

Informality in Indonesia

Levels, Trends, and Features

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Abstract

Informality is a multidimensional development challenge with features that potentially differ across workers, firms, and countries. This paper first briefly summarizes the literature, discusses the multiple existing definitions of informality, and adapts the cross-country analytical framework on informality to the context of Indonesia. It then uses several novel datasets and a range of modeling approaches to capture the levels and trends of both output and employment informality in Indonesia. It further contributes to the existing literature by estimating informality in Indonesia at the regional, provincial, and sectoral levels. Those estimates were then benchmarked to the levels, trends, and features of the informal sector in emerging markets and developing economies to examine whether the major features of the

informal sector in Indonesia deviate from those observed in other emerging markets and developing economies. The paper finds that despite the declining trend, both output and employment informality remain elevated and broadly above the comparator countries in the region. Informality in Indonesia is mostly concentrated in agriculture and low-skilled services and is associated with higher poverty at the provincial level. There also appear to be productivity, education, and salary gaps between formal and informal workers. Moreover, markets are not segregated as informal firms compete strongly with formal ones. Finally, informality seems to pose macroeconomic challenges as tax efforts and financial sector depth remain below the averages for emerging markets and developing economies.

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Informality in Indonesia: Levels, Trends, and Features

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1. Introduction

1. **Informality is a broad development challenge with multiple features and different layers of analysis.** Informality is associated with many development challenges, such as lower productivity firms, less protected workers, and tax leakages (Loayza 2018; Ohnsorge and Yu 2021; Ulyssea 2020). At the same time, the informal sector provides livelihoods, creativity, and buffers against shocks. The latter was exemplified by the recent shock induced by the COVID-19 pandemic. Despite the significance of informality in emerging markets and developing economies (EMDEs), it remains difficult to measure and study, mainly due to the presence of multiple definitions for informality and the lack of estimates (Elgin et al. 2021a). This is particularly the case in Indonesia where a limited number of studies have focused on the informal sector.¹

2. **Against this backdrop, this paper uses several novel datasets and various modeling approaches to measure the extent and nature of informality in Indonesia.** It first briefly summarizes the literature, discusses the multiple existing definitions of informality, and adapts the cross-country analytical framework on informality to the context of Indonesia. It then uses several novel datasets, including an updated cross-country database on informality provided by Elgin et al. (2021a), and a range of modeling approaches to capture the levels and trends of both output and employment informality. It further contributes to the existing literature by estimating output and employment informality in Indonesia at the regional, provincial, and sectoral levels, using a series of labor force surveys (SAKERNAS surveys) provided by Badan Pusat Statistik (BPS). Those estimates were then benchmarked to the levels, trends, and features in EMDEs to examine whether the major features of the informal sector in Indonesia deviate from those in EMDEs.

3. **Despite the recent development, informality remains pervasive in Indonesia.** While being slightly lower than the average of other EMDEs, output informality in Indonesia averaged around 35 percent of GDP in the decade before 2020, slightly above the average level in East Asia and the Pacific region (EAP). Informal employment in Indonesia, amounting to more than half of total employment, is higher than the average levels in other EMDEs and the EAP region. Like in other EMDEs, Indonesia witnessed a general declining trend in both output and employment informality during the past few decades. Nevertheless, both informality indicators remain elevated and broadly above comparator countries, creating both development and policy challenges.

4. **The informal sector in Indonesia exhibits several features, some of which are commonly documented in the literature and seen in the informal sectors in other EMDEs.** First, informality in Indonesia is mostly concentrated in the agriculture and low-skilled service sectors, similar to what has been observed in other EMDEs. Second, it is associated with a higher level of poverty at the provincial level, in line with the existing literature. Combining evidence at the macro and micro levels, there appear to be productivity, education, and salary gaps between formal and informal workers. Moreover, markets are not segregated as informal firms compete

¹ Some of the existing literature on Indonesia includes ADB (2010), Baddiet, Brown and Mazaheri (2015), OECD (2010), and Comola and de Mello (2011).

strongly with formal ones. Finally, informality seems to pose macroeconomic challenges as tax efforts and financial sector depth in Indonesia remain below the EMDE averages.

5. **The paper makes several contributions to the existing literature.** It is the first study on informality in Indonesia that uses a multidimensional approach adapted to the country's specific conditions. Following Elgin et al. (2021a), the paper looks at output, employment, and firm informality, and utilizes all existing data series that can be used to capture the extent of informality in Indonesia. Second, it is the first to estimate informality for Indonesia at the regional, provincial, and sectoral levels. No existing study has attempted to understand the informal sector in Indonesia at the sub-national level. Third, it is also the first paper that utilizes the various labor force surveys (SAKERNAS surveys) to estimate both output and employment informality. Lastly, it provides a systematic examination of the features of the informal sector in Indonesia, highlighting what is also commonly seen in other EMDEs (or documented in the literature) and what is not.

6. **The paper has limitations as many questions about the informal sector in Indonesia remain unanswered.** Limited studies have looked at the informal sector systematically in Indonesia. The existing ones tend to focus on one or two dimensions of informality. While this paper helps deepen the understanding of the informal sector in Indonesia via a multidimensional approach, it does not provide additional information on the drivers of informality, nor does it try to establish any causality relationships, nor provide policy recommendations.

7. **The paper is divided into five sections.** Section 2 highlights the literature behind the multiple informality analytical frameworks and discusses definitions and data used in this study. Section 3 depicts the levels and trends of informality in EMDEs (as well as the EAP region) and Indonesia. Section 4 summarizes the correlates of informality documented in the literature and other EMDEs and examines whether those correlates of informality also exist in Indonesia. In particular, it highlights the policy challenges associated with informality and examines the role of informality in Indonesia during an external shock like COVID-19. Section 5 concludes.

2. Adapting the multidimensional approach of informality analysis to Indonesia

2.1 Definitions of informality: Global versus Indonesia

8. **The nature of informality differs across workers, firms, and countries.** Some workers and firms are “excluded” from the modern economy due to burdensome entry regulations and lack of human capital (de Soto 1989; Loayza, Oviedo, and Servén 2006). This type of informality is frequently associated with underdevelopment, low productivity, and poorly paid employment (La Porta and Shleifer 2014; Loayza 2018).² Other informal workers and firms voluntarily “exit” the formal sector and choose the informal sector for its flexibility, independence, and lower compliance burdens (Blanchflower, Oswald, and Stutzer 2001; Maloney 2004; Günther and Launov 2012; Falco and Haywood 2016). Both “excluded” and “exiting” types of informality could coexist in an economy (Bosh and Maloney 2008, 2010; Lehmann and Pignatti 2007;

² This typically occurs in lower-income countries where the informal sector is a major source of income for low-skilled workers whose income would otherwise fall below subsistence (Docquier, Müller, and Naval 2017).

Nordman, Rakotomanana, and Roubaud 2016). As a result, the informal sector consists of both high-productive and low-productive workers and firms. While the latter stay in the informal sector out of necessity, the former join the informal sector to avoid various costs associated with “being formal”. As a result, the definition of informal workers as well as informal firms is largely context and country-specific (see Annex 1 for more details).

9. Multiple definitions of informal workers exist for cross-country comparison.

According to the International Labour Organization (ILO), informal employment covers all workers of the informal sector and informal workers outside the informal sector (Perry et al. 2007; ILO 2018). The former comprises all persons who were employed in at least one informal firm. The latter group includes self-employed and workers not employed in formal contractual arrangements or not subject to social protection or employment benefits. In practice, the most frequently used informal employment measure is the share of self-employment in total employment (La Porta and Shleifer 2014; ILO 1993).

10. In the context of Indonesia, labor force surveys also provide several definitions of informal employment.

For instance, the labor force surveys (SAKERNAS surveys) carried out by Badan Pusat Statistik (BPS) report data on self-employment twice a year. BPS provides three definitions of informal employment: simplified, old, and new.³ The simplified definition mainly reflects job-based informal employment, covering casual workers, (i.e. those without formal labor contracts), part-time workers, and unpaid household workers. Both new and old definitions use information on sectors and types of employment to classify workers, making sectoral estimates hard to interpret. While the simplified definition overlaps with self-employment, it is less linked with sectoral distribution and is preferred for the analyses in this paper (See Annex 2 for details).

11. From a firm’s perspective, past informality studies tend to use the following three criteria to identify informal firms (ILO 2018).

First, it is not a legal entity separate from its owners, has its own complete set of accounts, and is not owned or controlled by one or a few household members. Second, it is a market enterprise that sells its goods or services. Third, it falls into one of the following categories: it keeps the number of workers employed below a threshold determined by business regulations; it is not registered; or it hired workers informally. Other studies provide an alternative definition of informal firms as a continuum depending on size, registration, accounting standards, tax payments, mobility of workplace, and access to bank credit (Benjamin and Mbaye 2012; Mbaye, Benjamin, and Gueye (2017)). In firm surveys such as World Bank Informal Sector Enterprises Surveys, informal firms are typically defined as a business without the possession of a firm registration (or tax) number.

12. Indonesia follows the global standard in defining formal and informal businesses.

Specifically, a formal enterprise is defined as a business in possession of a firm registration number (*TDP-Tanda Daftar Perusahaan*) or firm unique ID (*NIB-Nomor Induk Berusaha*), whereas an informal enterprise is a business that does not possess either of these.

³ The BPS moved from the old to the new definition of informality in 2016.

13. **A multidimensional approach to informality should be taken to have a deeper understanding of informality in Indonesia.** As summarized by Elgin et al. (2021a), there are three dimensions of informality, with most of the available data capturing the following three dimensions: output informality, employment informality, and firm/perceived level of informality.

2.2 Informality data and estimation methods description: Cross-country and Indonesia-specific databases

14. **The paper carries out two sets of analyses.** The first set of analyses (section 3) compares the levels and trends of informality in EMDEs with those in Indonesia. The EMDE estimates are taken from a comprehensive informality database provided by Elgin et al. (2021a) and updated to 2021. The estimates for Indonesia mainly use data from the labor force surveys, referred to as SAKERNAS, which is provided by the official statistics agency BPS over the period 2000-22. In particular, estimates on output and employment informality at the regional and sectoral levels are also estimated using SAKERNAS surveys. The second set of analyses (section 4) explores policy and development challenges associated with informality across EMDEs. The findings from cross-country analyses will be compared with specific features of informality in Indonesia.

15. **The cross-country analyses rely on one of the most comprehensive cross-country databases of informal economic activity.** The updated database (from Elgin et al 2021a) covers more than 160 economies for the period 1990-2021. The database includes model-based and survey-based measures of informality, which capture the three dimensions of informality: output informality, employment informality, and perceived level of informality. The model-based measures cover output informality (often expressed in percent of official GDP), while survey-based estimates capture employment informality (in percent of total employment) and the perceived level of informality (especially by firms and by households). Annex 3 provides a detailed description of the three dimensions of informality and their construction. In this paper, when conducting cross-country analyses, preference is given to measures that are constructed using the same statistical standard (and definition) and have better country-and-year coverage.⁴

16. **The paper considered two model-based estimates to compute output informality and three survey-based estimates for employment informality.** First, two model-based estimates are considered for the cross-country comparisons. One is the multiple indicators multiple causes model (MIMIC), which is a type of structural equation model that takes into account both the multiple possible causes of informal activity and the outcome indicators of it. The other one is a dynamic general equilibrium model (DGE) created by Elgin and Oztunali (2012) where production in the informal sector is determined by how households optimize their labor allocation between formal and informal economies in each period and how the allocation changes over time. Both models provide estimates of informal output in percent of official GDP. Second, three survey-based informal employment measures are considered here to capture employment informality:

⁴ For instance, self-employment shares are often used as a proxy for informal employment here, given its wide country-and-year coverage and consistency across countries.

self-employment, informal employment, and employment outside the formal sector. All informal employment measures are expressed as a share of total employment.

17. **For output informality estimates in Indonesia, the paper prefers the MIMIC-based estimates.** In the case of output informality in Indonesia, the model-based MIMIC estimates are used mainly in cross-country comparisons, while the SAKERNAS estimates are used in the within-country comparison (see below for details). The MIMIC model, detailed in Schneider et al. (2010), is estimated in the paper (see Annex 4). According to Feige (2016), one of the limitations of Schneider et al. (2010) is that the base year value used for benchmarking is taken from an unspecified currency demand model. To overcome this limitation, the paper uses SAKERNAS estimates on output informality in 2000 to re-benchmark MIMIC estimates on output informality in Indonesia. It is also worth noting that MIMIC estimates are preferred here as they seem to capture the variation of informality better than DGE estimates in the case of Indonesia, while they are highly correlated with the DGE estimates in cross-country comparisons.

18. **SAKERNAS surveys are used to construct output and employment informality in Indonesia for national, regional, and sectoral level analyses.** These estimates are mainly used for within-country analyses. In addition to national-level estimates, output informality and employment informality are estimated for 34 provinces, 3 major sectors, and 9 subsectors over the period 2000-2022. The estimations use data on informal employment status and monthly income from Sakernas. The following equations are used to compute the share of output informality at the national (excl. i), regional (region =i), or sectoral (sector=i) level in year t:

1. Informal output (% total GDP, simple)_{it} =

$$\frac{\sum_{j=0}^{j=n_{it}} \text{informal employment status dummy}_{jit} * \text{monthly income}_{jit}}{\sum_{j=0}^{j=n_{it}} \text{employment status dummy}_{jit} * \text{monthly income}_{jit}}$$

2. Informal output (% total GDP, weighted)_{it} =

$$\frac{\sum_{j=0}^{j=n_{it}} \text{informal employment status dummy}_{jit} * \text{monthly income}_{jit} * \text{weight}_{jit}}{\sum_{j=0}^{j=n_{it}} \text{employment status dummy}_{jit} * \text{monthly income}_{jit} * \text{weight}_{jit}}$$

The share of informal employment at the regional (region =i) or sectoral (sector =i) level in year t is computed as follows:

3. Informal employment (% total employment, simple)_{it} =

$$\frac{\sum_{j=0}^{j=n_{it}} \text{informal employment status dummy}_{jit}}{\sum_{j=0}^{j=n_{it}} \text{employment status dummy}_{jit}}$$

4. Informal employment (% total employment, weighted)_{it} =

$$\frac{\sum_{j=0}^{j=n_{it}} \text{informal employment status dummy}_{jit} * \text{weight}_{jit}}{\sum_{j=0}^{j=n_{it}} \text{employment status dummy}_{jit} * \text{weight}_{jit}}$$

Here the (informal) employment status dummy equals 1 when worker j in region i (or sector i) and year t is employed (informally employed), and 0 otherwise. Weights capture the extent of representativeness of worker j in the whole sample. Both simple and weighted measures are constructed with the latter giving more weight to more representative observations in the sample. As shown above, while BPS provides three definitions of informal employment, the simplified definition is preferred for the analyses as it is less linked with Indonesia’s sectoral composition. These data series are then used to show the levels, trends, and features of informality in Indonesia.

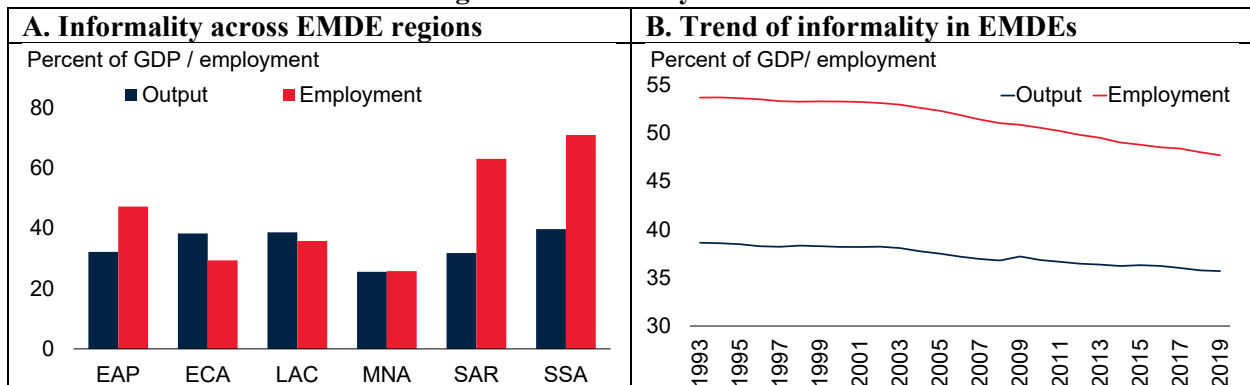
3. Levels and trends of informality: EMDEs versus Indonesia

3.1 Informality in EMDEs⁵

19. **Informal economic activity is more pervasive in EMDEs than in advanced economies (AEs).** In AEs, it accounted for less than one-fifth of official GDP and total employment in 2019, whereas about one-third of economic activities and employment in EMDEs happens in the informal sector (Elgin et al. 2021). Informality is common in all EMDE regions but takes different forms. On average, the informal economy’s share of output is highest in Sub-Saharan Africa (SSA), Europe and Central Asia (ECA), and Latin America and the Caribbean (LAC). The share of self-employment, however, is highest in SSA, South Asia (SAR), and East Asia and the Pacific (EAP).

20. **The share of informal output and employment has contracted in EMDEs since the 1990s.** The downward trend is observed both in AEs and EMDEs (Ohnsorge and Yu 2022). In the case of EMDEs, the downward trend is more prominent in output informality, whereas employment informality fell more noticeably during the recent two decades than during the 1990s.

Figure 1. Informality in EMDEs



Sources: Elgin et al. (2021, updated), International Labor Organization (2023), World Bank.

⁵ In this section, output informality for EMDEs is captured by MIMIC-based estimates. The DGE-based estimates are highly positively correlated with the MIMIC-based estimates and give similar results. The discussion here is restricted to the period before 2020 to avoid the impact of COVID-19.

Notes: Informal output is based on the MIMIC model, in percent of official GDP. Informal employment is based on the share of self-employment in total employment.

A. Bars show the average share of informal output during 2011-19 (in blue; average self-employment rate in red).

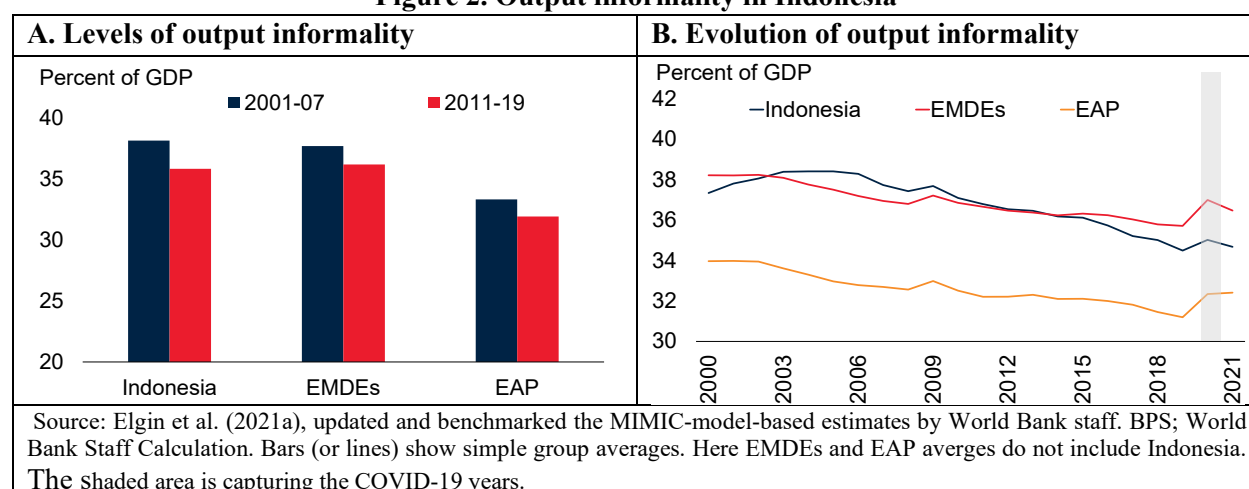
B. Lines show unweighted group averages.

3.2 Informality in Indonesia

Output informality

21. **Indonesia generally exhibits lower output informality compared to the average of other EMDEs.** Output informality in Indonesia averaged around 38 percent of GDP in 2000-2007 before sliding down slightly to an average of 36 percent of GDP in the decade before 2020.⁶ This is smaller than the average level in EMDEs by about 0.5 percentage point of GDP, while being slightly above the average level in EAP (figure 2). The declining trend in output informality in Indonesia was also accompanied by rising GDP per capita, which rose almost by six times from USD 770.9 in 2000 to USD 4,333 in 2021, a consistent trend observed across EMDEs.

Figure 2. Output informality in Indonesia

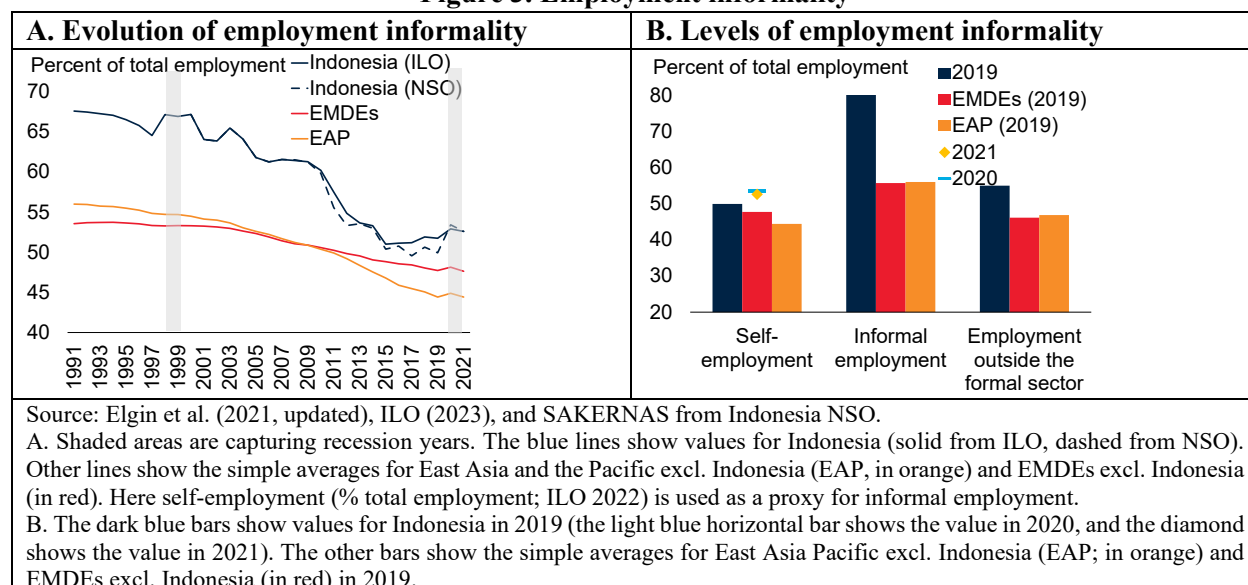


Employment informality

22. **Informal employment in Indonesia has also declined but remained higher than the average levels in other EMDEs and the EAP region.** Using self-employment as a proxy for informal employment, Indonesia has experienced a steady decline in informal employment since the 1990s (figure 3). However, there seems to be a reversal starting in 2016. A reversal that has been accelerated by the COVID-19 shock. Indeed, self-employment as a share of total employment increased from 49.9 percent in 2019 to 53.4 percent during the pandemic in 2020. Despite the historical decline, the level of employment informality in Indonesia is consistently higher than the level in the EAP region and other EMDEs. Using data on informal employment provided by ILO - a broader measure than self-employment - four out of five workers are informally employed in Indonesia, notably higher than the average informal employment rate in EAP or EMDEs (i.e., about 56 percent of total employment).

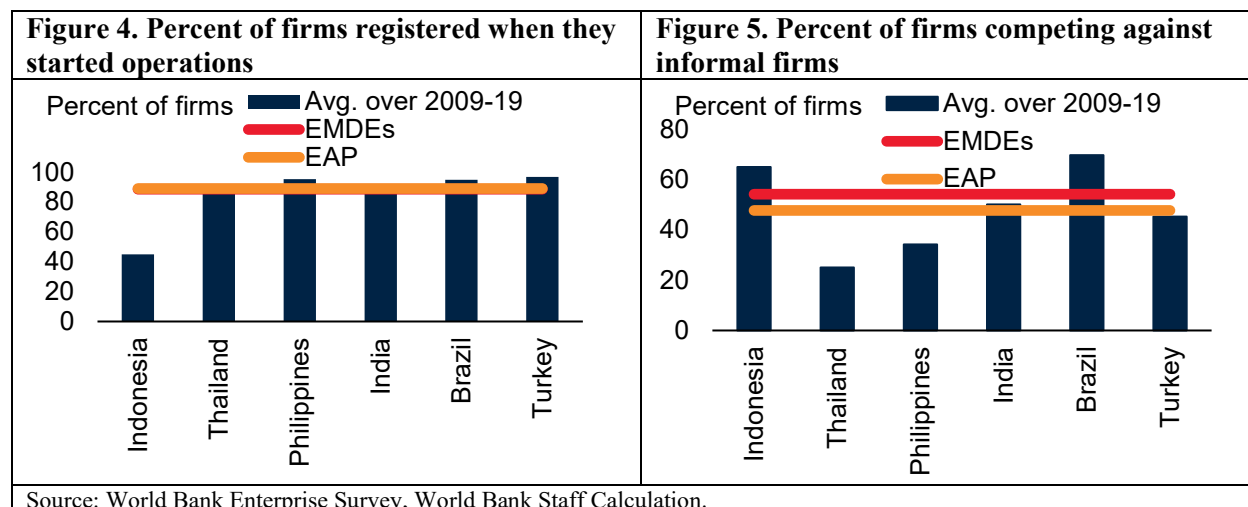
⁶ As shown in section 2, Output informality is proxied by MIMIC-based estimates or LFS estimates as elaborated in the previous section. The model-based MIMIC estimates are used mainly in cross-country comparisons, while the LFS estimates are used in the within-country comparison.

Figure 3. Employment informality



Firm informality

23. **Firms in Indonesia are dominated by Micro Small and Medium Enterprises (MSMEs).** The 2016 Economic Census, the last one available, classifies 99 percent of firms in the country as MSMEs. A large share of these MSMEs are micro firms, almost 60 percent, with fewer than 5 workers. This is in contrast to peer countries like Malaysia and Vietnam, which also have a large share of firms categorized as MSMEs. In those two countries, the informal sector is significantly smaller at around 9 percent (2016) and 27 percent (2019), respectively.



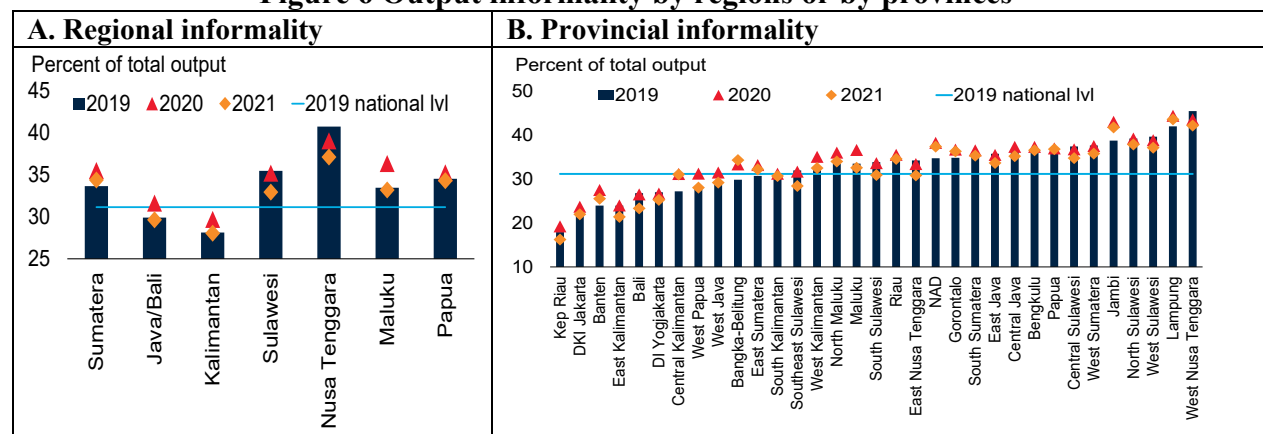
24. **Indonesia’s firms are predominantly informal and seem to compete with the formal sector firms.** Only 45 percent of Indonesia’s firms were legally registered when they started operations, a significantly lower share than EMDEs, EAP region, and peer-country averages

(figure 4). Moreover, economic activity in the formal and informal markets seems to be intertwined. According to the latest enterprise survey in 2015, around 65 percent of formal firms in Indonesia are competing with informal firms. This contrasts for example with Thailand where only 25 percent of formal firms compete with informal firms. It is also a larger share compared to EMDEs and EAP averages (respectively 54 and 47 percent) (figure 5).⁷ Across the country, this practice is most prevalent in Bali, where almost all firms (98 percent) report competing with informal firms. Bali is a province particularly known for its dominant service sector, especially in tourism and hospitality as well as other low-value-added services.

3.3 Informality at the regional level in Indonesia

25. **Across the region, most of the provinces in the eastern part of Indonesia show a relatively higher informal economy.** Papua province has the highest informal output, comprising almost 80 percent of its economy (figure 6). This is followed by three other provinces in the eastern region (East and West Nusa Tenggara, West Sulawesi) with around 70 percent of informal output. However, with unweighted computation,⁸ Lampung province has the highest level of informal output with the informal output capturing almost 45 percent of total economic output. Different methods of measurement of informality also resulted in a significantly different informality level. For example, an Informal Sector Survey conducted by the Statistics Agency in 2010 in two pilot provinces (Yogyakarta and Banten) used questionnaires to determine output produced by production units in the informal sector. Output informality was estimated at 37 percent and 27 percent in Yogyakarta and Banten respectively, lower than the estimation produced by the model.⁹

Figure 6 Output informality by regions or by provinces



Source: BPS; World Bank Staff Calculation.

26. **The regional pattern of informal employment seems to mimic the regional pattern of output informality** (figures 7). Informal employment is most prevalent in Nusa Tenggara and Papua regions, which could be explained by the nature of jobs in that province (i.e., agriculture

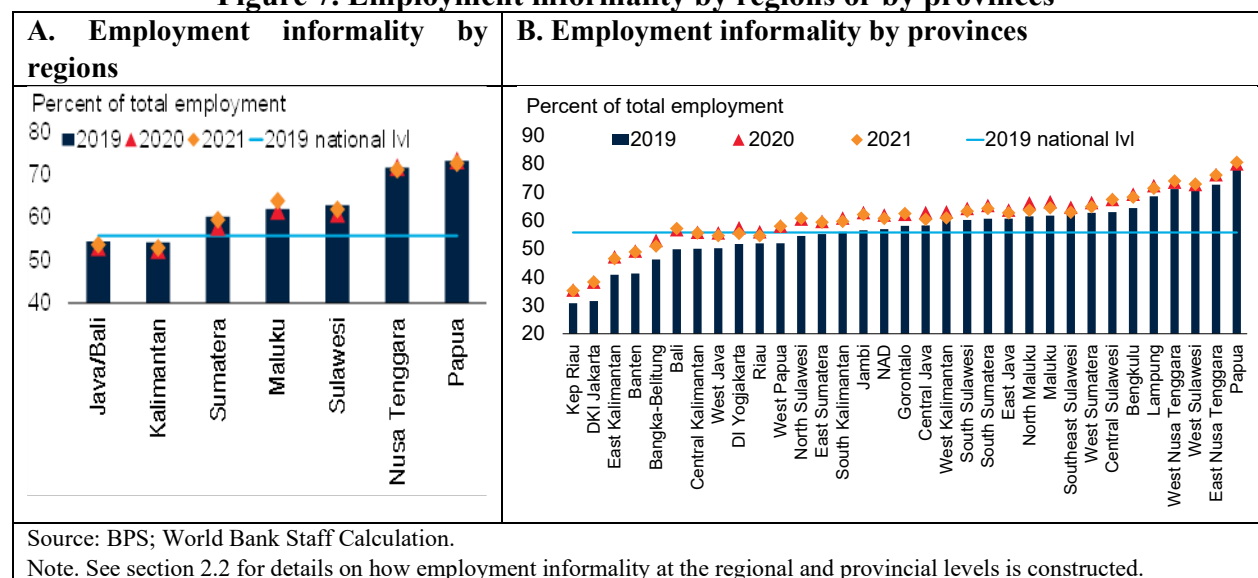
⁷ World Bank Enterprise Survey, 2015.

⁸ The weighted computation is accounting for the weight of the observation in the survey, while the unweighted computation is excluding the weight. See section 2 for the formula.

⁹ While the model calculated data for 2020 which could potentially show different figures, the result is significantly different where Yogyakarta informal output reached more than 50 percent of the economy and Banten informal output comprised more than 40 percent of the economy using the model.

and artisanal mining). For example, both in Nusa Tenggara and Papua, agriculture jobs accounted for more than 43 and 60 percent of total jobs respectively. In Papua, despite being small as a share, jobs in mining and quarrying increased by almost 50 percent in the last decade. In these regions, employment informality is about 30 percent higher than at the national level.

Figure 7. Employment informality by regions or by provinces



4. Policy and development challenges associated with informality: EMDEs versus Indonesia

27. **This section summarizes both development and macro policy challenges associated with informality.** It presents some of the correlates of informality identified in the literature (see, for instance, Loayza 2018; Ohnsorge and Yu 2021; Ulyssea 2020). Since the literature has not reached a consensus on what are the causes of informality nor on what are mere correlates of informality, the study here focuses on providing a comprehensive summary of correlates of informality in EMDEs and highlights areas where a causal link was established by past papers. Those correlates of informality are then reviewed for the case of Indonesia. In this section, empirical analyses for EMDEs are restricted to the period 1990-2019 to avoid being affected by the COVID-19 induced global recession in 2020.

4.1 Development challenges associated with informality

4.1.1 Underdevelopment, poverty and productivity gaps

28. **Theoretical models often consider the lack of economic development as one of the main causes (and features) of informality.** This type of model suggests that informality reflects the inability of an urban modern formal sector to absorb rural migrants during the urbanization process (Harris and Todaro 1970; Fields 1975; Loayza 2016). Development can further shrink the informal sector because households tend to shift away from agricultural and informal sectors as

their incomes grow (Saracoglu 2008). Moreover, limited access to credit, often associated with lower development, constrains firms' ability to overcome barriers to entry into the formal sector.¹⁰

29. **Informality is more pervasive in countries with a lower level of per capita income, regardless of the measure of informality.** As a result, informality tends to be considerably more pervasive in EMDEs than in advanced economies (figure 8, La Porta and Shleifer 2014). In 2019, informal output and informal employment in advanced economies fell below the levels in EMDEs by 16 percentage points of GDP and 29 percentage points of total employment, respectively.

30. **Informality is associated with a large rural population and a lack of urbanization.** As shown in Loayza (2016), a developing economy passes through three stages of development. In the first phase, modern informal employment expands as the falling relative cost of urban living encourages rural workers (in the rudimentary informal sector) to migrate to cities. In the second phase, rural-urban migration slows, and the relative shares of the modern informal and formal sectors stabilize, but the relative size of the rudimentary informal sector shrinks. In the third phase, modern informal employment declines as rural-urban migration stalls and a rising capital-labor ratio reduces the relative (and absolute) size of the modern informal sector.¹¹ In EMDEs with above-median informality, about half of the population still resided in rural areas during the past decade, while the ratio fell to two-fifths or one-third in EMDEs with below-median informality (Ohnsorge and Yu 2021).

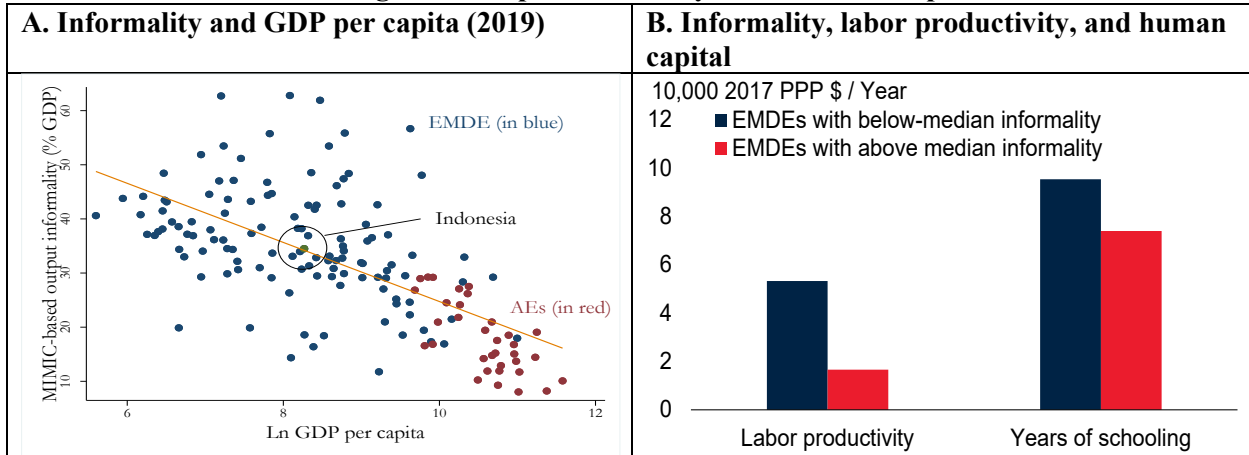
31. **Informality tends to be concentrated in the agriculture sector, especially in EMDEs.** About 90 percent of employment in the agriculture sector is informal in EMDEs (Ohnsorge and Yu 2020). Consequentially, in EMDEs with above-median informality, the agriculture sector accounted for about 20 percent of GDP and nearly 40 percent of total employment on average over the period 2011-2019. This is almost twice as much as in EMDEs with below-median informality. Meanwhile, informal firms in EMDEs tend to be small, less productive, and concentrated in labor-intensive sectors, such as low-value-added service sectors (Amin, Ohnsorge, and Okou 2019).

32. **Informal workers tend to be less skilled and lower paid than their formal counterparts (Loayza 2018; Perry et al. 2007).** A meta-analysis of worker-level empirical studies shows that informal workers are, on average, paid 19 percent less than formal workers, which largely reflects the fact that informal workers tend to be less skilled and inexperienced (World Bank 2019). The negative link between informality and labor productivity is also supported by data, which could be driven by the significantly lower school attainment in EMDEs with above-median informality than in other EMDEs (figure 8).

¹⁰ See, for instance, Ferreira-Tiyaki (2008), D'Erasmus and Moscoso Boedo (2012), and Capasso and Jappelli (2013).

¹¹ As modeled in Loayza (2016), a developing economy consists of two co-existing economies: a modern economy that is organized in firms and uses high-productive technology and a rudimentary, informal economy that captured the self-employed who only use labor and low-productive technology. The former further consists of two sectors: a capital-intensive modern formal sector and a modern informal sector that is more labor-intensive.

Figure 8. Output informality and underdevelopment

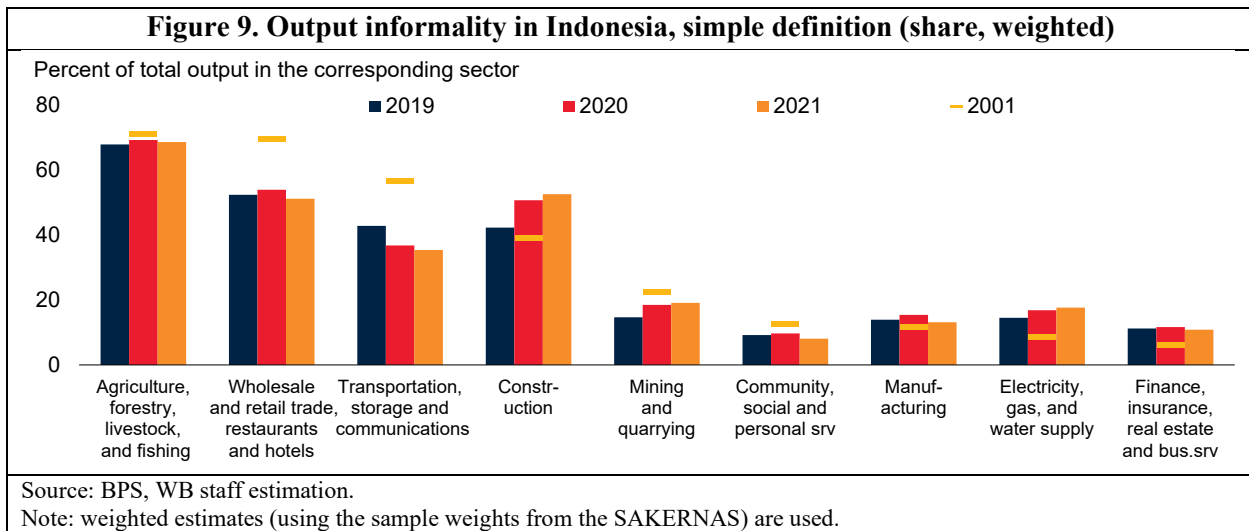


Sources: World Bank World Development Indicators, Elgin, et al. (2021 updated), and World Bank Staff estimates.

A. Informality is captured by MIMIC-based informal output as a share of GDP.

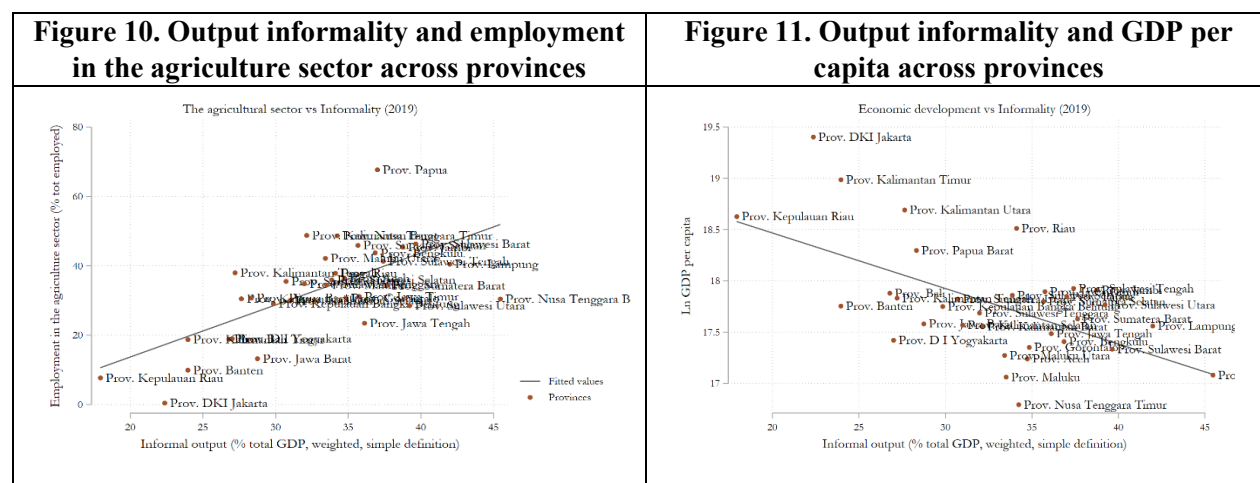
B. The sample is constrained to EMDEs, and data are averaged over 2011-19 to avoid the impact of the global recession around 2020 and 2008/09. EMDEs are grouped into “above-median” and “below-median” self-employment as a share of total employment.

33. The link between informality and underdevelopment is supported by evidence in Indonesia. First, output informality in Indonesia is most prevalent in the agriculture sector, followed by labor-intensive low-value-added service sectors (such as wholesale, retail, and hospitality sectors). Informal output in the agriculture sector is almost double the share of total informal output in the economy. It has declined slightly compared to its level in 2001 (figure 9). Wholesale, retail trade and hospitality sectors also pose a relatively larger share of informal output compared to other sectors though the share declined significantly compared to 2001. This is similar to a broad informality trend in other countries where informality tends to be higher in sectors that are labor-intensive, low-skilled, less productive, and with relatively low wages.



34. The regions with the largest output informality are also regions with the largest rural population, weaker urbanization, prevalence of agriculture, and lower income. For example, West Sulawesi and West Nusa Tenggara are two provinces in the top five largest output and employment informality. The share of the agriculture sector in those two provinces is the largest

in the country (43 and 30 percent of total provincial GDP, respectively) (figures 10 and 11). West Sulawesi also has the highest rural population compared to other provinces (23.6 percent) and the weakest urbanization rate with only a 0.8 percent increase in urban population between 1996 and 2020. Output informality is also negatively correlated with regional income. Regions with the lowest per capita GDP tend to have more pervasive levels of informality (figure 11).



Source: BPS; World Bank Staff Calculation. All data points are taken from 2019. The same pattern is observed for 2010 and 2020.

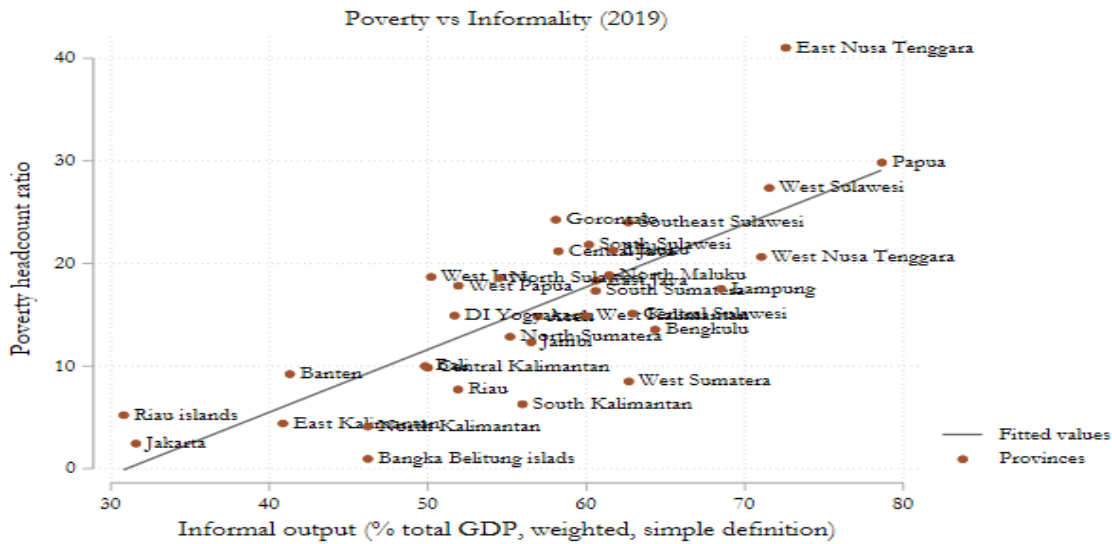
35. **At the same time, informality is also associated with the prevalence of services where the urbanization rate is high.** For example, West Nusa Tenggara has a relatively large share of the urban population with almost half of them in urban areas. It also has one of the highest urbanization rates, along with Lampung, among the provinces of Indonesia. In these two provinces, similar patterns are observed where there is a markedly declining share of agriculture-sector output (in percent of GDP) and an increasing share of services. This suggests that informality could potentially be closely associated with the service sector as well, particularly in low-productive service sectors (such as trade and hospitality).¹²

36. **Informality is also strongly associated with higher poverty.** East Nusa Tenggara and Papua Province have the highest poverty rate and the highest share of informality in their economy (figure 12). The poverty rate in Papua has reached almost 30 percent, while in East Nusa Tenggara more than 40 percent of its population are poor. Interestingly, though East Nusa Tenggara is dominated by the agriculture sector, most of Papua's economy and employment is coming from mining and quarrying, indicating that they might be potentially working on artisanal and small-scale mining in the province. Many of these mining companies are not licensed, operate illegally, and evade government regulations (Meutia et al 22). Other links between poverty and informality exist. The informal sector often serves as an additional source of income for an economically insecure family. For example, a survey of poor families in Jakarta shows that sending children to work in the informal sector is an important way of increasing household income.¹³

¹² However, other provinces with higher output informality such as Jambi have the same characteristics with a high rural population (70 percent) and weaker urbanization rate (17 percent rise in urban population during 1996-2020).

¹³ [Tulus Tambunan, Urban Poverty, Informal Sector and Poverty Alleviation Policies in Indonesia, EGDI and UNU-WIDER Conference Paper, September 2004.](#)

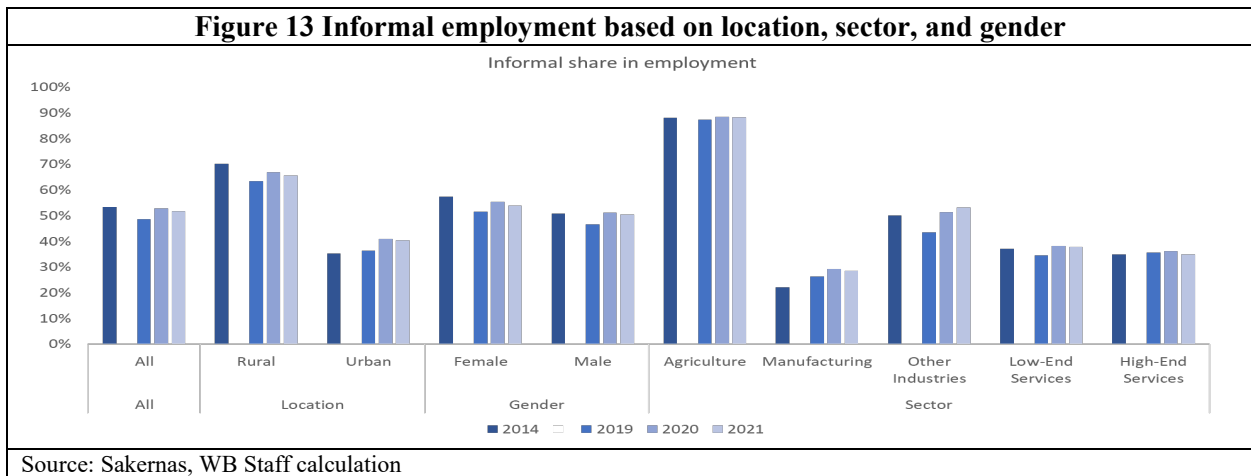
Figure 12. Output Informality and Poverty



Source: BPS; World Bank Staff Calculation.

37. **Informal employment is also more prevalent in the agriculture sector and low-end services, rural areas, and for female workers than males** (figure 13). In the agriculture sector, workers by nature are largely self-employed and/or work as unpaid family workers. Agriculture is also the dominant sector in most rural areas. Aside from agriculture, most commonly in urban areas are those in the low-value-added service sectors. Increasingly, with digital adoption, numerous online sellers are self-employed and are not covered by the social protection programs that are embedded in formal labor contracts.¹⁴ These small online sellers are generally owned by women who are looking for flexible work in terms of location and time, due to constraints to enter the formal job market. Overall, people in informal employment also have limited opportunities to reach economic security. Among the poor,¹⁵ 64 percent are informal workers.

Figure 13 Informal employment based on location, sector, and gender



Source: Sakernas, WB Staff calculation

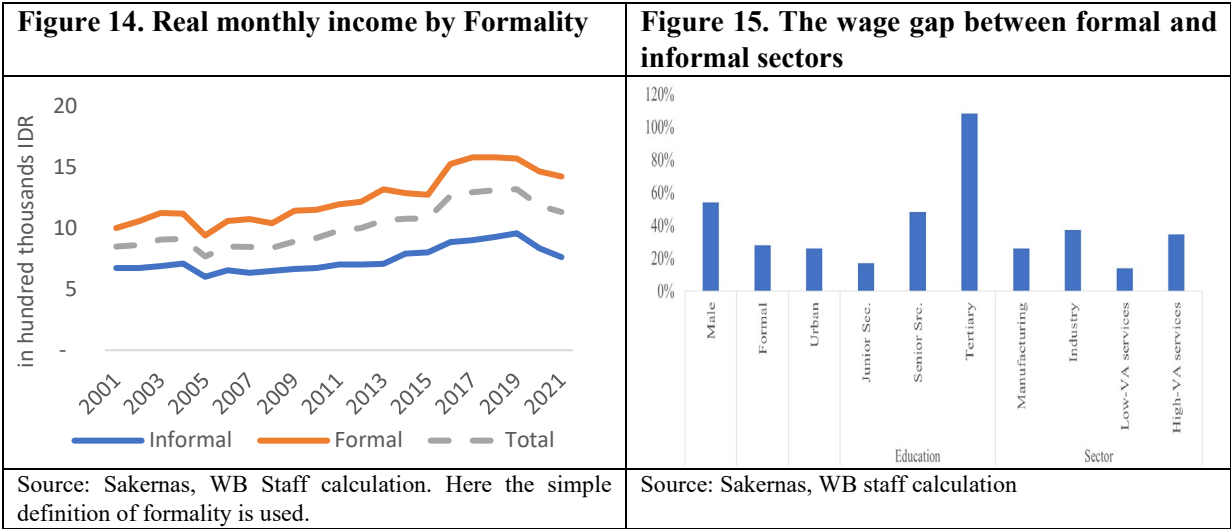
¹⁴ <https://www.newmandala.org/indonesian-gig-workers-the-quest-for-labour-protection/>.

¹⁵ Poor are defined as households living below US\$3.20 2011 PPP. In 2019, the share of the poor population was computed at 20 percent (Source: World Bank Macro Poverty Outlook).

38. **The share of informal employment was relatively higher than informal output, which suggests a large productivity gap between the informal and formal sectors.** Informal employment in Indonesia largely exceeds the level of EAP and EMDEs, while informal output tends to be lower. This disparity suggests a larger labor productivity gap between the formal and informal sectors in Indonesia, with the informal sector being less productive (Loayza 2018).

39. **Such a productivity gap could be attributed to firms and job characteristics in Indonesia.** Most of the country’s informal firms are micro or small firms, with fewer than five employees. They tend to pay low wages, are relatively unproductive when compared to large firms, predominantly supply products to local markets, make use of outdated technologies, and have no vision to expand their operations (Rothenberg et al., 2016). In terms of employment, most of them are self-employed and do not have a stable income. Typical examples in Indonesia are street vendors, small shop owners, farmers who own their farming land, and motorcycle taxi drivers. This is consistent with the fact that informality is most prevalent in the agriculture sector, with a large share of unpaid family workers or self-employed jobs. Those jobs often require a relatively low level of education background, suggesting low-skill workers with lower wages.

40. **The low productivity in the informal sector has also been reflected through wage and income gaps between formal and informal (livelihood) sectors.** The income gap between the formal and informal sectors is also widening (figures 14 and 15). In 2001, income in the formal sector was 48 percent higher than the level in the informal sector. Over the past two decades, the income gap has widened to 63 percent in 2019. The gap can be attributed to the gap in productivity and the type of jobs in the informal sector, which are low-skilled and low-educated. More than 50 percent of workers in the informal sector only received primary schooling, compared to 28 percent in the formal sector. Sixty percent of the workers in the formal sector attained at least senior secondary education. Moreover, even after controlling for the level of education, the formal wage premium remains up to 28 percent.



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