in local currency is adjusted to 2011 prices using the country-specific consumer price index values, and then the 2011 consumption-based PPP rate is applied (Ferreira et al. 2015).<sup>11</sup> *A job that pays above the threshold is counted as a success in the income dimension.*

Converting labor income into a binary indicator leaves out valuable information regarding the quality of a job. However, the Alkire-Foster aggregation method followed in the analysis offers many desirable properties for the construction of an aggregate JQM, though it also requires binary indicators (Alkire and Foster 2011). However, collapsing labor incomes into binary indicators is widely used in the construction of JQMs (Brummund, Mann, and Rodríguez-Castelán 2018; González et al. 2021; Sehnbruch et al. 2020). The literature includes alternative composite indicators that are based on continuous indicators, such as the Human Development Index, which is constructed by the United Nations Development Programme as a geometric mean of three normalized continuous variables.<sup>12</sup> A potential area for future research would be the development of a JQM that exploits the continuous nature of labor income.

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<sup>10</sup> A household size greater than four may be more appropriate, especially in lower-income countries, where fertility rates tend to be higher. However, Anker (2011) mentions a few considerations. First, data on household size are often not available in labor force surveys, which usually exclude individuals outside the ages of 15–64. Second, using region- or country-specific estimates of completed family size can be complicated. For instance, observed average household size is affected by the distribution of household types and sizes. Single-person households would significantly reduce average household size even though this is unrelated to the typical household size of workers with children.

<sup>11</sup> Consumer price index and PPP values are taken from WDI (World Development Indicators), World Bank, Washington, DC, <https://datatopics.worldbank.org/world-development-indicators/>.

<sup>12</sup> HDI (Human Development Index) (dashboard), United Nations Development Programme, New York, <https://hdr.undp.org/data-center/human-development-index#/indicies/HDI>.

Job benefits are nonwage forms of compensation that may include paid leave, health insurance, wages, or compensation in kind. In the modern labor market, employers attract workers by providing nonwage compensation, in addition to normal wages or salaries. At the same time, job benefits may provide insurance against temporary income loss, such as unemployment, or unexpected expenses, such as health care costs. Insurance is a crucial instrument in preventing transient poverty because of temporary consumption variability (Duclos, Araar, and Giles 2010; Jalan and Ravallion 1998). The benefits dimension includes six indicators, four related to social security and two to work-life balance. Indicators of social security include whether the job is registered with the social security administration, whether the employer provides health care, the pension eligibility, and unemployment insurance.<sup>13</sup> Indicators of work-life balance represent desirable attributes associated with employment and include paid annual leave and paid sick leave. *If a job satisfies any one of the six indicators, success is achieved in the benefits dimension.*

The stability dimension attempts to capture the sustainability of a job and job resilience to idiosyncratic shocks and economic cycles also because the frequency and duration of unemployment may vary across jobs. Jobs that are seasonal or that lack resilience to economic fluctuations are more likely to induce bouts of poverty in the future. Indicators of stability include a written contract, permanent employment, observed job tenure in the same job, and work for a formal employer. The first two indicators capture whether there is some formal agreement between the employer and the worker that the worker will continue working in the current job. This paper uses observed job tenure as another suitable indicator of stability because, if workers have been in the same jobs for several years, it is likely that they will be able to continue there for more years. Working for a formal employer is used as a proxy for job stability given that formal firms are typically less vulnerable to adverse shocks (Ohnsorge and Yu 2021; Straub 2005).<sup>14</sup> Formal employers are defined here as those that keep written accounts, are registered with authorities, or belong to the public sector. Unlike other definitions of formality, this definition does not include whether the job provides benefits such as annual or sick leave; so, there should not be any overlap with the benefits dimension. *A job that fulfills at least one of these four indicators succeeds in the stability dimension.*

The working conditions dimension captures whether a job promotes the physical and mental well-being of the worker. This encompasses a broad set of factors in the working environment, including working-time arrangements, health and safety, and the content of work and work opportunities. For each of these factors, there is a variety of indicators that may be used. Regarding working-time arrangements, jobs with high demands in terms of excessive working hours, high work intensity, unsocial working hours, and having more than one job may represent a significant psychological and physical burden on the worker. On the other hand, not having enough working hours would also lead to dissatisfaction. Health and safety issues at work, such as working with dangerous equipment without adequate protection or performing hard work (for example, moving heavy loads), are directly related to the worker's physical well-being.

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<sup>13</sup> Some countries provide some de jure level of universal health care for their citizens, and therefore it is less relevant whether the employer provides health insurance. However, the coverage and quality of universal health care may vary widely across countries, and there appears to be no consistent and systematic information about this across countries. For this reason, this information is not included in the analysis, but may be an area of future research if suitable information becomes available.

<sup>14</sup> Among the four indicators used to capture stability, only permanent employment guarantees long-term stability. A written contract may not imply long-term stability if the contract length is limited to a certain time period; tenure also does not guarantee future permanence in the job; and a formal employer does not necessarily imply stability because some public sector employers make use of short-term contracts. However, given the data limitations, the analysis needs to rely on these imperfect proxies of stability.

With respect to the content of work and work opportunities, having work autonomy and learning opportunities, such as on-the-job training, are crucial in a job. They provide a sense of self-worth and are conducive to personal accomplishment. Jobs that lack a sense of responsibility or self-worth may become a psychological burden, and mental health is closely linked to job quality (Cottini and Lucifora 2013).

Because of data limitations, the paper includes only a subset of the desired characteristics of working conditions: working excessive hours, holding a second paid job, and possessing a desire to work more. The number of hours of work is readily available across surveys. Excessive work hours are defined by the ILO as work of more than 48 hours a week. This variable may be considered a good proxy for mental health and work-life balance. The justification for using the second paid job indicator is that, because of better physical and mental health, workers with one job are, overall, more highly satisfied than workers with multiple jobs (Smith et al. 2008). If respondents would like to work more, this is indicative of a poor employment situation and dissatisfaction with the current job. Indicators on health and safety issues at work, the content of work, and work opportunities are typically not available in labor force or household surveys and, therefore, cannot be included.<sup>15</sup> Unlike the three previous dimensions whereby only one indicator needed to be satisfied to achieve success, *the working conditions dimension requires all indicators to be satisfied to achieve success*. This union approach means a job is considered satisfactory to the individual if the individual does not work excessive hours, does not work a second paid job, and would not like to work more.<sup>16</sup>

Collective interest representation is sometimes considered a key determinant of basic rights at work and an important source of subjective job satisfaction, and it has been included in some JQMs (ILO 2008; Leschke and Watt 2014). Another view is that labor organizing and bargaining rights are important, but are not job quality outcomes per se. Others argue that, instead of including these indicators in the JQMs, it is useful to analyze the relationship between good jobs and unionization (Brummund, Mann, and Rodríguez-Castelán 2018; Sehnbruch et al. 2020). In Latin American countries, Brummund, Mann, and Rodríguez-Castelán (2018) find that union membership is associated with high levels of job quality, but that a small share of workers (7 percent) in general are unionized. Data limitations prevent a similar analysis from being conducted here.

#### **b. The Alkire-Foster method**

The selected method for measurement and aggregation across dimensions adapts the Alkire-Foster theoretical framework originally developed as an approach for measuring multidimensional poverty (Alkire and Foster 2011). This method assigns indicators to each dimension and defines deprivation cutoffs (threshold levels of each indicator). If individuals are below the deprivation cutoff in a dimension, they are considered deprived in that dimension. The deprivation indicators of each of the dimensions are then aggregated for each individual, creating a multidimensional measure of poverty.

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<sup>15</sup> These indicators are likely to be correlated, though, with other indicators included in the measure of job quality. For example, health and safety issues may be correlated with working excessive hours. Also, informal learning may be proxied ex post by years of experience in a given job, included as tenure in the job stability dimension, and a potential proxy for formal learning is whether the employer is a formal firm, also included in the job stability category. Informal firms employ a predominantly low-skill workforce, have lower access to financing and capital markets and services and are thus less likely to invest in the human capital of their workers (Ohnsorge and Yu 2021). Moreover, learning opportunities at work are not only fulfilling in their own right, but also offer a path to more well-paying jobs and more job opportunities that increase job security (Cazes, Hijzen, and Saint-Martin 2016; Lagakos et al. 2018).

<sup>16</sup> Missing data for one of the three indicators do not preclude success, which is then based on fulfilling all available indicators.

The proposal to adapt Alkire-Foster to measure and aggregate the quality of jobs was first developed by Brummund, Mann, and Rodríguez-Castelán (2018) to benchmark job quality across the Latin America and Caribbean region. The Alkire-Foster method has much to offer, particularly a set of properties derived from an axiomatic framework that are relevant for identifying the poor and measuring poverty, including the ability to combine into a coherent framework cardinal data, such as labor income, and ordinal data, for example, benefits such as the availability of paid annual leave. These properties, although restrictive, have significant value as a desired measure of good jobs. These are decomposability, replication invariance, and symmetry. Decomposability shows that the aggregate JQM is the weighted sum of JQMs of various subpopulations, such as workers in different industries or rural and urban workers, whereby the weights are the relative sizes of these subgroups in the total population. Similarly, important to measuring job quality among different groups of interest are replication invariance and symmetry, which imply that job quality measured for groups of varying sizes are comparable and that individuals in these groups are equally contributing to the measure of job quality.

The proposed approach applies the Alkire-Foster framework to dimensions of achievement rather than dimensions of deprivation. This means that, if any of the indicators for a dimension are satisfied, the dimension overall is considered a success and is set equal to 1. The working conditions dimension is unique in that all indicators need to be satisfied to define success. A higher JQM therefore indicates greater job quality, whereas a higher Alkire-Foster poverty measure indicates greater levels of poverty. The JQM can be formally written as follows:

$$JQM_i = \sum_{d,i} w_d I_{d,i} \quad (1)$$

where  $JQM_i$  is the JQM for individual  $i$ ;  $I_{d,i}$  is an indicator function set equal to 1 if individual  $i$ 's job is a success in dimension  $d$ , and  $w_d$  are the weights assigned to each dimension.

The proposed JQM sums the successes across dimensions and assumes that dimensions are weighted equally with unity weights to highlight the difference with deprivation indicators. Measuring job quality in this way will reach a job quality score of 0 if a worker has a job that does not meet any of the criteria of success in all dimensions. In contrast, a worker with a job that has successes in all four defined dimensions receives the maximum job quality score of 4.

Whether each dimension should be equally weighted is debatable. In the case of linear aggregation indicators whereby the success within each dimension is based on indicator functions as in the Alkire-Foster method, weights take on the sole role of normatively determining the relative importance of each dimension.<sup>17</sup> The crucial issue is how to identify the appropriate weights. There are various weighting options for multidimensional indexes, of which the equal weights approach is the standard practice in the field (Decancq and Lugo 2013; World Bank 2018). Equal weighting can be justified if there are no compelling reasons to consider some dimensions more important than others or if the intention is to minimize intervention (Alkire and Foster 2011; Brandolini and D'Alessio 1998; Mayer and Jencks 1989). In the case of job quality, however, it can be argued that remuneration is the most important dimension. The analysis in this paper therefore conducts sensitivity analysis giving a higher weight to the earnings dimension. Other approaches to the selection of weights are those based on the revealed preferences of the population. Although these data-driven methods would reduce arbitrariness, it would not allow for

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<sup>17</sup> In contrast, other multidimensional indexes such as the Human Development Index do not use indicator functions, and, in addition to weights, the marginal rate of substitution among dimensions may be nonconstant.

international comparison given that there is considerable heterogeneity in revealed preferences among job quality components such as pay, stability, or flexibility in the population and across countries (Assy et al. 2019; Kumar et al. 2019; Wiswall and Zafar 2018). Nonetheless, analysis on a single country and future research might consider this alternative.

### **c. Country coverage and ex post harmonization of data on job quality**

The ideal measurement approach to job quality provides detailed information on all working individuals in each of the four dimensions for all jobs, including potential secondary and tertiary employment. Compared with multidimensional poverty measures, data on job quality attributes are not systematically collected in all surveys. The quality and availability of microdata on dimensions of job quality vary across countries, within countries across different employment types, such as wage workers or the self-employed, and across primary, secondary, or tertiary jobs on the individual observation level. The three main data constraints on the proposed analysis are therefore an insufficient overlap in relevant survey questions, an insufficient overlap in categorical definitions of employment status, and high unit nonresponse on crucial survey questions to build this metric.

The production of the proposed JQM based on the Alkire-Foster framework thus requires a substantive effort at ex post harmonization of data across developing countries. To compile the harmonized dataset of job characteristics and demographic attributes, the analysis identified 40 countries with household or labor force surveys that contain questions that are both comparable across countries and pertinent to job quality. The resulting sample spans all regions and income groups across the globe. The 40 countries include 12 in the Sub-Saharan African region, 6 in the East Asia and Pacific region, 12 in the Latin America and Caribbean region, two in the Europe and Central Asia region, 6 in the South Asia region, and two in the Middle East and North Africa region.<sup>18</sup> Survey selection for each country depends on which survey contains more relevant employment information. For many countries, the choice of a survey is a trade-off between the availability of detailed household income and expenditure data in household surveys and extensive employment modules in labor force surveys. Annex table A1 shows the list of available surveys by country-year included in this study. (Table A1 also shows the latest available GDP per capita, poverty headcount ratio, and JQM for wage employees.) The list of developing countries included in this study ranges from low-income and International Development Association–eligible countries to high-income countries across all regions.

The ex post harmonization of data to estimate the quality of jobs across developing countries is one of the main contributions of this paper, but not all survey questions are available across countries. This variation in data coverage and availability presents a challenge in measuring job quality globally. To overcome this constraint and increase coverage, it is common to include more indicators that are substitutes for each other. However, carelessly including more indicators to overcome the lack of survey question availability may reduce comparability across countries and render the JQM meaningless. Furthermore, employment-related surveys are subject to a country's regulatory framework. For example, if health insurance and pensions are state sponsored, an employment survey may not contain questions regarding social protection coverage at work. To construct a JQM that is both broad in scope and true to the intended use, the process of selecting survey questions to serve as indicators needs to be carefully considered. Indicators must be pertinent to each dimension, but also available and comparable across the

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<sup>18</sup> The labor force and household surveys are not publicly available.

set of countries being measured. To ensure availability and comparability, it is best to develop a set of indicators among the countries that are the most resource deprived first and expand from there. To maintain consistency with the literature, this paper selects indicators that are widely cited for each of the dimensions and listed in table 1.

#### **d. Data limitations and dimensions considered in measuring job quality**

Given the tension described above between the completeness of data for one country versus producing comparable measures of job quality across the developing world, the approach as laid out in the methodology section follows Brummund, Mann, and Rodríguez-Castelán (2018) and develops a practical measure based on information available for most countries instead of limiting this study to a few countries with rich data. Data availability on all four dimensions of job quality varies across countries because labor force surveys or labor modules in household surveys reflect the labor market and regulatory environment of a country. For example, economies with a mainly casual labor force use more questions to understand the hazards and working conditions of employees, while countries with strong regulatory frameworks and a mostly formal labor force provide detailed information on benefits and income, but less on working conditions.

Coverage of the four dimensions also varies across employment types within countries. Surveys usually distinguish among four main employment types—wage employment, self-employment, unpaid employment, and other, such as apprenticeship—and divide the questionnaire into a comprehensive set of questions for wage employees and a short questionnaire for workers in all other employment types. In most countries, the coverage is therefore much more limited on the other employment types than on wage employees. Household surveys may provide income information for self-employed individuals in the earnings or household enterprise modules, but at the expense of a shorter labor module for wage employees. If both household and labor force surveys are available, the labor force surveys provide better coverage of the four dimensions even if only for wage employees.

Based on the sample of 40 developing countries used in the analysis, the two most common dimensions covered in the data are income and working conditions, followed by benefits and job security. Little additional information is available to capture separate potential fifth and sixth dimensions on safety and training, respectively. This analysis considers not only the availability of survey questions, but also the share of valid responses to survey questions, the implicit assumptions built into the questionnaire, such as whether universal health care should be provided, as well as how much additional information is gained by including an indicator. For instance, self-reported indicators that are found to be positive for virtually all respondents, such as subjective skill level, do not add much information because most respondents would not report that they are unqualified for their current job.

Labor force and household surveys classify employment types differently. For example, labor force surveys distinguish among several types of workers and often have country-specific employment categories. For the countries in which the analysis relies on household surveys, only general employment status is available. As a result, this paper chooses four broad employment categories as dictated by the survey with the fewest number of categories: wage employees (formal or informal), self-employed workers, unpaid workers, and other workers.<sup>19</sup> However, the quality of the data across employment types

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<sup>19</sup> Other workers include employers and individuals with job descriptions that do not align with the other three categories, such as apprentices. The survey with the fewest number of categories is the 2017 Labor Force Survey in Türkiye.

is not the same. Information on self-employed workers is lacking on many indicators. For instance, the labor income of the self-employed is missing across most surveys, and it has not been possible to approximate labor income by using household income or consumption.

Although subsistence agriculture and self-employment are two of the largest sources of employment in low- and lower-middle-income countries and include the most vulnerable groups of workers, survey data on these labor market participants are extremely limited at best and unreliable at worst. Moreover, because self-employment and unpaid work are typically associated with low-quality jobs in developing countries, the proposed JQM can be considered a lower bound of job quality in each country, with an implicit value of zero for the quality of employment in categories other than wage employment. However, future research should expand the analysis to include nonwage workers.

Driven by the availability of data across countries, this analysis therefore focuses on four main dimensions of the quality of jobs and only one category of workers: wage workers. The four dimensions of job quality covered by the harmonization exercise are (1) sufficient income to move a family out of poverty and into the lower-middle class, (2) receiving benefits, (3) the stability of employment, and (4) adequate working conditions. This restriction to focus on a subset of dimensions because of data constraints is shared with the literature, while this paper expands the scope of countries to include all regions. Table 2 provides a summary of the four dimensions, the relevant indicators, and the definition of each indicator for the final set of survey indicators. The table shows there is a single indicator for the income dimension, six indicators for the benefits dimension, four indicators for the stability dimension, and three indicators for the working conditions dimension.

Table 2. Job Quality Dimensions and Indicators

<i>Dimension</i>	<i>Indicator</i>	<i>Definition of quality</i>
Income	Out of poverty	Total wages exceed the international extreme poverty line of US\$1.90/day per capita (2011 PPP), multiplied by the dependency ratio of (4.0/1.5)
Benefits	Health insurance	Job provides health insurance
	Unemployment insurance	Eligible for unemployment insurance
	Pension contributions	Job associated with pension benefits
	Social security	Job associated with any type of social security
	Annual paid leave	Job offers paid holiday leave
	Paid sick leave	Job offers paid sick leave
Stability	Tenure	3+ years of tenure in job for workers ages 25–64, 1+ years of tenure in job for workers ages 15–24
	Written contract	Employment is bound by written contract
	Permanent employment	Employment is permanent, not temporary
	Formal employment	Employer is formal company (registered with authorities, or keeps written accounts or public employer)
Working conditions	Excessive working hours	Individual does not exceed 48 weekly hours
	Second paid job	Individual does not work a second paid job
	Direct question: <i>would you like to work more?</i>	Individual responds “no”

*Note:* The table shows the dimensions and indicators, including the definitions, that comprise the JQM.

Annex table A2 takes stock of the availability of these indicators across surveys and provides insight into the gaps in this global data harmonization effort because the data on some countries include most indicators, while, in other countries, only a few indicators are covered. Three countries—Panama (PAN), the Philippines (PHL), and Thailand (THA)—have no indicator for the benefits dimension, and some countries only have one indicator in a given dimension. Meanwhile, some countries have multiple indicators available in each dimension, such as Bangladesh (BGD). The only indicators available in all countries are the daily wage and the number of hours worked, although, in some countries, there is a significant share of item nonresponses and thus missing entries in the data. Annex table A3 shows the share of missing entries for each indicator and country. If an indicator is omitted from a survey, the assumed share of missing data reported is 100 percent for that indicator. On most questions, the share of missing observations is low, but table A3 illustrates the advantage of using multiple indicators for each dimension. For example, Sri Lanka (LKA) has three of four indicators for the benefits dimension. For these three indicators, however, the share of missing values ranges from 16 percent (paid leave) to 36 percent (social security). From a harmonization perspective, it is not possible to determine whether the missing data entry is truly missing, or whether the survey only recorded positive answers.

On all countries, the sectors of employment are aggregated into 10 industry designations: agriculture, mining, manufacturing, utilities, construction, commerce, transport and communication, finance and business, public administration, and other services. These can be further aggregated into agriculture, manufacturing (mining to construction), and services (commerce to other). Observations without an employment category or industry are dropped. Each survey sample is partitioned to include individuals ages 15–64 who worked at least one hour for pay within the seven days previous to the survey interview.<sup>20</sup> Survey questions related to secondary jobs are not included given the limited information available.<sup>21</sup>

## 4. Results

### a. Job quality measure across countries, sectors, and sociodemographic groups

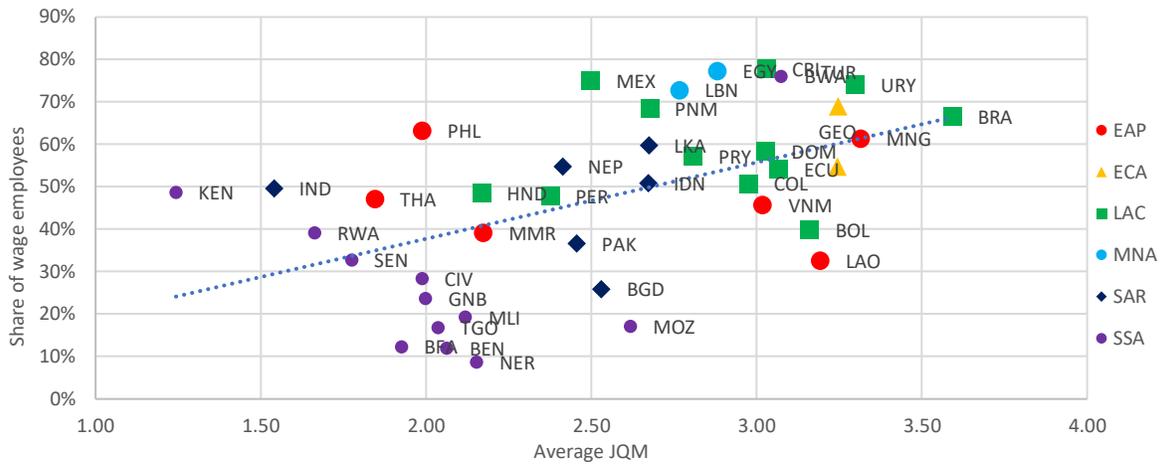
The analysis indicates that there is a strong positive correlation between job quality and the share of wage employment across countries (figure 1). Some patterns emerge across the regions. Thus, the countries in Sub-Saharan Africa are in the lower left corner, with the exception of Botswana, because of their low shares of wage employees and the lowest scores on job quality. These countries are characterized by economies with a high share of the working population in the primary sector, where the main avenue to improving living standards has been focused on farming and promoting labor reallocation from rural to urban areas (World Bank 2012). Most countries in the East Asia and Pacific region exhibit average levels of job quality, while most Latin American countries show higher levels of job quality.

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<sup>20</sup> This excludes individuals who were employed, but did not work during the seven days leading up to the interview because many surveys do not show income information for these individuals. In some cases, only information about the past month is available.

<sup>21</sup> Surveys do not provide the same level of detail on secondary jobs that they provide on main jobs. The only information obtained on secondary jobs is whether an individual is employed and earning a wage in a second paid job. This information is used for the second paid job indicator in the satisfaction dimension.

Figure 1. The Job Quality Measure for Wage Employees and the Share of Wage Employees, by Country

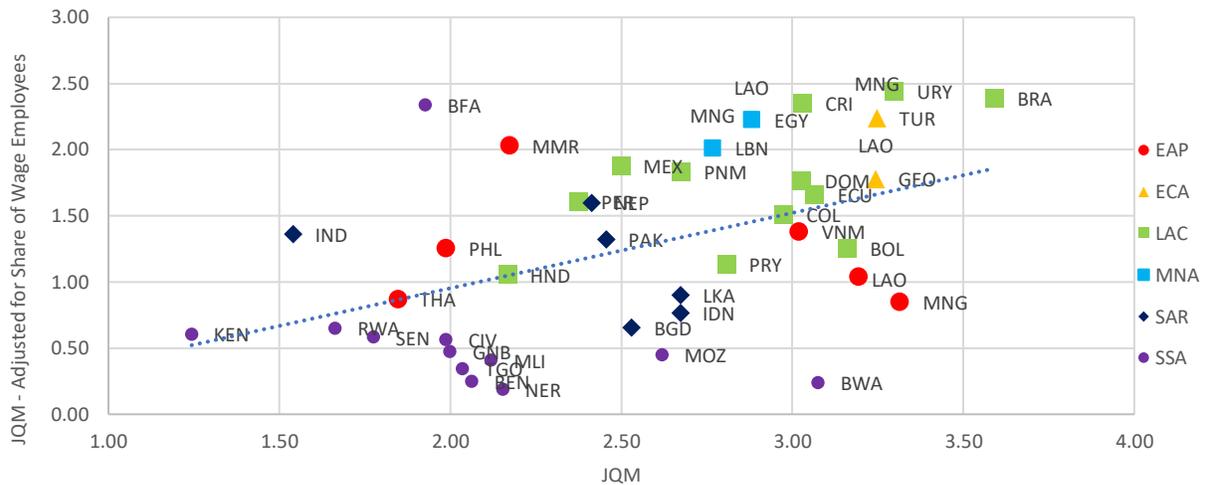


Source: Estimates based on multiple labor force and household surveys (see annex table A1)

Despite the positive correlation between the scores on job quality and the share of the wage employed, figure 1 also shows that job quality may vary significantly among countries with similar shares of the wage employed, and the share of the wage employed may vary considerably among countries with similar job quality scores. For example, Bolivia (BOL), the Lao People’s Democratic Republic (LAO), and Türkiye (TUR) have similar JQMs, at 3.16, 3.19, and 3.25, respectively, but different shares of the wage employed, at 40 percent, 33 percent, and 69 percent, respectively.

Focusing on job quality among the wage employed alone, however, leaves out a substantial share of the population in developing countries who are self-employed or unpaid workers. To evaluate the extent of the change in the results by including other categories, the JQM is weighted by the share of the wage employed across countries. This is equivalent to assuming that self-employed and unpaid employment had job quality scores equal to zero. Figure 2 shows a strong correlation between these two measures, but also a nontrivial extent of variation.

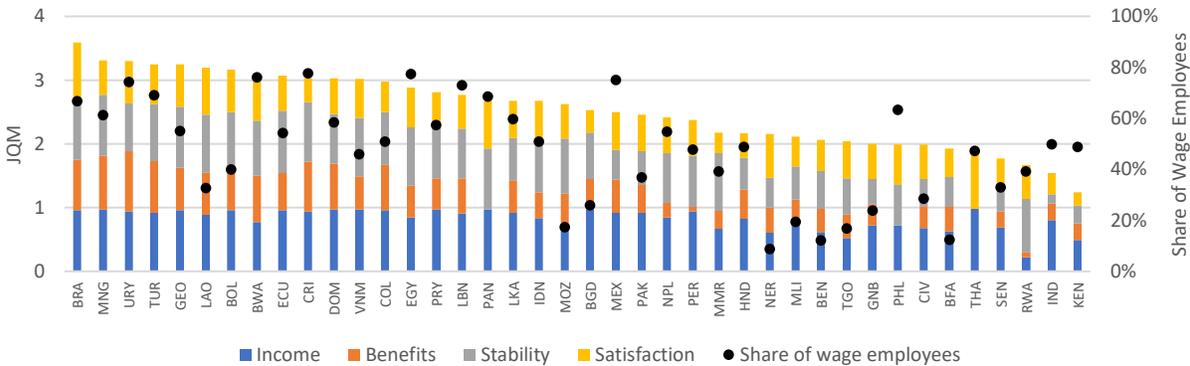
Figure 2. JQM Main Specification Compared with JQM Adjusted for Share of the Wage Employed



Source: Estimates based on multiple labor force and household surveys (see Table A.1 in the Annex)

The analysis of individual dimensions of the JQM shows substantial variations across countries in all dimensions (figure 3). The highest average values for the four dimensions range from 0.91 to 0.98, and the lowest values span from 0.07 to 0.21. The dimensions with greater variations are benefits and stability. The countries with the largest averages for the benefits dimension are Mongolia (MNG) and Uruguay (URY), with values of 0.84 and 0.95, respectively, while the countries with the lowest averages are Peru (PER) and Rwanda (RWA), with values of 0.07 and 0.08, respectively. For the stability dimension, the countries with the largest averages are Ecuador (ECU) and Mongolia, with values of 0.98 and 0.96, respectively, and the countries with the lowest averages are India (IND) and Kenya (KEN), with values of 0.14 and 0.28, respectively.

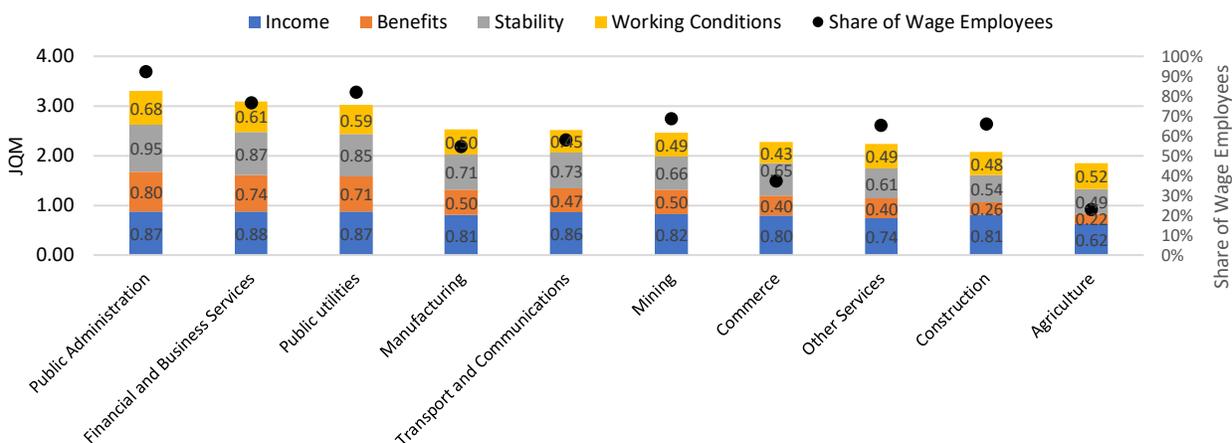
Figure 3. Job Quality Decomposition among the Wage Employed, by Country



Source: Estimates based on multiple labor force and household surveys (see annex table A1).  
 Note: This figure shows JQMs by country for the wage employed only. The JQM is comprised of four dimensions, and the highest possible JQM attainable for an individual is equal to 4.

Interesting patterns emerge in comparing job quality across economic sectors using cross-country data (figure 4). Sectors with the highest job quality include public administration, finance and business services, and (often public) utilities. Jobs in these sectors generally score higher in each dimension, but particularly in the benefits and stability dimensions. The average scores in these dimensions of the three top sectors mentioned above are 0.25 and 0.33 points higher than the average scores in these dimensions in the remaining seven other sectors. In addition, their average scores in the income and working conditions dimensions are higher by between 0.09 and 0.15 points. These sectors are also the ones with the highest share of wage employed. In contrast, at the other end of the spectrum, the low-skill sectors of agriculture and construction have the lowest levels of job quality. Agriculture workers have significantly lower scores than the rest of the economic sectors in all dimensions except working conditions, while construction workers fare particularly poorly in the benefits and stability dimensions.

Figure 4. Job Quality Measure among the Wage Employed, by Industry



Source: Estimates based on multiple labor force and household surveys (see annex table A1).

Note: The figure shows JQMs by industry among the wage employed only and the share of the wage employed among all workers. These are simple averages across 37 countries in the sample (Panama, Philippines, and Thailand were excluded because they do not have information for one or more dimensions). The average of the stability dimension in public administration is not equal to one (which could be the case given that all public administration workers have a formal employer and therefore have stability according to the definition) because some countries do not have information on formality among private sector workers, and, thus, the formality indicator is not included to calculate the stability dimension in these countries.

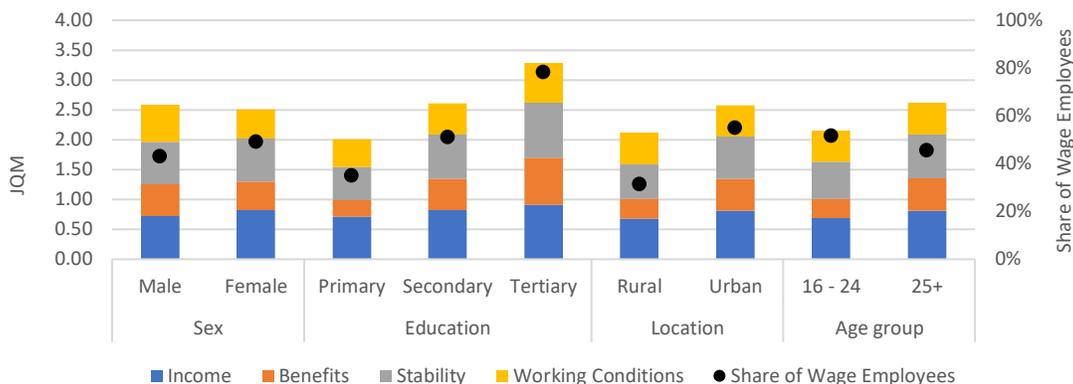
Despite considerable progress in recent years, gender disparities persist across developing countries. Women now represent 40 percent of the global labor force, 43 percent of the world’s agriculture labor force, and more than half the world’s university students. Over the past quarter century, women have joined the labor market in increasing numbers. Between 1980 and 2009, the global female labor force participation rate increased from 50.2 percent to 51.8 percent, while the male rate fell from 82.0 percent to 77.7 percent (World Bank 2012). While the rise in female labor force participation is a significant development, it only represents employment or intent to obtain a job. Disaggregating the JQM by gender would help inform the size of the gender gaps in the quality of employment.

Figure 5 presents the JQM for wage employment disaggregated by gender. The results show that job quality is, on average, similar between men and women. However, the JQM decomposition by the four dimensions reveals that women fare especially well in the working conditions dimension, while men fare much better in the income dimension. In particular, men earn more than women even though the selection into wage employment is lower among men than women. On average across countries, 49 percent of men workers are wage employees, whereas this is the case among 43 percent of women workers. Although this statistic conceals substantial variation across countries, the data show that, in most countries (27 in 40), the selection into wage employment is higher among women than among men.

Literature that explores the selection of women into the labor force generally suggests that there are many economic, social, and institutional constraints that shape women’s labor force participation, and these constraints vary across countries. However, in focusing on selection into paid employment versus self-employment, the literature consistently finds that the women who enter into paid employment possess characteristics that make them more likely to find quality work. For instance, career-oriented

women select into paid employment in Ghana (Owoo et al. 2022), and the education and literacy of family members are strong predictors of women selecting into paid employment in Pakistan (Hussain, Rabbi, and Ali 2012). These findings are consistent with the results here and likely explain why there are not large gender gaps in the job quality of wage employment.

Figure 5. JQM among the Wage Employed, by Education, Location, and Age-Group



Source: Estimates based on multiple labor force and household surveys (see annex table A1).

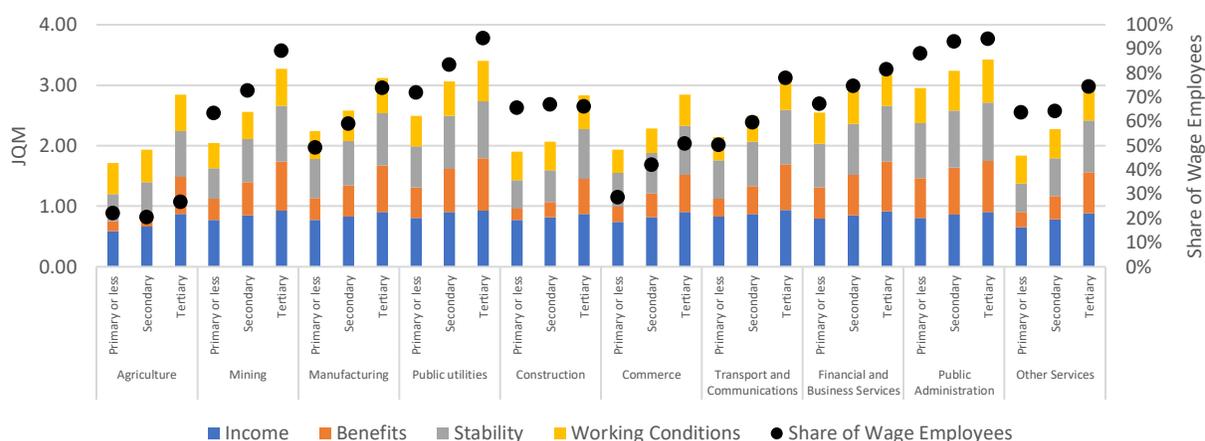
Note: The sample includes 37 countries with information for all dimensions. This figure shows the JQM by sex for the wage employed only and the share of the wage employed among all workers by sex. The sample for the education portion excludes two countries without information on education, and the sample for the location portion excludes nine countries without information on location.

The analysis of quality of the jobs among other disadvantaged groups of the population offers additional insights into disparities in labor markets across developing countries. Common disadvantaged groups are those less well educated, living in rural areas, and youth. In some countries, young people usually have unpaid jobs, and, even if young people are paid, they are less likely to have benefits and social security (World Bank 2012). Figure 5 shows the JQMs for the wage employed by educational attainment, location, and two age-groups, the young (ages 16–24) and workers (ages 25 or more). As expected, the largest difference is among the results disaggregated by education. The average JQM is 30 percent higher among people with secondary educational attainment than among people with primary education, and the average JQM is 26 percent and 63 percent higher among those with tertiary education than among those with secondary education and primary education, respectively. The scores of each dimension are higher among high-skill workers, but the difference is especially pronounced in the benefits dimension, where the scores of those with tertiary or secondary educational attainment are almost three times higher and two times higher, respectively, than the scores of those with primary education. The difference between individuals living in urban and rural areas and younger and older individuals are similar. The JQMs of urban and older (and more experienced) workers is, on average, 22 percent higher than the JQMs of rural and younger individuals, respectively. The greatest difference is found in the benefits dimension in both cases.

Worker allocation across sectors greatly depends on educational attainment. For example, on average, almost half the wage employed with primary education work in agriculture, compared with less than a fourth of the wage employed with secondary education and only 5 percent of those with tertiary education. In public administration, the shares are somewhat turned around. To explore the extent to

which education drives the differences in job quality within industries, the analysis disaggregates the JQMs into education groups (figure 6). Higher education secures greater job quality, with higher scores in all dimensions, but especially in the benefits dimension, within all industry groups. Moreover, among those industries with relatively low scores in some dimensions among the less well educated, the education premium is greater. For example, agriculture exhibits a low score in the income dimension among the wage employed with primary education (0.59 versus an average of 0.77 in other sectors). The income dimension scores among those with tertiary education relative to those with primary education is 0.28 higher in agriculture, compared with 0.14 higher, on average, in other industries. Similarly, the education premium for stability is particularly high in the mining, construction, and other services sectors that have relatively low scores in that dimension among the less well educated.

Figure 6. The Job Quality Measure among the Wage Employed, by Industry and Education



Source: Estimates based on multiple labor force and household surveys (see annex table A1).

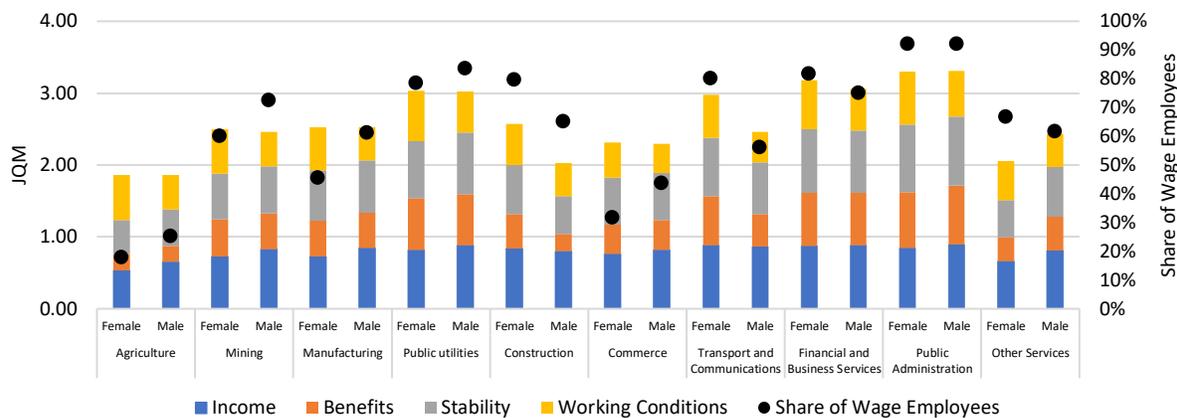
Note: The sample includes 35 countries with information on all dimensions and education levels. The figure shows JQMs by industry, disaggregated by education level, for the wage employed only.

There is substantial variation in job quality within each education group across industry sectors (see figure 6). As expected, low-productivity sectors, such as agriculture, construction, and commerce, exhibit relatively lower job quality among those with tertiary education relative to the results in high-productivity sectors, such as mining, utilities, and financial and business services. The public administration JQM scores are highest among workers with tertiary education as well as among other education groups. Among the JQM dimensions, income typically exhibits the highest score across all industries and education groups (except for public administration, in which stability has the highest score). The JQM dimensions can vary widely among low-skill sectors, such as agriculture and commerce. For example, income and working conditions dominate the JQM in agriculture, while income and stability are the strongest dimensions in commerce.

Regarding gender disparities within industries, the results show significant differences in three sectors: construction, transport and communications, and other services (figure 7). In construction and in transport and communications, women have an average JQM that is 27 percent and 21 percent higher than the average JQM among men, respectively. On average, only 1 percent to 2 percent of women wage

employees participate in these economic sectors, compared with 8 percent to 10 percent in the case of men wage employees. Presumably, those women who self-select into these sectors do so because they expect to have good jobs there given either their ability or their training. In other services, the average JQM is 16 percent higher among men than among women. Women and men may be choosing different occupations in this case because other services encompass a wide range of occupations.

Figure 7. The Job Quality Measure among the Wage Employed, by Industry and Sex



Source: Estimates based on multiple labor force and household surveys (see annex table A1).

Note: The sample includes 37 countries with information on all dimensions. The figure shows JQMs by industry, disaggregated by sex, for the wage employed only.

### b. The main correlates of job quality

Given the high correlation across various JQM dimensions, the paper follows Brummund, Mann, and Rodríguez-Castelán (2018) and runs the following regression to identify conditional correlations and to understand more clearly the characteristics that may be the main predictors of job quality:

$$JQ_{jcs} = \alpha + \beta X_{jcs} + \gamma_2 Sector_s + \gamma_3 Country_c + \epsilon_{jcs} \quad (2)$$

where  $JQ_{jcs}$  is the level of job quality for an individual  $j$ , working in sector  $s$ , in country  $c$ ;  $X_{jcs}$  is a vector of covariates that may help inform policy interventions;  $Sector_s$  is a sector of employment; and  $Country_c$  is country fixed effects.

The results from a linear regression of equation 2 are presented in table 3. Column 1 shows the results, including all countries with available information, and columns 2–5 show the results for countries in particular regions. (The Europe and Central Asia and the Middle East and North Africa regions are excluded because only two countries have adequate data in those regions.) There are some notable differences across regions. In particular, the impact of being male on job quality is statistically significant only in the Latin America and Caribbean region. Education and urban location are statistically significant in all regions, but to a lesser extent in the East Asia and the Pacific and in the South Asia regions. Industry sectors have a generally positive impact on job quality compared with agriculture, the omitted category. However, the statistical significance of the effects is much lower in the South Asia region, and sometimes they are not statistically significant.

Table 3. Predictors of Job Quality across Regions

	<i>All</i> (1)	<i>LAC</i> (2)	<i>EAP</i> (3)	<i>SAR</i> (4)	<i>SSA</i> (5)
Age	0.0121*** (0.00160)	0.00504** (0.00171)	0.00612* (0.00207)	0.00981** (0.00102)	0.0200*** (0.00204)
Male	0.0880*** (0.0280)	-0.00256 (0.0224)	0.0201 (0.0566)	0.111 (0.0434)	0.0715 (0.0412)
Education: secondary	0.440*** (0.0344)	0.303*** (0.0544)	0.179 (0.0953)	0.444* (0.128)	0.474*** (0.0391)
Education: tertiary	0.696*** (0.0592)	0.474*** (0.0628)	0.542* (0.171)	0.841** (0.170)	0.935*** (0.0782)
Urban	0.165*** (0.0189)	0.175*** (0.0394)	0.124 (0.0571)	0.115 (0.0474)	0.165*** (0.0396)
Sector: mining	0.390*** (0.110)	0.505*** (0.129)	0.588* (0.210)	0.448 (0.218)	0.299** (0.0983)
Sector: manufacturing	0.509*** (0.0787)	0.549*** (0.164)	0.460** (0.120)	0.556* (0.149)	0.303** (0.116)
Sector: utilities	0.615*** (0.116)	0.472** (0.204)	0.392** (0.0963)	1.029* (0.310)	0.688*** (0.143)
Sector: construction	0.140*** (0.0487)	-0.0145 (0.0731)	0.413** (0.0784)	0.0904 (0.0536)	0.214* (0.105)
Sector: commerce	0.217*** (0.0585)	0.276** (0.103)	0.359*** (0.0372)	0.0276 (0.0259)	0.0296 (0.0959)
Sector: transport and communications	0.291*** (0.0509)	0.312*** (0.0944)	0.203 (0.0898)	0.206 (0.0733)	0.382*** (0.0990)
Sector: financial and business services	0.672*** (0.0808)	0.533*** (0.138)	0.723** (0.189)	0.772 (0.267)	0.722*** (0.158)
Sector: public administration	0.952*** (0.116)	0.616*** (0.135)	0.533** (0.157)	0.737 (0.457)	1.398*** (0.146)
Sector: other services, unspecified	0.0898 (0.0618)	-0.165 (0.113)	0.284** (0.0732)	0.0567 (0.106)	0.212** (0.0926)
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.455	0.331	0.429	0.438	0.464
Observations	550,768	268,029	98,640	112,832	60,273

Note: The sample includes 33 countries (11 in LAC, 11 in SSA, 4 in EAP, 3 in SAR, 2 in ECA, and 2 in MENA). Each country is given equal weight in the regressions.

Robust standard errors in parentheses. \*\*\*  $p < .01$  \*\*  $p < .05$  \*  $p < .1$

### **c. Sensitivity analysis**

This subsection presents the results of a series of sensitivity analyses of the JQM using six alternative income thresholds and dependency ratios: (1) the lower-middle-income international poverty line—US\$3.20 (PPP 2011)—keeping the same dependency ratio, (2) the upper-middle-income international poverty line—US\$5.50 (2011 PPP)—keeping the same dependency ratio, (3) the flexible international poverty line according to the income level of the country and keeping the same dependency ratio, (4) keeping the extreme international poverty line—US\$1.90 (PPP 2011)—using a dependency ratio of 2, (5) each country’s median income, and (6) each country’s minimum wage.

The results show that average job quality and country rankings are quite stable in comparing the main specification and specifications using the alternative income thresholds (annex figures A1–A6). Furthermore, sensitivity tests are conducted by giving more relevance to the income dimension than to other dimensions because it can be argued that remuneration is the most important aspect of job quality. The two sensitivity tests in this regard are (1) giving the income dimension a weight that doubles the weights given to the other dimensions and (2) keeping equal weights for all dimensions, but censor job quality as zero (the lowest possible score) if the daily wage is below the minimum income threshold to move a family out of poverty, as in Brummund, Mann and Rodríguez-Castelán (2018). The results are robust to these alternative specifications producing results that are similar to those obtained with the main specification (annex figures A7–A8).

### **d. Value added of the JQM to the standard definitions of informality**

The claim of this paper is that the proposed job quality index provides more comprehensive information on the quality of jobs across countries relative to a single indicator, such as informal employment, that is used widely in the literature. In particular, the proposed JQM includes two additional dimensions on income and working conditions that are not part of the typical official informality measures used to assess job quality across countries. To illustrate the differences between our proposed JQM and the standard formality indicator, the analysis next constructs the standard definitions of informality, and then compares these to the JQM. The main finding is that workers at different levels of job quality may be classified in single categories of the standard binary definitions of informality, and thus critical information on the quality of jobs is lost.

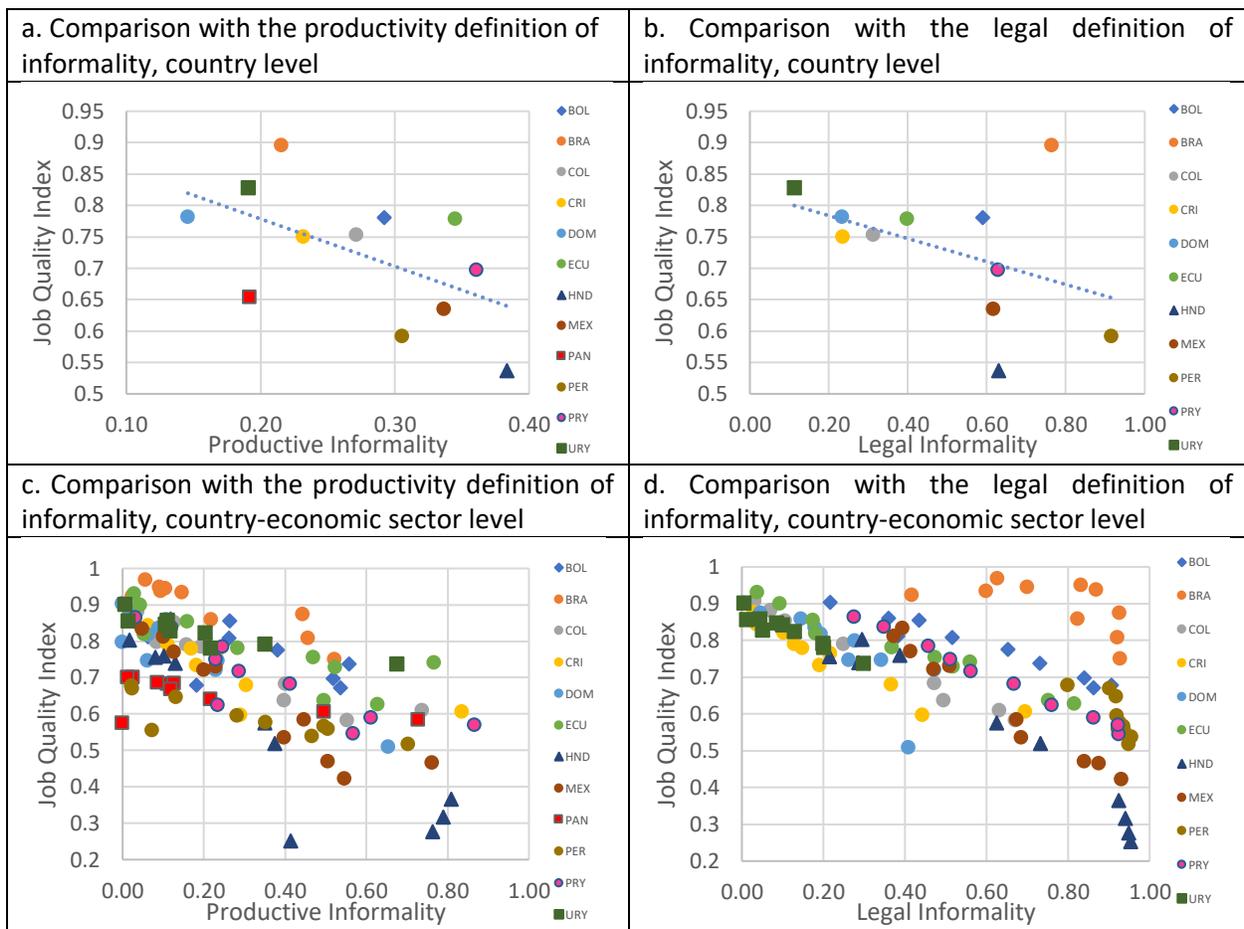
To conduct the comparative analysis between the JQM and informality, the ex post harmonized SEDLAC database is used.<sup>22</sup> SEDLAC correspond to a subset of the main data set used for the analysis in this paper and includes standardized definitions of informality. The two standardized informality definitions used are (1) productive informality, which classifies a worker as informal if the firm has five or fewer employees, and (2) legal informality, which classifies a worker as informal if the job does not have pension benefits. The data contain information on more than 430,000 wage workers across 12 Latin American countries. These two definitions of informality capture different underlying working conditions. Thus, 30 percent of workers are informal according to the productive informality definition, and 60 percent of workers qualify as informal using the legal definition. Within these two groups of informal wage workers, there is large variation both in the informality shares and in the observed job quality across countries for productive

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<sup>22</sup> SEDLAC (Socio-Economic Database for Latin America and the Caribbean), Center for Distributive, Labor, and Social Studies, Facultad de Ciencias Económicas, Universidad Nacional de La Plata, La Plata, Argentina, and Equity Lab, Team for Statistical Development, World Bank, Washington, DC, <https://www.cedlas.econo.unlp.edu.ar/wp/estadisticas/sedlac/>.

informality and legal informality, respectively (figures 8, panels a and b). Overall, the JQM is correlated with informality, as shown by the linear fit line. At the same time, the panels show that countries with comparable shares of informal workers have, in fact, different levels of job quality and vice versa. Among countries with similar informality shares, such as Ecuador (ECU), Honduras (HON), Mexico (MEX), and Paraguay (PRY), job quality varies from 0.55 to 0.8 (figure 8, panel a). In addition, countries with similar levels of job quality classify different shares of wage workers as informal. Thus, using the legal informality definition, wage workers in Bolivia (BOL), the Dominican Republic (DOM), and Ecuador have the same level of job quality (figure 8, panel b); yet, Bolivia counts 60 percent of wage workers as informal, while the Dominican Republic classifies only 20 percent as informal.

Figure 8. Comparison of the JQM with the Productivity and the Legal Definition of Informality



Source: Estimates based on data of SEDLAC (Socio-Economic Database for Latin America and the Caribbean), Center for Distributive, Labor, and Social Studies, Facultad de Ciencias Económicas, Universidad Nacional de La Plata, La Plata, Argentina, and Equity Lab, Team for Statistical Development, World Bank, Washington, DC, <https://www.cedlas.econo.unlp.edu.ar/wp/estadisticas/sedlac/>.

Similar patterns emerge in measuring job quality and informality across countries and sectors. Figure 8, panels c and d show the average JQM and informality shares of wage workers across 10 sectors of the economy using productive and legal definitions of informality. Thus, in Brazil (BRA), shown in orange, using

the productive informality definition, no more than 40 percent of wage workers in any sector are considered informal, but, using the legal informality definition, 40 percent to 100 percent of wage workers are considered informal. Yet, across all sectors, the JQM is similar, ranging between 0.75 and 0.95. Furthermore, across multiple sectors in Brazil, Honduras, and Mexico, the share of informal workers is above 90 percent, while the JQM fluctuates from low-quality jobs at around 0.2 in the agriculture and mining sectors in Honduras to 0.88 in the construction sector in Brazil (see figure 8, panel d).

Table 4 shows the distribution of wage workers across the various levels of JQM among the informal and formal workers according to the productive definition of informality. (Annex table A8 provides the same statistics for the legal definition of informality.) The analysis finds that a simple identification of workers as informal can misjudge the quality of their jobs. For example, among 30 percent of wage workers who are classified as informal under the productive definition, approximately one-third have a high level of job quality (a JQM score of 3 or higher), which implies that they fare well on all or almost all dimensions of job quality proposed in this study. Their jobs also score higher than the jobs of nearly one-fifth of formal workers who have JQMs of 2 or lower.

Table 4. Share of Productivity Classified Informal Wage Workers in SEDLAC and JQM

<i>Informal</i>	<i>Formal</i>
Share of informal workers (30%)	Share of Formal workers (70%)
JQM = 0, 3.1%	JQM = 0, 0.3%
JQM = 1, 30.3%	JQM = 1, 5.7%
JQM = 2, 36.9%	JQM = 2, 12.8%
JQM = 3, 20.3%	JQM = 3, 31.2%
JQM = 4, 9.4%	JQM = 4, 49.9%

*Source:* Estimates based on data of SEDLAC (Socio-Economic Database for Latin America and the Caribbean), Center for Distributive, Labor, and Social Studies, Facultad de Ciencias Económicas, Universidad Nacional de La Plata, La Plata, Argentina, and Equity Lab, Team for Statistical Development, World Bank, Washington, DC, <https://www.cedlas.econo.unlp.edu.ar/wp/estadisticas/sedlac/>.

*Note:* The table shows the shares of wage workers at different levels of job quality among formal and informal workers, classified according to the productive definition of informality. A worker is informal if the firm employs five or fewer workers.

Correlation analysis between the single dimensions of the JQM and the two definitions of informality (productive and legal) shows that, overall, the JQM is well correlated with the legal classification of informality (–0.7) and less with the productivity classification (–0.5), given that having access to pension benefits is one of the JQM criteria.<sup>23</sup> At the same time, both informality classifications are only weakly correlated with income and the working conditions dimensions (–0.1). The stability dimension is correlated at –0.47 with legal informality and –0.38 with productive informality. The highest correlation occurs between both informality definitions and the benefits dimension with a correlation of –0.86 for

<sup>23</sup> The correlation is negative because informality is equal to 1, while the lowest job quality score is equal to 0.

the legal definition, which overlaps with the definition of the benefits category, and  $-0.51$  for the productive definition.

Principal-component analysis further shows that the JQM using four dimensions captures four distinct components and cannot easily be reduced to fewer dimensions (annex table A7). Using the full set of wage workers in 40 countries with over 1.1 million observations, the four components account for 41.2 percent, 24.4 percent, 21.0 percent, and 13.4 percent of the variation in job quality.

## 5. Conclusions

The vast majority of policy research work on labor markets across developing countries focuses on job creation, while less attention has been devoted to the quality of employment beyond a single dimension, such as formality or labor earnings. However, because not all jobs have the same implications for worker well-being, understanding the multiple characteristics that contribute to worker welfare, especially those that allow individuals to move out of poverty and into the middle class in a sustained way, is a crucial issue in designing and implementing policies to achieve inclusive growth across developing countries.

This paper proposes an index of the quality of wage employment across developing countries that combines four dimensions—widely discussed in the literature—that characterize a good job: sufficient earnings to move a family out of poverty, access to employment benefits, job stability, and acceptable working conditions. To develop this global JQM, the analysis harmonizes a common set of indicators available for each dimension in recent labor force and household surveys across 40 developing countries. A JQM that scores several important characteristics of employment as opposed to a single indicator, such as wages or formality (widely used in the previous literature), adds value to both empirical research and policy analysis. A globally harmonized comprehensive dataset also allows the quality of jobs to be analyzed across various countries, regions, industries, and sociodemographic groups, such as women and youth.

The results show a strong positive correlation between the JQM and the share of the wage employed in total employment across developing countries, indicating that countries with more opportunities for workers to find paid employment perform better in terms of the availability of good jobs than countries with large self-employed or informal worker populations. Also, there is substantial variation not only in the composite job quality index across countries, but in all its dimensions, with greater differences observed in benefits and stability.

Sectors with the highest JQM include public administration, financial and business services, and utilities, while low-skill sectors, such as agriculture and construction, have the lowest JQMs. The analysis finds that the JQM is, on average, similar between men and women despite differences in individual dimensions. For example, the JQM decomposition reveals that women fare especially well in the working conditions dimension, while men perform better in terms of income. However, the job quality is much lower among other disadvantaged groups, such as rural residents and youth, relative to urban residents and older wage employees. The starkest difference is observed between different educational attainment groups, indicating that the strongest predictors of JQM within countries is educational attainment.

Despite these insightful results, large gaps in the data limit the scope and country coverage of job quality analysis. First, most country surveys lack information on certain dimensions of job quality, which have been discussed in the literature as the desirable characteristics of good jobs, particularly those related to

work safety and professional development (lifelong learning). Second, labor and household surveys in many countries only have partial coverage of the main indicators used to produce the proposed JQM. There is insufficient information on key characteristics of good jobs for workers beyond salaried employment. Given these limitations, the paper focuses on estimating job quality for wage employment in 40 developing countries with adequate data. However, future research is required to expand the coverage of countries as well as to examine job quality in other types of employment, such as the self-employed, which constitute a large share of labor in developing countries.

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## Annex

### Annex Tables

Table A1: Countries Included in the Global JQM Analysis

Country	Country code	Region	Survey	JQM for wage employees	GDP per capita	Poverty headcount ratio (% of population)
Benin	BEN	SSA	2018 EHCVM	3.19	\$3,506	76
Burkina Faso	BFA	SSA	2014 EMC	3.31	\$2,279	77
Bangladesh	BGD	SAR	2016 LFS	2.17	\$5,083	52
Bolivia	BOL	LAC	2017 SEDLAC	1.99	\$8,367	8
Brazil	BRA	LAC	2017 SEDLAC	1.85	\$14,836	9
Botswana	BWA	SSA	2015-16 MTHS	3.02	\$16,921	37
Côte d'Ivoire	CIV	SSA	2018 EHCVM	2.99	\$5,458	59
Colombia	COL	LAC	2017 SEDLAC	3.25	\$14,565	13
Costa Rica	CRI	LAC	2017 SEDLAC	3.16	\$21,032	3
Dominican Republic	DOM	LAC	2016 SEDLAC	3.59	\$17,937	3
Ecuador	ECU	LAC	2017 SEDLAC	2.97	\$10,896	10
Egypt, Arab Rep.	EGY	MNA	2018 ELMPS	3.03	\$12,608	29
Georgia	GEO	ECA	2018 LFS	3.03	\$14,863	15
Guinea-Bissau	GNB	SSA	2018 EHCVM	3.07	\$1,949	85
Honduras	HND	LAC	2015 SEDLAC	2.17	\$5,421	29
Indonesia	IDN	SAR	2016 SAKERNAS	2.50	\$12,074	20
India	IND	SAR	2018 PLFS	2.68	\$6,454	62
Kenya	KEN	SSA	2015-16 KIHBS	2.81	\$4,452	67
Lao PDR	LAO	EAP	2017 LFS	2.37	\$8,235	37
Lebanon	LBN	MNA	2018 LFHLCS	3.30	\$12,289	N/A
Sri Lanka	LKA	SAR	2017 LFS	2.88	\$13,225	11
Mexico	MEX	LAC	2016 SEDLAC	2.77	\$18,833	7
Mali	MLI	SSA	2018 EHCVM	2.53	\$2,339	80
Myanmar	MMR	EAP	2015 LFS	1.54	\$4,794	15
Mongolia	MNG	EAP	2019 LFS	2.67	\$12,101	5
Mozambique	MOZ	SSA	2014-15 IOF	2.41	\$1,297	82
Niger	NER	SSA	2018 EHCVM	2.46	\$1,263	77
Nepal	NPL	SAR	2018 PLFS	2.66	\$4,009	51
Pakistan	PAK	SAR	2017 LFS	2.06	\$4,877	36
Panama	PAN	LAC	2015 SEDLAC	3.07	\$26,776	5
Peru	PER	LAC	2017 SEDLAC	1.93	\$11,879	8
Philippines	PHL	EAP	2016 FIES-LFS	1.99	\$8,390	17
Paraguay	PRY	LAC	2016 SEDLAC	1.69	\$13,013	5
Rwanda	RWA	SSA	2016 EICV5	1.24	\$2,214	80
Senegal	SEN	SSA	2018 EHCVM	1.84	\$3,481	68
Togo	TGO	SSA	2015 QUIBB	2.49	\$2,224	74
Thailand	THA	EAP	2018Q1 LFS	2.15	\$18,236	0
Türkiye	TUR	ECA	2017 LFS	1.66	\$28,120	2
Uruguay	URY	LAC	2017 SEDLAC	1.78	\$22,795	1
Vietnam	VNM	EAP	2018 LFS	2.04	\$8,651	7

Note: GDP per capita and poverty headcount ratio are taken from the World Development Indicator database. GDP per capita is measured in 2020 current USD but adjusted for purchasing power (WDI ID: NY.GDP.PCAP.PP.CD). The poverty headcount ratio is shown for the latest available year per country, using the \$3.20 in 2011 USD poverty line (WDI ID: SI.POV.LMIC). Initial Job Quality index results for wage employees are based on authors' calculations.

Table A2. Availability of Statistics Indicators across Countries

Country code	INCOME Earnings	BENEFITS							STABILITY				# of indicator	WORKING CONDITIONS				Total # of indicators
		Health Insurance	Unempl. Insurance	Pension	Social Security	Paid Leave	Sick Leave	# of indicators	Written contract	Permanent Employment	Formal Employment	Tenure		Excessive hours	Second Paid Job	Would like to work more	# of indicators	
BEN	Yes	No	No	No	No	Yes	Yes	2	No	No	Yes	No	1	Yes	Yes	No	2	6
BFA	Yes	No	No	No	No	Yes	Yes	2	No	No	Yes	No	1	Yes	Yes	No	2	6
BGD	Yes	Yes	No	Yes	No	No	Yes	3	Yes	Yes	No	No	2	Yes	Yes	Yes	3	9
BOL	Yes	Yes	No	Yes	Yes	Yes	No	4	Yes	No	Yes	Yes	3	Yes	Yes	Yes	3	11
BRA	Yes	No	No	Yes	No	No	No	1	Yes	Yes	No	Yes	3	Yes	Yes	No	2	7
BWA	Yes	Yes	No	Yes	No	Yes	Yes	4	Yes	Yes	No	Yes	3	Yes	Yes	No	2	10
CIV	Yes	No	No	No	No	Yes	Yes	2	No	No	Yes	No	1	Yes	Yes	No	2	6
COL	Yes	Yes	No	Yes	No	Yes	No	3	Yes	Yes	No	Yes	3	Yes	Yes	Yes	3	10
CRI	Yes	Yes	No	Yes	No	Yes	No	3	No	Yes	No	Yes	2	Yes	Yes	Yes	3	9
DOM	Yes	Yes	No	Yes	No	Yes	No	3	Yes	Yes	No	Yes	3	Yes	Yes	Yes	3	10
ECU	Yes	Yes	No	Yes	Yes	Yes	No	4	Yes	Yes	Yes	Yes	4	Yes	Yes	Yes	3	12
EGY	Yes	Yes	No	No	Yes	Yes	Yes	4	Yes	Yes	Yes	Yes	4	Yes	Yes	No	2	11
GEO	Yes	No	No	No	No	Yes	Yes	2	Yes	Yes	Yes	No	3	Yes	Yes	No	2	8
GNB	Yes	No	No	No	No	Yes	Yes	2	No	No	Yes	No	1	Yes	Yes	No	2	6
HND	Yes	Yes	No	Yes	No	Yes	No	3	Yes	Yes	No	No	2	Yes	Yes	Yes	3	9
IDN	Yes	Yes	Yes	Yes	No	Yes	Yes	5	Yes	Yes	No	Yes	3	Yes	Yes	Yes	3	12
IND	Yes	Yes	No	Yes	Yes	Yes	No	4	Yes	No	No	No	1	Yes	Yes	No	2	8
KEN	Yes	Yes	No	Yes	No	Yes	No	3	Yes	No	No	No	1	Yes	Yes	Yes	3	8
LAO	Yes	No	No	No	Yes	Yes	Yes	3	Yes	Yes	Yes	Yes	4	Yes	Yes	Yes	3	11
LBN	Yes	Yes	No	No	Yes	Yes	Yes	4	No	No	Yes	No	1	Yes	No	No	1	7
LKA	Yes	No	No	Yes	No	Yes	No	2	Yes	Yes	Yes	No	3	Yes	Yes	No	2	8
MEX	Yes	Yes	No	Yes	No	Yes	No	3	Yes	Yes	No	No	2	Yes	Yes	No	2	8
MLI	Yes	No	No	No	No	Yes	Yes	2	No	No	Yes	No	1	Yes	Yes	No	2	6
MMR	Yes	Yes	No	Yes	No	Yes	Yes	4	Yes	Yes	Yes	Yes	4	Yes	Yes	Yes	3	12
MNG	Yes	Yes	Yes	Yes	No	Yes	Yes	5	Yes	Yes	Yes	Yes	4	Yes	Yes	Yes	3	13
MOZ	Yes	No	No	No	Yes	No	No	1	No	Yes	No	No	1	Yes	No	No	1	4
NER	Yes	No	No	No	No	Yes	Yes	2	No	No	Yes	No	1	Yes	Yes	No	2	6
NPL	Yes	No	No	No	Yes	Yes	Yes	3	Yes	Yes	Yes	Yes	4	Yes	Yes	Yes	3	11
PAK	Yes	Yes	No	Yes	Yes	Yes	Yes	5	Yes	Yes	Yes	No	3	Yes	Yes	Yes	3	12
PAN	Yes	No	No	No	No	No	No	0	Yes	Yes	Yes	Yes	4	Yes	Yes	Yes	3	8
PER	Yes	No	No	Yes	Yes	No	No	2	Yes	Yes	No	Yes	3	Yes	Yes	Yes	3	9
PHL	Yes	No	No	No	No	No	No	0	No	Yes	No	No	1	Yes	Yes	Yes	3	5
PRY	Yes	Yes	No	Yes	No	Yes	No	3	Yes	Yes	Yes	Yes	4	Yes	Yes	Yes	3	11
RWA	Yes	Yes	No	No	No	No	No	1	No	Yes	No	Yes	2	Yes	Yes	No	2	6
SEN	Yes	No	No	No	No	Yes	Yes	2	No	No	Yes	No	1	Yes	Yes	No	2	6
TGO	Yes	No	No	No	No	Yes	Yes	2	No	No	Yes	No	1	Yes	Yes	No	2	6
THA	Yes	No	No	No	No	No	No	0	No	No	No	No	0	Yes	No	No	1	2
TUR	Yes	No	No	No	Yes	No	No	1	No	Yes	Yes	Yes	3	Yes	Yes	Yes	3	8
URY	Yes	Yes	No	Yes	Yes	No	No	3	No	No	No	Yes	1	Yes	Yes	Yes	3	8
VNM	Yes	No	No	No	Yes	No	No	1	Yes	Yes	Yes	Yes	4	Yes	Yes	Yes	3	9
<b>Total</b>	<b>40</b>	<b>20</b>	<b>2</b>	<b>20</b>	<b>13</b>	<b>29</b>	<b>19</b>		<b>24</b>	<b>26</b>	<b>23</b>	<b>20</b>		<b>40</b>	<b>37</b>	<b>21</b>		

Table A3. Percentage of Missing Observations for Statistics Indicators across Countries

Country code	INCOME Earnings	BENEFITS						STABILITY				WORKING CONDITIONS		
		Health Insurance	Unempl. Insurance	Pension	Social Security	Paid Leave	Sick Leave	Written contract	Permanent Employment	Formal Employment	Tenure	Excessive hours	Second Paid Job	Would like to work more
BEN	11.1%					0.0%	0.0%			0.0%		0.0%	0.0%	
BFA	13.7%					0.0%	0.0%			0.0%		0.0%	0.0%	
BGD	0.2%	0.0%		0.0%			0.0%	0.1%	6.0%			0.0%	6.8%	6.5%
BOL	1.9%	0.3%		0.0%	0.0%	0.3%		7.6%		15.7%	0.0%	0.0%	0.0%	0.0%
BRA	0.1%			0.0%				0.0%	0.0%		0.0%	0.0%	0.0%	
BWA	2.4%	0.0%		3.2%		0.0%	0.0%	0.2%	0.0%		4.0%	0.7%	3.6%	
CIV	10.0%					0.0%	0.0%			0.0%		0.0%	0.0%	
COL	0.0%	0.0%		0.7%		0.0%		0.0%	0.2%		0.0%	0.0%	0.0%	0.0%
CRI	0.2%	7.0%		7.0%		0.6%		0.0%	0.0%		3.6%	5.2%	0.0%	0.0%
DOM	0.0%	10.7%		10.7%		0.0%		15.2%	15.7%		10.8%	0.0%	0.0%	0.0%
ECU	0.1%	0.0%		0.0%	0.0%	0.0%		0.0%	0.0%	11.9%	0.0%	0.0%	0.0%	0.3%
EGY	10.9%	0.2%			0.2%	0.4%	0.4%	0.6%	0.0%	16.5%	7.2%	4.5%	5.6%	
GEO	25.7%					0.0%	0.0%	0.0%	0.2%	0.0%		0.6%	0.0%	
GNB	47.2%					0.0%	0.0%			0.0%		0.3%	0.0%	
HND	0.9%	0.0%		0.0%		0.0%		1.7%	1.7%			0.4%	0.0%	13.2%
IDN	0.0%	3.0%	7.1%	4.9%		4.3%	4.3%	4.4%	0.0%		14.4%	0.2%	0.0%	0.0%
IND	0.0%	22.0%		22.0%	22.0%	22.0%		22.0%				0.0%	0.0%	
KEN	1.1%	0.9%		0.9%		0.9%		0.9%				0.1%	0.0%	0.2%
LAO	5.4%				12.6%	8.3%	8.2%	0.0%	0.0%	23.5%	0.0%	0.0%	2.2%	0.0%
LBN	9.8%	9.3%			9.6%	10.4%	10.5%			0.0%		9.4%		
LKA	0.2%			15.5%		14.8%		15.0%	0.0%	0.0%		0.0%	1.3%	
MEX	0.2%	0.0%		0.0%		0.0%		0.0%	0.0%			0.0%	0.0%	
MLI	37.4%					0.0%	0.0%			0.0%		0.1%	0.0%	
MMR	2.8%	8.6%		7.6%		1.5%	6.4%	32.2%	35.5%	5.7%	0.2%	0.2%	0.0%	0.2%
MNG	3.3%	0.4%	0.4%	0.4%		1.6%	3.3%	0.0%	0.0%	1.4%	0.0%	0.0%	0.1%	0.0%
MOZ	1.6%				0.6%				0.0%			0.5%		
NER	8.3%					0.0%	0.0%			0.0%		0.0%	0.0%	
NPL	6.1%				0.0%	0.0%	0.0%	0.0%	0.0%	9.7%	0.0%	0.0%	0.0%	0.0%
PAK	0.6%	0.0%		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.0%		0.4%	0.0%	0.0%
PAN	0.0%							0.0%	0.0%	3.6%	0.2%	0.1%	0.1%	0.1%
PER	0.7%			0.0%	0.0%			1.6%	1.6%		0.0%	0.0%	0.0%	0.2%
PHL	11.3%								0.0%			0.3%	3.8%	0.0%
PRY	0.0%	0.0%		0.2%		0.3%		0.4%	0.4%	6.8%	0.2%	0.1%	0.0%	0.6%
RWA	1.0%	0.0%							0.0%		0.0%	0.0%	0.0%	
SEN	15.2%					0.1%	0.1%			0.0%		1.1%	0.0%	
TGO	8.9%					0.0%	0.0%			0.0%		0.1%	0.0%	
THA	0.7%											0.0%		
TUR	0.0%				0.0%				0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
URY	0.0%	0.0%		0.0%	0.0%						0.0%	0.0%	0.0%	0.0%
VNM	0.0%				0.0%			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Notes: No information is shown if the indicator is not available.

Table A4. Distribution of Countries, by Number of Indicators Available

Number of indicators available	Income	Benefits	Stability	Working conditions
0	0	3	1	0
1	40	5	14	3
2		11	5	16
3		11	11	21
4		7	9	
5		3		
6		0		
<b>Total # of countries</b>	<b>40</b>	<b>40</b>	<b>40</b>	<b>40</b>

Table A5. Harmonized Industry Classification Mapping to ISIC 4

Industry Name	Broad Sector Name	ISIC 4 Categories
Agriculture	Agriculture	A
Mining	Industry	B
Manufacturing		C
Utilities		D + E
Construction		F
Commerce		G + I
Transport & Communication	Services	H + J
Finance & Business Services		K + L + M
Public Administration		N + O + P + Q
Other Services		R + S + T + U

Note: This table shows the aggregation of sector codes into 10 industries based on the ISIC4 sector classification.

Table A6. Correlation between Job Quality, Job Quality Dimensions, and Informality in SEDLAC, Wage Workers

	Job Quality Score	Poverty	Benefits	Stability	Working Conditions	Legal Informality	Productive Informality
Legal Informality	-0.6918	-0.2271	-0.8631	-0.447	-0.1034	1	
Productive Informality	-0.4913	-0.2207	-0.5063	-0.3781	-0.1093	0.526	1

Note: Correlation analysis using micro data for wage workers in 12 Latin American countries for the two informality definitions as well as Job Quality and the four Job Quality dimensions. The result shows that in particular the income dimension and working conditions dimension add to the analysis of job quality, followed by the stability dimension and benefits dimension.

Table A7. Principal-Component Analysis of Job Quality

Component	Proportion
Comp 1	0.4160
Comp 2	0.2439
Comp 3	0.2062
Comp 4	0.1340

A principal component analysis of the four dimensions of Job Quality using over 1.1 million observations of wage workers in 40 countries shows that the job quality measure cannot easily be reduced to fewer dimensions.

Table A8. Share of Legally Classified Informal Wage Workers in SEDLAC and JQ

Share of informal workers	Share of Workers with Job Quality Levels
Informal (60%)	JQ = 0, 2.3%
	JQ = 1, 26.9%
	JQ = 2, 38.2%
	JQ = 3, 26.0%
	JQ = 4, 6.6%
Formal (4%)	JQ = 0, 0.0%
	JQ = 1, 0.1%
	JQ = 2, 3.8%
	JQ = 3, 40.3%
	JQ = 4, 55.9%

This table shows the shares of wage workers at different levels of job quality among the formal and informal workers, classified according to the productive definition of informality. A worker is informal if the firm employs five or fewer workers.

Table A9. Adjustments and Notes

<p><b>General</b></p> <ul style="list-style-type: none"> <li>• Surveys questions that may not promote a response. For example: <i>please check this box if you have a 401k retirement plan from your employer</i>. For questions like this, we assume non-response (or missing) indicate that the individual does not have an employer-sponsored retirement plan.</li> <li>• Surveys will require certain individuals to skip questions creating missing patterns that are not truly missing. For example: <i>“please indicate if you have health insurance from your employer (if you are a government employee, please skip this question)”</i>. In this case, we assume that the government employee does receive employer-sponsored health insurance. Skip patterns are imputed with “yes” or “no” responses depending on the language written in the survey.</li> <li>• Questions that include answers such as “don’t know” are assumed missing.</li> </ul>
<p><b>Income – wages</b></p> <ul style="list-style-type: none"> <li>• All wages are annualized as follows: <ul style="list-style-type: none"> <li>○ Daily payments are multiplied by 252</li> <li>○ Weekly payments are multiplied by 52</li> <li>○ Bi-weekly payments are multiplied by 26</li> <li>○ Monthly payments are multiplied by 12</li> <li>○ Quarterly payments are multiplied by 4</li> <li>○ Trimester payments are multiplied by 3</li> <li>○ Annual payments are left unadjusted</li> <li>○ For surveys that report pay ranges, we assume the mid-point of the range is the payment amount received</li> </ul> </li> <li>• Once wages are annualized, they are divided and adjusted to the 2011 consumer price index, translated into US dollars PPP, and divided by 365 to arrive at a daily income number.</li> <li>• In some cases (COL, and others), cash income, bonuses, and in-kind income is not reported separately.</li> <li>• Some surveys censor data at the low or high end of the income distribution. We assume censored individuals receive the level of income in which the survey is censored. (EGY censors income over 100,000 pounds; GEO censors monthly income below 100 GEL).</li> <li>• A few countries reported a high number of missing values for income. For these countries (GNB, MLI and GEO), income was imputed using a Mincer equation.</li> <li>• Wages in kind do not have missing values, but only 0’s. This creates an inherent assumption that no one is missing wages in-kind, but they are reporting 0 wage in-kind income.</li> </ul>
<p><b>Stability – tenure</b></p> <ul style="list-style-type: none"> <li>• Due survey questionnaire constraints we cannot precisely identify tenure for MNR and VNM. In these countries, the tenure indicator is constructed as follows: <ul style="list-style-type: none"> <li>○ MNR: individuals 25 years and over with two or more years of tenure receive an indicator for tenure.</li> <li>○ VNM: individuals 25 years and over with five or more years of tenure receive an indicator for tenure.</li> </ul> </li> </ul> <p><b>Stability - formal</b></p> <ul style="list-style-type: none"> <li>• Public sector employment is assumed to be formal employment. However, we are interested in measuring formal employment in non-public sector too and do not want to bias the job quality measure by size of government, so we do not include the formal indicator in a country if they do not have indicators for the private sector.</li> <li>• To increase the scope throughout the SSA region, we adopt a formality definition specific to this region. Formality in BEN, BFA, CIV, GNB, MLI, NER, SEN, and TGO are based on type of</li> </ul>

employment. Individuals that are Senior Managers, Middle Managers/Supervisors, and Skilled Worker/Employees are considered formal.

Firms that employ 5 or more people are considered formal in URY. This is a special case that follows the SEDLAC methodological guide.

#### **Satisfaction - excessive hours worked**

- Many surveys ask respondents for their *usual hours* of work per period and their *actual hours* of work per period. Our default is to use *usual hours* of work first, and supplement missing values with *actual hours*. In cases where *usual hours* are not reported and only *actual hours* are reported, then we use *actual hours*.
- There is significant bunching, across all surveys, for weekly hours of 97, 98, and 99. These reported hours are assumed to be missing.
- There are patterns in surveys that indicate misinterpretation of questions. For instance, surveys may ask respondents how many days they work per week, and how many hours per day. Some respondents report 8, 12, and 40 days per week. We assume these are missing since we are unable to calculate weekly hours. Some respondents report 40+ hours per day. We assume these cases are hours per week and we report this as their weekly hours.

#### **Satisfaction - second paid job**

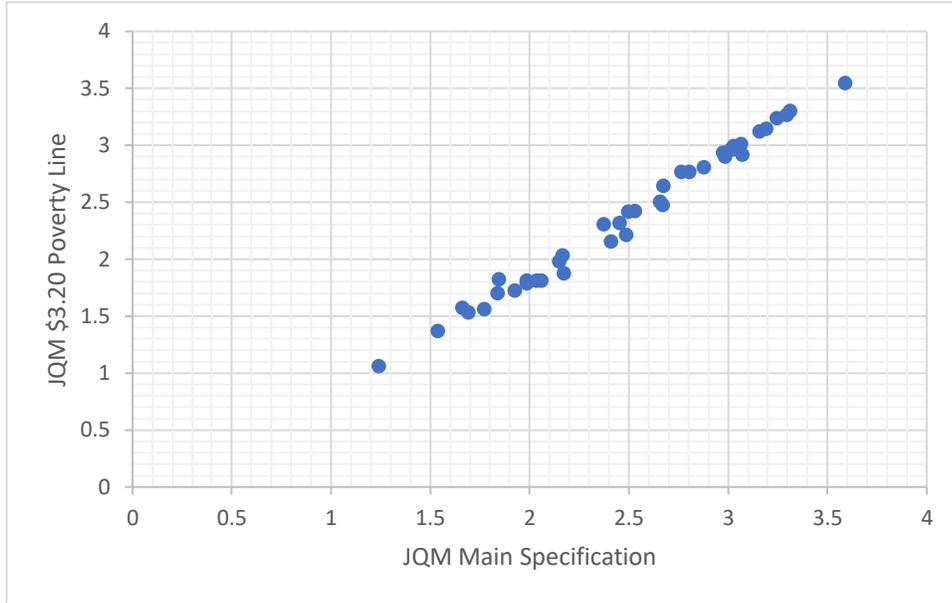
Not all surveys ask the direct question: *do you have a second paid job?*. Additional questions are used to infer whether the second job is paid. For instance, *“do you have a second job?”* may be one question, then there may be a question that asks: *“do you have secondary income?”*, we assume in this case that the secondary income comes from the second job.

#### **Demographic variable definitions**

- **Age:** age in years
- **Youth:** individuals 15 to 24 years of age
- **Male:** indicator set equal to one if an individual is male
- **Urban:** indicator set equal to one if an individual resides in an urban location
- **Ethnic:** indicator set equal to one if an individual identifies as an ethnic minority
- **Disabled:** indicator set equal to one if an individual registers as a disabled person or receives disability support from the government
- **Education years:** number of years of education
- **Education level:** completed level of education (primary, secondary, tertiary)
- **Enrolled:** indicator set equal to 1 if individual was enrolled in school at the time of the survey
- **Occupation code:** official country occupation code
- **Household size:** number of members that share the same household
- **Dependents:** number of individuals under 15, and over 64 that reside in the same household
- **Dependency ratio:** total dependents in a household divided by the total non-dependents in the same household
- **Public employment:** indicator set equal to one if an individual is employed in the public sector
- **CCODE:** three letter country abbreviation
- **Country name:** the name of the country
- **Region:** World Bank region assignment
- **International Development Association:** World Bank lending classification
- **Income group:** World Bank country income level classification

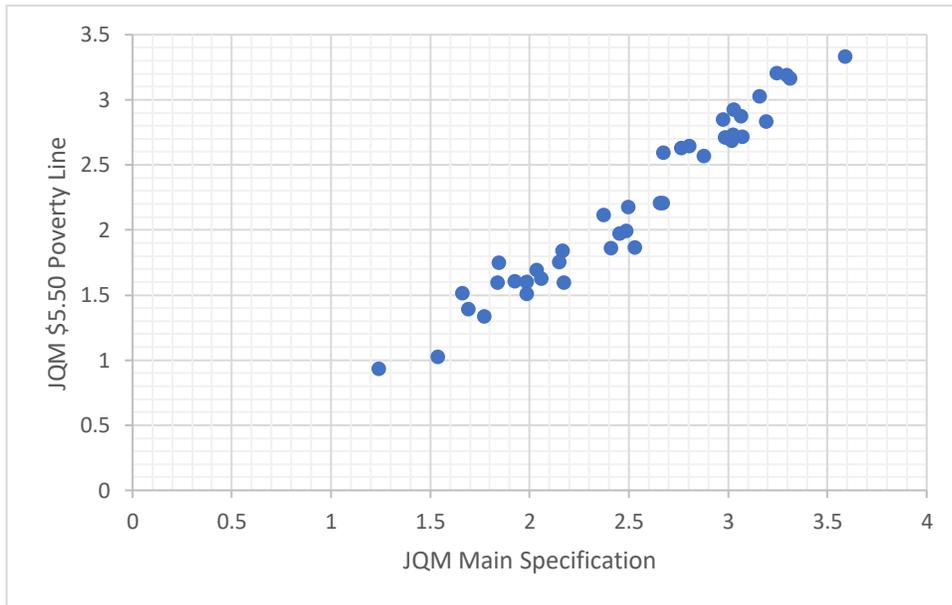
Annex Figures

Figure A1. JQM Main Specification Compared with JQM Using US\$3.20 Poverty Line as the income Threshold



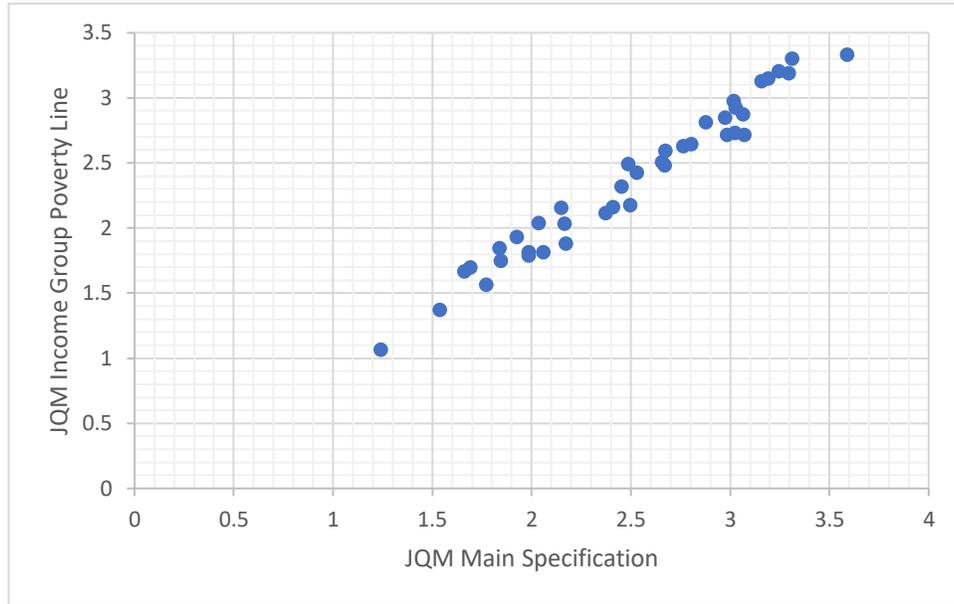
Note: Both specifications use the 2.6 dependency ratio.

Figure A2. JQM Main Specification Compared with JQM Using US\$5.50 Poverty Line as the income Threshold



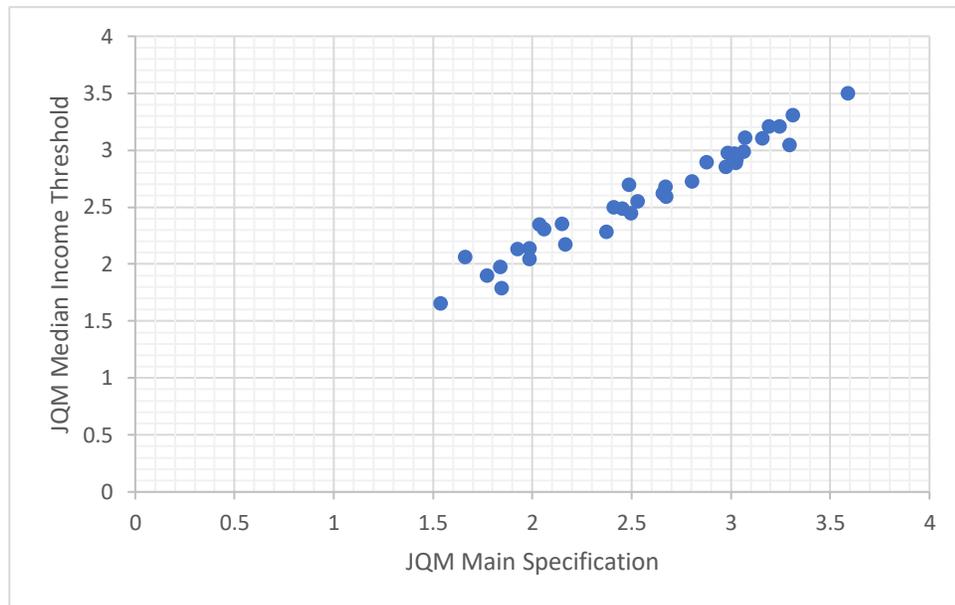
Note: Both specifications use the 2.6 dependency ratio.

Figure A3. JQM Main Specification Compared with JQM Using Flexible Poverty Line across Income Groups



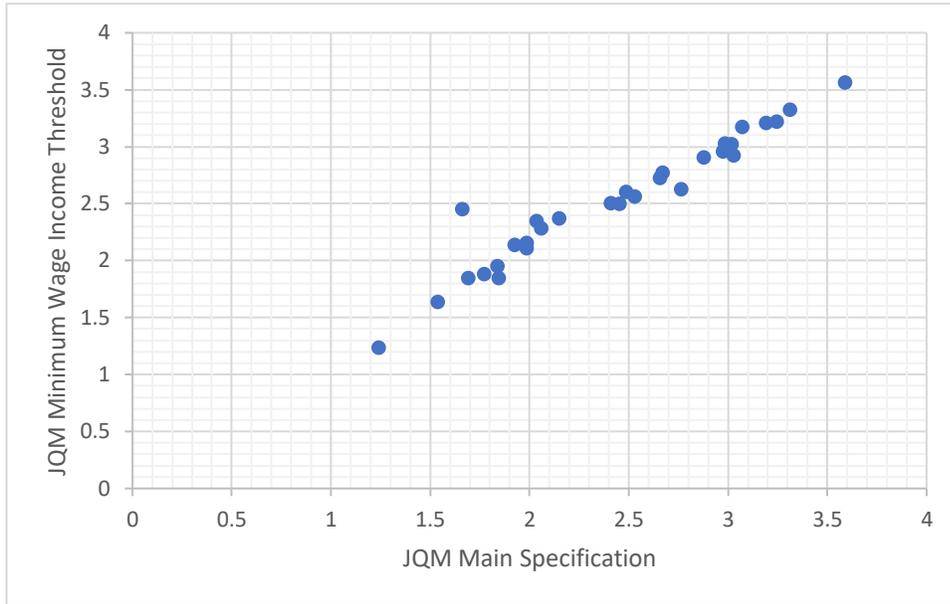
Note: Both specifications use the 2.6 dependency ratio.

Figure A4. JQM Main Specification Compared with JQM Using Median Wage as the Income Threshold



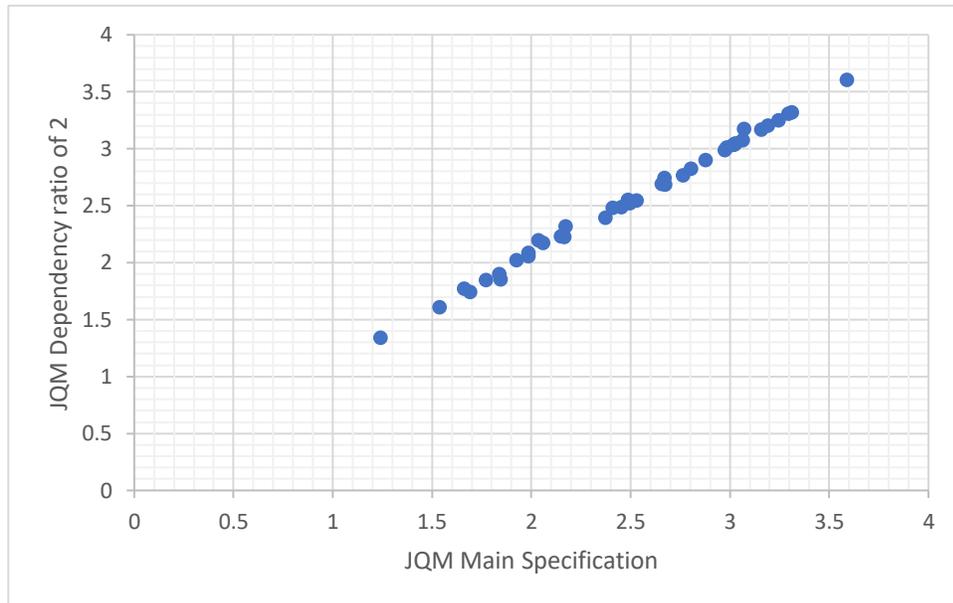
Note: Median income by country is obtained from historical data in the Global Database of Share Prosperity from the Development Data Hub. All income levels are measured in 2011 PPP. This information is available for 36 out of the 40 countries included the job quality sample. The four excluded countries are Equatorial Guinea, Kenya, Myanmar, and Lebanon.

Figure A5. JQM Main Specification Compared with JQM Using Minimum Wage as the Income Threshold



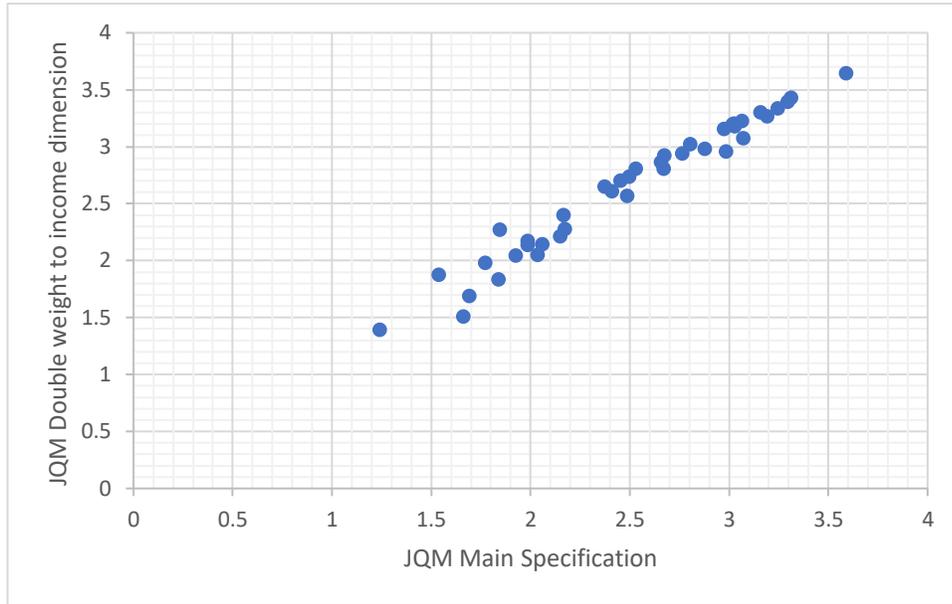
*Note:* Monthly minimum wages are obtained from the International Labour Organization’s statistics on wages. Monthly wages are measured in 2011 PPP and adjusted to daily wages. This information is available for 30 out of the 40 countries included the job quality sample. The ten excluded countries are Bolivia, Dominican Republic, Ecuador, Honduras, Mexico, Myanmar, Panama, Peru, Paraguay, and Uruguay.

Figure A6. JQM Main Specification Compared with JQM with Dependency Ratio Equal 2



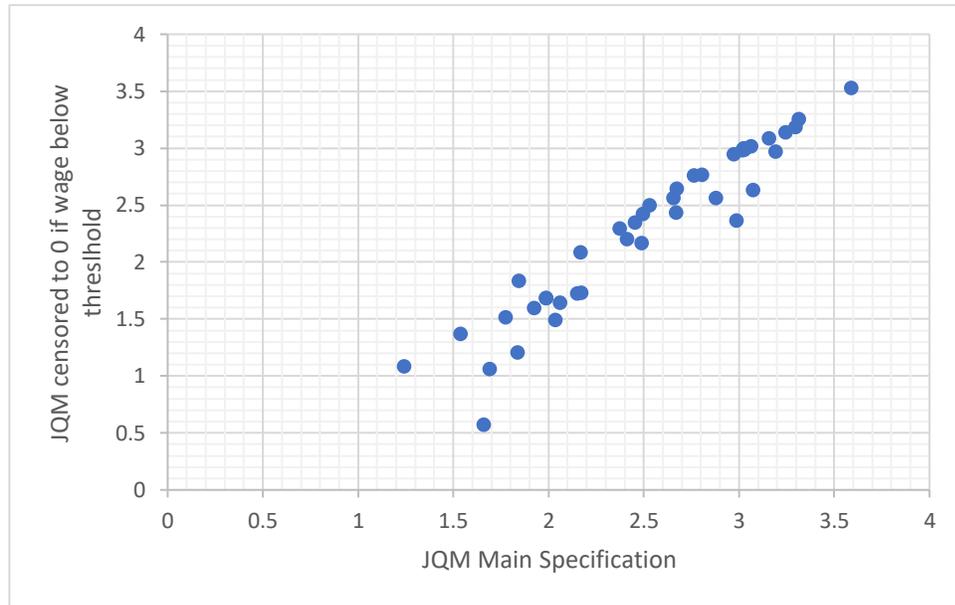
*Note:* Both specifications use the \$1.90 poverty line to construct the income threshold.

Figure A7. JQM Main Specification Compared with JQM That Gives Double Weight to Income Dimension



Note: Both specifications use the \$1.90 poverty line and dependency ratio of 2.6 to construct the income threshold.

Figure A8. JQM Main Specification Compared with JQM Censored If Wage Is Below the Threshold



Note: Both specifications use the \$1.90 poverty line and dependency ratio of 2.6 to construct the income threshold.