

WIDER Working Paper 2024/29

Labour market inequality in two Asian giants

Indonesia and India compared

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May 2024

Abstract: We examine the nature of labour market inequality in Indonesia and India, using a common conceptual approach drawing from the *job ladder* framework. In the framework, we differentiate between self-employment and wage-informal and between formal, upper tier informal, and lower tier informal jobs. We find that both countries have a large proportion of workers in lower tier jobs, though the importance of wage-employment is larger in Indonesia. There are more workers in formal wage-employment in Indonesia than India. There are also sharp disparities in the earnings of workers in different tiers of the labour market in Indonesia and India, and there is limited evidence of convergence of the earnings of the lower tier informal workers to that of formal workers, at least for Indonesia. We also find that gender and educational level are important correlates of work status in both countries. Females and less educated workers occupy the lower tiers of the labour markets in the two countries.

Key words: job ladder, labour market inequality, informality, Indonesia, India

JEL classification: J21, O17, P50

Acknowledgements: A shorter version of this paper has been commissioned for the *Bulletin of Indonesian Economic Studies*. The paper has benefited from the excellent research assistance provided by Putri Riswani Halim for Indonesia and Golam Rabbani for India. I also acknowledge the comments of three referees. The usual disclaimer applies.

Note: Tables and figures are at the end of the paper; the Online Appendix is available as supplementary material on the working paper's [webpage](#).

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This study is published within the UNU-WIDER project [Transforming informal work and livelihoods](#).

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ISSN 1798-7237 ISBN 978-92-9267-487-8

<https://doi.org/10.35188/UNU-WIDER/2024/487-8>

Typescript prepared by Siméon Rapin.

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The Institute is funded through income from an endowment fund with additional contributions to its work programme from Finland and Sweden, as well as earmarked contributions for specific projects from a variety of donors.

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The views expressed in this paper are those of the author(s), and do not necessarily reflect the views of the Institute or the United Nations University, nor the programme/project donors.

1 Introduction

Income inequality has been growing within countries in the last decade, partially offsetting the large decline in across-country inequalities, resulting from faster growth in China and other emerging economies (Gradin and Opper 2021). Reducing inequality is a major goal of the 2030 Agenda, and there has been increasing interest in the policy community on the patterns and determinants of inequality, as well as its consequences for human development, social cohesion and economic inclusion (Chancel et al. 2022). A key determinant of overall inequality is inequality in the labour market, with many workers in poorly paid work with precarious working conditions (ILO 2018). Informality is a recurrent feature of such labour markets, where informal jobs are those which have limited social security benefits and lack of security of tenure, in contrast to formal workers, who have access to social security, and have security of tenure. Formal and informal workers also have different remunerations and working conditions, with informal workers often poorly paid as compared to formal workers (Deléchat and Medina 2021). Therefore, labour market inequality manifests itself in the earnings disparities that are associated with the different jobs that workers hold—formal and informal.

While an earlier literature made a distinction only between formal and informal jobs, a recent literature highlights the heterogenous nature of informal work in developing countries (see Fields 2019). This literature recognizes the duality in both informal self-employment and informal wage-employment (Kanbur 2017). In informal self-employment, two types of enterprises may exist—employers, which are enterprises that employ hired workers and are relatively productive and own account enterprises, who use family labour and are involved in subsistence activities (Chen 2012). In informal wage-employment, too, two types of workers may exist—workers with better paid jobs with some de facto benefits, though not with the same security of tenure and social security benefits as formal wage jobs, along with those in poorly paid jobs in manual work such as in farms and in construction sites, where informal employment is a last resort job to avoid unemployment (Natarajan et al. 2023).

Recognizing this duality in self-employment and wage-employment, as well as the heterogenous nature of informal work, Fields et al. (2023) propose a framework of analysis for labour markets in developing countries, which conceptualizes such labour markets as a *job ladder*, where workers are in different tiers, and informal work may be either in ‘lower tier’ or ‘upper tier’ self/wage-employment (Fields 2005). Conditions of work and earnings may differ across workers in different tiers, with formal workers being paid the most, and lower tier informal workers being paid the least. The advantage of this framework is that it provides a simple and intuitive way to classify workers into different tiers of the labour market, using the conventional labour force surveys that are available for most developing countries. In this paper, we use the *job ladder* framework to analysis the nature and type of inequality in Indonesia and India, highlighting the similarities and differences in the structure of labour markets for the two countries.

Indonesia and India are two Asian giants, with their combined labour force accounting for 19 per cent of the world’s labour force and 35 per cent of Asia’s total labour force. They have both performed well in economic growth among emerging and low- and middle-income countries (Hill and Hill 2016). They have a relatively young workforces, and at the same time, high degrees of informality—the ILO (2018) estimates that 85.6 per cent of Indonesia’s total employment and 88.2 per cent of India’s total employment are informally employed (see Manning 1998 for Indonesia and Raj and Sen 2016 for India, for a discussion of the nature of labour markets in the two countries). Therefore, both countries face similar challenges in terms of creating well-paid jobs for their workers with decent working conditions.

In this paper, we examine the nature of inequality in Indonesia’s and India’s labour markets, differentiating between formal, upper tier informal and lower tier informal workers and at the same time, between self-employment and wage-employment. We provide a comparative lens to understanding labour market inequality in Indonesia and India, by using the same conceptual framework proposed by Fields et al. (2023)—the job ladder framework—to understand the multi-tiered nature of labour markets in developing countries. This framework classifies workers in any developing country labour market in six work status—formal self-employed, upper tier informal self-employed, lower tier informal self-employed, formal wage-employed, upper tier informal wage-employed and lower tier informal wage-employed. We operationalize the framework for Indonesia and India in such a manner that valid comparisons can be made between the two countries, using similar concepts of formal, upper tier informal and lower tier informal work.

For our analysis, we use individual worker level data from the Sakernas surveys for Indonesia and the Employment Unemployment Surveys and Periodic Labour Force Surveys for India. These data-sets are large nationally representative labour force surveys for the two countries, and are repeated cross-sectional data. The period of analysis for Indonesia is 2000-2020 and for India, 1988-2022. The long periods of analysis in the two countries allows us to assess changes over time, as well as differences in the structure of the labour markets for Indonesia and India at any point in time.

There have been two previous studies that employ the job ladder framework for studying the labour markets of Indonesia and India. For Indonesia, Rizky et al. (2023) use the 2000, 2007, and 2014 rounds of the Indonesian Family Labour Survey (ILFS), which is a longitudinal socio-economic survey for the country, to examine transitions between formal, upper tier informal and lower tier informal work status in Indonesia. Our study uses the Sakernas data instead, which has a significantly larger sample size, and is more representative of the population in the 13 provinces that it covers (Dong 2016). Further, Rizky et al. (2023) do not distinguish between self-employment and wage-employment, while we consider *all six work status* in our paper. Finally, our period of analysis is for a longer duration than Rizky et al. (2023), as our starting year is 2001 and our end year is 2020.¹ For India, Natarajan et al. (2023) use the panel data from the Indian Human Development Survey of 2004-2005 and 2011-2012 to classify workers in all six work status, and examine transitions across these work status over 2004-2011. However, the Indian Human Development Surveys, while nationally representative, do not have as large a sample as the Employment and Unemployment Surveys and the Periodic Labour Force Surveys, which are the data-sets we use.² Moreover, we are able to start our analysis in 1988, before the onset of India’s economic reforms, and end in 2022, so our paper covers a longer period than Natarajan et al. (2023).

The rest of the paper is in five sections. Section 2 describes the patterns of structural transformation in Indonesia and India, focusing on employment patterns and trends in labour productivity. Section 3 provides an introduction to the job ladder framework and discusses its operationalization for Indonesia and India. Sections 4 and 5 apply the job ladder framework to Indonesia and India, respectively. Section 6 examines the factors that explain why workers are at different steps of the job ladder in Indonesia and India. Section 7 concludes.

¹ We start in 2000, as the labour market in Indonesia was significantly depressed in the late 1990s, due to the 1996 financial crisis, and end at 2020, as we do not have access to unit record data after this year.

² The 2004 round of the Indian Human Development Survey had around 215,00 individuals, while the 2010 Employment Unemployment Surveys of the Government of India had around 950,000 individuals.

2 An overview of the patterns of economic development in Indonesia and India

How have economic policies evolved in Indonesia and India over time, and how may this have influenced patterns of structural transformation in the two countries since the 1990s? In this section, we briefly discuss key economic policies in Indonesia and India, followed by an examination of the structure of employment and levels of labour productivity by broad sectors over the period 1990–2018.

We first briefly discuss the evolution of economic policies in Indonesia. In 1966, following an economic crisis, the New Order government of President Suharto embarked on a programme of orthodox economic management, with the government providing a stable economic and political environment, especially on property rights, macroeconomic policy was carefully managed, and the provision of critical public goods on education and infrastructure increased substantially (Hill 1996). After a period of recovery in 1966–71, economic growth accelerated in the 1970s, coinciding with a large increase in world oil prices in 1973, which provided windfall revenues to Indonesia, an oil exporter. These enhanced public revenues were used to build schools and health clinics in rural areas, as well as rural infrastructure such as road and irrigation (Booth 2016). Oil prices fell in the 1980s, leading to cutbacks in public expenditures and a continuation of economic reforms, especially in taxes, customs and the banking sector. As Hill (1996: 17) notes, in this period, ‘Indonesia became a significant industrial exporter, following the well-travelled route of its East Asian neighbours’. This manufacturing driven growth phase was very much based on the comparative advantage of labour-intensive and resource-based industries.

The process of economic development was abruptly halted by the 1997-1998 Asian Financial Crisis (AFC), which was caused by a loss of confidence in Indonesia’s currency and banking system (Hill and Hill 2016). It took some time for economic growth to recover, which it did in the early 2000s. There was another large economic shock in 2008–09 in the form of the Global Financial Crisis, but Indonesia withstood this shock well, with a well regulated financial system and a floating exchange rate regime (op cit.). Economic growth was particularly rapid in the Resources Boom of 2005-2012, and 18.5 million jobs, mostly in the services sector was created at this time (Ginting et al. 2018). Therefore, in the post-AFC phase, services were the source of economic growth, as compared to manufacturing in the pre-AFC phase (Kim et al. 2022). Labour markets have also become more regulated in the 2000s, with the minimum wage becoming the major plank of labour policy (Ginting et al. 2018). The export-oriented labour-intensive manufacturing sector has not been able to recover its earlier dynamism in the pre-AFC phase (op cit.), with the service sector absorbing most of the workers moving out of agriculture, as compared to manufacturing (Manning and Pratomo 2022).

The evolution of economic policies in India in the post-independence period can be classified into three phases (Athukorala and Sen 2002; Sen 2023a): ‘The first phase was one of control and command, which stretched from the mid-1950s to the early 1980s. The second phase from the early 1980s to the early 1990s was a period of slow and uneven reform, with the liberalisation measures occurring mostly in the trade and industrial sector. The third phase from 1991 to the present was one of rapid and radical reforms, with the reforms encompassing almost every aspect of the policy regime’ (Sen 2023a: 73).

In the first phase, India followed a highly restrictive trade regime, From the mid-fifties till the late 1970s, with nearly all imports were subject to discretionary import licensing or were channelized by government monopoly trading organizations. There was also strict government control of industrial firms, with the enactment of the Industries (Development and Regulation) Act of 1951, which introduced the system of licensing for private industry. This system governed almost all

aspects of firm behaviour in the industrial sector, controlling entry into an industry and expansion of capacity, and also technology, output mix, capacity location and import content (Athukorala and Sen 2002). It is generally well recognized that the command and control regime of the Indian government in the 1960s and 1970s led to a strong anti-export bias and a highly inefficient economic structure (Bhagwati 1993).

In the second phase of the evolution of economic policies in India, there was a gradual and piecemeal relaxation of trade and industrial policy, which may have contributed to a somewhat higher economic growth in 1980s as compared to the 1960s and 1970s (Panagariya 2010). However, more radical reforms had to wait till 1991, when as a part of the structural adjustment programme, quotas on the imports of most machinery and equipment and manufactured intermediate goods were removed, and peak tariff rates were cut on most imports. Along with this, industrial licensing was removed, along with the relaxation of foreign exchange controls and financial sector reform. Economic growth per capita accelerated in the post-1991 period, from 1.8 per cent per annum in 1960–91 to 4.6 per cent in 1992–2022. . However, the rapid economic growth has not been accompanied by corresponding rates of job creation. This in part may be due to stringent employment protection legislation (among the most protective of formal workers in the world) which contributed to high capital intensity in the manufacturing sector (Das and Sen 2015)

The relatively stronger economic growth in Indonesia as compared to India is reflected in the large difference in GDP per capita (in constant USD Purchasing Power Parity terms) between the two countries (Figure 1). However, there has been some catch up on per capita GDP by India—in 1990, India’s GDP per capita was 40 per cent of that of Indonesia’s, while in 2022, it was 57 per cent (in 1990–2022, the average annual growth rate of per capita output for India was 4.39 per cent, while for Indonesia, it was 3.27 per cent). At the same time, though Indonesia is richer than India, it has lower income inequality than India’s, though the measure of income inequality—the Gini—shows an increasing trend in both countries in recent decades (Figure 2).

How have the processes of economic development in the two countries led to changes in the structure of employment in Indonesia and India? In Figure 3, we present the employment structure for Indonesia.³ We see that in 1990, the share of agriculture in total employment was 55 per cent, which fell to 31 per cent in 2018. The shares of manufacturing and services in total employment was 10 and 31 per cent in 1990 respectively, which increased to 14 and 48 per cent in 2018. Therefore, services are now the main source of sectoral employment in Indonesia, and agriculture has no longer the importance that it had in 1990 in terms of employment provision. In the case of India, we see that in 1990, the share of agriculture in total employment was 65 per cent, which declined to 39 per cent in 2018 (Figure 4). The share of manufacturing in total employment was 11 per cent in 1990, which marginally increased to 12 per cent in 2018. The share of services in total employment was 20 per cent in 1990, which increased to 33 per cent in 2018. Therefore, unlike Indonesia, the main source of sectoral employment in India still remains agriculture, and the relatively constancy of the employment share in manufacturing in India differentiates it from Indonesia. In the case of Indonesia, the increase in the share of manufacturing employment over the 1990s and 2000s can be explained by a more dynamic labour-intensive export-oriented

³ We use the recently released GGDC/UNU-WIDER Economic Transformation Database (ETD) (Kruse et al. 2022) for calculating employment shares and labour productivity for Indonesia and India. The ETD provides time-series of employment and real and real value added by twelve sectors in fifty-one countries for the period 1990–2018, including Indonesia and India, and the data is comparable across countries and over time (see Sen 2023b).

manufacturing sector in Indonesia as compared to India's, where most of the success in exports has not been in manufacturing but in tradable services (chiefly IT).

We next look at real labour productivity by broad sectors in Indonesia and India, indexing the measures of real labour productivity to 100 in 1990 (Figures 5 and 6, respectively). For Indonesia, agriculture has shown the largest increase in labour productivity in 1990-2018, as output increased in that sector, along with workers leaving the sector for non-agricultural jobs (Manning and Pratomo 2018). The dynamism of Indonesian agriculture has been noted in previous studies, and the rapid productivity growth in agriculture may have been an important reason why there has been a decline in employment share in this sector over time (Hill 1996). In India, labour productivity growth has been the strongest in manufacturing and services. In the case of manufacturing, this may be due to trade reforms which prioritized tariff cuts and removal of quotas on imports of capital goods, with a significant increase in capital intensity in Indian manufacturing (see Das and Sen 2015). In the case of services, the increase in labour productivity may be explained by the growth of a dynamic information technology (IT) sector since the 1990s (Baldwin and Forslid 2019).

3 The job ladder framework

In this section, we provide an exposition of the job ladder framework, drawing from Fields et al. (2023). We then operationalize the framework in the context of Indonesia and India.

3.1 What is the job ladder framework?

The early literature on modelling labour markets in developing countries characterized the dualism inherent in these labour markets in terms of two sectors or work status—a formal sector, which offers relatively attractive wages and other terms and conditions of employment, and an informal sector, which offers relatively unattractive pay and conditions of employment (Fields 2007). More recent literature has pointed out the multi-sectoral nature of labour markets in developing countries, with two important dimensions. Firstly, workers can either be in wage-employment or self-employment, where self-employment and wage-employment work status exist in both the formal and informal sectors. Wage-employees experience an employer–employee relationship, which the self-employed do not. Secondly, the informal sector is characterized by its own duality, where both wage-employed and self-employed workers can be in upper tier or lower tier work status (see Fields et al. 2023).

To operationalize the two-tier schema of informal labour markets, we follow Fields et al. (2023).⁴ Upper tier informal self-employed comprise informal employers (that is, unregistered enterprises who use hired workers) and individuals who have technical and vocational training (such as plumbers and electricians). These are activities where there is some barriers to entry, such as a need for financial capital (to become an employer) or certain skills (such as the professional certification needed by plumbers and electricians, for example). Lower tier informal workers can be considered to be in 'free entry' employment (Fields 2019). These are mostly own account workers and contributing family workers, examples of which are street vendors and waste pickers.

⁴ To distinguish between formal and informal employment, we use the ILO definition, where informal workers are those which lack any type of legal recognition or protection, and do not have secure employment contracts, workers' benefits, social protection or workers' representation (ILO 2018).

In the case of wage-employment, upper tier informal work status comprises wage work which provides some de facto benefits (though not as generous as those provided to formal wage workers) or occupations which need some prior training or skills. Lower tier informal work status comprises low paid casual wages, and is often associated with activities that need a high degree of manual labour.

Figure 7 provides a characterization of the multi-tiered nature of labour markets in developing countries. Starting with the working age population first, an individual may be employed, unemployed or out of the labour force. Among those employed, workers may be self-employed or wage-employed, depending on their occupational position. The self-employed and wage-employed can be in formal or informal work status. Within informal work status, the worker can be in upper tier or lower tier work. This provides us six possible work status characterization for any individual employed worker at a point in time: i) formal self-employed; ii) formal wage-employed; iii) informal upper tier self-employment; iv) informal upper tier wage-employment; v) informal lower tier self-employment; and vi) informal lower tier wage-employment.

Figure 8 provides a depiction of the job ladder in any developing country labour market. Formal jobs are at the top of the ladder, followed by upper tier informal and the lowest rung is occupied by lower tier informal workers. The job ladder framework allows us to assess how many jobs there may be at different tiers of the labour market. If there are many formal jobs as compared to upper tier informal jobs, and more upper tier informal jobs than lower tier informal jobs, the ladder will be broad at the top and narrow at the bottom. On the other hand, if there are few formal jobs, and a large number of lower tier informal jobs, the ladder will be narrow at the top and broad at the bottom. We show these two possibilities in Figure 9.

How steep the job ladder for any country would depend on the wages of workers in formal, upper tier informal, and lower informal jobs. If formal workers are paid much more than upper informal workers who in turn are paid considerably more than lower tier informal workers, and if it is difficult for lower tier informal workers to progress to the upper tier informal tier and then on to the formal tier, one could visualize such a possibility as a *broken* job ladder as shown in Figure 10.

What determines whether a ladder is broad or narrow or if it is broken or not? This would depend on both supply side and demand side factors. On the supply side, education and skills play a key role. The more educated and skilled the worker is, the more likely it is that she will be in the higher tiers of the job ladder. However, other supply side factors such as labour market discrimination can also play a role, as there may be an explicit or implicit bias not to employ workers with certain characteristics related to gender and ethnicity for upper tier jobs. In addition, worker preferences can also play a role in whether they opt to choose informal jobs over formal jobs—for example, they may like to avoid paying contributory social insurance that are often part of formal jobs and prefer to be working in informal jobs (Maloney 2004). Demand side factors can also play an important role in determining the shape of the job ladder—manufacturing is often the source of formal jobs, and if the growth of the manufacturing sector is constrained by the lack of demand, the job ladder is likely to be narrow at the top. In many developing countries, globalization and labour-saving technological change have been important reasons for the lack of jobs in manufacturing, and for the limited size of the formal sector in developing countries (Goldberg and Larson 2023). In poor subsistence economies or where the manufacturing or service sectors are not very productive, one may see a mass of low productivity household enterprises and a large presence of casual wage workers. In such economies, a large proportion of employment will be in the form of lower-tier self-employment and wage-employment, with the job ladder that is broad at the bottom.

What explains the relative importance of wage-employment versus self-employment? Structural change and economic development processes can explain why some countries have more wage-employment as a share of total employment—as countries grow richer and workers move from agriculture and low productivity services such as street vending to manufacturing and tradable services, self-employment falls as a share of total employment, and wage-employment tends to increase (Bandiera et al. 2022). Further, where wage workers are placed in the job ladder relative to self-employed workers for any level of the multi-tiered labour market (e.g. upper tier informal self-employment versus upper tier informal wage-employment) would depend on how much self-employment is remunerated relative to wage-employment and whether self-employment is employment out of necessity and a survival strategy or a hotbed of entrepreneurship. Segmented labour markets also make it possible for the shape of the job ladder to be different for self-employment and wage-employment, if there is little mobility between the two categories. Therefore, the shape of the job ladder in any particular country is determined by broader processes of structural transformation and economic growth as well as structural labour market characteristics (such as the nature of segmentation). In this paper, we will examine the shape of the job ladder in Indonesia and India, and its evolution over time. Before we do so, we set out a schema to operationalize the application of the job ladder framework for the two countries.

3.2 Applying the job ladder framework to Indonesia

For Indonesia, we use the National Labor Force Survey, also known as the Survei Angkatan Kerja Nasional (Sakernas), which is a nationally representative survey conducted by the Central Statistics Agency of Indonesia (BPS) to capture comprehensive data on the labour force in the country. For this study, Sakernas data from the years 2001, 2010, and 2020 were utilized. These rounds of the Sakernas data covers the 2000s till the most recent period, and includes both the sub-period of recovery from the 1996 financial crisis in the first decade of the 2000s and the sub-period of strong growth in the second decade of the 2000s. It is important to note the variation in observations across the years: 119,935 observations for 2001, 953,172 for 2010, and 793,202 for 2020. This discrepancy is attributed to the differing levels of data recovery, with 2001 representing regional data and 2010 and 2020 reflecting district-level information.

To classify workers by work status in Indonesia, we use the codes for employment status that are provided in the Sakernas questionnaires (Table B1). To classify self-employed workers, we use code 1: self-employment: own account worker, code 2: self-employment, by temporary or unpaid workers, code 3: self-employment, by permanent or paid workers, and code 7: unpaid workers. We classify lower tier informal self-employment as those workers associated with codes 1, 2, and 7, which are own account enterprises or self-employed with temporary workers or unpaid workers. However, classifying self-employed as formal or upper tier informal poses a challenge, as there are no questions in the Sakernas surveys on whether the self-employed are registered or not. Therefore, in order to classify self-employed as formal or upper tier informal, we first use code 3: self-employed with paid worker and combine this with occupation codes provided in Sakernas surveys for each worker to differentiate between formal and upper tier informal. For formal self-employed, we use occupation codes for professionals, clerical workers, and technical workers (Group 1). These codes differ across the 2001, 2010, and 2020 surveys. For example, for the 2001 survey, occupational codes 011 to 399 are associated with professionals and clerical workers, and codes 801-899 are associated with technical workers. For other occupation codes 400 to 799 (Group 2), we classify them as upper-informal self-employed. The only exceptions here are occupation codes associated with manual labour, which, in the 2001 survey, are occupation codes 901-999 (Group 3), assigned to lower tier informal wage workers.

In the case of wage-employed, we follow a similar strategy, as the Sakernas questionnaire does not provide information on which worker has security of tenure or has access to social security. Lower

tier informal wage workers are those associated with codes 5 and 6 (casual/free workers in agriculture/non-agriculture). Formal and upper tier informal wage workers are those associated with code 4 (regular/salaried wage employees). To differentiate between formal and upper tier informal wage-employment, we use the same occupational codes as we use for formal versus upper tier self-employment, with professionals, clerical workers, and technical workers (Group 1) classified as formal wage workers and other occupations (Group 2) as upper tier informal wage workers (for all those with Sakernas codes 4). The only exception are occupation codes for manual labourers (Group 3), who are assigned to lower tier informal wage workers. Figure 11 and Table 2 provide the full classification of work status for the seven work status categories for Indonesia, with the occupation codes that are related to each work status for the three rounds of the Sakernas surveys.⁵

3.3 Applying the job ladder framework to India

For India, we use the the consolidated unit-level datasets obtained from the Employment and Unemployment Survey (EUS) and the Periodic Labour Force Survey (PLFS) conducted by the National Sample Survey Office (NSSO). These datasets serve as the primary sources of information for the labour force in India. The study utilizes data spanning six years: 1987-88, 2004-05, 2011-12, and 2021-22, for expositional ease, years of the data referred as 1988, 2000, 2012, and 2022 respectively. Data for 1987-88, 1999-00, and 2011-12 is derived from the EUS data of NSSO's 43rd, 55th, and 68th survey rounds, while data for 2021-22 is sourced from PLFS' 2017-18 and 2021-22 surveys. The period of coverage includes the pre-reform year of 1987, with post-reform years of 2000, 2012, and 2022.⁶

In the case of India, the questionnaires for 1988 does not provide more information about workers' social security or firms' registration status. However, this information is available for the EUS for 2000 and 2012, and the PLFS for 2022. Similar to Indonesia, we combine information on job status and occupation codes to place workers in the six work status categories for 1988 (Table B2). Starting with lower tier informal self-employment, we assign workers with codes 11 (own account workers) and 21 (workers in household enterprises, unpaid workers) as lower tier informal self-employed (see Table B2 for the job status codes in the EUS/PLFS questionnaires).⁷ Workers with code 12: employer can either be formal or upper tier self-employment and we use occupational codes for professionals, clerical workers, managers and technical workers to classify self-employed workers as formal, with the rest of the occupational codes classified as upper tier informal (Table 2 provides the occupational codes for formal versus upper tier self-employment).⁸

In the case of wage-employment, we classify workers as lower tier wage-employed if they are casual labourers, either in public workers (code 41 in Table 8) and in other types of work (code 51 in Table 8). Regular/salaried workers (code 31 in Table 8) can either be formal or upper tier informal.

⁵ Online Appendix Tables A1, A2, and A3 provide detailed occupation labels for each occupation code for the 2001, 2010, and 2020 surveys.

⁶ India underwent major financial, trade, and industrial reforms in 1991, which set the economy on path of higher economic growth since 1991 (see Panagariya 2010 for a discussion of the reforms)

⁷ One limitation of our analysis is that we cannot differentiate between own account worker and employer for the self-employed category in the 1988 survey. Here, we use the level of education of the worker to classify a worker as lower tier informal self-employed as compared to upper tier informal/formal self-employed. This is a poor proxy so care must be taken to interpret the results for lower tier vs upper tier/formal self-employment for 1988.

⁸ Online Appendix Table A4 provides the detailed occupational codes. Further, some of the earlier EUS used 1968 NCO occupational codes and the later ones used 2004 NCO codes. The Online Appendix also provides the mapping from the 1968 to 2004 occupational codes.

Similar to the classification we used for formal versus upper tier informal self-employment, we use the same occupational codes to distinguish between formal and upper tier informal wage-employment. Figure 12 and Table 2 provide the full classification of the six work status categories for India.

For the EUS of 2000 and 2012, and the PLFS of 2022, there are more detailed questionnaires in the surveys which allow us to infer formal status for both self-employed and wage-employed directly. For the self-employed, the EUS survey of 2000 and 2012 and the PLFS of 2022 provide the size of the firm and whether the firm uses electricity or not. In the Indian case, if a firm has 10 workers or more with electricity or 20 workers or more without electricity, it needs to be registered. So, in this case, we can use the information on firm size to classify workers as formal or upper tier informal without taking recourse to occupational codes. Therefore, we classify firms that employ 10 or more workers with electricity or 20 or more workers without electricity as formal self-employed. Firms that employ less than 10 workers with electricity or 10 to 19 workers without electricity as classified as upper tier informal self-employed (see Table 2).⁹ The rest of the firms are lower tier informal self-employed, as these are household enterprises which do not employ any outside wage workers (see Natarajan et al. 2023).

Similarly, for wage-employed, for the EUS of 2012 and the PLFS of 2022, there are questions on whether workers receive social security or any other benefit (such as maternity pay) and whether the worker has a written contract. Here again, following Fields et al. (2023), we can directly classify workers as formal wage-employed if the worker has access to social security and/or a written contract, without taking recourse to occupation codes. Upper tier informal wage-employed are worker with some de facto benefits such as health and maternity benefits but do not have access to social security benefits and do not have a written contract. Lower tier informal wage workers do not have access to any type of benefits and do not have a written contract (see Natarajan et al. 2023).¹⁰ We next operationalize the job ladder classifications to Indonesia and India in the next section.

4 The job ladder in Indonesia

In this section, we apply the job ladder framework to Indonesia. Table 3 provides the distribution of workers by work status, for 2001, 2010 and 2020. Formal self-employed were 0.39 per cent of all workers in 2001, slightly increasing to 0.68 per cent in 2020. The share of upper tier informal self-employed remained fairly stable at around 2 per cent over 2001–20. The share of lower tier informal self-employed fell from 60 per cent in 2001 to 45 per cent in 2020.

The share of formal wage-employed increased from 11 per cent in 2001 to 20 per cent in 2020. The share of upper tier wage-employed remained fairly constant at around 14 per cent in 2001–20. The share of lower tier informal wage-employed increased from 12 per cent in 2001 to 20 per

⁹ The PLFS of 2022 does not provide information on whether the firm uses electricity but does provide the information on the size of the firm. Here, we classify the firm as formal if it employs 20 workers or more, and upper tier informal, if it employs less than 20 workers.

¹⁰ For the EUS of 2000 and 2012, and the PLFS of 2022, we also classify workers in the six work status using the occupation codes which we employed for the 1988 EUS round. We present the corresponding tables for Tables C1–C3 in the Online Appendix. We do not find any appreciable difference between the two sets of tables in terms of work status classifications.

cent in 2020. Overall, the share of wage-employment in total employment increased from 38 per cent in 2001 to 50 per cent in 2020.¹¹

Not differentiating between self-employment and wage-employment, the shares of formal, upper tier informal and lower tier informal workers in total workers were 20, 15, and 65 per cent respectively in 2020. The corresponding shares in 2001 were 12, 16, and 72 per cent in 2020.

Within informal employment, the share of upper tier informal workers in total informal employment was stable over 2001–20 at around 19 per cent. There was a slight increase in upper tier workers in total informal self-employment from 3.2 per cent in 2001 to 4.8 per cent in 2020. However, there was a sharp fall in upper tier informal in total informal wage-employment from 54 per cent in 2001 to 41 per cent in 2020. Thus, within lower tier informal jobs, there has been a shift from self-employment to wage-employment.

Assessing the nature of the job ladder in Indonesia, we can make the following points. Firstly, while formal employment still remains a relatively small proportion of total employment at 20 per cent in 2020, there has been an increase in its share in total employment over 2001–20, effectively doubling its share over this period. This suggests that the job ladder in Indonesia has broadened at the top over time, a positive development for possible worker mobility from the lower ends of the labour market to the more sought-after formal jobs.

Secondly, upper tier informal employment has remained fairly constant at around 16 per cent over 2001–20. This suggests that while the size of the step at the highest point of the ladder (formal employment) has increased, the next step below in the job ladder has not shown an increase, limiting the mobility of workers from *within* the informal sector.

Thirdly, the aggregate picture masks changes that are occurring in Indonesian labour markets within and across self-employment and wage-employment. Overall, there has been a shift from self-employment to wage-employment over time. Within informal self-employment, there is relatively little change in the shares of workers in different work status. Within informal wage-employment, we see a clear increase in the share of lower tier informal wage-employment. Therefore, while lower tier informal employment as share of total employment has decreased over time, the importance of wage-employment in this tier of the labour market has increased over time. We will discuss later in this section the implication of these shifts in different tiers of the job ladder in Indonesia for earnings structure.

We next assess the average characteristics of workers by work status with respect to age, gender and location (urban/rural) in Table 4, followed by educational level in Table 5. With respect to age, while there has been a slight increase in the average age of all workers from 37 years in 2001 to 40 years in 2020 for self-employed and from 35 years in 2001 to 38 years in 2020 for wage-employed, we do not see any noticeable difference in average age across the work status categories. With respect to gender, there is an increase in female workers in total formal self-employed workers from 6 per cent in 2001 to 17 per cent in 2020. Similarly, there is an increase in female workers in total formal wage-employed workers from 34 per cent in 2001 to 42 per cent in 2020. However, a large proportion of female workers are in the lower tier informal work status—46 per cent of lower tier informal self-employed workers are women and 38 per cent of lower tier informal wage-employed workers are women in 2020. Therefore, there are stark disparities in where women and men workers are placed in different steps of the job ladder with women workers more likely

¹¹ We note that the share of employment in working-age population has been roughly constant at around 60–62 per cent in 2001–20.

to be in the lowest tier of the job ladder. With respect to location, 55 per cent of all workers are in urban areas in 2020, with a large proportion of formal self-employed (70 per cent) and formal wage-employed (71 per cent) in urban areas. In contrast, there is a large proportion of lower tier informal workers in rural areas (56 per cent of self-employed and 45 per cent of wage-employed in 2020). However, with Indonesia urbanizing rapidly, the increasing share of lower tier informal workers in urban areas (from 27 per cent in 2001 to 44 per cent in 2020 for self-employment and from 41 per cent in 2001 to 55 per cent in 2020 for wage-employment) suggests that in terms of absolute numbers, there will be more lower tier informal workers in urban areas than in rural areas.

With respect to educational level, the share of workers with elementary/no schooling has decreased over time for all tiers of the labour market (from 58 per cent in 2001 to 33 per cent in 2020, for all workers) (Table 5). Formal workers, especially the wage-employed, are likely to have graduate degrees (in 2020, 28 per cent of formal self-employed and 43 per cent of formal wage-employed had graduate degrees) (see also Pratomo and Manning 2022). In contrast, upper tier and lower tier informal workers are much less educated (in 2020, 10 per cent of upper tier informal self-employed and 5 per cent of upper tier informal wage-employed had graduate degrees, while 3 per cent of lower tier informal self-employed and 1 per cent of lower tier informal wage-employed had graduate degrees). Therefore, education seems to be an important factor that can explain where workers are placed on the job ladder. We will examine this more systematically in Section 6.

Are there large differences in what workers earn at different tiers of the labour market? Table 6 report real mean wages for wage-employed by tier level for 2001, 2010, and 2020. Note that data on earnings for self-employed are not available except for 2020. Figure 13 provide the job ladder in real wages and Figure 14 show a comparison between lower tier informal self-employment and lower tier informal wage-employment. We clearly observe a steep upward gradient in earnings in the job ladder for 2010 and 2020. In 2001, somewhat surprisingly, lower tier informal workers earn more than upper tier informal workers (Figure 13). This discrepancy may be attributed to the economic aftermath of the Asian Financial Crisis (AFC), during which the reduction in formal sector employment led to a migration of workers to the informal sector (Feridhanusetyawan 2002), including those classified as lower-tier informal wage employees in our study (see also Manning 2000 for a description of labour market adjustment to the 1996 financial crisis). Our calculations show that the wages of upper tier informal workers remained below that of lower tier informal workers from 1998 to 2001, and it was only from 2002 onwards, do we see that the wages of upper tier informal workers exceeding the wages of lower tier informal workers. In 2010, we note a decrease in the real wage of lower-tier informal wage employees compared to 2001. This decline may be explained by the impact of the 2008–09 global financial crisis, during which wages of casual workers (who are classified as lower tier informal wage workers in our study) experienced a downturn relative to the pre-crisis period (McCulloch et al. 2013). In Figure 14, we observe that the real wage of lower-tier informal self-employed individuals is higher than that of lower-tier informal wage employees. This may be attributed to the burgeoning influence of e-commerce, which could be seen as a consequence of the Covid-19 pandemic (Ridhwan et al. 2023).

We observe a clear job ladder among wage workers in Indonesia (Figure 13), especially for 2010 and 2020. Lower tier and upper tier informal wage workers earn 46 per cent and 62 per cent of formal workers respectively in 2020. However, all workers have seen fairly large increases in real wages over 2001-2020. Wages of formal workers increased by 37.5 per cent in 2001-2020, while wages of upper tier informal workers increased by 64.8 per cent while that for lower tier informal

workers increased by 3.5 per cent.¹² Therefore, while there has been some convergence in wages of upper tier informal workers to formal workers in 2001-2020, this has not been the case for lower tier informal workers.¹³ On the contrary, the absolute gap between wages of formal and lower tier informal workers increased from 309,774 real rupiahs to 599,2018 real rupiahs. Therefore, the job ladder has become steeper, especially for lower tier informal wage workers over time, suggesting greater earnings inequality (see also Yusuf and Halim 2023 who find that the Gini of real earnings increased from 0.38 in 2001 to 0.48 in 2015).¹⁴

5 The job ladder in India

Table 7 provides the distribution of workers by work status, for 1988–2022. Formal self-employed were 0.12 per cent of all workers in 1988, slightly falling to 0.09 per cent in 2022. The share of upper tier informal self-employed decreased from 6.9 per cent in 1988 to 2.4 per cent in 2022. Here, we observe that the share of total self-employment in formal and upper tier informal work status is broadly similar to that of Indonesia. However, unlike the case of Indonesia, the share of lower tier informal self-employed remained fairly constant at around 47–49 per cent in 1988-2022.

The share of formal wage-employed increased from 7.0 per cent in 1988 to 9.5 per cent in 2022. Therefore, not only is the share of formal wage-employed in total employed roughly half of that of Indonesia in the most recent period, the increase in the share of formal wage-employed in total employment has been slower than that for Indonesia. This implies that Indonesia has been more successful in creating formal wage jobs than India. On the other hand, the share of upper tier wage-employed has increased steadily from 4.3 per cent in 1988 to 15.1 per cent in 2022. The share of lower tier wage-employment has fallen sharply from 34.0 per cent in 1988 to 24.0 per cent in 2022. This trend of declining informal wage-employment shares at the lower tier, differentiates India's labour market experience from that of Indonesia, where as we have seen previously the share of lower tier informal wage-employment has increased over time relative to lower tier informal self-employment. Overall, the share of wage-employed in total employment stayed the same, at 48 per cent in 1988-2022.¹⁵

Not differentiating between self-employment and wage-employment, the shares of formal, upper tier informal and lower tier informal workers in total workers were 10, 17, and 73 per cent respectively in 2022. The size of the different tiers in the job ladders between Indonesia and India differs in the greater share of formal workers in total employment in Indonesia, and the slightly larger share of lower tier informal workers in India. There has been an increase in the share of upper tier informal employment from 11.3 per cent in 1988 to 17.5 per cent in 2022, and a decrease in the share of lower tier informal employment from 81.7 per cent in 1988 to 73.0 per cent in 2022. The increase in the share of upper tier informal jobs was mostly due to a large increase in the share of upper tier informal wage-employment in total informal employment from 11 per cent in 1988

¹² The limited increase in lower tier informal wages is somewhat surprising, given that minimum wages increased by 5-10 per cent in this period. However, as Ginting et al. (2018) note, minimum wage laws have been imperfectly enforced in Indonesian provinces.

¹³ As Alisjahbana and Manning (2006) show, informal workers are more likely to be in poverty, especially those in urban areas.

¹⁴ It should be kept in mind that the COVID-19 pandemic in 2020 was a severe negative shock for workers in Indonesia, with the informal sector being hit much harder than during the 1996 financial crisis (Manning 2021).

¹⁵ Interestingly, unlike Indonesia, the employment to working age population ratio fell from 60 per cent in 1988 to 52 per cent in 2022.

to 39 per cent in 2022. In contrast, there was a decline in upper tier informal self-employment from 13 per cent in 1988 to 5 per cent in 2022. Generally, there has been a shift in the structure of informal employment in India over time, to a higher proportion of upper tier jobs, especially in wage-employment.

The overall pattern for India mirrors Indonesia, though there are differences in the size of the steps in the job ladder for Indonesia and India. In both countries, the steps of the job ladder are the narrowest for formal jobs and widest for lower tier informal jobs. In both countries, upper tier jobs are a small proportion of informal self-employment, and a relatively larger proportion of informal wage-employment. However, there are two main differences. Firstly, by the 2020s, the job ladder was broader at the top in Indonesia than in India. This could have been both due to demand-side factors—the importance of labour-intensive export-oriented manufacturing in Indonesia as compared to India—and supply-side factors—the increasingly more educated workforce in Indonesia than India.¹⁶ Secondly, the trends in the composition of jobs in the lower tier of the labour market shows that the share of self-employment in Indonesia has been increasing over time, relative to wage-employment, while the opposite being true for India.

We next assess the average characteristics of workers by work status with respect to age, gender, and location (urban/rural) in Table 15, followed by educational level in Table 16. Average age of workers has been increasing over time from 33 years in 1988 to 38 years in 2022 (Table 8). There has not much difference in average wage across work status categories. With respect to gender, women are mostly in lower tier jobs—30 per cent of lower tier self-employment are held by women, and 24 per cent of lower tier wage-employed jobs. However, we do see an increase in the share of upper tier wage-employed jobs going to women from 8 per cent in 1988 to 21 per cent and a corresponding fall in the share of lower tier informal wage-employment from 35 per cent in 1988 to 24 per cent, in 2022. Therefore, the gender disparities that we observed in the case of Indonesia is also evident for India. With respect to location, formal jobs are mostly in urban areas (63 per cent of formal self-employment and 55 per cent of formal wage-employment in 2022), while lower tier informal jobs are mostly in rural areas (81 per cent of lower tier self-employment and 84 per cent of lower tier wage-employment in 2022).

With respect to educational level, the share of workers who have no or below primary education has decreased over time for all tiers of the labour market (from 65 per cent in 1988 to 25 per cent in 2022, for all workers) (Table 9). However, the increases in education are mostly evident at the below secondary level, not for other levels of education. As in Indonesia, formal workers are likely to have graduate degrees (in 2022, 41 per cent of formal self-employed and 51 per cent of formal wage-employed had graduate degrees), In contrast, lower tier informal workers are educated not above secondary level, showing the stark differences in the education levels of workers in different tiers of the labour market in India.

We next discuss the differences in earnings across workers in different tiers of the labour market in India, as well as over time (Table 10).¹⁷ As in the case of Indonesia, we see a clear job ladder in real wages for all years in India. For the wage-employed, the earnings of upper tier and lower tier informal workers are 70 and 27 per cent of the earnings of formal workers in 2022 respectively (Figure 15). For the self-employed, the earnings of upper tier and lower tier informal workers are 52 and 18 per cent of the earnings of formal workers in 2022 respectively (Figure 16). Therefore,

¹⁶ The learning adjusted years of schooling in Indonesia and India was 7.8 and 7.1 in 2020 respectively as estimated by the World Bank's Human Capital Project.

¹⁷ We have data on earnings of self-employed workers for the 2022 round of the PLFS.

the gradient of the job ladder is steeper for self-employment than for wage-employed in India. For the period 1988–2022, the real wages of formal, upper tier informal and lower tier informal increased by 218.7, 163.8 and 601.5 per cent respectively. Therefore, unlike Indonesia, there is evidence of catch-up in earnings for lower tier wage-employed to formal workers. This could be due to the increasing real minimum wages that occurred in India since the late 1990s, with the average minimum wage increasing by 457 per cent over 1999–2018. As Khurana et al. (2023) show, earnings inequality decreased over this period, and they find that a 1 per cent increase in minimum wages leads to a 0.17 per cent increase in the wages of the lowest wage quintile.¹⁸ However, for the period 1988–2022, the absolute gap in real wages increased from 722 real rupees to 2,975 real rupees for upper tier informal workers and from 1,710 real rupees to 4,520 real rupees for upper tier informal workers, suggesting that as in the case of Indonesia, the job ladder in wages in India has become steeper over time.

6 The correlates of work status in Indonesia and India

In the previous two sections, we have observed that more educated male workers are likely to be formal work status, and female less educated workers are likely to be lower tier informal work status, for both countries. In this section, we investigate the correlates of work status more systematically using regression analysis.¹⁹ For Indonesia and India separately, we estimate multinomial logit models where the dependent variables are the six work status. We also estimate ordered logit models, where formal work status is coded 3, upper tier informal work status is coded 2 and lower tier informal work status is coded 1 (we pool self-employment and wage-employment in the ordered logit models). We use pooled cross-sectional data over the periods of study, 2001–2020 for Indonesia and 1988–2022 for India. Our explanatory variables are age and age square²⁰, gender, location (whether the worker is located in an urban area) and educational level (pre-primary is the residual category). We estimate the models with province dummies for Indonesia and state dummies for India—these province/state dummies control for regional factors such as sub-national labour policies that may also explain the attainment of higher tier work status. The plots of the marginal effects for Indonesia are presented in Figure 17 for Indonesia and for India, in Figure 18.²¹

For both Indonesia and India, in the multinomial logit regression results, both age and age square are significant for formal, upper tier informal and lower tier informal wage-employment, suggesting that older workers are more likely to be in wage-employment (for formal wage workers, this could be because more experienced workers, with age as a proxy for experience, are likely to get formal employment). In both countries, we find we see that female workers are more likely to be in formal wage-employment and lower tier informal self-employment. They are less likely to be in formal self-employment and in upper tier jobs. Overall, we observe clear gender segmentation in the labour markets of both Indonesia and India, with the ordered logit results suggesting that

¹⁸ The Gini of log nominal wages fell from 0.113 in 1999 to 0.063 in 2018.

¹⁹ It should be noted that the multinomial and ordered logit analysis are correlational and not causal. For example, work status and education are jointly determined. This is particularly the case with the Indonesian estimates as we proxy work status with occupation, and occupational structure may be endogenous to changes in the level of education in the country.

²⁰ The relationship between age and higher level work status may increase with experience, and then decrease after a certain age, as older workers may not have the necessary skills for formal jobs.

²¹ The full results are presented in Tables D1–D4 in the Online Appendix.

female workers are less likely to be in formal jobs and more likely to be in lower tier informal jobs. On marital status, multinomial logit results suggest that married workers are more likely to be in self-employment and less likely to be in wage-employment, and in lower tier informal jobs compared to formal jobs. Both the multinomial and ordered logit results suggest that for Indonesia and India, workers in urban areas are more likely to be in formal and upper tier wage-employment and less likely to be in lower tier self-employment.

Educational level has a clear positive association with formal work status and a negative association with lower tier informal work status in both countries. However, there is a higher likelihood of a graduate to attain formal wage-employment status in Indonesia as compared to India—for Indonesia, the marginal effect for a graduate to obtain a formal job is 0.47, as compared to 0.21 for India. This suggests that the returns to education are higher in Indonesia than India, since higher tier work status is associated with higher earnings (as we observed in earlier sections). This may be linked to a lower skill intensity in formal jobs in India as compared to Indonesia, possibly due to the relatively less jobs created in manufacturing in India than in Indonesia.²²

7 Conclusions

Inequality in earnings and conditions between different groups of workers is an endemic feature of labour markets in emerging economies. In this paper, we examine the nature of labour market inequality in Indonesia and India, two large Asian economies who have witnessed rapid structural transformation in recent decades. We use a common analytical approach—the *job ladder* framework—which takes into account the multi-tiered nature of labour markets in developing countries. Using this framework, we classify all workers in Indonesia and India in six work status—formal self-employed, upper tier informal self-employed, lower tier informal self-employed, formal wage-employed, upper tier informal wage-employed, and lower tier informal wage-employed. Our period of analysis covers 2001-2020 for Indonesia and 1988-2022 for India. To operationalize the Job Ladder framework, we use rich nationally representative individual level data from the Sakernas labour force surveys for Indonesia and the Employment Unemployment Surveys and Periodic Labour Force Surveys for India.

Applying the job ladder framework to Indonesia and India, we find that the size of the steps of the ladder is the narrowest for formal jobs, and the largest for lower tier informal jobs for both countries. This suggests a high degree of inequality across different groups of workers for Indonesia and India. However, the proportion of workers in formal jobs in Indonesia is almost twice that for India, suggesting that Indonesia has done better than India in creating formal jobs. This may be related to the larger share of manufacturing in total employment in Indonesia as compared to India, along with the fact that a large proportion of workers in India are employed in the low productivity service sector jobs.

A key difference in the changes in the job ladder over time is that there has been a shift of workers from self-employment to wage-employment in Indonesia, unlike India. This shift from self-employment to wage-employment is a feature of economic development, as firms grow larger in size from household to non-household enterprises employing wage labour (Bandiera et al. 2022).

²² We also look at the association of social disadvantage with work status in India, where Scheduled Castes (SC) and Scheduled Tribes (ST) are the most socially disadvantaged, with higher levels of social exclusion and poverty than the rest of the population (Gang et al. 2008). We find that SC and ST workers are more likely to be formal and lower tier informal wage-employment and less likely to be in other work status categories.

The fact that this seems to be happening in Indonesia as compared to India suggests a more dynamic labour market in Indonesia, with a more rapid movement from a subsistence to a modern economy. While the causes of this shift are outside the scope of this paper, it could possibly be related to the success of labour intensive export-oriented manufacturing in Indonesia as compared to India (Hall and Hill 2016). At the same time, earnings between workers on different tiers of the labour market are highly unequal in the two countries, and there is limited evidence of convergence of the earnings of lower tier workers to that of formal workers, at least for Indonesia. In this sense, there is little difference in the nature of inequality in the labour markets of Indonesia and India.

The factors that explain where workers are placed in different tiers of the labour market are approximately the same for Indonesia and India. Female workers suffer a disadvantage in terms of climbing to the top of the job ladder, except for formal wage jobs. Being located in a rural area is also a disadvantage. The most important factor explaining the placement of workers in different tiers of the work status is education, and the returns to education in terms of climbing the job ladder is large in both countries, but larger in Indonesia.

What do our findings imply for policy? An important policy implication that follows from our analysis is that there needs to be greater attention to demand side policies that increase the size of the higher steps of the job ladder in Indonesia and India, so that more workers who are in lower tier informal jobs can transition to formal and upper tier informal jobs. At the same time, supply side policies that emphasise further investments in secondary and graduate education will also make it more likely for workers to move up the job ladder, and not remain stuck in lower tier informal jobs. However, it is likely that a large proportion of informal workers may not be able to climb up the job ladder. For these workers, stronger enforcement of minimum wages as well as creating better livelihood opportunities for these workers is important to ensure that they are not left behind in the process of economic growth.

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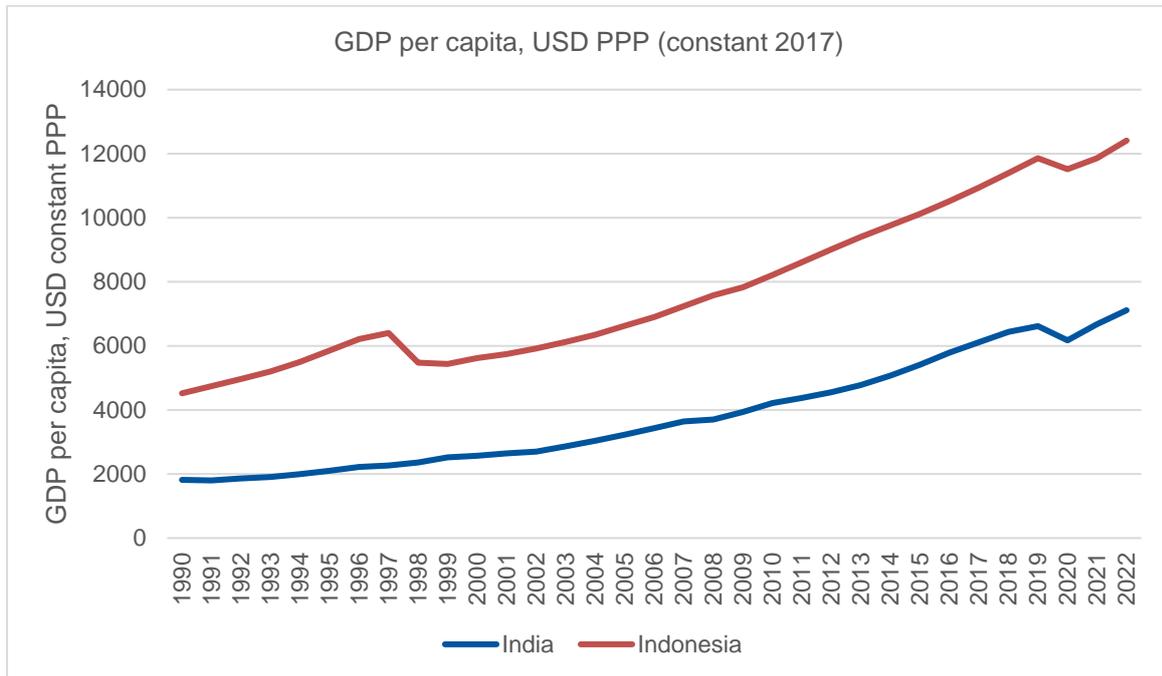
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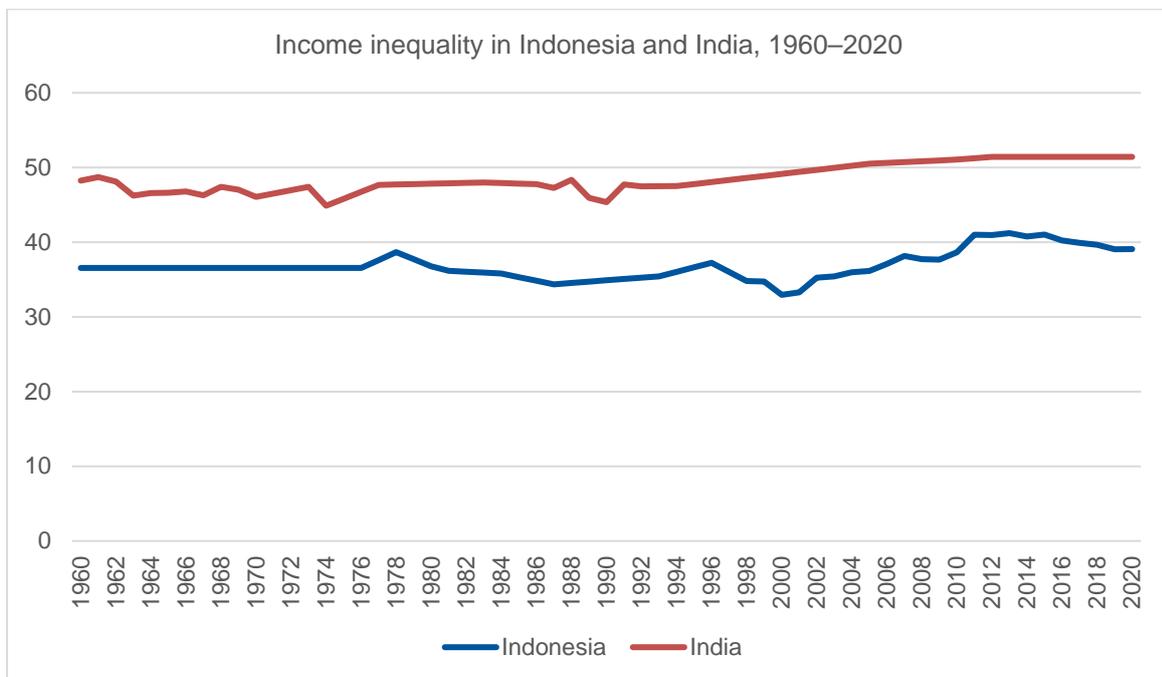
Figures

Figure 1: GDP per capita, Indonesia and India



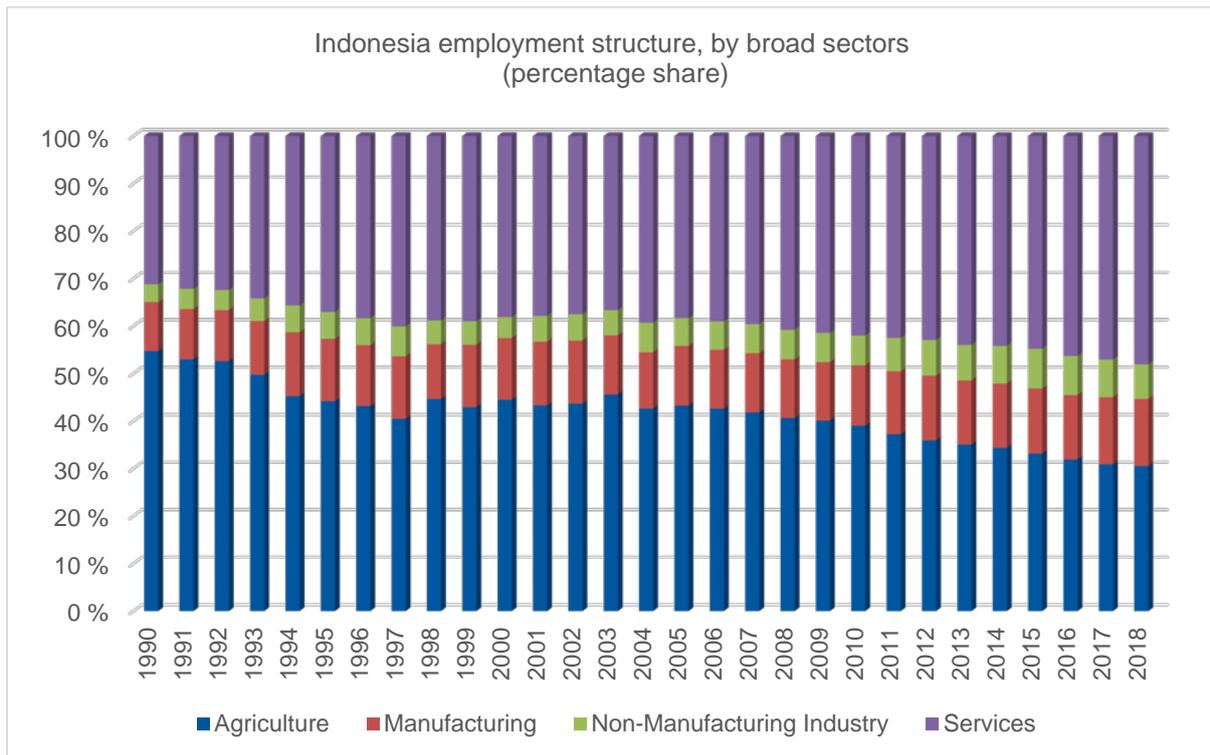
Source: WDI Database, World Bank, accessed 25 April 2024.

Figure 2: Income inequality (net Gini), Indonesia and India



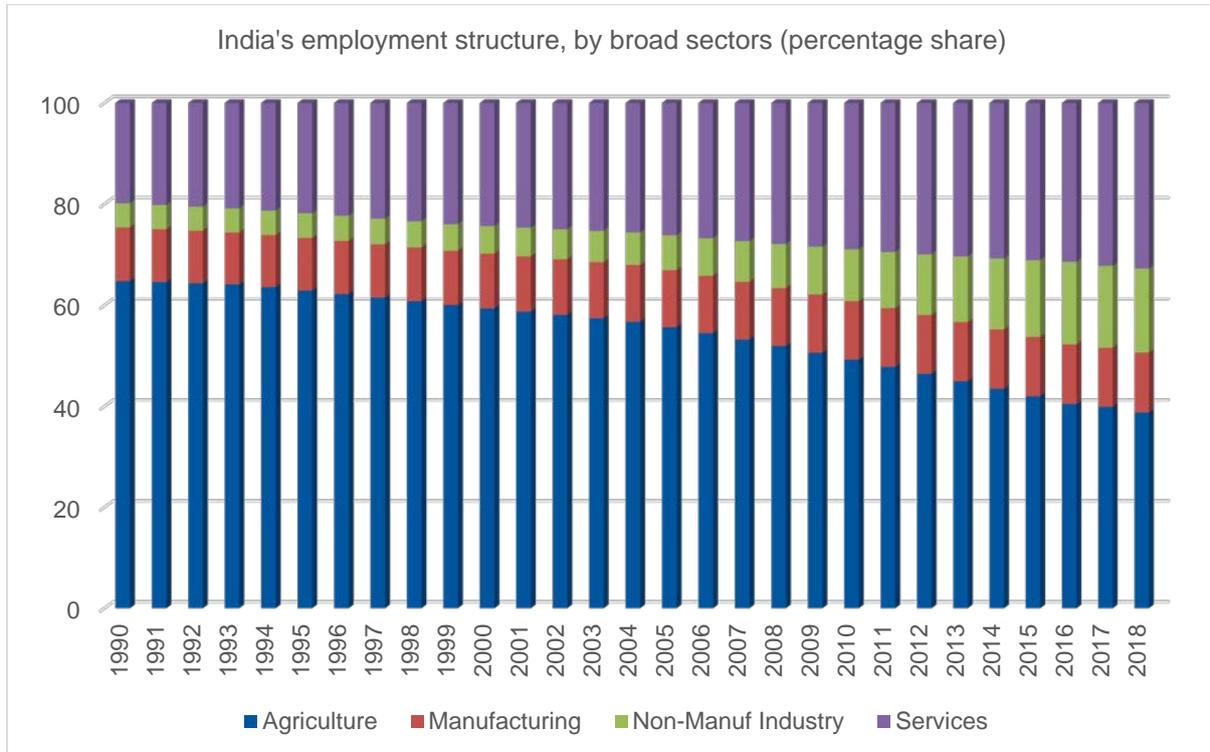
Source: WIID Database, UNU-WIDER, accessed 25 April 2024.

Figure 3: Indonesia's employment structure, by broad sectors



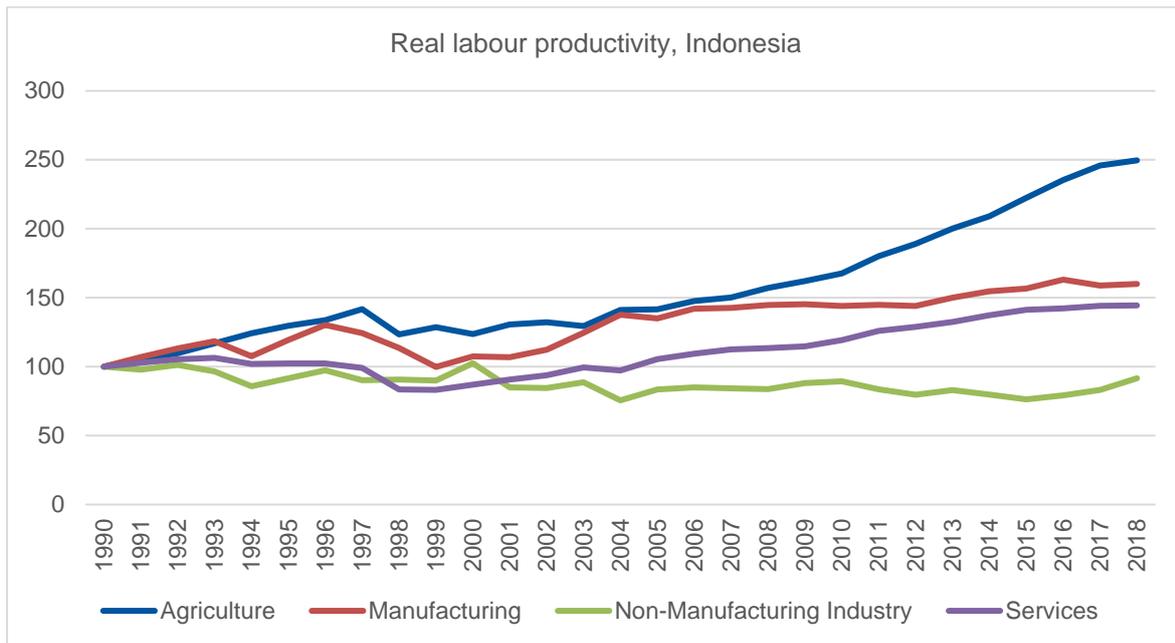
Source: *The Economic Transformation Database*, GGDC/UNU-WIDER, our calculations.

Figure 4: India's employment structure, by broad sectors



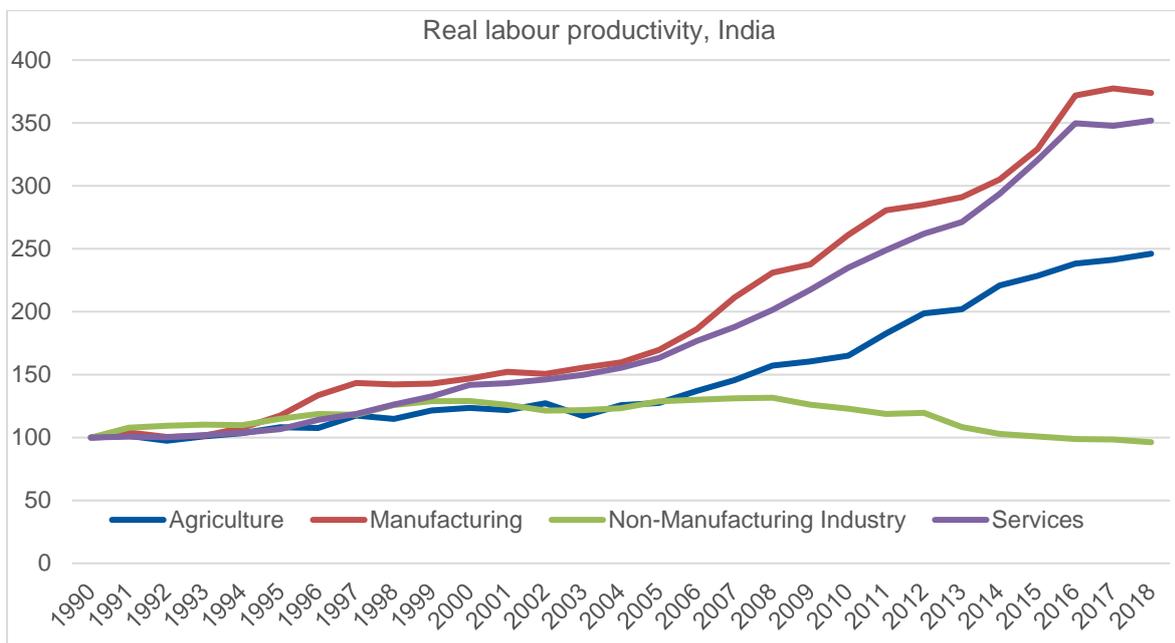
Source: *The Economic Transformation Database*, GGDC/UNU-WIDER, our calculations.

Figure 5: Real labour productivity in Indonesia



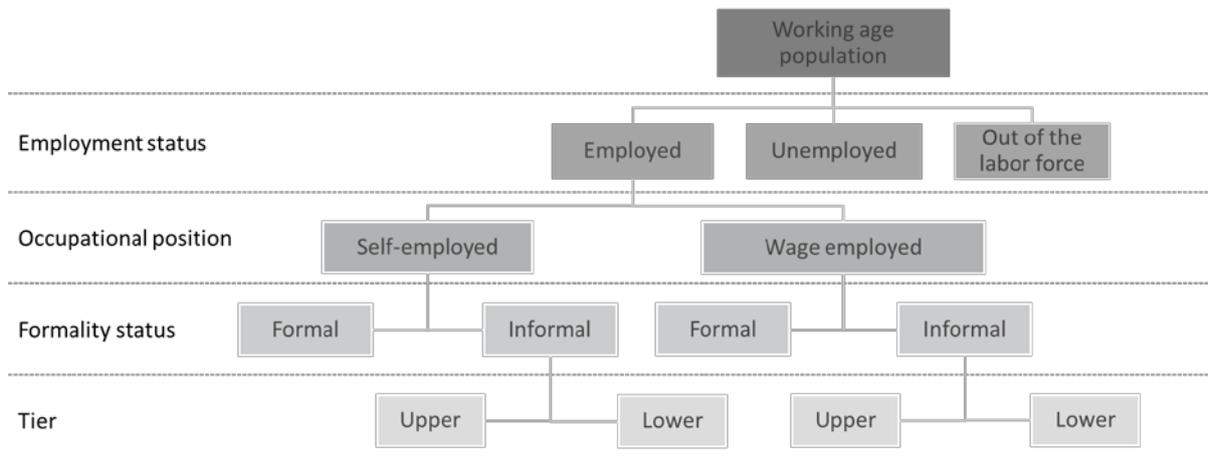
Source: *The Economic Transformation Database*, GGDC/UNU-WIDER, our calculations.

Figure 6: Real labour productivity in India



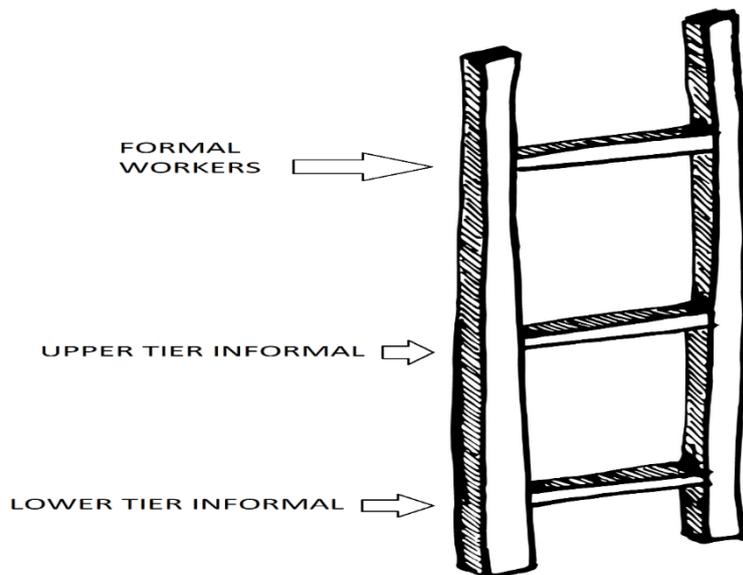
Source: *The Economic Transformation Database*, GGDC/UNU-WIDER, our calculations.

Figure 7: A multi-tiered labour market in developing countries



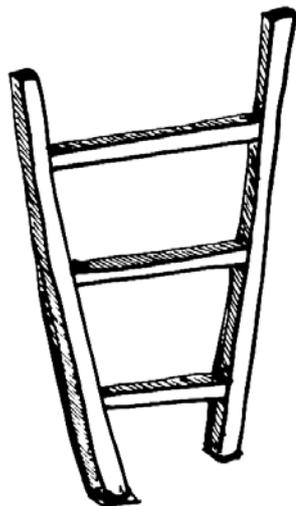
Source: reproduced from Raj et al. (2020: 4), with permission.

Figure 8: The job ladder



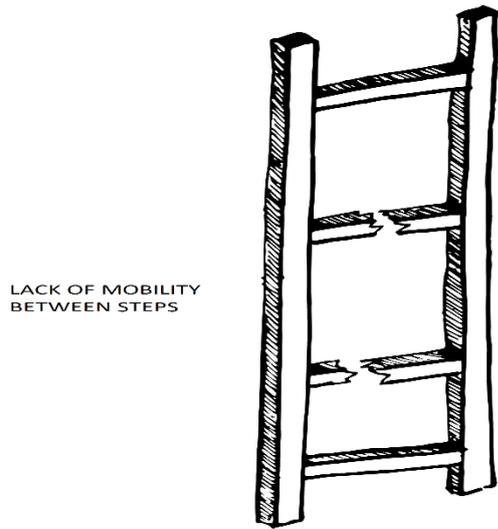
Source: our illustration.

Figure 9: Types of job ladders



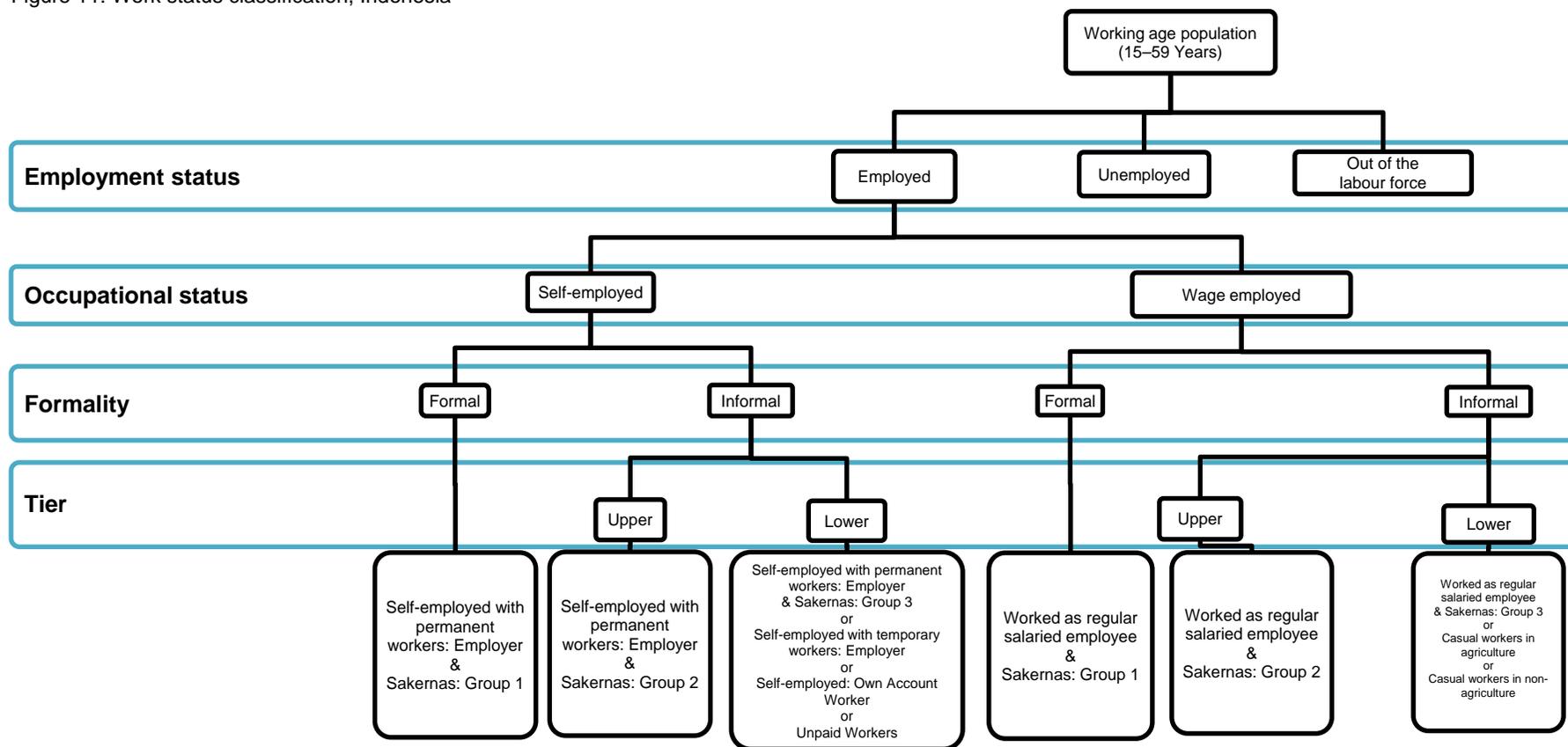
Source: our illustration.

Figure 10: A broken job ladder



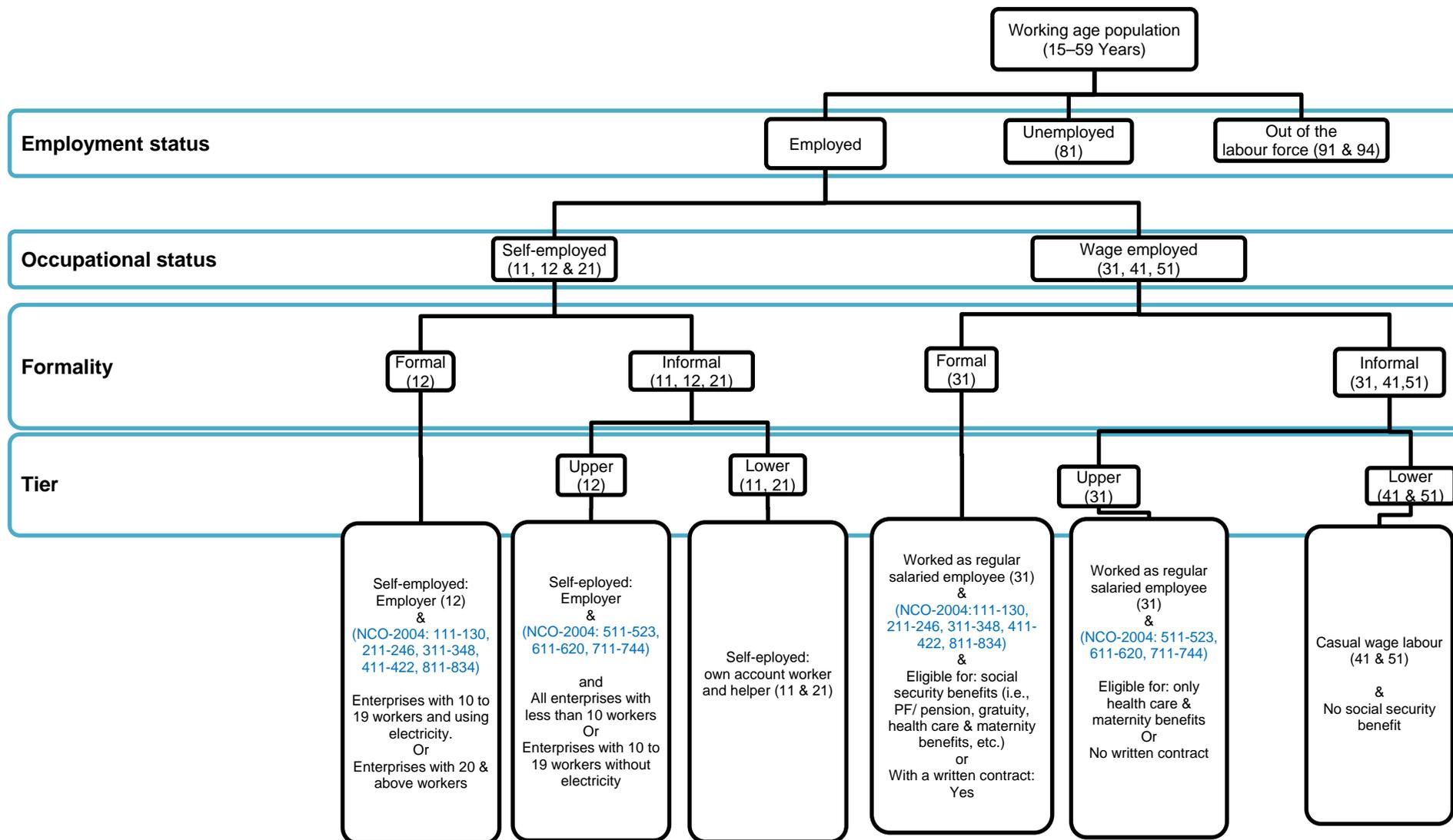
Source: our illustration.

Figure 11: Work status classification, Indonesia



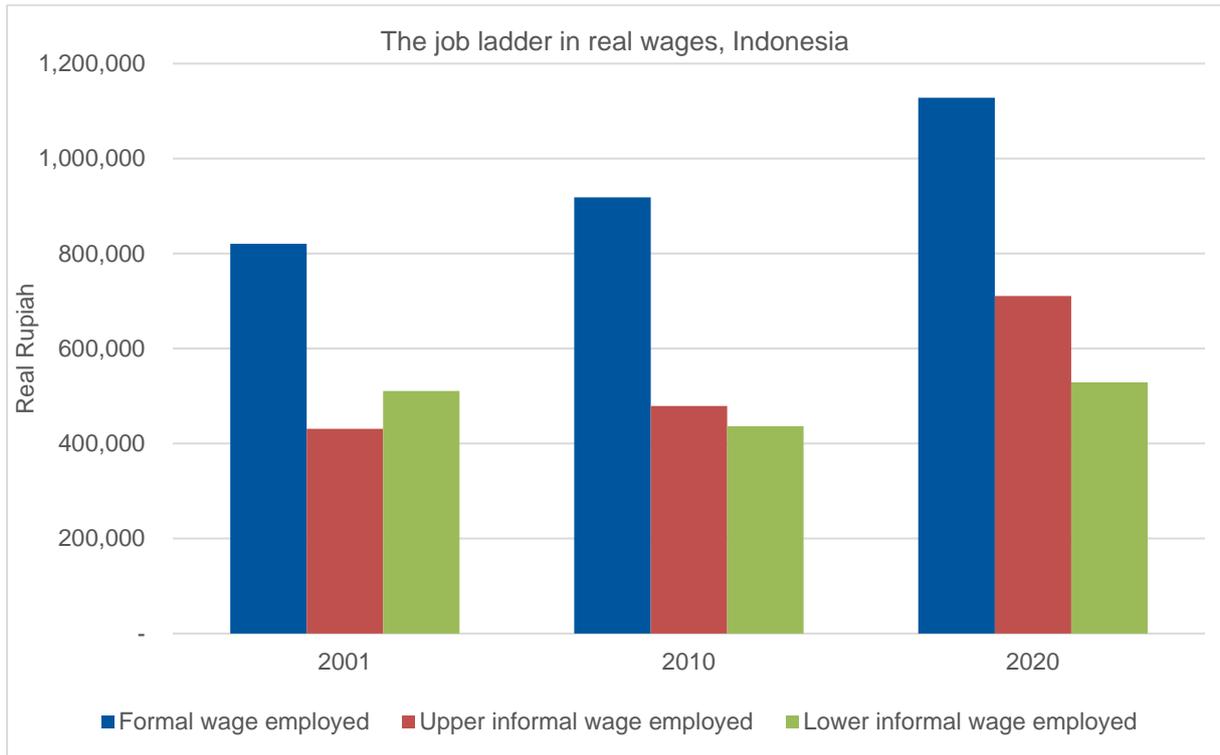
Source: our illustration.

Figure 12: Work status classification, India



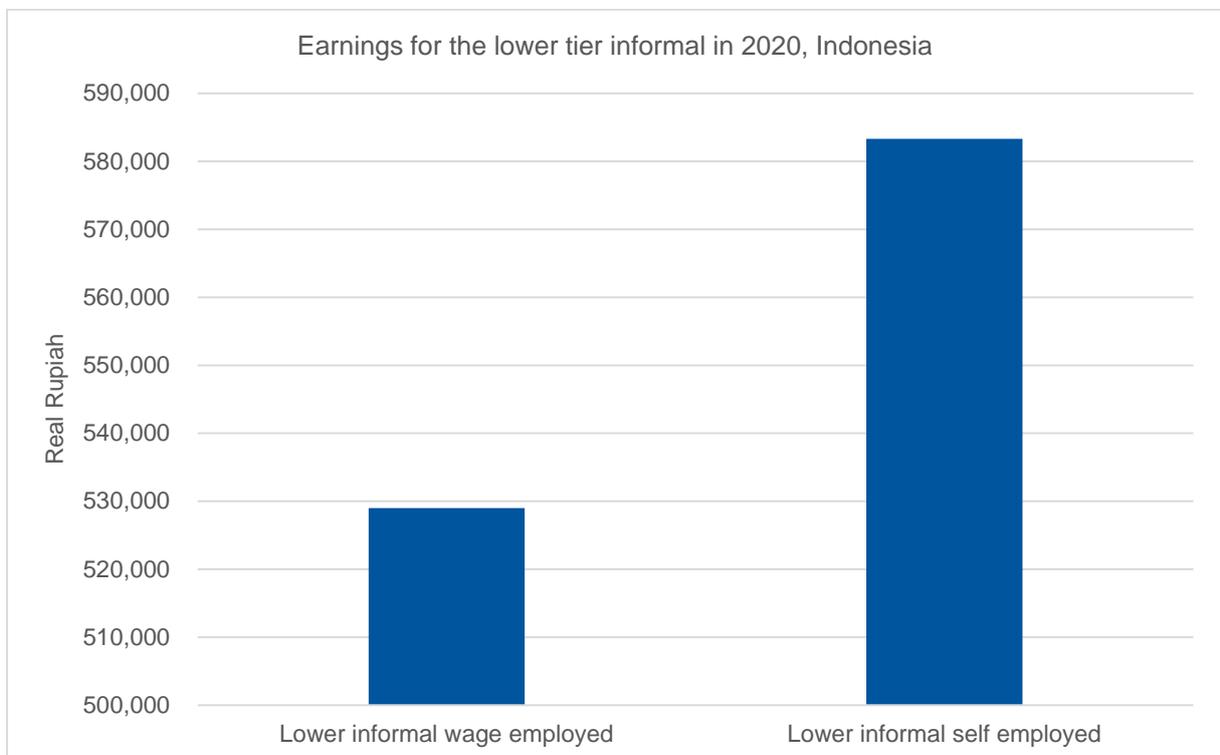
Source: our illustration.

Figure 13: Real wages in Indonesia



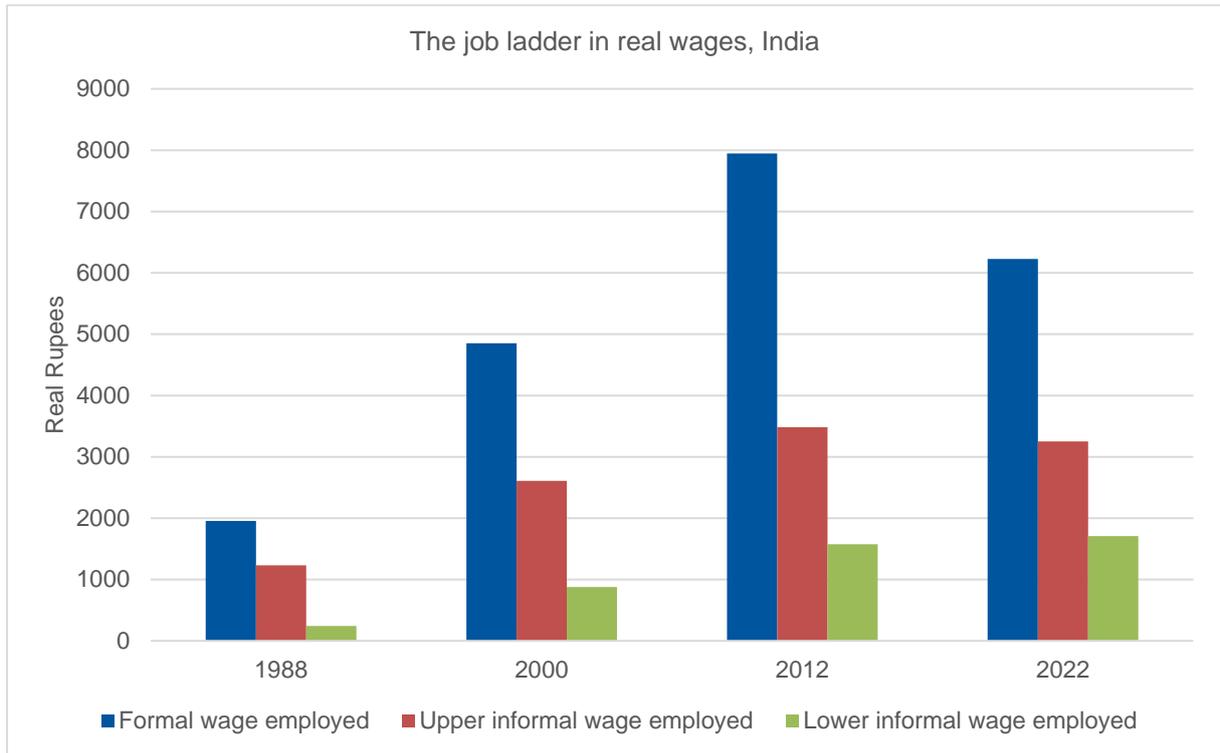
Source: our calculations, from Sakernas Surveys.

Figure 14: Earnings of lower tier informal wage-employed and self-employed for 2022, Indonesia



Source: our calculations, from Sakernas Surveys.

Figure 15: Real wages in India



Source: our calculations, from EUS and PLFS.

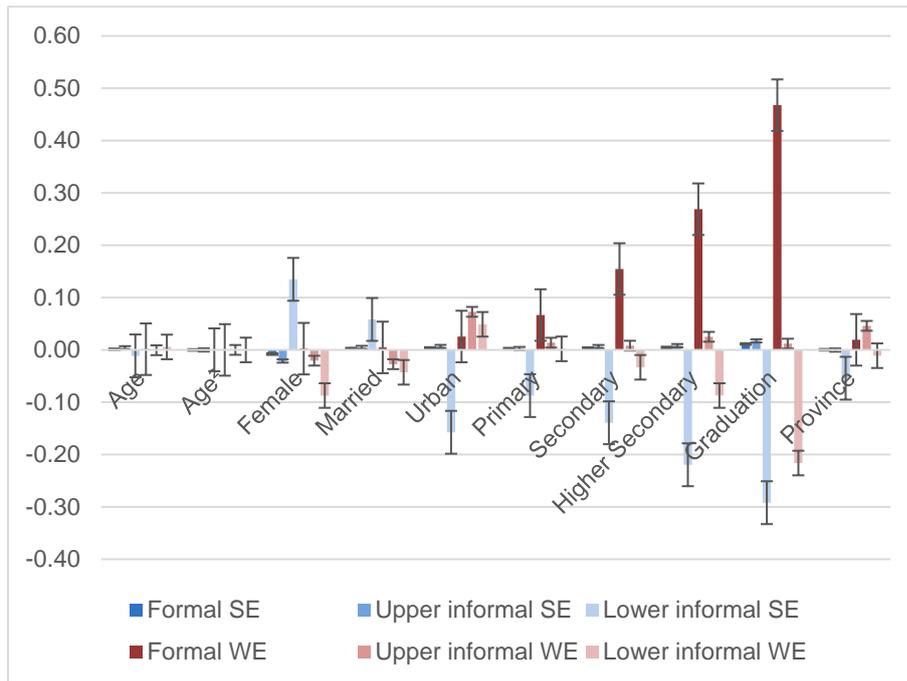
Figure 16: Real earnings in India, 2022



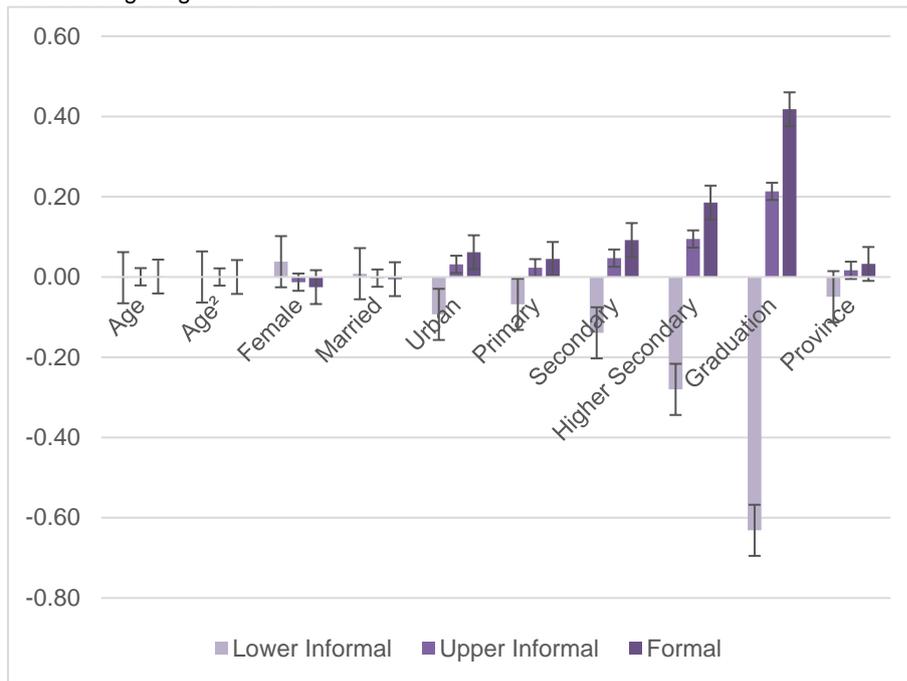
Source: our calculations, from EUS and PLFS.

Figure 17: Marginal effects of multinomial and ordered logit regressions, Indonesia

Multinomial logit regression

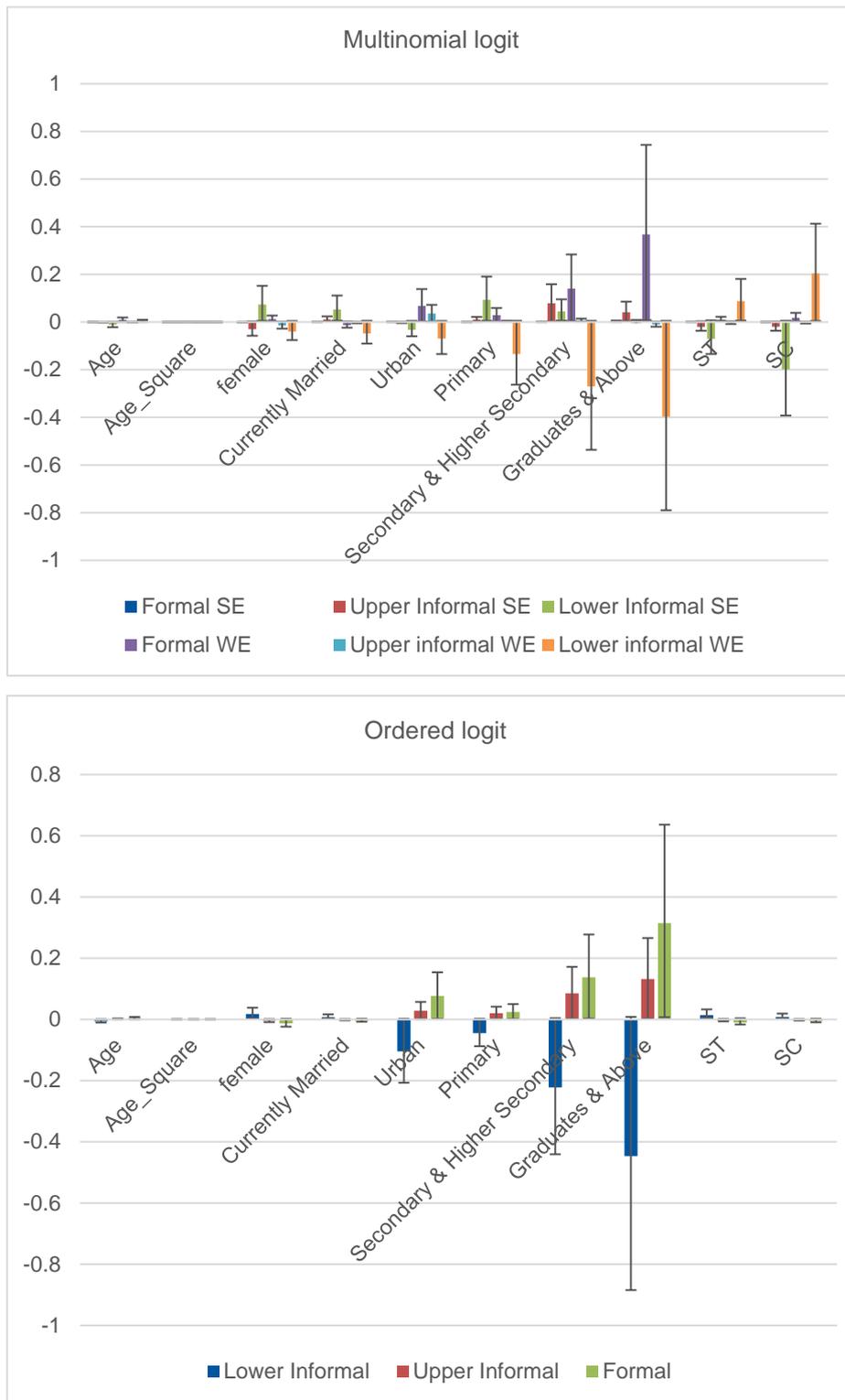


Ordered logit regression



Source: our calculations.

Figure 18: Marginal effects of multinomial and ordered logit regressions, India



Source: our calculations.

Tables

Table 1: Classification of work status for employed individuals aged 15–59 years, Indonesia

Sl. No.	Work status classification	Available for Sakernas 2001, 2010, 2020			
		Work status	Occupation 2001 (3-digit Sakernas-1982 Code)	Occupation 2010 (4-digit Sakernas-2002 Code)	Occupation 2020 (1-digit Sakernas-2014 Code)
1	Formal self-employed	Self-employed with permanent workers: Employer (code-3)	Group 1: 011-199 201-219 300-399 801-899	Group 1: 1110-1319 2111-2939 3111-3960 4111-4223 8112-8340	Group 1: 1 2 3 4 8
2	Upper-tier informal self-employed	Self-employed with permanent workers: Employer (code-3)	Group 2: 400-498 500-599 600-649 700-799	Group 2: 5111-5230 6111-6210 7111-7442	Group 2: 5 6 7
3	Lower-tier informal self-employed	Self-employed with permanent workers: Employer (code-3)	Group 3: 901-999	Group 3: 9111-9333	Group 3: 9
		Self-employed with temporary workers: Employer (code-2)	Irrespective of the occupation group self-employed (with temporary workers) person falls under the Lower-tier informal self-employed.	Irrespective of the occupation group self-employed (with temporary workers) person falls under the Lower-tier informal self-employed.	Irrespective of the occupation group self-employed (with temporary workers) person falls under the Lower-tier informal self-employed.
		Self-employed: own account worker (code-1)	Irrespective of the occupation group self-employed (with temporary workers) person falls under the Lower-tier informal self-employed.	Irrespective of the occupation group self-employed (with temporary workers) person falls under the Lower-tier informal self-employed.	Irrespective of the occupation group self-employed (with temporary workers) person falls under the Lower-tier informal self-employed.
		Unpaid workers (code-7)	Irrespective of the occupation group self-employed (own account worker) person falls under the Lower-tier informal self-employed.	Irrespective of the occupation group self-employed (own account worker) person falls under the Lower-tier informal self-employed.	Irrespective of the occupation group self-employed (own account worker) person falls under the Lower-tier informal self-employed.

4	Formal wage-employees	Worker/employee/labourer: worked as regular salaried/ wage employee (code-4)	Group 1: 011-199 201-219 300-399 801-899	Group 1: 1110-1319 2111-2939 3111-3960 4111-4223 8112-8340	Group 1: 1 2 3 4 8
5	Upper-tier informal wage-employees	Worker/employee/labourer: worked as regular salaried/ wage employee (code-4)	Group 2: 400-498 500-599 600-649 700-799	Group 2: 5111-5230 6111-6210 7111-7442	Group 2: 5 6 7
6	Lower-tier informal wage-employees	Worker/employee/labourer: worked as regular salaried/ wage employee (code-4),	Group 3: 901-999	Group 3: 9111-9333	Group 3: 9
		Casual workers/ free workers in agriculture (code-5)	Irrespective of the occupation group all casual worker falls under the Lower-tier informal wage-employees	Irrespective of the occupation group all casual worker falls under the Lower-tier informal wage-employees	Irrespective of the occupation group all casual worker falls under the Lower-tier informal wage-employees
		Casual workers/ free workers in non-agriculture (code-6)	Irrespective of the occupation group all casual worker falls under the Lower-tier informal wage-employees	Irrespective of the occupation group all casual worker falls under the Lower-tier informal wage-employees	Irrespective of the occupation group all casual worker falls under the Lower-tier informal wage-employees

Source: our illustration.

Table 2. Classification of work status for employed individuals aged 15–59 years, India

Sl. No.	Work status group (as defined in the <i>Job Ladder</i> book)	Available for EUS 1988		Available for EUS 2000, 2012 and PLFS 2022	Available for EUS 2000, 2012 and PLFS 2022	
		Work status	Occupation (3-digit NCO-2004 Code)	Availability of social security benefits & Job contract	Enterprise's size & Electricity use	Enterprise's size (electricity information is not available for PLFS 2022)
1	Formal self-employed	Worked in household enterprise (self-employed): Employer - (code-12)	Group 1: 111---130, 211---246, 311---348, 411---422, 811---834		Enterprises with 10 to 19 workers and using electricity. Or Enterprises with 20 & above workers	Enterprises with 20 & above workers
2	Upper-tier informal self-employed	Worked in household enterprise (self-employed): Employer (code-12)	Group 2: 511---523, 611---620, 711---744		All enterprises with less than 10 workers Or Enterprises with 10 to 19 workers without electricity	All enterprises with less than 20 workers
3	Lower-tier informal self-employed	Worked in household enterprise (self-employed): own account worker - (code-11) Worked as helper in household enterprise (unpaid family worker) - (code-21)				
4	Formal wage-employees	Worked as regular salaried/ wage employee - (Code 31),	Group 1: 111---130, 211---246, 311---348, 411---422, 811---834	Eligible for: social security benefits (i.e., PF/ pension, gratuity, health care & maternity benefits, etc.) or Written contract: Yes		
5	Upper-tier informal wage-employees	Worked as regular salaried/ wage employee - (Code 31)	Group 2: 511---523, 611---620, 711---744	Eligible for: only health care & maternity benefits Or No written contract		
6	Lower-tier informal wage-employees	Worked as casual wage labour: in public works - (Code 41), other types of work - (code 51)				

Note: (a) In 1988, UPA codes for own-account worker (code-11) and employer (code-12) were merged together as 'worked in household enterprise' (self-employed). This means that own-account workers and employers in the self-employed category were not separately identified. Therefore, we use the level of education to distinguish between these two categories for 1988. We also checked our estimates for lower-tier informal self-employment for 1988 with the 1994 EUS where own account and employer information is provided, and did not find any significant difference in our estimates. (b) Concordance of NCO code 1968 and 2004 is presented in the Online Appendix Table A4.

Source: our illustration.

Table 3: Distribution of workers by work status (percentage), Indonesia

			2001	2010	2020
(a)	Proportion of employment by work status				
	Self-employed	Formal	0.39	0.71	0.68
		Informal			
		Upper-tier	1.99	2.1	2.24
		Lower-tier	59.65	54.97	44.57
	Self-employed in total employment		62.48	58.01	50.20
	Wage-employed	Formal	11.45	15.24	18.94
		Informal			
		Upper-tier	14.33	9.66	13.63
		Lower-tier	12.18	17.32	19.94
	Wage-employed in total employment		37.52	41.99	49.80
(b)	Proportion of formal vs informal employment				
	Formal		11.84	15.94	19.62
	Informal				
		Upper-tier	16.32	11.76	15.87
		Lower-tier	71.83	72.29	64.51
(c)	Proportion of upper-tier informality in informal employment				
	Upper-tier informal in total informal employment		18.52	13.99	19.75
	Upper-tier informal in informal self-employment		3.23	3.67	4.79
	Upper-tier informal in informal wage-employment		54.05	35.82	40.60
(d)	Total employment in working-age population		62.95	64.40	60.06

Source: our calculations, from 2001, 2010, and 2020 Sakernas data.

Table 4: Average worker characteristics by work status, Indonesia

Period	Self-employed			Wage-employed			Total
	Formal	Informal		Formal	Informal		
		Upper-tier	Lower-tier		Upper-tier	Lower-tier	
(a) Average age (years)							
2001	38.08	39.86	36.51	35.42	31.09	34.34	35.42
2010	40.40	40.89	37.61	35.54	31.24	35.53	36.42
2020	41.41	41.91	40.13	36.26	33.35	37.77	38.05
(b) Share of female workers (%)							
2001	5.85	17.03	41.17	33.95	39.22	20.48	36.76
2010	14.23	16.91	42.58	38.96	32.58	28.47	37.67
2020	17.44	20.26	45.76	42.06	32.43	25.42	38.24
(c) Share of urban workers (%)							
2001	64.32	47.99	27.73	73.21	62.92	44.87	40.83
2010	68.71	49.89	31.54	69.46	63.03	41.63	42.99
2020	69.53	59.50	44.08	71.38	71.04	52.26	55.20

Source: our calculations, from 2001, 2010, and 2020 Sakernas data.

Table 5: Average worker characteristics by education level, Indonesia

Period	Self-employed			Wage-employed			Total
	Formal	Informal		Formal	Informal		
		Upper-tier	Lower-tier		Upper-tier	Lower-tier	
Lower elementary/No schooling							
2001	3.8	16.21	25.5	1.98	11.84	22.07	20.06
2010	3.71	13.21	23.41	1.27	8.78	22.69	18.03
2020	2.88	5.59	12.35	0.56	3.45	11.29	8.43
Elementary school							
2001	26.61	36.03	44.52	7.47	33.45	43.83	38.19
2010	13.95	26.07	34.55	4.92	23.22	38.59	29.14
2020	14.11	22.84	32.03	3.92	17.13	36.69	25.15
Junior high school							
2001	24.5	20.27	17.99	8.8	22.45	18.25	17.68
2010	17.04	23.01	20.93	12.4	24.7	21.92	20.13
2020	14.96	20.26	21.99	6.88	19.84	24.17	19.09
Senior high school							
2001	31.98	22.21	10.96	48.51	28.67	14.9	18.85
2010	39.57	31.46	18.99	40.96	39.6	16.12	24.58
2020	34.79	38.26	28.71	36.35	52.07	26.48	33.38
Associate degree (DI/DII/DIII)							
2001	4.49	1.94	0.4	15.43	1.82	0.42	2.38
2010	5.65	2.23	0.92	13.81	1.95	0.33	2.94
2020	5.67	2.66	1.44	9.67	2.45	0.46	2.99
Bachelor degree or higher (DIV/S1/S2/S3)							
2001	8.62	3.34	0.63	17.82	1.77	0.54	2.84
2010	20.08	4.02	1.2	26.64	1.75	0.34	5.18
2020	27.58	10.39	3.49	42.62	5.05	0.91	10.96

Source: our calculations, from 2001, 2010, and 2020 Sakernas data.

Table 6: Mean real wage across status with 2001 as the base year, Indonesia

Status	Wage		
	2001	2010	2020
Formal wage employed	820,581	918,332	1,128,223
Upper informal wage employed	431,202	479,176	710,669
Lower informal wage employed	510,807	436,401	529,005
Formal self employed	na	na	na
Upper informal self employed	na	na	na
Lower informal self employed	na	na	583,320

Note: In the Sakernas surveys of 2001 and 2010, wage data were exclusively accessible for individuals categorized as paid employees or those with job status denoted as 4 (refer to Table A1 for job status specifications). However, in the 2020 survey, wage information encompassed not only paid employees but also individuals engaged as free workers in both agricultural and non-agricultural sectors, as well as self-employed individuals operating without assistance. Consequently, the calculation of mean wage values across different employment statuses is limited to wage-employed individuals in 2001 and 2010, as well as those classified as wage-employed and occupying lower informal self-employment positions in 2020.

Source: our calculations, from 2001, 2010, and 2020 Sakernas data.

Table 7: Distribution of workers by work status, India

Work status	1988	2000	2012	2022	
A. Proportion of employment by work status					
Self-employed					
Formal	0.12	0.03	0.04	0.09	
Informal					
	Upper-tier	6.98	0.82	1.25	2.39
	Lower-tier	47.76	48.84	47.29	49.31
Self-employment in total employment	51.79	49.38	48.58	51.75	
Wage-employed					
Formal	6.84	8.69	7.22	9.50	
Informal					
	Upper-tier	4.33	5.23	13.34	15.07
	Lower-tier	33.96	36.39	30.87	23.65
Wage-employment in total employment	48.21	51.62	51.42	48.22	
B. Proportion of formal vs informal employment					
Formal	6.96	8.71	7.26	9.58	
Informal					
	Upper-tier	11.32	6.05	14.59	17.46
	Lower-tier	81.72	85.24	78.15	72.96
C. Proportion of upper-tier informality in informal employment					
Upper-tier informal in total informal employment	12.16	6.63	15.73	19.31	
Upper-tier informal in informal self-employment	12.76	1.65	2.58	4.62	
Upper-tier informal in informal wage-employment	11.32	12.56	30.17	38.91	
D. Total employment in working-age population					
	59.95	58.05	52.30	52.18	

Source: our calculations, from EUS and PLFS data.

Table 8: Average worker characteristics by work status (work-status main), India

Year	Self-employed			Wage-employed			Total
	Formal	Informal		Formal	Informal		
		Upper-tier	Lower-tier		Upper-tier	Lower-tier	
A. Average age (in years)							
1988	35.46	32.05	34.20	36.67	32.58	31.89	33.36
2000	39.92	40.20	34.40	37.51	33.36	32.74	34.06
2012	43.58	41.21	36.76	39.01	33.39	34.70	35.90
2022	42.37	42.00	38.78	37.53	34.62	36.48	37.57
B. Female share							
1988	4.59	3.51	32.62	12.97	8.38	34.89	28.93
2000	2.70	10.50	26.40	16.77	11.30	32.93	27.01
2012	0.68	5.99	22.95	19.31	19.04	24.15	22.31
2022	3.61	6.53	29.58	24.81	21.04	24.36	26.03
C. Urban share							
1988	74.63	25.37	13.43	72.64	68.99	10.42	19.77
2000	69.80	29.39	18.73	63.33	65.39	11.93	22.67
2012	86.02	46.70	22.72	65.45	63.49	13.62	28.76
2022	62.97	42.39	18.59	59.47	54.81	15.61	27.83

Source: our calculations, from EUS and PLFS data.

Table 9 Average worker characteristics by education level, India

Year	Self-employed			Wage-employed			Total
	Formal	Informal		Formal	Informal		
		Upper-tier	Lower-tier		Upper-tier	Lower-tier	
Illiterate/below primary							
1988	0.00	0.00	73.18	9.67	34.77	82.64	65.19
2000	4.77	25.75	51.17	7.16	23.07	72.27	53.33
2012	15.33	14.60	37.48	5.18	18.63	54.98	37.74
2022	4.89	10.05	27.36	4.39	12.67	39.32	25.36
Primary/below secondary							
1988	0.00	0.00	17.20	8.71	22.88	10.22	13.27
2000	16.14	33.03	29.71	16.64	39.49	22.31	26.41
2012	15.31	26.87	32.73	12.43	30.82	33.30	31.10
2022	33.53	35.01	38.79	15.03	33.38	44.01	36.86
Secondary & higher secondary							
1988	50.66	92.96	8.46	51.52	39.51	7.01	18.21
2000	32.36	28.40	14.75	37.90	30.87	5.09	14.21
2012	33.28	40.70	22.87	33.79	30.94	10.99	21.29
2022	20.83	34.40	24.37	29.62	31.02	15.20	23.94
Graduates & above							
1988	49.34	7.04	1.16	30.10	2.84	0.12	3.33
2000	46.72	12.82	4.38	38.30	6.57	0.33	6.05
2012	36.08	17.83	6.92	48.60	19.60	0.72	9.86
2022	40.75	20.54	9.49	50.96	22.93	1.47	13.85

Source: our calculations, from EUS and PLFS data.

Table 10: Weekly mean wage/earnings (in real rupees), India

Year	Self-employed			Wage-employed			Total
	Formal	Informal		Formal	Informal		
		Upper-tier	Lower-tier		Upper-tier	Lower-tier	
1988				1954.24	1232.16	243.37	286.99
2000	1439.17	767.55		4853.62	2608.06	879.20	1828.04
2012	1853.69	1308.13		7946.49	3484.35	1575.47	3026.99
2022	10518.16	5505.97	1854.84	6227.38	3251.47	1707.23	2540.25

Source: our calculations, from EUS and PLFS data.