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Do export booms discourage schooling? Evidence from Indonesia

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Abstract

Economic growth is strongly associated with increased education, yet export booms in low-income countries often spark an opposite trend. Rapid growth of jobs in low-skill occupations may lower overall returns to schooling and raise dropout rates, especially among teens from relatively poor origins. While the problem of high school dropout rates has been identified in several emerging Asian economies, most studies have emphasized supply-side constraints such as schooling access and cost, and shortages of qualified teachers. But boom-related changes in the sectoral and occupational distribution of job creation suggest that demand-side factors may also be in play.

We explore this idea with data from Indonesia's resource export boom of the 2000s. We find evidence of large changes in job opportunities for new labor market entrants, and associated with these, changes in the expected returns to schooling. Looking more deeply, we find that changes in employment opportunities, and especially access to formal sector employment regardless of sector, are strongly conditioned by exogenous family and early-life circumstances: a better start in life is associated with higher returns to education. Conversely, individuals from less advantaged backgrounds are more likely to truncate schooling, and to find work in industries that don't reward skills, and in the informal labor market. This finding suggests that the employment-education channel may help explain recent dramatic increases in inequality in Indonesia.

Keywords: Indonesia, employment, wages, returns to education, poverty, inequality

JEL: O15, J21, F16, I32.

1. Introduction

What are the implications of a sustained resource export boom for employment and household welfare?

The boom increases total income, but also alters economic structure. Resource extraction sectors (e.g., oil palm, timber, energy and mining) expand, as do private expenditures on income-elastic nontradables such as residential construction, health, and personal services. In such a Dutch Disease-affected economy, profitability in sectors that produce non-resource tradables is squeezed between rising domestic costs and output prices that are fixed in world markets. This particularly affects parts of agriculture, the biggest employer of low-skill labor, and also much of manufacturing, the most skill-intensive and technologically dynamic sector.

In the absence of countervailing policies, therefore, a sustained resource export boom may slow the overall growth of labor demand, and also tend to reduce growth of jobs in skill-intensive industries.¹ As a result average expected returns to education may fall, *ceteris paribus*. This in turn will exert downward pressure on enrolment and retention rates at upper secondary school and tertiary levels, especially as rising labor demand in low-skill industries increases the opportunity cost of schooling.

In the long run the economy may be less well positioned to make the post-boom transition to growth based on skills and innovation. And since education is in nearly all economies the most important pathway to economic mobility, income inequality is likely to rise.

¹ Some skill-intensive service industries, such as banking, insurance and finance, and telecommunications, are likely to expand during the boom. However, their growth contributes very little to changes in overall labor demand.

2. Indonesia in the 2000s: crisis, growth and Dutch Disease

2.1 Growth and structural change

Indonesia is the world's 16th largest economy and the fourth largest by population. Unlike many other resource-rich developing economies it can boast an impressive record of economic growth and development. Excluding a major correction during the Asian crisis in 1998-2000, the Indonesian economy has grown rapidly since the 1970s. In the post-independence era it has depended heavily on agriculture, minerals (including oil and gas), forestry, plantation crops, and fisheries to generate income, employment and export revenues. Indonesia has also made substantial progress in industrialization—most especially so in the period from 1984-96, between the end of the 1970s oil price rises and the onset of the Asian crisis. During these years the economy was substantially reoriented towards trade, and hosted an increasingly large stock of foreign investment in export-oriented, labor-intensive industries such as garments, footwear, furniture and electrical appliances (Aswicahyono, Bird and Hill 1996).

Indonesia was hit hard by the Asian crisis, and was slow to recover. The economic downturn precipitated the downfall of the Suharto regime and subsequent restoration of democratic governance was accompanied by an extended period of political instability.² Since the early 2000s, however, the political system has stabilized and the economy has returned to steady growth, expanding at an average per capita rate of almost 5%. Per capita income has risen from 15% of the world average to 20% (Figure 1). Poverty has continued its downward trend (Figure 2).

Figure 1: GDP growth

² Indonesia had 3 presidents in the 6 years from mid-1998 to late 2004. The subsequent (and current) president was the first to be elected by direct popular vote, in 2004. The 1999 national parliamentary election was the first free vote for representatives to that body since 1955. In addition, between 1999 and 2001 the Constitution was almost entirely rewritten, and the country underwent a sweeping decentralization of powers to provincial and district level administrations. A long-running military conflict with a separatist movement in the northern province of Aceh came to an end in 2005.

Figure 2: Poverty trends

This growth appears to be due largely to booming external demand and prices for industrial crops, timber and minerals, all driven by rapid economic expansion in China and other large Asian economies. As a result, sectoral growth rates in the 2000s have been highly unequal. Mining, industrial crops and forestry have all expanded due to external demand. Indirectly, the resource boom has also driven rapid growth in domestic consumption expenditures, especially spending on nontradable services (Figure 3). Employment in these industries has risen, as have prices. The real exchange rate, a broad indicator of trends in domestic prices relative to those in a country's trading partners, appreciated from an average index value of 69 (2010=100) in 2000-01 to 98 in 2011-12, a rise of almost 4% per year (Figure 4). Meanwhile, however, output and employment growth in manufacturing, the engine of Indonesia's growth in the decade prior to the crisis, have fallen far behind. These trends are readily seen in the data in Table 1.

Figure 3: Sectoral contributions to GDP growth

Figure 4: Real exchange rate trend

Table 1: Trends in sectoral output and employment

Slow growth in manufacturing relative to overall GDP appears to have more than one cause. It is likely to be due in part to the after-effects of a large and sustained drop in investment during the Asian crisis. From 1970-96, the stock of machinery and equipment grew at around 8% per year and investment averaged about 30% of GDP. In 1997-2001 investment fell to 21% of GDP; recovery to pre-crisis levels took until 2007. Moreover, growth of total capital stock in the 2000s has been led by construction, particularly non-residential construction, rather than by manufacturing capital (van der Eng 2009, Figure 4). Meanwhile public investments in infrastructure have also fallen far behind the pace required to maintain an efficient economy. Inefficient and unreliable ports, roads and traffic management, and electricity supply all have a

particularly large impact on manufacturing sector costs.³ Thus growth of capital per worker (excluding construction) was very low or even negative over the decade 1998-2007.

Other flaws in the structure and management of this large and rickety economy have arguably contributed to diminished employment and wage growth. In the post-democratization era, momentum in economic reform, including liberalization of trade and foreign investment policies, has been lost (Wihardja 2013). There has been backtracking and ambivalence on FDI regulations and divestment, and even on trade policy—including a recent effort to impose export taxes on unprocessed natural resource products.⁴ Labor market regulations—already very restrictive by regional standards (World Bank 2013) have been tightened, including moves to raise minimum wages in organized sectors and to impose controls that make hiring and firing more costly. On social policy, spending has increased, most especially on education, but empirical studies do not find evidence that increased spending is mapping into improved educational outcomes (e.g. Suryadarma and Jones 2013; Newhouse and Suryadarma 2011). In addition, there is some evidence that new technologies in manufacturing, transport, communications and retailing have all reduced the propensity for growth in those industries to be translated into substantial rises in labor demand (Aswicahyono et al. 2011).

Finally, Indonesia is without doubt suffering from Dutch Disease (Thee 2011). Theory predicts that in a small trade-dependent economy a resource boom, while increasing income, will reduce profits, activity levels and employment in non-resource tradable sectors such as manufacturing, and increase them in non-tradable sectors (broadly, services), whose prices will also be bid up—as the real exchange rate data cited

³ Shipping turnaround times and container “dwell times” in Indonesia’s major port, Tanjung Priok, are very high relative to international competitors, and the Jakarta metropolitan area, which houses a large fraction of national industrial production and employment, suffers heavily from traffic congestion (ADB 2013). In addition, disruptions due to electricity shortages, flooding and other infrastructure-related problems have become a major burden.

⁴ In Indonesia, much credit for past development successes is given to the axiom that “bad times make for good policies” (this is known as Sadli’s Law, in honor of a former Indonesian finance minister). These indicators of current policy trends suggest that there may be an equally powerful converse, i.e. that good times make for bad policies. That is an observation also found in the global resource curse literature (e.g. Auty 2001).

above confirm. The factor market implications of Dutch Disease are not unambiguous, but theory leads us to expect that returns to factors used intensively in non-booming sectors will fall in real terms, while real returns to more mobile factors (commonly, unskilled labor) may rise or fall depending on the extent of real appreciation.⁵

A brief consideration of theory also indicates that many of the effects of these three putative causes of manufacturing decline are correlated. The resource boom, the collapse of investment and the tightening of labor market and other industrial regulations all reduce profits, activity levels and employment in manufacturing sectors. If physical and human capital are complements (e.g. Griliches 1969), then a diminished rate of investment in manufacturing also reduces growth in the demand for skilled workers. Of course, one important contrast between the export boom and investment collapse is that the former raises total income, whereas the latter reduces it. It is therefore clear that of these three influences on manufacturing growth, the resource export boom has been dominant, lifting GDP growth to rates of 5% and more per year in the post-crisis era.

2.2 Poverty, wages and earnings, and inequality

Since the 1970s Indonesia has recorded an impressive rate of poverty reduction. Poverty has fallen in almost every measured interval, rising only during the Asian crisis years and again, briefly, in 2006. In the latter year real household incomes were sharply reduced as the prices of rice and fuel soared, the latter due to reduction of a long-standing domestic fuel price subsidy. Available estimates of the poverty elasticity of growth⁶ in Indonesia are broadly comparable with estimates from other countries. Suryahadi et al. (2012) find a semi-elasticity of -0.31 before the Asian crisis and -0.37 afterwards, which

⁵ See Cassing and Warr (1985) for a formal taxonomy of distributional changes in a standard resource boom model.

⁶ The poverty elasticity of growth is the percentage decline in poverty associated with a particular growth episode. Though widely used, the poverty elasticity of growth is problematic for several reasons. Not least among these, the poverty elasticity often relies on headcount measures and so is highly sensitive to the distribution of incomes or expenditures clustered around the poverty line—as is the case in Indonesia.

correspond to elasticity values of about -1.5 and -2.4 respectively. However, these are estimates for headcount poverty only, and per capita consumption is tightly clustered around the national poverty line. In 2012, only 12.5% of Indonesians were counted as poor according to the national poverty line (PPP\$1.20/day), yet 38.4% fell below 1.5 times this line (PPP \$1.78day) and 56.5 below twice the line (World Bank 2012). While headcount poverty is at least diminishing, trends in the Indonesian labor market tell a story that is strikingly dissonant with the usual economic development narrative.

First, patterns of employment growth have diverged from the “typical” developing country case. Figure 6 provides a breakdown of trends by broad sector of employment. Job growth in manufacturing has declined. In agriculture, which is composed partly of tradable sectors such as oil palm, coffee and rubber, and partly of sectors such as rice that are largely insulated from international markets, employment has fallen somewhat. Meanwhile in services, and especially in low-skill subsectors, there has been substantial job growth. These trends are much more pronounced if we look only at the distribution of employment among new labor market entrants, that is, workers aged 15-24 in each survey year. The trends in employment by sector for this group can be seen in Figure 7. Pre-crisis, 25% of new job market entrants found employment in manufacturing, but by 2007 only 17% did so—a drop of of-third. Meanwhile, the share of young workers in wholesale/retail trade and personal services rose from 20% to 26%, and in government/community services from 14% to 17%. These patterns in employment shares are in line with predictions of diminished profitability in manufacturing due to lower investment, Dutch Disease, and policy tightening.

Figures 6 and 7: Employment by sector, all workers and young workers

Second, while overall labor demand has grown, post-crisis real wages are essentially flat. ILO data show real wages of regular (formal) employees rising slightly in the 2000s; however, those for casual workers have remained constant at about Rp.250,000 (\$US28) per month throughout the decade (ILO 2011, and see Figure 8), even as average real per capita income has increased at a globally rapid pace. This

combination has led some commentators to describe the past decade as marked by “jobless growth.” The term is not strictly accurate, however. It is not clear that open unemployment has risen appreciably; rather, the composition of labor demand has changed, and real wages have stagnated.⁷

Figure 8: Real wage trends

There is, of course, a relationship between the changing sectoral composition of employment and trends in real wages. Informality is widespread in the Indonesian labor force, but is far less prevalent in manufacturing than in agriculture or services. Expansion of services thus means more workers in informal employment, other things equal. While it is possible that some workers opt for informal employment (and especially self-employment) as a means to build a business or a more flexible career, it is more typically true that jobs in informal services provide a “sink” for workers who would otherwise be recorded as unemployed or underemployed. There are some indications that the latter is the case during Indonesia’s boom. From 1997 to 2007, median earnings of workers in private wage employment in domestic trade and personal services remained roughly constant relative to those in manufacturing, while the relative earnings of self-employed workers fell sharply:

Median earnings/worker in wholesale/retail/personal services, relative to manufacturing wages			
	1997	2000	2007
Private employment	0.88	0.85	0.85
Self-employed w/out employees	0.80	0.70	0.53

Source: IFLS.

The decline in relative returns to self-employment is inconsistent with positive selection of workers into self-employment in order to advance their careers.

⁷ Although more recent data suggest that in Indonesia youth unemployment is now very high by global standards.

Another study looking in more detail at the data on manufacturing has made it clear that in the 2000s this sector has also undergone structural change. Whereas in 1986 and 1996 large firms (100 workers or more) accounted for 55% of manufacturing employment, in 2006 this figure had fallen to 39%. Medium firms (20-99 employees) fell from 14% in 1986 and 10% in 1996 to 8% in 2006. Small firms (5-19 employees) rose, from 32-35% in 1986-96 to 53% of manufacturing employment in 2006 (Aswicahyono et al. 2011, Table 8).

Third, in spite of public commitments to educational reform and (and a recent constitutional reform committing the government to spend not less than 20% of its budget on education) there has been comparatively little progress on educational infrastructure or the quality of schooling (Suryadarma and Jones, eds., 2013). Indonesia's labor force is already woefully undereducated: the country is close to the bottom of many global comparisons of educational achievement.⁸ The boom era has resulted in no discernible catch-up relative to slower-growing economies.

Fourth, economic returns to education in Indonesia are low, and unusually among Asian developing countries, have actually declined since the pre-crisis era. This trend, also, is inconsistent with the typical experience of low-middle income countries. We explore the dimensions and reasons for this phenomenon in more detail in the next section of this paper.

The other big welfare question concerns the robustness of poverty alleviation with respect to volatility in world commodity markets. An economy in which economic activity is concentrated on commodity exports and non-tradable services is more than usually subject to volatility from global market shocks (Hausmann and Rigobon 2002). Global commodity prices are far more volatile than are those for manufactured goods. In addition, since domestic prices of nontradable goods and services (e.g. land and

⁸ Indonesia continues to underperform on international comparisons of educational achievement, most recently in the OECD's 2012 PISA scores (www.oecd.org/pisa).

property, construction and personal services), are driven by domestic demand, they are also highly procyclical. Lastly, most service sector employment is informal. As a result, workers in service sector industries are more vulnerable than most to a recession or a downturn in economic growth.

Finally, Indonesian income inequality has risen very sharply in the past decade (Figure 9). Booming resource export earnings, increases in nontradable product and services prices and the shift in employment toward lower-paid, less dynamic jobs all contribute to higher inequality during the recent boom.⁹ The Gini coefficient, stable for several decades at around 0.32, began rising in the early 2000s and by 2011 had reached 0.41. Rising inequality in the 2000s has begun to attract a great deal of concern, especially given that it has historically been low by developing-country standards (Yusuf 2013).

Figure 9: Inequality trends

Since we lack a counterfactual against which to evaluate these trends, it's important to try to see them in context. One comparison is with labor market data from comparable neighboring economies such as Thailand, Malaysia and the Philippines (e.g., Aswicahyono et al. 2011). Indonesia's growth rate has been roughly similar, and its industrial slowdown has been approximately matched in Thailand. But Indonesia's industrialization *never* reached a comparable share of GDP, or employment, nor attained anything like the level of productivity or technical sophistication seen in its neighbors (Coxhead and Li 2008), and its average per capita income remains well below theirs.

Another comparison is with the pre-crisis period in Indonesia itself. From the mid-1980s to 1996 Indonesia's economy underwent an industrialization boom. Real wage growth was positive and rapid in spite of a large surplus of low-productivity rural labor (Manning 1998: 118-128; Islam 2003). There was

⁹ In Indonesia this trend has been exacerbated by the substantial weakening since 2000 of INPRES, a central government formula for acquiring natural resource rents and redistributing them among provinces, and by reforms to minimum wage and labor laws (Mishra 2009).

perceptible “co-movement” of real wages and poverty reduction. In 1989-97, output per worker grew at 5.5%/yr and real wages at 6.2%/yr – the highest rates of any era since 1980. In 2000-07, by contrast, these rates were 4.3% and 1.7% (Dhanani et al. 2009: 140-141). GDP growth was somewhat slower in the later period (about 4.4% versus more than 5%), so this does not explain the whole of the discrepancy. Real wages in Indonesia have remained flat in the post-GFC era, unlike those in other countries (World Bank 2013).

The trends of the last decade in the structure of employment, real wages, returns to schooling and inequality raise questions about the true extent and sustainability of Indonesia’s recent poverty reduction. How are such large reductions in poverty being achieved if real wages and earnings are flat, and how will they be sustained if the proportion of the labor force in more rewarding industries, occupations and (perhaps) institutional arrangements is declining?

3. Structural change in labor markets

As discussed above, Indonesia’s post-boom job growth has been strong in services and weak in manufacturing. What does it mean to a worker to take up employment in one of these industries instead of another? In this section we ask how different these industries currently are in terms of earnings, stability, returns to skills and other factors likely to influence long-term economic well-being. We also take initial steps toward addressing a deeper question, that of the stability of individual earnings through the course of the resource export boom.

3.1 Data, and definitions of key variables

We use data from recent rounds of the Indonesian Family Life Survey (IFLS).¹⁰ The IFLS is a longitudinal socioeconomic and health survey based on a sample of households representing about 83% of the Indonesian population living in 13 of the 26 provinces that existed at the time of the first survey wave, 1993. The survey collects data on individual respondents, families, households, and communities, and on a wide array of health and education resources and outcomes. The first wave (IFLS1) was administered to individuals living in 7,224 households. The second wave (IFLS2) was fielded to the same respondents in 1997, immediately prior to the Asian crisis. The third wave, IFLS3, was in 2000, and the most recent wave, IFLS4, was administered in late 2007 and early 2008 on the same 1993 households and their splitoffs. In that wave, 13,535 households and 44,103 individuals were interviewed. An important feature of the IFLS methodology is the attention given to minimizing attrition. Average attrition (both of original respondents and of splitoff households) in IFLS4 is less than 10% overall, although the rate is somewhat higher in areas affected by armed conflict and natural disasters, and in the capital city, Jakarta. Strauss et al. (2009) provide complete documentation on sampling, survey instruments, methods and protocols, and supply a breakdown of basic data about respondents.

The data included in our analysis are for those of working age (15-65) and in the labor force only. In 2007 this was 78% of men and 42% of women surveyed (Table 2). Of those not working, 8% of men and 7% of women were attending school; 3% of men and 47% of women were engaged in housekeeping, and smaller percentages were searching for a job, retired, invalids, or otherwise out of the labor force.

Table 2: Summary data on distribution of labor force

¹⁰ The following description paraphrases text in Strauss et al. (2009).

In order to estimate determinants of earnings, we fit modified earnings equations (Mincer 1974) to the data. Initially, we restrict attention to the most recent data, from IFLS4. This gives us a picture of determinants of variation in earnings in 2007, a year well after the end of the Asian crisis era and well into the resource export boom period.

Table 3 summarizes the main variables used in estimation. Earnings are measured as the log of monthly labor income in rupiah. We measure education by the number of years reported.¹¹ Tenure is the number of years an individual reports having held a specific job. Experience is reported as years in the labor force. In order to allow for diminishing returns, both these variables also enter in quadratic form. Urban, Sumatra and OtherIndo are dummies for urban location, Sumatra, and other Indonesia (the excluded category is Java, the main and most populated island). Hours per year are calculated from reported hours in paid work for the reporting period.

Table 3: Summary statistics of data used in regressions

Height, mother's education and household assets are included to control for family origins. A large literature from wealthy country datasets finds that early childhood health, nutrition and family socio-economic status have significant and persistent effects throughout childhood and in labor market outcomes (Currie 2009; Almond and Currie 2011). In developing country datasets these effects are found to persist even after schooling choices are taken into account (Glewwe 2001; Alderman et al. 2006; Maluccio et al. 2009). These findings support the claim that instruments for early childhood health and nutrition are correlated with cognitive ability, an important unmeasured component of labor market outcomes. We assume that the same is true in Indonesia. We take height in 2007 as an instrument for

¹¹ Of course, there are significant markers of educational attainment (such as completion of a schooling stage), so using discrete educational levels rather than years allows for nonlinearities in returns. We also estimated these, but the results add little to the empirical story and we omit them to save space.

early childhood conditions serving as predictors of adult cognitive ability (Silventoinen 2003; Case and Paxson 2006; Case, Paxson and Islam 2009).¹²

Another important variable given the foregoing discussion is the indicator of formal sector employment. Formality is known to be a highly influential determinant of labor productivity and earnings (for discussion of a closely comparable case, that of Mexico, see Hanson 2010). Firms in the informal sector are less capital and technology-intensive, so human capital and labor employed by informal firms are less productive. Informal employment contracts typically do not entail training other than ‘on the job’, and casual employees, for their part, have fewer incentives to give their all (including creative effort) to employers who offer no long-term commitment.

Informality lacks a universally accepted definition, despite its importance in labor market studies (ILO 2013). Another recent study using IFLS data uses a combination of employment status (that is, working conditions such as contracts or benefits) and enterprise characteristics: “A job is classified as formal if the worker is a salaried employee, is self-employed with permanent workers, or is self-employed with temporary workers outside of agriculture” (Newhouse and Suryadarma (2013). According to these authors, this definition is “99 percent correlated with the official definition adopted by Statistics Indonesia, which is based on employment status and occupation.” By this definition, however, only 11% of nonagricultural workers are counted as in informal employment, a figure far below ILO estimates for comparable countries.

We use a definition of formality based only on employment status. In this approach, we count a worker as formally employed if she receives any benefits (bonus, pension, insurance, training, transportation, or health) as part of her employment, regardless of the enterprise type. This definition allows for informal or

¹² The IFLS records both parents’ educational attainment. However these are highly correlated, so we use only that for the mother.

casual employment contracts even within formally incorporated enterprises. By this definition, 74% of workers in IFLS4 are classified as informally employed, a figure very similar to those for countries such as Brazil, Mexico, South Africa, India, Philippines and Vietnam, which range between 50% and 85% (ILO 2013, Table 2.6).

Table 4: Formal and informal workers

3.2 Earnings and returns to schooling during the boom

We now turn to estimates of the 2007 earnings functions, using the log of monthly earnings as dependent variable. We obtain these estimates by OLS. This method leaves unaddressed the possibility of estimation bias due to non-random selection into the labor force. In practice, however, prior estimation of earnings and employment functions using IFLS data has revealed no significant differences between estimates obtained from OLS and those obtained from two-stage models accounting for selection into the labor force (for a review of these, see Purnastuti et al. 2013). Our regressions control for many exogenous characteristics of individuals in the hope that any remaining variation due to unobserved traits has only random effects on earnings.

Table 5 shows results of the earnings regressions. The first column shows estimates with a basic set of controls; this set expands in subsequent columns. Most results are strongly intuitive and are consistent in sign, if not in magnitude, with comparable studies. Among the findings, the following are of particular relevance. First, formal employment status confers a significant earnings premium, of 13-21% depending on the model fitted. Second, estimated returns to education vary across models. In model (1) the return to an additional year of education is 0.10 (i.e. earnings are 10% higher per additional year of education). However, this rate of return is contingent on being in formal employment, as can be seen by comparing model (1) with estimates in subsequent columns. These show estimated returns to education for employees in formal jobs ranging from 7% to 10%. In model (2), for example, the return is $0.0731 + 0.0354 = 0.1085$. Returns to education in informal jobs range from a high of 7% in models (2) and (3)

down to 4.5%, in models (5) and (6). The average returns correspond with other estimates from Indonesian data (e.g. Purnastuti et al. 2011), though all of these estimates are somewhat lower than those for broader samples of developing countries (Psacharopoulos and Patrinos 2004).¹³

Table 5: Earnings functions for 2007

Looking briefly at some other variables, we see across all models that employment experience and job tenure both raise earnings, though at a diminishing rate as seen by negative quadratic terms. Urban workers earn more, and male workers earn an average premium of 40-50% over earnings of females in the same occupation and sector.

Even after accounting for other sources of variation, our proxies for ability remain influential. Model (3) estimates returns to adult height after taking account of intermediate choices over years of education. This shows that each percentage point increase in height is associated with 0.27% higher earnings, other things equal. When parental education and household assets are included (models (4)-(6)), the effect of height is insignificant but the other variables are highly significant, and together these again indicate a “family background” premium of about 0.25, or 25%.

Finally, in models (5) and (6) we include occupation and sector controls. Their inclusion lowers somewhat the influence of urban location, but leaves other estimates largely unchanged. In other regressions not reported here, we replace occupation dummies with occupation*education interactions. As expected, these estimates in the earnings function are significantly negative for services, wholesale trade and agriculture, even after inclusion of controls for formal sector employment.

¹³ The lower estimate of returns to education was also found in similar data from Vietnam, another resource-dependent low-income Asian economy (Phan and Coxhead 2013).

3.3 Earnings and returns to schooling before and after the boom

In the previous subsection we focused on level effects for all workers during the resource boom era. Clearly, however, the Indonesian labor market, along with the rest of the economy, is undergoing a transition. How is this playing out for individual workers? Comparisons across waves of the IFLS panel reveal very low mobility by *existing* workers. Once in a specific job, individuals surveyed by IFLS tend to report no change in occupation, sector or employment status over successive waves of the survey. However, different cohorts of workers have markedly different employment experiences, as the comparison of Figures 4 and 5 so clearly suggests. We explore cohort effects in two ways. First, we compare earnings and returns to skills across cohorts in the most recent (2007) data. Second, we compare outcomes for workers of the same age in 1997, using IFLS2 data, against those in 2007.

Table 6 shows estimates of the earnings function augmented by interactions between cohorts, education and formality (there are also cohort-specific intercepts, not reported here). As before, we fit several alternative models, but as before, parameter estimates and significance levels vary little across models.

Table 6: Cohort interactions in earnings function 2007

After allowing for cohort-specific effects, the cohort-specific dummies indicate that wages are essentially the same for the youngest and oldest cohorts, after controlling for formal employment, tenure, experience, location and adult height. The exception is the 29-40 year old cohort, whose average wages are 10-22% lower than for others, depending on the model. In the 2007 data these are workers who were young job market entrants (19-30 years old) at the onset of the Asian crisis in 1997. It appears that the crisis, which lowered Indonesian real GDP by about 20%, has had a lasting negative effect on earnings of this group.

As before, education and formal sector employment both add substantially to earnings. Table 7 summarizes some key results in more accessible form. Given formal sector employment, the earnings premium for an additional year of schooling ranges from 4.1% to 7.2%, depending on the model. This is

for the baseline cohort, aged 15-28 in 2007. However, the education premium is substantially and significantly higher for older cohorts in formal employment: about 3% per year of education, or between 1.4 and more than 2 times greater than for 15-28 year olds. In informal employment, returns to education for young workers are dismally low at just 1.4-3.9%. They compare unfavorably with returns to both the middle cohort (4.9-6.7%) and the oldest cohort (3.6-5.4%). For Indonesia's younger workers, returns to schooling are only modest given formal employment, and very low indeed outside the formal sector.

The final row of Table 7 makes use of regressions with 1997 data, results of which are shown in Appendix Table A-1. Comparisons of the 2007 estimates with those for the earlier year reveals that 2007 returns to education for younger workers are also much lower than for the same cohort (or indeed for all workers, since cohort effects are insignificant) in 1997. Comparing down the columns of Table 7, we can see that between 1997 and 2007, returns to education remained roughly constant for workers in older cohorts with formal sector jobs. Returns were sharply lower, however, for informal sector workers, and were lowest by far for new labor market entrants.

Table 7: Returns to education in 1997 and 2007

The foregoing findings echo some results from other recent studies, but also add revealing details. As a benchmark of sorts, Duflo (2001) estimated annual returns to schooling at 6.8-10% using 1995 intercensal survey data. Purnastuti et al. (2011), using IFLS data, estimated 2007 returns at 4.6% for men and 5.4% for women. In a more recent study the same authors compared returns to schooling from the first and latest waves of IFLS (1993 and 2007) and concluded that returns have fallen (Purnastuti et al. 2013). They speculate that this is due to some combination of increased supply of skills, lower quality of education as schooling has expanded, and changes in the composition of labor demand. In another recent study using IFLS data, Newhouse and Suryadarma (2011) found a marked drop in 2007 in returns to categories of schooling targeted at manufacturing employment. The wage premium for male vocational education, which is mainly in technical and industrial subjects, fell sharply between 2000 and 2007.

Among other causes, Newhouse and Suryadarma speculate that this may be due to “the declining relevance of these skills in an increasingly service-oriented Indonesian economy” (p.320). This speculation is consistent with the predictions of a Dutch Disease model: because skill criteria and opportunities for training are higher in manufacturing than in most service sector jobs, the relative decline of manufacturing is likely to have lowered expected returns to schooling.

Other things equal, lower probability of employment in high-skill industries reduces students’ incentives to stay in school beyond the legal minimum age. Moreover, the higher is the probability of informal sector employment, the lower is their expectation of returns on human capital investments. Both of these probabilities appear to have fallen in Indonesia between 1997 and 2007, in spite of sustained and rapid growth of the aggregate economy in the post-crisis years.

4. Discussion and conclusions

The Indonesian economy has grown steadily since the turmoil of the Asian crisis and subsequent political transformation, and poverty has declined almost continuously. However, data from the resource boom era reveal contradictory trends in labor markets, notably a rise in the employment shares of industries characterized by low labor productivity; low and declining returns to education; and rising rates of informality. These structural changes are consistent with the expected effects of a real appreciation and related consequences of a natural resource export boom. They are much less easily reconciled with trends to be expected in an economy making a sustained transition from resource dependence to middle-income, with the accompanying rise of knowledge-intensive industries built on investments in capital, technology and skills. Indonesia, a latecomer and slow starter on industrialization, may be nearing – or may already have passed -- a turning point beyond which manufacturing’s GDP share and share in employment both decline.

The history of economic development confirms that sustained and rapid economic growth is best (or perhaps only) achieved with a combination of technological dynamism and a matching increase in the skills of the labor force. Together, these are powerful enough to overcome other deficiencies that undermine growth: “formal manufacturing industries are natural ‘escalator’ industries that tend to propel an economy forward, even in the presence of bad governance, bad policies and a disadvantageous context” (Rodrik 2013: 27). Manufacturing growth, in those developing economies that pursue their comparative advantage, is also a fast track to higher employment and labor productivity. The long-run effects of Dutch Disease, if they include movement away from dynamic industries that reward human capital investments, could include great difficulty in maintaining the momentum of poverty alleviation and of income growth in the lower income quintiles. In present-day Indonesia, poverty alleviation continues but employment and wages are not growing, and inequality is rising very sharply.

Despite the predictions of stylized Dutch Disease models, there is nothing inherent to a natural resource export boom that rules out successful growth of other tradable industries, including skill-intensive manufacturing. Indeed there are many counter-examples to the most stylized ‘resource curse’ prediction, from Latin America (de Ferranti et al., 2002), Southeast Asia (Coxhead 2007; Coxhead and Li 2008) and Africa (Acemoglu et al., 2001). Rather, realization of the resource curse requires a combination of conditions in which resource export revenues are not used productively or efficiently to generate growth and jobs.

Looking to Indonesia’s future, three questions present themselves.

First, is *poverty* robustly and permanently in retreat? One generation ago at the time of the OPEC oil price rises, the Indonesian state used its near-monopoly on oil and gas export revenues to boost spending on roads, electrification, schools, agricultural development and a raft of other initiatives that raised the productivity of the country’s labor force, especially those in rural areas. This time around, much of the

revenue is coming through private entities and the pattern of spending growth is correspondingly different.¹⁴ Moreover the policy environment is now also quite different.

Second, how are such large reductions in poverty being realized, if real wages are flat and the proportion of the labor force in more rewarding industries, occupations and employment types is declining?¹⁵ Are increases in public sector transfers responsible for lower poverty? Or is the measured fall in poverty due mainly to relatively small increases in the earnings of households with initial incomes just below the poverty line?¹⁶ Is whatever it is that is lowering measured poverty sustainable, in the sense of being persistent and/or resilient in the face of possible economic downturns?

Third, is the observed upward trend in *inequality* in Indonesia a product of the same forces driving the anomalous labor market trends revealed in our analysis? If rising inequality is a transitional phenomenon associated with rural-urban migration along with a corresponding occupational shift from farm to factory, then there is little reason for concern about its welfare implications. On the other hand, if the recent rise in inequality instead reflects the relative decline of growth in manufacturing jobs, especially formal jobs, that is a much more serious concern. Among low-middle income countries, lack of dynamism in manufacturing sector growth has well-established associations with inequality (Leamer et al. 1999; McMillan and Rodrik 2011; Rodrik 2013). In this case rising inequality is symptomatic of a deeper

¹⁴ In 1984-94, private consumption averaged 57.2% of GDP and government consumption averaged 9.9%. In 2002-12 these figures were 61.6% and 8.5% respectively. Investment share of GDP was 30.2% in the earlier period and 27.8% in the later (source of basic data: ADB Key Indicators).

¹⁵ Poverty in Indonesia rose sharply in 2006, following a large reduction in the state subsidy on fuels and increases in the price of rice, a consumer staple. Poverty declines since then have undoubtedly been aided by increased spending on education and health, and by inauguration of the world's largest unconditional cash transfer program. How these actions, and especially the latter, translate into long-term poverty declines remains to be researched.

¹⁶ Suryahadi et al. (2009, 2012) compute decompositions of sources of poverty change in Indonesia which, they argue, reveal that the largest share of credit for poverty alleviation goes to growth of urban services sectors. However, their use of a headcount poverty measure leaves unanswered the question of *how much* better off an unskilled worker becomes when taking a job in urban services.

structural problem: the failure to diversify production away from resource extraction and toward manufacturing and other technologically dynamic skills-based industries.

Perhaps the most compelling task of all is to unpack and better understand the *causes* of trends in poverty and inequality. As we have argued, contemporary structural changes in employment, earnings and returns to education have multiple possible causes. Crisis-driven investment collapse, Dutch Disease, trade and FDI policy, labor laws, the expansion of schooling, and technical progress have all been identified as candidates. Which among these is more influential, and how it operates, matters a great deal for the design of development policy. Is there any way to test which processes are driving labor market transformation? Indonesia is an archipelagic nation, so there are distinct local markets for some goods and services. Subnational factor endowments, sectoral activities, and trends in consumer prices may reveal a different pace and extent of “rollout” of real exchange rate trends. Labor market policies in particular may have a distinct local element, given that subnational administrations now have some discretion in the setting of minimum wage rates. And recent changes in schooling policy and practice may also have an identifiable subnational sequence. If so, then there exists (in principle at least) an identification strategy for hypothesis testing. A bonus of this approach is that it may also shed light on the drivers of the dramatic rise in inequality. Exploring these possibilities is a logical path for continuing research.

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Figures

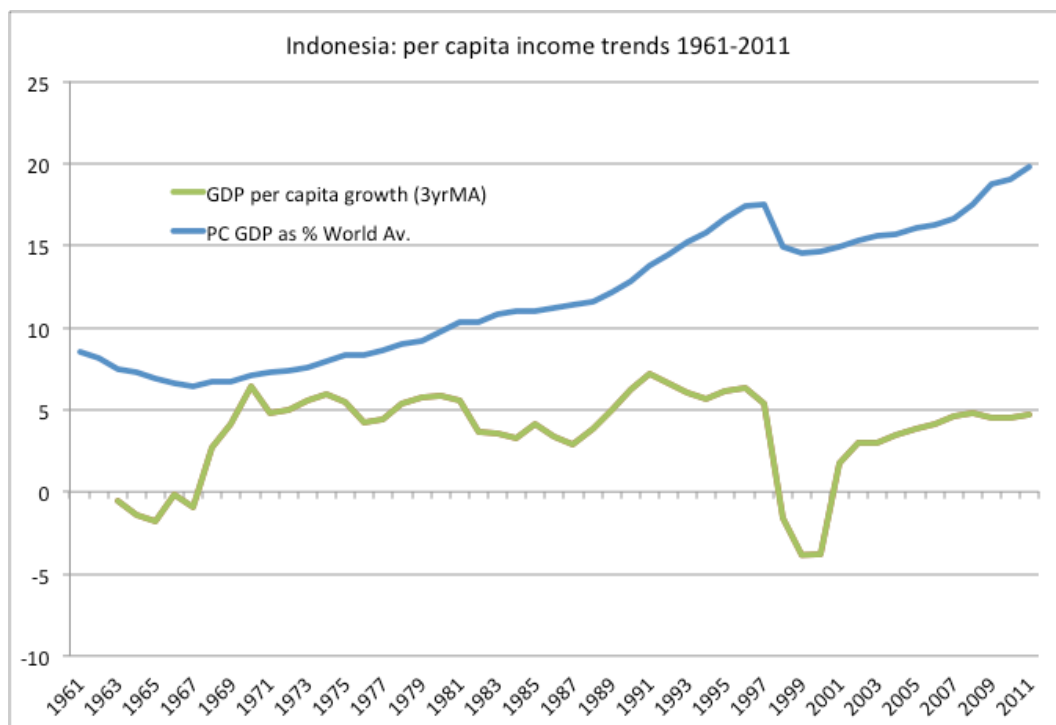


Figure 1: Indonesia: trends in per capita income, 1961-2011

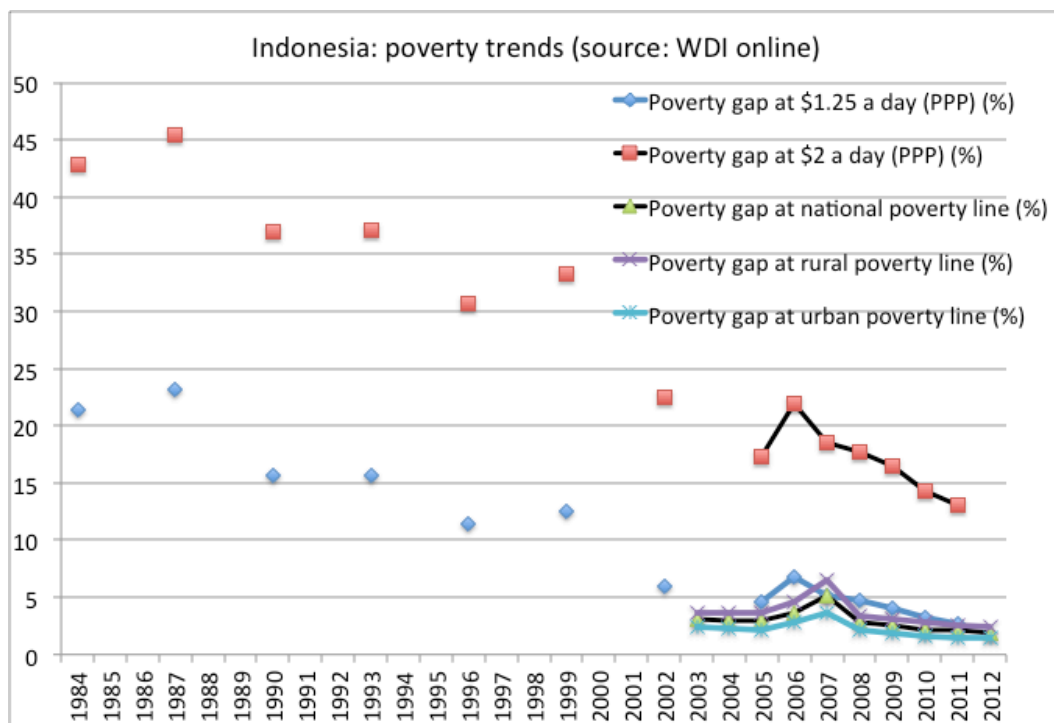


Figure 2: Indonesia: Trends in poverty

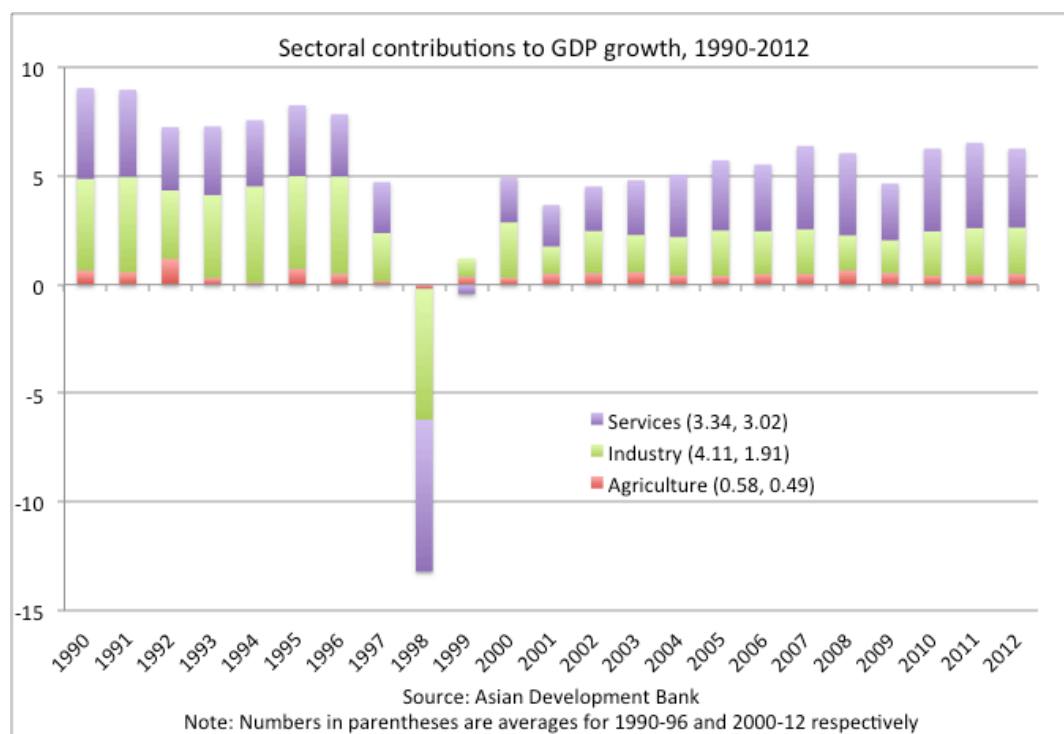


Figure 3: Sectoral contributions to GDP growth



Figure 4: Real exchange rate trend

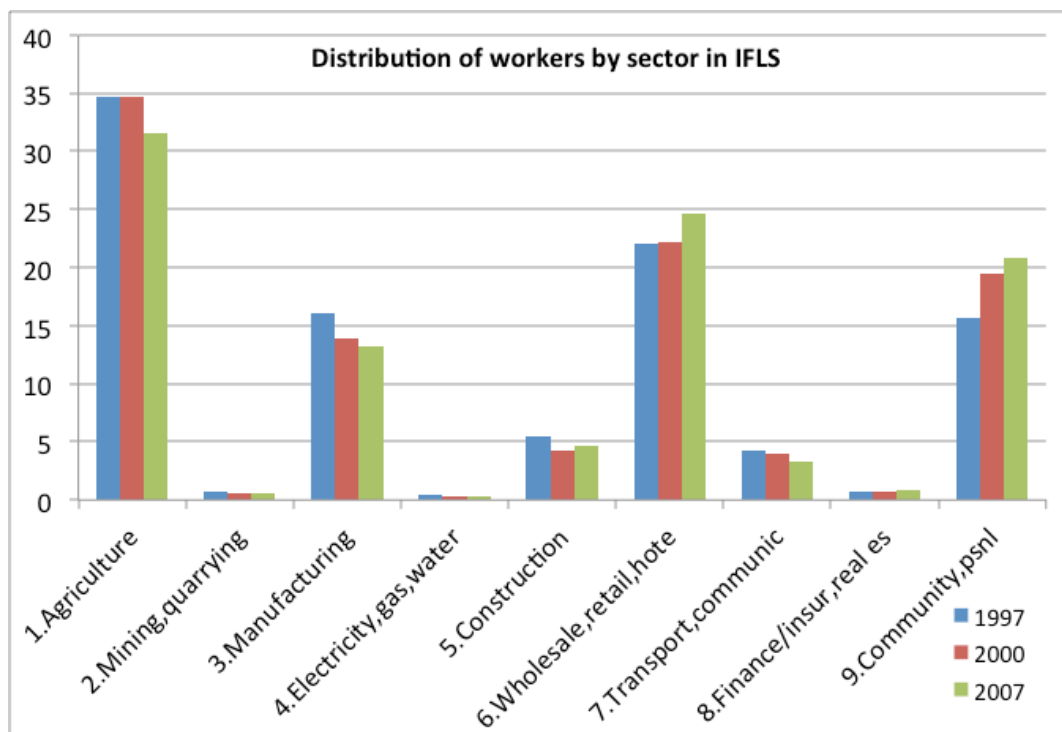


Figure 6: Indonesia: distribution of employment by sector (Source: IFLS)

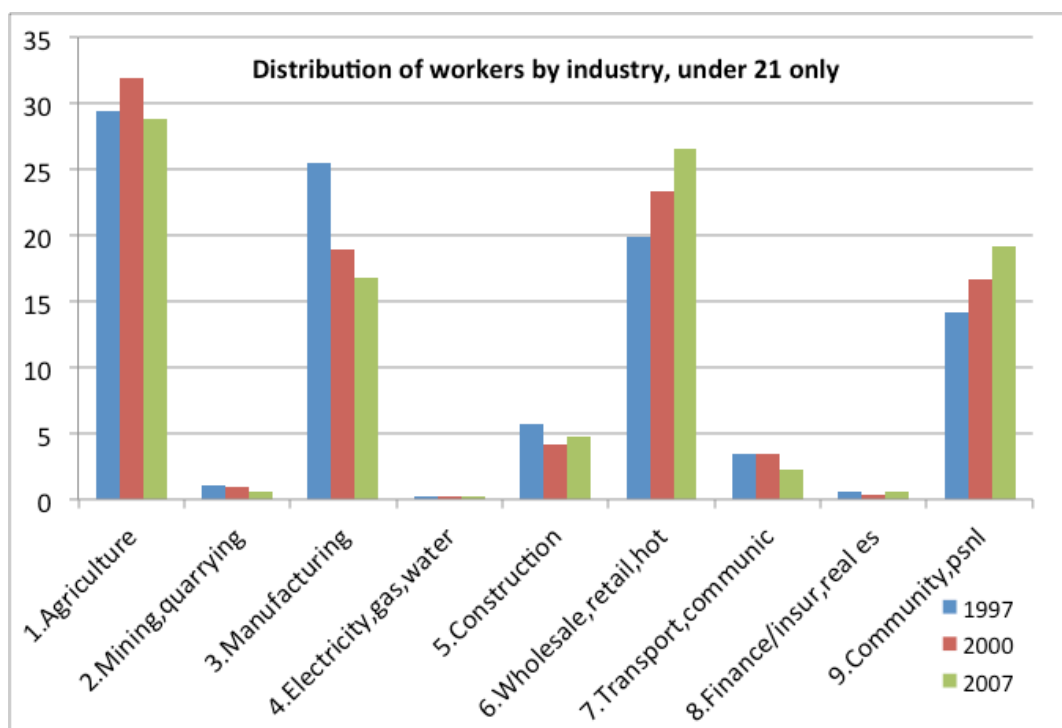


Figure 7: Indonesia: distribution of youth employment by sector (Source: IFLS)

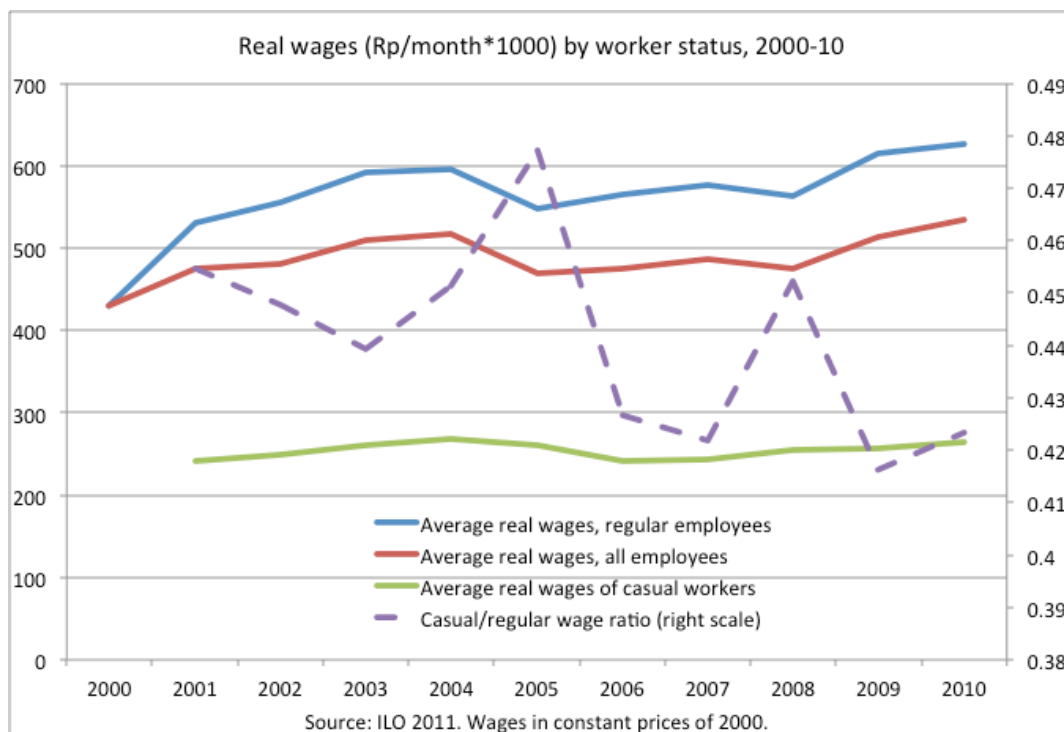


Figure 8: Average real wage trends in the 2000s

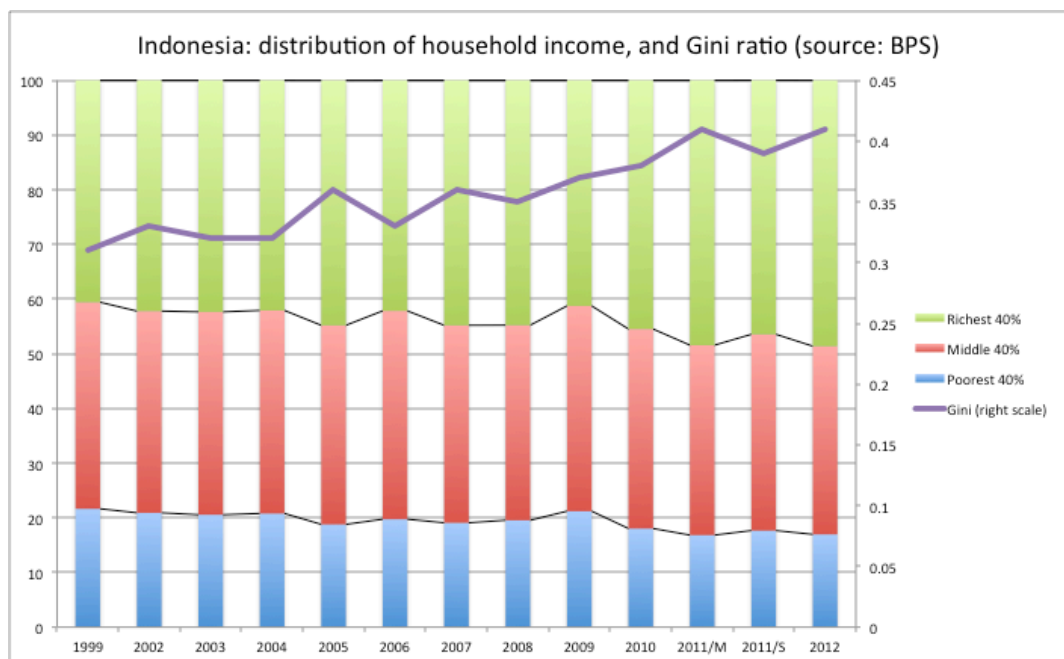


Figure 9: Indonesia: quintile distribution of household income and Gini ratio

Tables

Table 1: Sectoral output and employment growth, 1990-2008

	1990-96	2000-08	Change
Output growth (% per year)			
Agriculture	3.1	3.9	0.8
Mining and utilities	5.3	1.5	-3.8
Manufacturing	11.2	5.2	-6
Construction	13.7	6.5	-7.3
Wholesale trade	8.9	5.8	-3
Transport	8.2	10.1	1.9
Other activities	6.4	5.8	-0.7
Total	7.9	5.3	-2.6
Employment growth (% per year)			
Agriculture	-1.7	0.2	1.9
Mining and utilities	6	3.7	-2.3
Manufacturing	6	0.9	-5.1
Construction	10.8	5.7	-5.1
Wholesale trade	6.5	1.7	-4.8
Transport	9.4	3.9	-5.5
Other activities	4.6	3.6	-1
Total	2.3	1.7	-0.6

Source: ADB data compiled by Aswicahyono et al. 2011.

Table 2: Distribution of primary activities

2007	Entire Sample		By age group					
			16-25		26-45		45 and over	
	Male	Female	Male	Female	Male	Female	Male	Female
Working (01)	77.89	41.76	58	32.36	92.03	46.73	78	45.24
Job search (02)	3.03	0.5	7	1.47	2.2	0.18	1	0.05
Attending school (03)	7.93	6.99	24.02	19.87	0	0.43	0.05	0.19
Housekeeping (04)	3.16	47.44	2.72	44.59	2.54	52.05	5	45.17
Retired (05)	3.33	2.22	0.06		0.03		12.45	8.14
Sick/disabled (07)	1.18	0.48	0.72	0.22	0.74	0.37		0.94
Other (95)	3.45	0.61	7.45	1.49	2.29	0.21	2.48	0.02
Vacation/just graduated (99)	0.01	0.01			0.03	0.03	1.66	0.24
N	13,839	15,214	3,343	4,017	6,465	6,751	3,672	4,405

1997	Entire Sample		By age group					
			16-25		26-45		46 and over	
	Male	Female	Male	Female	Male	Female	Male	Female
Working (01)	72.23	40.26	46.06	28.57	92.76	49.31	75.34	41.24
Job search (02)	8.34	3.2	20.51	8.98	4.88	1.25	2.31	0.53
Attending school (03)	10.97	9.35	29.64	25.87	0.41	0.15	0.15	0.1
Housekeeping (04)	1.07	40.36	1.25	34.82	0.66	48.59	1.58	36.7
Retired (05)	5.61	5.9			0.08	0.13	18.68	20.74
At home, not working (06)	0.67	0.5	1.38	1.37	0.44	0.2	0.33	0.13
Sick/disabled (07)	0.6	0.21	0.21	0.04	0.49	0.28	1.14	0.3
Other (08)	0.51	0.21	0.96	0.36	0.27	0.09	0.48	0.26
N	9,128	10,780	2,399	2,783	3,645	4,577	2,725	2,038

Source: IFLS. Note: some category definitions varied slightly between surveys.

(file: IFLS_Tables_03_03_2013)

Table 3 (a): Summary statistics: working age individuals with employment information, 200

	Observations	Mean	Std. Dev.	Min	Max
Education (years)	18,133	8.639	4.086	0	18
Urban	19,272	0.515	0.500	0	1
Region					
Sumatra	19,272	0.157	0.363	0	1
Java	19,272	0.438	0.496	0	1
Male	19,272	0.574	0.494	0	1
Hrs worked per yr (log)	19,223	7.150	1.029	0	9.075
Formal employment	19,272	0.685	0.464	0	1
Height (log)	18,857	5.049	0.122	2.653	5.261
Mother's education (years)	16,219	3.957	3.688	0	17

Source: IFLS4

Table 3 (b) Labor market status of individuals aged 15-65, 2007

	Female	Male	Total
Work	7,745	10,892	18,637
Work and school	190	237	427
School, no work	937	931	1,868
None	6,343	1,773	8,116

Source: IFLS4

Table 3 (c) Sector and job type, individuals reporting employment, 2007

	Self-employed, no workers	Self-employed, w/ workers	Government	Private	Casual	Total
Agriculture	2,891	42	43	555	2,820	6,351
Manufacturing	531	66	45	1,668	358	2,668
Wholesale	2,697	148	13	1,129	988	4,975
Services	585	63	1,248	1,746	546	4,188
Others	426	24	72	844	605	1,971
Total	7,130	343	1,421	5,942	5,317	20,153

Source: IFLS4

Table 4. Subsample sizes in formal and informal employment

Occupation	Total	Informal %	Formal %
Professional/technical	1,245	29.7	70.3
Administrative/Manager	63	63.5	36.5
Clerical	805	22.6	77.4
Sales	3,787	84.3	15.7
Service	3,078	64.4	35.6
Agriculture/forestry	6,320	95.0	5.0
Production line workers	1,547	60.4	39.6
Semi-skilled production workers	592	43.8	56.3
Blue collar production workers	2,620	69.4	30.6
<u>Total</u>	<u>20,057</u>	<u>73.7</u>	<u>26.3</u>
<u>Sectors</u>			
Agriculture	6,352	94.7	5.3
Manufacturing	2,668	52.5	47.5
Wholesale	4,975	83.9	16.1
Services	4,188	43.9	56.1
Others	1,973	70.1	29.9
<u>Total</u>	<u>20,156</u>	<u>73.5</u>	<u>26.5</u>
<u>Employment types</u>			
Self-employed (no employees)	7,130	100.0	0.0
Self-employed (perm. employees)	343	100.0	0.0
Government	1,421	16.5	83.5
Private	5,942	35.9	64.1
Casual	5,317	93.4	6.6
<u>Total</u>	<u>20,153</u>	<u>73.5</u>	<u>26.5</u>

Source of basic data: IFLS4.

Table 5: Earnings functions. Dependent variable is ln(earnings)

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Education	0.105*** (0.00261)	0.0731*** (0.00362)	0.0714*** (0.00366)	0.0478*** (0.00436)	0.0422*** (0.00442)	0.0425*** (0.00441)
Tenure	0.0412*** (0.00276)	0.0375*** (0.00268)	0.0375*** (0.00270)	0.0341*** (0.00311)	0.0357*** (0.00310)	0.0359*** (0.00309)
Tenure squared	-0.001*** (8.25e-05)	-0.000854*** (8.01e-05)	-0.000854*** (8.06e-05)	-0.000768*** (9.32e-05)	-0.000755*** (9.18e-05)	-0.000759*** (9.17e-05)
Experience	0.00201* (0.00113)	0.00398*** (0.00122)	0.00467*** (0.00122)	0.00673*** (0.00187)	0.00655*** (0.00177)	0.00654*** (0.00174)
Exper. squared	-1.60e-05 (2.19e-05)	-1.16e-05 (2.39e-05)	-2.52e-05 (2.44e-05)	-9.76e-05*** (3.71e-05)	-8.71e-05** (3.52e-05)	-8.68e-05** (3.46e-05)
Urban	0.321*** (0.0183)	0.272*** (0.0180)	0.268*** (0.0182)	0.230*** (0.0212)	0.148*** (0.0222)	0.147*** (0.0222)
Sumatra	0.296*** (0.0254)	0.322*** (0.0248)	0.315*** (0.0253)	0.354*** (0.0291)	0.383*** (0.0293)	0.379*** (0.0293)
Other Indonesia	0.170*** (0.0182)	0.176*** (0.0177)	0.177*** (0.0178)	0.193*** (0.0207)	0.207*** (0.0207)	0.201*** (0.0207)
Male	0.402*** (0.0180)	0.437*** (0.0176)	0.420*** (0.0186)	0.482*** (0.0221)	0.510*** (0.0232)	0.489*** (0.0233)
Log (hrs per yr)	0.379*** (0.0118)	0.342*** (0.0118)	0.344*** (0.0119)	0.334*** (0.0141)	0.326*** (0.0145)	0.328*** (0.0146)
Formal		0.159*** (0.0464)	0.152*** (0.0469)	0.211*** (0.0552)	0.134** (0.0566)	0.153*** (0.0568)
Formal*Educ		0.0354*** (0.00458)	0.0365*** (0.00462)	0.0299*** (0.00536)	0.0313*** (0.00550)	0.0299*** (0.00549)
Log(height)			0.269*** (0.0875)	0.108 (0.0811)	0.100 (0.0774)	0.0967 (0.0764)
Mother's educ.				0.0183*** (0.00312)	0.0162*** (0.00313)	0.0159*** (0.00313)
Log(parents' assets)				0.132*** (0.00734)	0.127*** (0.00736)	0.126*** (0.00735)
Occupation controls					YES	YES
Sector controls						YES
Constant	8.611*** (0.0920)	8.926*** (0.0925)	7.566*** (0.448)	6.308*** (0.437)	6.676*** (0.421)	6.629*** (0.444)
Observations	14,696	14,696	14,350	10,203	10,138	10,138
R-squared	0.322	0.356	0.357	0.376	0.386	0.389

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 6: Earnings functions with cohort interactions, 2007. Dependent variable is ln(earnings)

Variables	(1)	(2)
Education	0.0389*** (0.00707)	0.0148* (0.00884)
Formal	0.0947 (0.0925)	0.148 (0.120)
29-40 yo	-0.185** (0.0824)	-0.258** (0.101)
41-65 yo	0.0595 (0.0875)	-0.0942 (0.106)
Formal*(29-40)	0.0546 (0.123)	0.0788 (0.154)
Formal*(41-65)	-0.110 (0.114)	-0.111 (0.142)
Education* (29-40)	0.0332*** (0.00910)	0.0266** (0.0116)
Education*(41-65)	0.0279*** (0.00888)	0.0344*** (0.0107)
Formal*Education*(29-40)	0.0152* (0.00869)	0.0207** (0.0104)
Formal*Education*(41-65)	-0.00408 (0.0121)	-0.00632 (0.0148)
Log(Height)	0.0251** (0.0116)	0.0277** (0.0141)
Mothers' education		0.0177*** (0.00316)
Log(parents' assets)		0.125*** (0.00739)
Worker controls	Y	Y
Occupation controls	Y	Y
Sector controls	Y	Y
Constant	8.068*** (0.475)	6.840*** (0.446)
Observations	14,265	10,138
R-squared	0.377	0.393

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Worker controls: tenure, tenure squared, experience, experience squared, urban, region, male, hours/yr.

Table 7: Returns to education by cohort, formal and informal employment

	Model 1	Model 2
Returns given informal employment, 2007		
Base (15-28 yo)	0.0389	0.0148
29-40 yo	0.0668	0.0492
41-65 yo	0.0541	0.0355
Returns given formal employment, 2007		
Base (15-28 yo)	0.0721	0.0414
29-40 yo	0.100	0.076
41-65 yo	0.1078	0.0898
Returns in 1997 (all groups)	0.0932	0.0700

Source: (2007): Table 6; (1997): Appendix Table A-1, columns (3) and (4).

Returns in 1997 are statistically the same for all groups.

Appendix Table A-1: Earnings functions in 1997. Dependent variable: ln(earnings)

	(1)	(2)	(3)	(4)
Education (years)	0.0736*** (0.00802)	0.0560*** (0.00938)	0.0932*** (0.0240)	0.0700** (0.0301)
Experience (years)	0.0341*** (0.00265)	0.0323*** (0.00369)	0.0259*** (0.00523)	0.0270*** (0.00720)
Experience squared	-0.000479*** (4.77e-05)	-0.000504*** (6.52e-05)	-0.000375*** (7.45e-05)	-0.000385*** (0.000103)
Urban	0.248*** (0.0230)	0.182*** (0.0288)	0.248*** (0.0231)	0.179*** (0.0288)
Sumatra	0.244*** (0.0323)	0.259*** (0.0429)	0.247*** (0.0322)	0.260*** (0.0428)
Other regions	0.0332 (0.0222)	0.0485* (0.0273)	0.0303 (0.0222)	0.0451* (0.0274)
Male	0.314*** (0.0306)	0.398*** (0.0385)	0.314*** (0.0306)	0.394*** (0.0385)
ln(hrs per year)	0.341*** (0.0139)	0.339*** (0.0188)	0.341*** (0.0139)	0.338*** (0.0188)
Formal	0.465*** (0.0575)	0.629*** (0.0716)	0.454** (0.188)	0.498* (0.271)
Age 29-40			-0.0352 (0.198)	-0.188 (0.278)
Age 41-65			0.134 (0.196)	-0.0882 (0.279)
Formal*Age29-40			0.173 (0.205)	0.308 (0.286)
Formal*Age 41-65			-0.0645 (0.195)	0.0218 (0.277)
Formal*education	0.0131 (0.00837)	0.000580 (0.00990)	-0.00974 (0.0246)	-0.0138 (0.0310)
Education*Age29-40			0.00329 (0.0280)	0.0145 (0.0340)
Education*Age 41-65			-0.0392 (0.0262)	-0.0334 (0.0326)
Formal*Age29-40*Education			-0.00727 (0.0287)	-0.0197 (0.0351)
Formal*Age41-65*Education			0.0468* (0.0267)	0.0464 (0.0333)
Log height	2.501*** (0.275)	1.770*** (0.344)	2.496*** (0.274)	1.768*** (0.343)
Mother's education		0.0131*** (0.00444)		0.0133*** (0.00444)
Log of HH assets		0.132*** (0.00949)		0.133*** (0.00952)
Occupation controls	YES	YES	YES	YES

Sector controls	YES	YES	YES	YES
Constant	-4.821*** (1.397)	-3.176* (1.746)	-4.750*** (1.402)	-3.063* (1.759)
Observations	8,581	5,332	8,581	5,332
R-squared	0.435	0.438	0.436	0.440

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1