

# Structural Change and Formal Sector Employment Growth in Indonesia

Devanto Shasta Pratomo and Chris Manning

*The study provides evidence on the transition and growth of the formal sector in the Indonesian economy. It utilizes data from the National Labour Force Survey (Sakernas) for tracking the previous work status of labourers as formal or informal workers. The study also examines the implications of formalization of employment for the different rates of earnings of formal sector workers, given their human capital characteristics and different industries of employment. The study finds that the growth of employment in the formal sector is mainly the result of the entry of younger and better educated workers. Although there is some mobility from the informal to the formal sector, the results show that individuals who were previously working in the informal sector are less likely to move to the formal sector. In terms of earnings, there is evidence of scarring effects: individuals who are initially in the formal sector earn more than individuals who are initially in the informal sector.*

**Keywords:** Informal sector, job mobility, human capital, earnings differentials, Indonesia.

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## 1. Introduction

The formal-informal dichotomy is of great significance in the study of structural transformation and economic development in developing economies. From a dual-sector perspective, the formal and informal sectors are fundamentally different. The informal sector tends to be more traditional, less productive, using little capital, and adding less value to the economies. In contrast, the formal sector, often the modern part of the economy, is the more productive sector with a more educated and more skilled labour force (La Porta and Shleifer 2014). Thus, a large difference in labour productivity between formal and informal

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parts of the economy is typical in developing societies (McMillan and Rodrik 2011). Employment in the informal sector is also characterized by insecure working arrangements, little protection for workers, and low wages (La Porta and Shleifer 2014; Rothenberg et al 2016).

The structural transition from the informal sector into the formal sector has been considered a key driver of economic development (see Lewis 1954; Fei and Ranis 1964; Chenery 1979). In China, India and some other Asian countries, the transition has also been characterized by the expansion of higher productivity employment in the formal sector, mainly from the low-productivity agriculture into modern manufacturing and services. Structural change of employment from the informal to the formal sector has also contributed significantly to economic growth (Brandt, Hsieh and Zhu 2008; Herrendorf, Rogerson and Valentinyi 2014; and McCaig and Pavcnik 2015).

Similar to other developing countries, the Indonesian labour market is divided between formal and informal sectors. Although the informal sector tended to be dominant in providing employment in the earlier decades, the labour market has undergone a fundamental transition, while at the same time employment has fallen in agriculture and stagnated in the non-agricultural informal sector (Figure 1).<sup>1</sup>

Using the individual data from the National Labour Force Survey (*Sakernas*), this study seeks to provide an understanding of the labour market transition between formal and informal sectors, particularly focusing on the growth of formal sector jobs in Indonesia. As mentioned by McCaig and Pavcnik (2015), workers who switch to the formal sector tend to have similar education, age, residence, and other characteristics to those already employed in the formal sector. Therefore, individuals who are poorly educated, older, female, and who are living in rural areas have a lower probability of moving to the formal sector. Besides the potential mobility of workers from the informal sector into the formal sector, Suryahadi, Marshan and Indrio (2018) also noted that the growth of formal sector employment in Indonesia, particularly in urban industry and services, is also supported by the employment of more younger, educated workers, who are mostly new entrants to the labour market. Using data from the Indonesian Family Life Survey, they showed that only a quarter of new entrants to the formal sector started work in rural agriculture; while almost half of new entrants to formal jobs had had prior access to non-agriculture sectors, and most chose the urban formal sector as their first place of employment.

This study then continues to examine the implication of these transitions for earnings among the job movers. Although it contrasts the analysis of formal and informal sector earnings, the paper will focus more on the analysis of earnings in the formal sector, given that the earnings of the informal sectors tend to be variable from year to year in *Sakernas*. Besides showing that earnings in informal sector employment tend to be lower than in formal sector employment, previous studies in Indonesia suggest that the longer someone has a job in the informal sector, the more likely they are to be disadvantaged in terms of earnings compared with jobs utilizing labour with a similar qualification in the formal sector (Naidoo, Packard and Auwalin 2015). In other words, the evidence suggests “scarring” effects in terms of earnings from the experience of working in the informal sector, compared to movers with no experience in the informal sector or new entrants (see Manning 2018).<sup>2</sup>

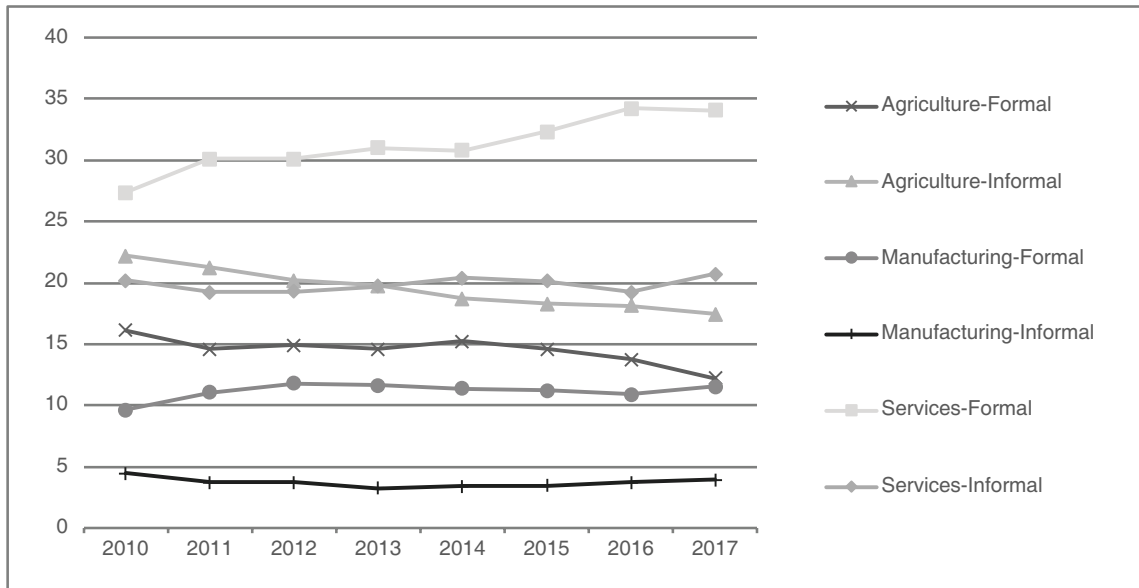
The following section of the paper looks briefly at the definition of the informal sector and then at the growth and share of formal-informal sector employment in Indonesia in more detail. Then, we discuss job mobility across sectors with a focus on mobility to the formal sector. The paper subsequently examines earnings differentials among the job movers, with a focus on the earnings of formal sector employees. Finally, the last section concludes.

## 2. Defining the Formal-Informal Sector

The data used in the study are individual data, mostly from the National Labour Force Survey (*Sakernas*), covering the period from 2010 to 2017. To examine changes over time, the formal and informal definition

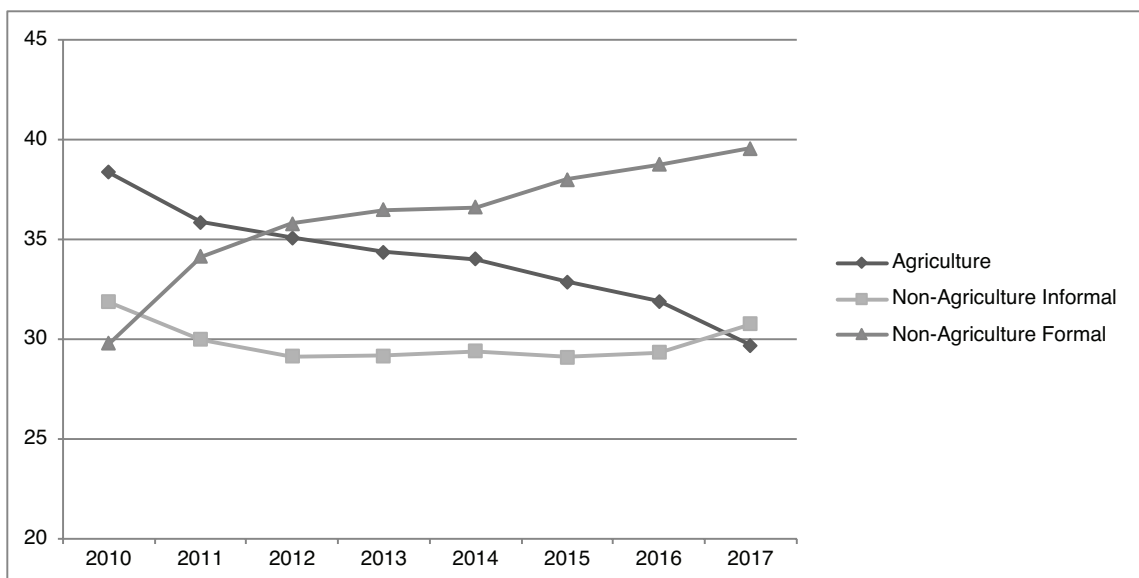
FIGURE 1  
Share of Employment in Agriculture, and the Formal and Informal Sectors outside Agriculture, 2010–17 (Percentage)

Panel A: Agriculture, Manufacturing, and Services in both Formal and Informal Sectors



SOURCE: Sakernas.

Panel B: Agriculture, Non-Agriculture Informal and Non-Agriculture Formal



SOURCE: Sakernas.

used in the study is mainly based on the Central Bureau of Statistics (BPS) definition using work status categories (the so-called Proxy 1). Individuals are defined as working in the informal sector if they are self-employed, casual workers, or family workers, while wage employees and employers are categorized under formal sector employment. The concept of formal-informal sector used in the study, therefore, focuses on the labour market (employment) approach rather than the industrial or firm-based approach (see, for example, Rothenberg et al. 2016 for the latter approach). These categories are generally consistent with the standard practice of labour market definition of the formal-informal sector used in the literature on developing countries.<sup>3</sup>

Following the practice of early authors on the subject (e.g., Hart 1973; Mazumdar 1976), we discuss the informal sector mainly in relation to non-agricultural work. In Indonesia, the main dynamics of the labour market for the past several decades have involved a shift of workers from agriculture to non-agricultural sectors, into both the formal and the informal sectors. While non-agricultural work was initially widely distributed in urban and rural areas, more recently it has become much more concentrated in the former—in the growing towns and cities.

There are two main reasons for this approach. The first is simply statistical. A very high proportion of all work in agriculture (close to 90 per cent in urban and rural areas) is informal, as defined here, and this industry dominates the patterns and trends in informal work in the economy as a whole. However, for policy purposes, our main interest in the informal sector lies in raising productivity, which is measured by output per employment, mostly in non-tradeable service industries. Raising agricultural productivity involves a different set of policy options. Second, the nature of many informal enterprises in the agricultural sector is very different in one key respect from many of those outside agriculture: the self-employed in agriculture own or rent (or share-farm) a valuable asset, whereas most non-agricultural workers in the informal sector own very few fixed assets.

### **3. Growth and Structure of the Formal-Informal Sector**

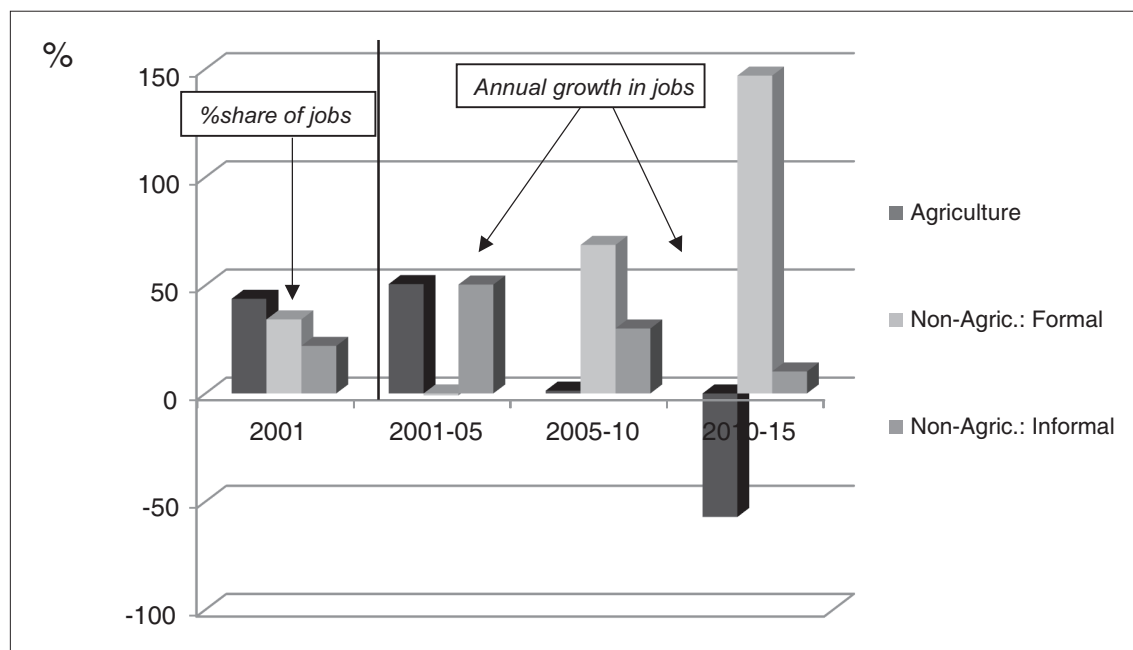
The period chosen for examination covers a phase of growth of formal sector employment in Indonesia, which started in 2010 (see Figure 1). During the second decade of the 2000s, the share of formal sector employment in the country, supported by the growing formal-manufacturing and formal-services, rose from less than 30 per cent in 2010 to around 40 per cent in 2017. In contrast, the share of both formal and informal agricultural employment declined significantly from a total of 38 per cent in 2010 to less than 30 per cent in 2017, while the share of non-agricultural informal sector employment tended to be stable at around 30 per cent.<sup>4</sup> Related to the sector of activity, formal sector employees in Indonesia concentrated in manufacturing and services, while agricultural informal sector employees mainly worked in retail trade and small business.

The growth of formal sector employment is important for Indonesia. This latest phase of structural change in the labour market implies that the country may have begun a little-noticed transformation away from the low productivity agriculture and informal sector into higher-value formal sector employment. Data presented in Figure 2 clearly show that, while up to around 2010 many jobs were created in the informal sector, it hardly grew after that, indicating that most new jobs had been created in the formal economy. One factor that is predicted to have influenced the transition to the formal sector has been the strong labour demand from services (Manning 2018), a pattern which is rather different from other rapidly growing export-oriented countries such as China and Vietnam, where manufacturing has played a bigger role (McCaig and Pavncik 2015).

On the supply side, the improved education of the labour force has provided a workforce ready to work in the formal sector (Allen 2016; Purnagunawan, Suryadarma and Pratomo 2017). The transition is interesting because this has been a period when the growth of the economy has slowed and when

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FIGURE 2  
Share of Employment in 2001 and of Employment Growth 2001–15 by  
Major Sector of the Indonesian Workforce (Percentage)



SOURCE: Sakernas.

economic and social observers have continued to view the creation of new formal sector jobs as a major challenge. After peaking at 6.5 per cent per annum during the period of recovery in 2011, Indonesia’s GDP started to slow to around 5 per cent per annum through to 2017.<sup>5</sup>

More than half of the employment is in urban areas (see Table 1). Comparing formal and informal sectors, urban areas are more dominated by formal sector employment, although there is also a significant percentage of informal sector jobs. Informal sector workers in urban areas tend to work in trade and transportation, while formal sector workers tend to be in manufacturing and services. Agriculture, predictably, is mostly found in rural areas. Comparing gender, a larger share of males work in the formal sector, although it is interesting to note that more than half of female workers in non-agriculture are also employed in the formal sector. Most females working in the formal sector are employed in trade and services.

Young workers make a big contribution to jobs in the formal sector. More than half of young workers (aged 15–24 and 25–34) work formally (Figure 3). As mentioned by Suryahadi, Marshan and Indrio (2018), young people or new job seekers are no longer attracted to agricultural jobs. Historically some of them, particularly among middle-class families, also preferred to become unemployed rather than working in agriculture and informal sector jobs, related to the “sticky” processes of job search in the formal sector (Manning and Junankar 1998). On the other hand, the contribution in the informal sector and agriculture remains dominant for the older workers (aged over 55).

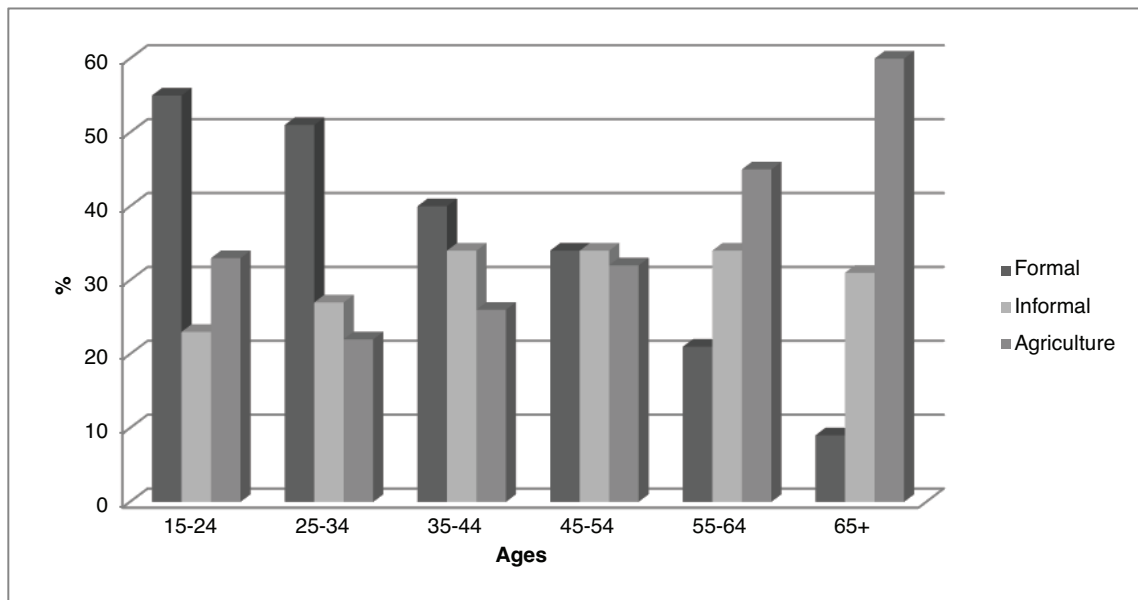
While construction, trade, and transport and communications are heavily informal, the formal sector is dominated by workers in services and manufacturing (see Table 2). During the 2010–17 period, an

TABLE 1  
Number and Share of Jobs in the Formal and Informal Sectors, and Agriculture, 2017

| Characteristics | Percentage of Jobs |          |             |       | No. of Jobs<br>(million) |
|-----------------|--------------------|----------|-------------|-------|--------------------------|
|                 | Formal             | Informal | Agriculture | Total |                          |
| <i>Location</i> |                    |          |             |       |                          |
| Urban Areas     | 55                 | 35       | 10          | 100   | 63.9                     |
| Rural Areas     | 22                 | 26       | 52          | 100   | 57.1                     |
| Total           | 39                 | 31       | 30          | 100   | 121.0                    |
| <i>Gender</i>   |                    |          |             |       |                          |
| Male            | 41                 | 28       | 31          | 100   | 74.7                     |
| Female          | 37                 | 35       | 28          | 100   | 46.3                     |
| Total           | 39                 | 31       | 30          | 100   | 121.0                    |

SOURCE: Sakernas.

FIGURE 3  
Share of Jobs in the Formal, Informal, and Agricultural Sectors by Age Group, 2017 (Percentage)



SOURCE: Sakernas.

increase in the share of jobs in the formal sector is found in all industries, with the highest growth in construction, mining, utilities and financial services. On the other hand, a significant decline in the informal sector is found in transportation and communications. The informal sector continued to grow in trade and construction and even faster in mining, utilities, and finance services, though in the latter case from a very small base.

TABLE 2  
Distribution of Formal Sector Jobs, Their Incidence in Each Industry and Growth of the Informal Sector, Formal Sector and All Jobs outside Agriculture, Indonesia 2010 and 2017

|   | % of All<br>Formal<br>Sector Jobs |      | % of Industry<br>Jobs in the<br>Formal Sector |      | Growth of Jobs 2010–17<br>(% p.a.) |                  |       |
|---|-----------------------------------|------|---|------|------------------------------------|------------------|-------|
|   | 2017                              | 2010 | 2017  | 2010 | Informal<br>Sector                 | Formal<br>Sector | Total |
| Manufacturing                           | 24                                | 57   | 67  | 67   | –0.8                               | 5.2              | 3.0   |
| Construction                            | 8                                 | 39   | 45  | 45   | 4                                  | 7.3              | 5.4   |
| Trade, Rest. & Hotels                   | 19                                | 26   | 33  | 33   | 1.8                                | 6.7              | 3.2   |
| Transportation & Communication          | 7                                 | 34   | 47  | 47   | –2.7                               | 4.9              | 0.4   |
| Social, Private and Government Services | 34                                | 76   | 80  | 80   | 0.7                                | 4.4              | 3.6   |
| Other <sup>a</sup>                      | 8                                 | 71   | 80  | 80   | 2.3                                | 9.4              | 7.7   |
| <i>All Industries</i>                   | 100                               | 33   | 43  | 43   | –0.7                               | 5.3              | 1.6   |

NOTE: a. Other includes mining, utilities and waste disposal and financial services.

SOURCE: *Sakernas*.

The formal sector employs more educated workers than the informal sector and agriculture. As presented in Figure 4, workers with senior high school (academic and vocational) education and above dominate formal sector jobs, although there is also a non-negligible share of senior high graduates from the academic stream who are employed in the informal sector, perhaps indicating limited job availability in the formal sector. In contrast, a low-level education (primary schooling or less) continues to dominate agriculture, contributing to low productivity (Ginting, Manning and Taniguchi 2018).

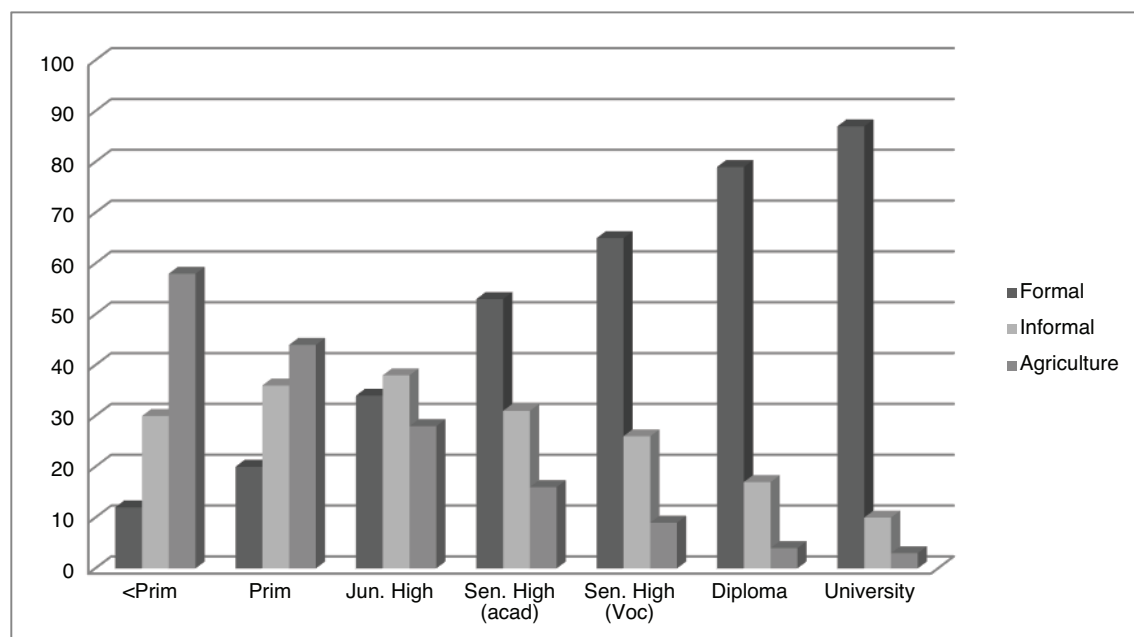
#### 4. Job Mobility across Sectors in the Labour Market

Based on *Sakernas* 2017, just under 40 per cent of the working-age population had changed labour force status or jobs in the past, with the largest share of movers found in the formal sector (Table 3). The movers to the formal sector mostly come from the other jobs within the formal sector and also new entrants. On the other hand, agricultural workers have the lowest level of mobility (never changed jobs) compared to other sectors. Besides a low level of education that prevents them from entering the formal sectors, farmers may have limited information regarding other jobs, and remain content with the only livelihood that they know (World Bank 2010).

Data on job mobility across sectors are presented in Table 4, comparing the current work status and the previous work status among the job movers during the period of 2010–17. The data show that more than half of new entrants (56 per cent) are employed in the formal sector. The share is larger than the movement from informal to the formal sector (26 per cent) and also larger than the movement within the formal sector, from one formal sector job to another (50 per cent). The share of new entrants who enter the formal sector is also higher than the new entrants who enter the informal sector (25 per cent), perhaps related to the higher formal educational qualifications of new entrants.

This study uses statistical analysis to examine the transition of workers (particularly movements into the formal sector) more rigorously. The analysis continues to use the pooled data during the period of 2010–17, although we should remind the readers that *Sakernas* is not an individual panel data set.

FIGURE 4  
Share of Jobs in the Formal, Informal, and Agricultural Sectors by Education, 2017 (Percentage)



SOURCE: Sakernas.

TABLE 3  
Mobility of Main Labour Force Status Group, 2017 (Percentage)

| Previous Labour Force Experience | Current Labour Force |            |          |        |             |       |
|----------------------------------|----------------------|------------|----------|--------|-------------|-------|
|                                  | Not Working          |            | Employed |        |             |       |
|                                  | Not in Labour Force  | Unemployed | Informal | Formal | Agriculture | Total |
| 2017                             |                      |            |          |        |             |       |
| Worked Before/Change Jobs        | 30.2                 | 39.9       | 34.0     | 38.8   | 27.1        | 38.5  |
| Left Jobs in Previous Year       | 4.4                  | 22.7       | 2.7      | 4.4    | 1.6         | 3.4   |
| Kept Same Job in Past Year       | 25.7                 | 17.2       | 31.3     | 34.4   | 25.5        | 35.1  |
| Never Worked/Never Change Jobs   | 69.8                 | 60.1       | 66.0     | 61.1   | 72.9        | 61.5  |
| Total                            | 100                  | 100        | 100      | 100    | 100         | 100   |
| Million                          | 64.0                 | 7.0        | 37.2     | 47.9   | 35.9        | 121   |

SOURCE: Sakernas.



TABLE 4  
Previous Work Status of Persons Who Left their Job in the  
Last Twelve Months (Percentage), Pooled Data, 2010–17

| <i>Previous Work Status</i> | <i>Current Work Status</i> |                    |                        |                      | <i>Total</i> |
|-----------------------------|----------------------------|--------------------|------------------------|----------------------|--------------|
|                             | <i>Not working</i>         | <i>Agriculture</i> | <i>Informal Sector</i> | <i>Formal Sector</i> |              |
| Not Working (New Entrants)  | n.a.                       | 19                 | 25                     | 56                   | 100          |
| Agriculture                 | 9                          | 45                 | 28                     | 18                   | 100          |
| Self-employed               | 13                         | 23                 | 36                     | 27                   | 100          |
| Casual                      | 9                          | 31                 | 36                     | 24                   | 100          |
| Family Workers              | 17                         | 20                 | 33                     | 30                   | 100          |
| <i>Total Informal</i>       | <i>12</i>                  | <i>26</i>          | <i>36</i>              | <i>26</i>            | <i>100</i>   |
| Employer                    | 9                          | 25                 | 28                     | 38                   | 100          |
| Wage Employment             | 11                         | 15                 | 23                     | 50                   | 100          |
| <i>Total Formal</i>         | <i>11</i>                  | <i>15</i>          | <i>23</i>              | <i>50</i>            | <i>100</i>   |

SOURCE: *Sakernas*.

However, *Sakernas* does collect data on the previous work status twelve months prior to the survey. Some important questions for job mobility that are available from *Sakernas* include:

- (a) Whether individuals stopped working or moved into another job in the past year;
- (b) In what industry was the previous job (before the worker stopped working or moved out into another job); and
- (c) What was the employment status in their previous job (before stopping work or moving into another job).

Appendix 1 contains important summary statistics for the main variables among the job movers to the formal sector (non-agriculture) using the 2010–17 pooled data from *Sakernas*. Job movers, from all categories to the formal sector, are dominated by young workers (15–24 years old for new entrants and 25–34 years old for other categories), suggesting that the older workers are less mobile. This is reflected in the mean share of the job movers among people aged 35 years and above, which is significantly lower than for job movers among younger workers. Moreover, new entrants are dominated by workers with a higher level of education; the majority were senior high graduates (academic stream). This contrasts with the studies of Aydin, Hisarciklilar and Ilkcaracan (2010) and Tansel and Acar (2017) in Turkey, which showed that the young often experience entry barriers to formal employment because most young people lack the necessary experience to find a formal job.

The movement to the formal sector for new entrants is concentrated in trade and services, while the movement from the informal to the formal sector was spread more widely across manufacturing, construction, trade and services industries. Males dominated the job movers in all categories. Among the job movers, married individuals are also less represented than single people. Comparing islands, Java and Sumatra have a higher share of movers to the formal sector than other islands, perhaps related to the bigger proportion of jobs in the formal sector on those islands.

The transition of workers to the formal sector is firstly examined using a logit model, with a binary: whether individuals are currently working in the formal sector (1) or working in the informal sector (0). Following the above discussion, the Proxy 1 definition of the informal sector is used in the estimate. The main independent variable is whether workers twelve months ago were:

- (a) New entrants (who do not have a job);
- (b) Working in the informal sector; or
- (c) Working in the formal sector (omitted as a reference).

Following the method used by McCaig and Pavncik (2015) for Vietnam, the estimate focuses on the job movers, excluding those workers who have not changed their job in the past twelve months. The transition will also be linked to some social and demographic characteristics as control variables, consisting of the labour supply characteristics. These include age, gender, residence in urban/rural areas, highest level of completed education, whether the individual is a household head, marital status, sector of activity, and the main island where the worker lives. In addition, the provincial minimum wage and the provincial share of output in services and industry are added as proxies to measure labour demand variations. An increase in the provincial minimum wage is expected to attract more workers to the formal sector but also to push up labour costs, and therefore potentially affect the job movement across sectors. Dummy variables are used to control for year-specific characteristics. The logit model will be examined for all jobs and non-agricultural jobs, given the different characteristics of the agricultural sector from the other sectors discussed above.

As presented in Table 5, the coefficient of the new entrants (individuals who did not have a job in the previous twelve months) is positive and statistically significant. This indicates that workers who did not have a job in the past year are more likely to enter the formal sector. Compared to other categories, the result also shows that new entrants have a higher probability of entering the formal sector than workers previously employed in both the informal sector and formal sector. Thus, the main driving force for the formal sector expansion in the last decade has been new entrants.

Comparing the estimates of all workers and non-agricultural workers, the coefficient is higher using the data for all workers, indicating that new entrants have a higher probability of entering the formal sector than workers who previously worked in agriculture. Although new entrants tend to be superior to other job movers, World Bank (2010) noted that young people are more likely employed on fixed-term contracts rather than as permanent employees. They are thus likely to face a higher degree of income insecurity with lower earnings.

Moreover, although we know that there is some mobility of workers from the informal to the formal sector, the result shows that individuals who previously worked in the informal sector are generally less likely to move to the formal sector, and more likely to move to the other informal sector jobs. In other words, the result supports the analysis that workers who previously worked in the informal sector find more difficulties in entering formal sector employment than the other categories. The difficulties are a bit more severe for workers in formal, non-agricultural jobs (columns 3 and 4 of Table 5), suggesting some constraints in the transition, particularly to the non-agricultural jobs, as indicated by the decrease in coefficients when agricultural workers are excluded. The evidence suggests the existence of an “informality trap” for most of the informal sector workers.

The result is consistent with McCaig and Pavncik (2015) for Vietnam, showing that the transition of workers to the formal sector is dominated by younger, educated male workers living in urban areas. Comparing age groups, young movers (aged 15–24) are the most likely to enter the formal sector employment relative to the older workers, confirming our observation that young workers make an important contribution to the expansion of the formal sector. The probability of moving then declines

TABLE 5  
 Logit Results for Movement to the Formal Sector Compared with Previous Activity  
 (1: Formal Sector Jobs and 0: Informal Sector Jobs)

|                                       | <i>All Workers</i> |               | <i>Non-Agriculture Jobs</i> |               |
|---------------------------------------|--------------------|---------------|-----------------------------|---------------|
|                                       | <i>Coef.</i>       | <i>P&gt;z</i> | <i>Coef.</i>                | <i>P&gt;z</i> |
| <i>Previous Work Status</i>           |                    |               |                             |               |
| New Entrants                          | 0.157              | 0.00          | 0.048                       | 0.00          |
| From Informal Sector                  | -0.619             | 0.00          | -0.679                      | 0.00          |
| <i>Ages</i>                           |                    |               |                             |               |
| Age 15–24                             | 1.483              | 0.00          | 1.643                       | 0.00          |
| Age 25–34                             | 1.108              | 0.00          | 1.217                       | 0.00          |
| Age 35–44                             | 0.842              | 0.00          | 0.941                       | 0.00          |
| Age 45–54                             | 0.612              | 0.00          | 0.719                       | 0.00          |
| Age 55–64                             | 0.256              | 0.00          | 0.373                       | 0.00          |
| <i>Education</i>                      |                    |               |                             |               |
| Primary                               | 0.227              | 0.00          | 0.183                       | 0.00          |
| Junior high                           | 0.381              | 0.00          | 0.431                       | 0.00          |
| Senior High-Academic                  | 0.802              | 0.00          | 0.909                       | 0.00          |
| Senior High-Vocational                | 0.693              | 0.00          | 0.825                       | 0.00          |
| Diploma                               | 1.344              | 0.00          | 1.480                       | 0.00          |
| University                            | 1.075              | 0.00          | 1.232                       | 0.00          |
| <i>Current Industry of Employment</i> |                    |               |                             |               |
| Mining                                | 1.520              | 0.00          | -0.709                      | 0.00          |
| Manufacturing                         | 1.643              | 0.00          | -0.657                      | 0.00          |
| Utilities                             | 2.809              | 0.00          | 0.502                       | 0.00          |
| Construction                          | 1.263              | 0.00          | -1.009                      | 0.00          |
| Trade                                 | 0.586              | 0.00          | -1.722                      | 0.00          |
| Transportation                        | 0.657              | 0.00          | -1.657                      | 0.00          |
| Finance                               | 2.587              | 0.00          | 0.240                       | 0.00          |
| Services                              | 2.291              | 0.00          |                             |               |
| <i>Other Personal Characteristics</i> |                    |               |                             |               |
| Urban                                 | 0.401              | 0.00          | 0.365                       | 0.00          |
| Head HH                               | 0.344              | 0.00          | 0.354                       | 0.00          |
| Males                                 | 0.114              | 0.00          | 0.121                       | 0.00          |
| Married                               | -0.609             | 0.00          | -0.730                      | 0.00          |
| Ever Married                          | -0.455             | 0.00          | -0.522                      | 0.00          |
| <i>Islands</i>                        |                    |               |                             |               |
| Sumatra                               | 0.488              | 0.00          | 0.364                       | 0.00          |
| Kalimantan                            | 0.693              | 0.00          | 0.501                       | 0.00          |
| Sulawesi                              | 0.436              | 0.00          | 0.398                       | 0.00          |
| Other                                 | 0.067              | 0.00          | 0.156                       | 0.00          |
| <i>Demand Side</i>                    |                    |               |                             |               |
| Ln Minimum Wage                       | -0.354             | 0.00          | -0.309                      | 0.00          |
| Share of Services                     | 2.422              | 0.00          | 2.698                       | 0.00          |
| Share of Industry                     | 2.394              | 0.00          | 2.563                       | 0.00          |
| Constant                              | 0.347              | 0.19          | 1.867                       | 0.00          |
| No. observation                       |                    | 176645        |                             | 133474        |
| Pseudo <i>R</i> square                |                    | 0.25          |                             | 0.20          |

SOURCE: Authors' calculations.

noticeably among different age groups, indicating that workers of different ages also differ in labour mobility costs, affecting their ability to move into the formal sector (see Dix-Carneiro 2014).

The result also shows that higher levels of education are associated with easier access to the formal sector, supporting the results of Gong, Van Soest and Villagomez (2004) in Mexico and Tansel and Acar (2017) in Turkey. Comparing education levels, there is a significant ranking according to workers' educational attainment, meaning that among movers, people with higher education qualifications are more likely than those with lower educational qualifications to move to the formal sector. The highest probability is found among movers with tertiary-level education. Female workers are less likely to move to the formal sector; this finding supports other evidence that females are more likely to work in the informal sector, which offers them greater job flexibility. Similarly, workers who live in urban areas have a greater probability of entering the formal sector than those who live in rural areas. This is also supported by the fact that the movers to the formal sector tend to work in the modern sector (including finance, services, and utilities), which is more likely to be found in urban areas.

The share of output in services and manufacturing in a particular region shows positive results, suggesting that both sectors are dominated by formal sector employment. Moreover, higher annual increases in the level of provincial minimum wages are associated with a decrease in the probability of being employed in the formal sector, as expected.

To focus specifically on the transition to the formal sector, the paper now examines the transition to the formal sector from each category. The multinomial logit model is estimated for three possible outcomes with the following transitions:

- (a) From the informal sector to the formal sector;
- (b) From one formal sector job to another formal sector job; and
- (c) New entrants (without a job one year ago) who move to the formal sector.

The explanatory variables are similar to the main explanatory variables used in the first estimate, comprising labour supply characteristics, i.e., age, gender, living in urban or rural areas, educational attainment, head of households, marital status, main island of residence, year, industry dummies and year dummies. In addition, labour demand shifters are added, including share of output in services and manufacturing, and annual increases in provincial minimum wages.

Table 6 reports the multinomial logit results for transition to the formal sector. The estimate focuses on non-agricultural jobs. To facilitate interpretation of the results, the marginal effects for each explanatory variable are also reported in the result because the raw regressions are not directly informative and not comparable across the three possible outcomes. The marginal effects provide information on the change in probabilities of each outcome that is examined. Therefore, specifically, the change in one covariate might increase the probability of one selected outcome but might decrease the probability of another outcome, providing a zero value of total probabilities across all selected outcomes.

The results generally support the first estimate that young people (aged 15–24 years) have greater probabilities of entering the formal sector, as indicated by the positive marginal effects for new entrant outcomes (the marginal effect is 0.134). However, among the older age groups (aged 25 and above), the transition to the formal sector is more dominated by the individuals who have experience of working in the formal sector in the past, as indicated by the positive marginal effects of the transition from formal to (other) formal sector for ages 25 and above. Moreover, individuals who have previously worked in the informal sector are less likely to move to the formal sector, supporting our earlier finding that only a small share of the informal sector workers successfully use the sector as a stepping stone to enter the formal sector (see Table 4).

Although the first estimate above (logit) showed that higher education is associated with a higher probability of moving into the formal sector, interestingly, Table 6 also shows that individuals who have

TABLE 6  
Multinomial Logit Result for Movers to the Formal Sector, Non-Agricultural Sectors (Proxy 1)

|                                       | <i>Informal to Formal</i> |                | <i>Formal to Formal</i> |                | <i>New Entrant to Formal</i> |                |
|---------------------------------------|---------------------------|----------------|-------------------------|----------------|------------------------------|----------------|
|                                       | <i>Mfx</i>                | <i>P value</i> | <i>Mfx</i>              | <i>P value</i> | <i>Mfx</i>                   | <i>P value</i> |
| <i>Ages</i>                           |                           |                |                         |                |                              |                |
| Age 15–24                             | –0.097                    | 0.00           | –0.037                  | 0.24           | 0.134                        | 0.00           |
| Age 25–34                             | –0.036                    | 0.00           | 0.096                   | 0.01           | –0.060                       | 0.09           |
| Age 35–44                             | –0.015                    | 0.10           | 0.093                   | 0.01           | –0.078                       | 0.03           |
| Age 45–54                             | –0.009                    | 0.33           | 0.070                   | 0.05           | –0.060                       | 0.09           |
| Age 55–64                             | –0.025                    | 0.00           | 0.082                   | 0.03           | –0.056                       | 0.14           |
| <i>Education</i>                      |                           |                |                         |                |                              |                |
| Primary                               | 0.029                     | 0.00           | 0.078                   | 0.00           | –0.107                       | 0.00           |
| Junior high                           | 0.000                     | 0.98           | 0.121                   | 0.00           | –0.121                       | 0.00           |
| Senior High-Academic                  | –0.028                    | 0.00           | 0.163                   | 0.00           | –0.135                       | 0.00           |
| Senior High-Vocational                | –0.045                    | 0.00           | 0.148                   | 0.00           | –0.102                       | 0.00           |
| Diploma                               | –0.061                    | 0.00           | 0.200                   | 0.00           | –0.139                       | 0.00           |
| University                            | –0.076                    | 0.00           | 0.116                   | 0.00           | –0.040                       | 0.05           |
| <i>Industry</i>                       |                           |                |                         |                |                              |                |
| Mining                                | 0.035                     | 0.00           | 0.089                   | 0.00           | –0.125                       | 0.00           |
| Manufacturing                         | 0.011                     | 0.00           | 0.123                   | 0.00           | –0.135                       | 0.00           |
| Utilities                             | 0.031                     | 0.02           | 0.037                   | 0.10           | –0.069                       | 0.00           |
| Construction                          | 0.015                     | 0.00           | 0.037                   | 0.00           | –0.052                       | 0.00           |
| Trade                                 | 0.021                     | 0.00           | 0.108                   | 0.00           | –0.129                       | 0.00           |
| Transportation                        | 0.009                     | 0.03           | 0.115                   | 0.00           | –0.124                       | 0.00           |
| Finance                               | 0.000                     | 0.95           | 0.128                   | 0.00           | –0.127                       | 0.00           |
| <i>Other Personal Characteristics</i> |                           |                |                         |                |                              |                |
| Urban                                 | –0.029                    | 0.00           | 0.099                   | 0.00           | –0.071                       | 0.00           |
| Head HH                               | 0.031                     | 0.00           | 0.138                   | 0.00           | –0.170                       | 0.00           |
| Males                                 | 0.059                     | 0.00           | 0.063                   | 0.00           | –0.123                       | 0.00           |
| Married                               | 0.043                     | 0.00           | 0.065                   | 0.00           | –0.108                       | 0.00           |
| Ever Married                          | 0.063                     | 0.00           | 0.054                   | 0.00           | –0.118                       | 0.00           |
| <i>Islands</i>                        |                           |                |                         |                |                              |                |
| Sumatra                               | –0.029                    | 0.00           | –0.028                  | 0.00           | 0.058                        | 0.00           |
| Kalimantan                            | –0.027                    | 0.00           | –0.030                  | 0.00           | 0.058                        | 0.00           |
| Sulawesi                              | –0.045                    | 0.00           | –0.089                  | 0.00           | 0.132                        | 0.00           |
| Other                                 | –0.032                    | 0.00           | –0.080                  | 0.00           | 0.112                        | 0.00           |
| <i>Demand Side</i>                    |                           |                |                         |                |                              |                |
| Ln Minimum Wage                       | 0.009                     | 0.00           | 0.019                   | 0.00           | –0.028                       | 0.00           |
| Share of Services                     | –0.182                    | 0.00           | 0.451                   | 0.00           | –0.269                       | 0.00           |
| Share of Industry                     | –0.193                    | 0.00           | 0.422                   | 0.00           | –0.229                       | 0.00           |
| No. observation                       | 83414.00                  |                |                         |                |                              |                |
| Pseudo R square                       | 0.14                      |                |                         |                |                              |                |

SOURCE: Authors' calculations.

a higher education level and come from other formal sectors have the highest probability of relocating to the formal sector, as indicated by the positive marginal effect. In other words, higher education, combined with the experience of working in other formal sectors, provides a greater chance of entering the formal sector.

Comparing industries, new entrants, rather than workers previously engaged in informal and other formal sectors, have a lower probability of entering the formal sector in most sectors, especially in services (the reference category). Many are likely to be professionals in teaching and healthcare who have just graduated from the courses. The other interesting result is that, although females are less likely to move to the formal sector, those who are new entrants dominate the movement to the formal sector. This is indicated by the negative coefficient for new male entrants. In addition to entry into formal sector jobs among females trained in teaching and health, the other possible reason is the lower mobility of females who are already in the labour force in general; they are less likely to make a transition from their current job to either the formal or the informal sector.

### 5. Earnings of Formal Sector Workers

The study further examines the implication of these transitions for the different rates of earnings between the formal and informal sectors and among the movers and stayers. According to *Sakernas*, the earnings of formal sector workers are based on earnings in wage employment, while the earnings of informal sector workers include earnings received by self-employed and casual workers. As presented in Table 7, those workers in formal employment earn the most on average, with the highest earnings among workers in formal, non-agricultural work. This also confirms that workers in the informal sector appear to be at a disadvantage, consistent with the literature that informal sector workers earn significantly less than their formal counterparts. Moreover, agricultural earnings continue to be inferior, with a large gap compared with the non-agriculture formal sector.

Table 8 presents the cross-tabulation of current hourly earnings in the non-agriculture segment, comparing current earnings in the formal and informal sectors for mobile workers with a different work status in the previous year. Although new entrants have a higher probability of entering the formal sector, on average they receive less of a premium than the movers who have had work experience (in both formal

TABLE 7  
Employment and Earnings in the Informal and Formal Sectors by Main Industry, 2017

| Main Industries | Informal and<br>Formal Sectors | Employment<br>(million) <sup>a</sup> | Earnings |        |                                |        |
|-----------------|--------------------------------|--------------------------------------|----------|--------|--------------------------------|--------|
|                 |                                |                                      | Rp 000   |        | Index                          |        |
|                 |                                |                                      | Monthly  | Hourly | Monthly                        | Hourly |
|                 |                                |                                      |          |        | (Index = All<br>Workers = 100) |        |
| Agriculture     |                                | 14.6                                 | 1,309    | 10.8   | 58                             | 73.5   |
| Non-Agriculture | Informal                       | 24.5                                 | 1,801    | 13.0   | 80                             | 88     |
|                 | Formal                         | 44.7                                 | 2,811    | 16.9   | 125                            | 115    |
| Total           | Formal+Informal                | 83.9                                 | 2,252    | 14.7   | 100                            | 100    |

NOTE: a. Excludes family workers and employers, which is not supported by earnings data from *Sakernas*.

SOURCE: *Sakernas*.

TABLE 8  
Hourly Earnings in the Formal and Informal Sectors Based on  
Previous Work Status among Job Movers, Pooled Data, 2010–17<sup>a</sup>

| <i>Previous Work Status</i> | <i>Current Work Status</i> |                      |
|-----------------------------|----------------------------|----------------------|
|                             | <i>Informal Sector</i>     | <i>Formal Sector</i> |
| Not Working (New Entrants)  | 7,540                      | 6,909                |
| Self employed               | 8,147                      | 7,641                |
| Casual                      | 6,880                      | 6,652                |
| Family Workers              | 7,568                      | 7,303                |
| <i>Total Informal</i>       | 7,557                      | 7,242                |
| Employer                    | 12,402                     | 11,681               |
| Wage Employment             | 8,788                      | 8,916                |
| <i>Total Formal</i>         | 8,923                      | 8,964                |

NOTE: a. Non-agricultural workers only.

SOURCE: *Sakernas*.

and informal sectors) before entering the formal sector. Compared to experienced workers, job movers from the informal sector to the formal sector receive lower earnings than the movers from other formal sectors. This confirms the potential “scarring” effect when they enter into formal sector jobs.

Among informal sector workers, the previously self-employed enjoy higher earnings in the formal sector than previously employed casual workers and family workers. Interestingly, job movers from the formal sector jobs receive similar earnings irrespective of whether they take up jobs in the informal sector or another formal sector. Moving to the informal sector was not a backward step for many workers previously employed in the formal sector.

Finally, the study also compares the earnings of job movers that switch to the formal sector using statistical analysis. As already explained, the study focuses on formal sector earnings because earnings are quite variable in the informal sector, providing unstable coefficients in the earnings equation. The dependent variable in the estimate is the log of hourly earnings in the formal sector, calculated as the sum of monthly labour income in their main job divided by the number of hours worked during the month. Following the categories used in the previous estimate, the main independent variables include: (a) workers who moved from the informal sector to the formal sector in the same jobs; (b) workers who moved from one formal sector job to another; and (c) individuals without jobs (mostly new entrants) moving to the formal sector (the omitted category). The control variables are broadly the same as in the previous section, including labour supply and labour demand shifters.

The results confirm that generally individuals who have the experience working in other formal sectors receive the highest earnings compared with the other two categories (Table 9). The result is robust across different estimates. The coefficients for workers who moved from another formal sector are significantly higher than for individuals who moved from the informal sector, again suggesting the existence of a scarring effect for those previously employed in the informal sector. Although new entrants have a higher probability of entering the formal sector, the results confirm that their earnings are lower than the experienced job movers’, either from the formal or informal sector.

The coefficients on most of the control variables in the earning equation were also found to be significant. In general, the results suggest that older aged movers to the formal sector enjoyed higher

TABLE 9  
Hourly Earnings Equation for Formal Sector Jobs

|                                       | <i>Heckman</i> |               | <i>OLS</i>   |               |
|---------------------------------------|----------------|---------------|--------------|---------------|
|                                       | <i>Coef.</i>   | <i>P&gt;z</i> | <i>Coef.</i> | <i>P&gt;z</i> |
| <i>Previous Work Status</i>           |                |               |              |               |
| From Formal Sector                    | 0.106          | 0.00          | 0.107        | 0.00          |
| From Informal Sector                  | 0.015          | 0.09          | 0.018        | 0.04          |
| <i>Ages</i>                           |                |               |              |               |
| Age 15–24                             | 0.102          | 0.05          | –0.028       | 0.56          |
| Age 25–34                             | 0.220          | 0.00          | 0.126        | 0.01          |
| Age 35–44                             | 0.297          | 0.00          | 0.229        | 0.00          |
| Age 45–54                             | 0.354          | 0.00          | 0.300        | 0.00          |
| Age 55–64                             | 0.320          | 0.00          | 0.289        | 0.00          |
| <i>Education</i>                      |                |               |              |               |
| Primary                               | –0.025         | 0.23          | –0.034       | 0.09          |
| Junior high                           | 0.190          | 0.00          | 0.160        | 0.00          |
| Senior High-Academic                  | 0.398          | 0.00          | 0.342        | 0.00          |
| Senior High-Vocational                | 0.577          | 0.00          | 0.522        | 0.00          |
| Diploma                               | 0.770          | 0.00          | 0.696        | 0.00          |
| University                            | 0.889          | 0.00          | 0.816        | 0.00          |
| <i>Industry</i>                       |                |               |              |               |
| Mining                                | 0.432          | 0.00          | 0.468        | 0.00          |
| Manufacturing                         | 0.207          | 0.00          | 0.235        | 0.00          |
| Utilities                             | 0.249          | 0.00          | 0.234        | 0.00          |
| Construction                          | 0.242          | 0.00          | 0.293        | 0.00          |
| Trade                                 | –0.106         | 0.00          | –0.028       | 0.00          |
| Transportation                        | 0.069          | 0.00          | 0.147        | 0.00          |
| Finance                               | 0.278          | 0.00          | 0.275        | 0.00          |
| <i>Other Personal Characteristics</i> |                |               |              |               |
| Urban                                 | –0.007         | 0.20          | –0.009       | 0.10          |
| Males                                 | 0.194          | 0.00          | 0.188        | 0.00          |
| <i>Islands</i>                        |                |               |              |               |
| Sumatra                               | 0.074          | 0.00          | 0.054        | 0.00          |
| Kalimantan                            | 0.139          | 0.00          | 0.114        | 0.00          |
| Sulawesi                              | 0.054          | 0.00          | 0.034        | 0.00          |
| Other                                 | 0.061          | 0.00          | 0.052        | 0.00          |
| <i>Demand Side</i>                    |                |               |              |               |
| Ln Minimum Wage                       | 0.435          | 0.00          | 0.451        | 0.00          |
| Share of Services                     | 1.331          | 0.00          | 1.160        | 0.00          |
| Share of Industry                     | 1.499          | 0.00          | 1.340        | 0.00          |
| Constant                              | 0.484          | 0.00          | 0.617        | 0.00          |
| Lambda                                | 0.169          | 0.00          |              |               |
| No. observation                       |                | 78,092        |              | 78,092        |
| R square                              |                |               |              | 0.252         |

SOURCE: Authors' calculations.



incomes than younger aged movers, with the highest coefficient for ages 45–54 years old. This is most likely due to the greater work experience of the older movers compared with their younger counterparts. As expected, individuals with more education enjoyed a higher labour income. Comparing sector of activities, movers to the formal sector who are working in mining and finance enjoyed higher labour incomes than individuals who moved to other sectors. The lowest level of earnings was received by workers who moved to trade and services (the omitted category). Male movers also received higher earnings than female movers. On the demand side, increases in minimum wages raised hourly earnings, as predicted. A bigger share of industry and services in the region also supports higher earnings of the workers formerly employed in the formal sector.

## 6. Conclusion

The paper has studied the job transition across sectors supporting the growth of the formal sector in Indonesia. Formalization occurred in a period of slower growth in the economy. In this respect, Indonesia is different from an interesting competitor, Vietnam, which is a low-income but fast-growing and industrializing country (see McCaig and Pavcnik 2015). Using the National Labour Force Survey, the study finds that the expansion of the formal sector in Indonesia is closely correlated with the strong growth in the number of younger better educated, new job entrants. This occurred in a period of increased social services, including a rapid increase in government-funded education and healthcare facilities in the second decade of the 2000s. Indonesia has been among the countries investing heavily in the number of schools and universities, reflected in the significant increase in the educational budget (Ginting, Manning and Taniguchi 2018). For many, education is a must for formal sector work, especially in modern sectors.

On the other hand, there is some mobility from the informal to the formal sector, particularly for workers who have similar characteristics to those of employees in the formal sector. Despite this mobility, the results show that individuals who previously worked in the informal sector find moving to the formal sector difficult. In terms of earnings, there is also evidence of scarring effects, suggested by the fact that formal sector workers who initially started in the formal sector earn more than individuals who began in the informal sector.

Besides education, some demographic characteristics of workers are also found to be related to job transitions. Regarding age, the study found that older workers found it harder to enter formal sector jobs than younger people. The sector of economic activity appeared to play a significant role in explaining job mobility in the formal sector, particularly for jobs in services and manufacturing. Although formal sector work is generally preferred in terms of earning capacity over informal and agricultural work, some studies in Indonesia showed that jobs in the formal sector are not always superior to those in the informal sector. As discussed above, the quality of jobs in the formal sector depends partly on the employee's contract status.

If data are available, future research work could further examine job transition using the expanded definition of the formal-informal sector (Proxy 2 and Proxy 3) in the national labour force survey. This is particularly relevant for the specific questions on workers' previous jobs. This will help make the definition of formal-informal sectors more specific and realistic.

APPENDIX 1  
Summary Statistics for Main Variables among the Job Movers to the  
Formal Sector, Pooled Data 2010–17

| <i>Characteristic</i>                 | <i>Informal to Formal</i> |           | <i>Formal to Formal</i> |           | <i>No Job to Formal<br/>(New Entrants)</i> |           |
|---------------------------------------|---------------------------|-----------|-------------------------|-----------|--|-----------|
|                                       | <i>Mean</i>               | <i>SD</i> | <i>Mean</i>             | <i>SD</i> | <i>Mean</i>                                | <i>SD</i> |
| <i>Ages</i>                           |                           |           |                         |           |  |           |
| Age 15–24                             | 0.19                      | 0.39      | 0.34                    | 0.47      | 0.61                                       | 0.49      |
| Age 25–34                             | 0.32                      | 0.46      | 0.35                    | 0.48      | 0.24                                       | 0.43      |
| Age 35–44                             | 0.28                      | 0.45      | 0.19                    | 0.39      | 0.09                                       | 0.29      |
| Age 45–54                             | 0.15                      | 0.36      | 0.08                    | 0.27      | 0.04                                       | 0.20      |
| Age 55–64                             | 0.04                      | 0.20      | 0.03                    | 0.16      | 0.01                                       | 0.11      |
| Age >64                               | 0.01                      | 0.10      | 0.003                   | 0.06      | 0.002                                      | 0.05      |
| <i>Education</i>                      |                           |           |                         |           |  |           |
| Less than Primary                     | 0.03                      | 0.17      | 0.01                    | 0.11      | 0.02                                       | 0.13      |
| Primary                               | 0.41                      | 0.49      | 0.19                    | 0.40      | 0.20                                       | 0.40      |
| Junior high                           | 0.26                      | 0.43      | 0.23                    | 0.42      | 0.23                                       | 0.43      |
| Senior High-Academic                  | 0.24                      | 0.43      | 0.39                    | 0.48      | 0.36                                       | 0.48      |
| Senior High-Vocational                | 0.02                      | 0.14      | 0.05                    | 0.21      | 0.05                                       | 0.22      |
| Diploma                               | 0.03                      | 0.16      | 0.10                    | 0.29      | 0.10                                       | 0.30      |
| University                            | 0.01                      | 0.07      | 0.03                    | 0.16      | 0.04                                       | 0.19      |
| <i>Industry</i>                       |                           |           |                         |           |  |           |
| Mining                                | 0.08                      | 0.27      | 0.04                    | 0.20      | 0.03                                       | 0.18      |
| Manufacturing                         | 0.19                      | 0.39      | 0.22                    | 0.41      | 0.17                                       | 0.37      |
| Utilities                             | 0.01                      | 0.08      | 0.01                    | 0.08      | 0.01                                       | 0.08      |
| Construction                          | 0.19                      | 0.39      | 0.10                    | 0.29      | 0.08                                       | 0.28      |
| Trade                                 | 0.21                      | 0.40      | 0.27                    | 0.44      | 0.26                                       | 0.44      |
| Transportation                        | 0.07                      | 0.26      | 0.07                    | 0.25      | 0.05                                       | 0.21      |
| Finance                               | 0.03                      | 0.19      | 0.08                    | 0.26      | 0.06                                       | 0.23      |
| Services                              | 0.20                      | 0.40      | 0.22                    | 0.41      | 0.34                                       | 0.46      |
| <i>Other Personal Characteristics</i> |                           |           |                         |           |  |           |
| Urban                                 | 0.52                      | 0.50      | 0.75                    | 0.43      | 0.64                                       | 0.48      |
| Rural                                 | 0.48                      | 0.50      | 0.25                    | 0.43      | 0.36                                       | 0.48      |
| Male                                  | 0.80                      | 0.39      | 0.68                    | 0.46      | 0.52                                       | 0.50      |
| Female                                | 0.20                      | 0.39      | 0.32                    | 0.46      | 0.48                                       | 0.50      |
| Head of Household                     | 0.54                      | 0.50      | 0.37                    | 0.48      | 0.13                                       | 0.34      |
| Married                               | 0.69                      | 0.46      | 0.53                    | 0.50      | 0.30                                       | 0.46      |
| Ever Married                          | 0.06                      | 0.24      | 0.04                    | 0.20      | 0.03                                       | 0.17      |
| Single                                | 0.25                      | 0.42      | 0.43                    | 0.49      | 0.67                                       | 0.47      |
| <i>Islands</i>                        |                           |           |                         |           |  |           |
| Java                                  | 0.36                      | 0.47      | 0.45                    | 0.50      | 0.33                                       | 0.47      |
| Sumatra                               | 0.227                     | 0.44      | 0.25                    | 0.43      | 0.28                                       | 0.45      |
| Sulawesi                              | 0.14                      | 0.34      | 0.09                    | 0.29      | 0.15                                       | 0.35      |
| Kalimantan                            | 0.11                      | 0.31      | 0.11                    | 0.31      | 0.10                                       | 0.31      |
| Other                                 | 0.12                      | 0.33      | 0.10                    | 0.30      | 0.14                                       | 0.34      |

*Demand Side*

|                           |       |      |       |      |       |      |
|---------------------------|-------|------|-------|------|-------|------|
| Ln Increase Minimum Wage* | 13.95 | 0.35 | 13.98 | 0.37 | 13.98 | 0.38 |
| Share of Services         | 0.43  | 0.10 | 0.43  | 0.13 | 0.43  | 0.12 |
| Share of Industry         | 0.38  | 0.14 | 0.41  | 0.15 | 0.38  | 0.16 |

NOTES: SD – Standard Deviation

SOURCE: *Sakernas*.

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## NOTES

1. The agriculture sector is excluded from the formal-informal definition because it has several unique characteristics, as discussed later in the article.
2. Scarring refers to the situation where unemployment or employment in a low status, or low wage activity (such as informal sector work), has a negative long-term effect on future labour market prospects.
3. See, for example, Arango and Pachon (2004) in Colombia and Gindling and Terrell (2007) in Costa Rica. BPS in the recent years has expanded the formal-informal definition to the so-called Proxy 2, combining work status and occupational categories (e.g., self-employed professionals, managers and clerical workers are all considered formal according Proxy 2, whereas they are classified as informal according to Proxy 1). The Proxy 3 also takes into account type of enterprise, type of bookkeeping where the worker is employed and her/his access to social security. The Proxy 1 definition is mostly used in the paper because of data limitations regarding specific questions on workers' previous jobs in *Sakernas*.
4. Despite the trend of a sustainable decline in agricultural employment, Manning and Purnagunawan (2016) show that it has not been followed by improved productivity in agriculture, suggesting the importance of paying attention to the agriculture sector if Indonesia wants to either achieve food resilience or maintain food security. A policy to invest more in agricultural mechanization is needed, which will increase the productivity of the rural agriculture sector while reducing the demand for agricultural workers.
5. The main reasons for this economic slowdown include: sluggish global economic growth; falling commodity prices; and stagnant household consumption (Shrestha and Coxhead 2018).

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