

# Constraints on Productivity and Investment in Indonesia's Manufacturing Sector: Survey-based Analysis of Business Constraints



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# Policy Note 4

## Constraints on Productivity and Investment in Indonesia's Manufacturing Sector: Survey-based Analysis of Business Constraints

### Abstract

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*Well-functioning markets, adequate infrastructure and simple and clearly defined regulations are some of the characteristics of a growth-enhancing business climate. In Indonesia, some of these elements are missing, which challenges firms' operations. This note discusses the main constraints that Indonesia's manufacturing firms face, shows that these differ depending on the nature of the firm and examines the effect of these constraints on firms' productivity and decisions to invest. It concludes that the poor business climate has substantial costs in terms of firms' productivity and growth. Some broad policy recommendations emerge, and are related to improving credit information, providing microfinance for productive start-ups, improving infrastructure particularly electricity and logistics, incentivizing training, increasing collective action on sharing knowledge, improving tax administration including shortening the time for VAT refunds and duty drawbacks, as well as strengthening law enforcement on business contracts. Addressing these constraints is not merely a task for the Government of Indonesia, but also one for the private sector. It is the Government's responsibility to set clear business regulations, as well as improve the business environment, but it is the private sector's responsibility to take action on sharing knowledge and developing its clusters.*



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## Table of Content

### **1. Background**

### **2. What Survey Data Tell Us about Business Constraints**

- a. Business constraints by firm characteristics
- b. How do manufacturing firms perceive different elements of the business climate: the case of Indonesia, the Philippines and Vietnam

### **3. How Do Business Constraints Affect Manufacturing Performance?**

- a. How do business constraints affect productivity?
- b. How do business constraints affect decisions to invest?

### **4. Potential Areas for Intervention Wins**

### **References**

### **Annexes**

## 1. Background

The manufacturing sector has been facing higher opportunity costs at the macro-level. As argued in Policy Note 3 on the macroeconomic environment and the investment climate, the combination of increased competition in international markets putting downward pressure on manufacturing prices, together with sustained growth domestically and a commodity boom putting upward pressure on non-tradable prices, helps to explain the decline in profitability of non-resource-based manufacturing in Indonesia. In the non-resource-based manufacturing sector profit margins have declined at an average annual rate of 1.8 percent since the end of the Asian financial crisis. As a consequence, the sector has experienced a deceleration in growth.

Aside from the macro factors highlighted in Policy Note 3, micro-level constraints are affecting firms' productivity and their opportunities to expand. To better understand the main constraints faced by Indonesian manufacturing firms, and how these impact on their performance, we use two complementary business climate surveys: the World Bank Enterprise Survey (WBES) of Indonesia 2009, and the Monitoring Investment Climate in Indonesia (MICI) Survey 2009 (see Box 1 for details on each of these surveys). The reasons for using WBES 2009 are twofold. First, WBES is a nationally representative survey in terms of the size, ownership and location of firms. Second, the survey was conducted in more than 108 countries, which allows us to do comparative analysis across countries. WBES is complemented by MICI 2009, which provides more details on the perceptions of medium and large firms regarding business constraints in Indonesia and how these business constraints affect firms' decisions to invest. In addition, the two surveys are complemented by focus group discussions and interviews with officials from the Government of Indonesia and members of the private sector represented by firms of various size and ownership across regions in Indonesia. The interviews took a place from February to November 2011.

### Box 1: WBES 2009 and MICI Survey 2009

#### World Bank Enterprise Survey (WBES) 2009

Enterprise Survey 2009 is conducted by the World Bank. The manufacturing block of the survey is nationally representative survey in which the sample frame relies on Statistics Indonesia industry census. It covers 1,157 firms: 65 in North Sumatra, 53 in South Sumatra, 113 in Banten, 93 in DKI Jakarta, 254 in West Java, 230 in Central Java, 235 in East Java, 50 in Bali and 64 in South Sulawesi. Based on the size of firm measured by the number of workers, about 80 percent of the sample is small and medium firms with the composition of 590 small firms, 298 medium firms and 269 large firms. Based on ownership, 92 percent of the sample or 1,062 firms are domestic-owned while the rest are foreign-owned. The survey data are available at <http://enterprisesurvey.org>

#### Monitoring Investment Climate in Indonesia (MICI) Survey 2009

Monitoring Investment Climate in Indonesia Survey 2009 is conducted by LPEM University of Indonesia. The survey covers 471 firms: 36 in North Sumatra, 204 in DKI Jakarta and its surrounding, 66 in Banten, 36 in West Java, 38 in Central Java, 83 in East Java and 8 in South Sulawesi. Based on the size of firm measured by the number of workers, about 90 percent of the sample is large firms with the composition of 43 medium firms and 428 large firms. There was a tendency to cover more large firms by design, first to complement Enterprise Survey, and second to attain more information on business licenses, taxes and labor regulations, as small firms may not face problems on these issues. Based on ownership, 70 percent of the sample or 329 firms are domestic-owned while the rest are foreign-owned. The data can be made available by request to the World Bank Jakarta Office.

## 2. What Survey Data Tell Us about Business Constraints

Section 2 presents a descriptive analysis of business constraints based on WBES 2009 and MICI 2009. It first discusses business constraints by characteristics and then explains how manufacturing firms from Indonesia, the Philippines and Vietnam value different elements of the business climate. Section 3 discusses how business constraints affect manufacturing performance both in terms of productivity and business expansion. Section 4 draws conclusion and provides some broad policy recommendations.

**a. Business constraints by firm characteristics**

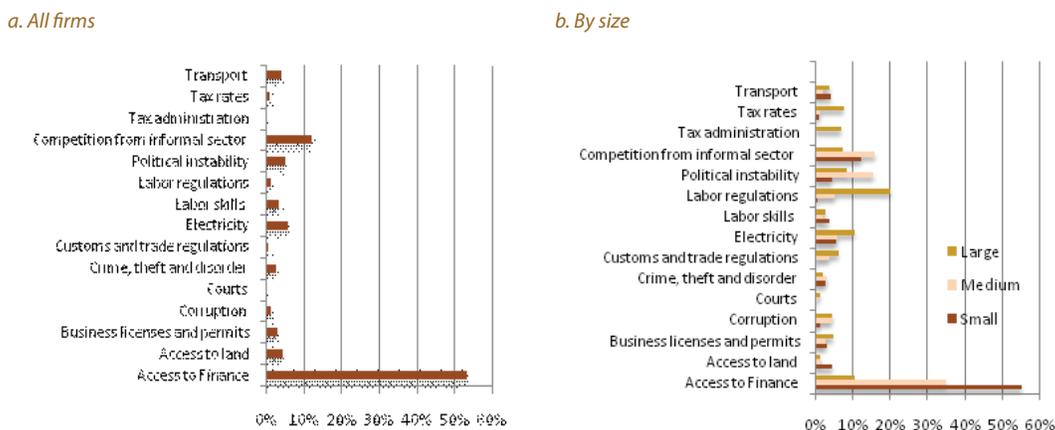
This section explains business constraints by firm characteristics. The first part of the discussion is based on WBES 2009 and the second part is based on MICI 2009.

Analysis of WBES 2009 reveals that more than half of the manufacturing firms in Indonesia identify access to finance as the most severe business constraint. Overall, about 53 percent of manufacturers claim that access to finance is the most important constraint (Figure 1a). This result is driven by the fact that 92 percent of manufacturers in Indonesia are of a small size (Census Industry, 2008). Poor credit information and uncertainty in enforcing contracts are likely to be the main cause of high costs for small manufactures in accessing credit, particularly for investment loans. Compared with other major economies in East Asia, Indonesia still does not have a well-functioning private credit bureau as an information exchange and sorting mechanism for lenders. Legal rights to protect borrowers and lenders in loan agreements in Indonesia are also perceived as the weakest in the region. In addition, even larger firms face difficulties in obtaining funding, as options outside the banking system are limited, with a bond market in Indonesia that is under-developed and dominated by government bond issuances.

Rigid labor regulations and high tax rates are among the top five business constraints for large and exporting firms. Large firms in Indonesia identify labor regulations as their top constraint, while for exporters it is their fourth most important obstacle. Tax rates, on the other hand, rank fifth among large firms, and first among exporters (Figures 1b and 1d).<sup>1</sup> The fact that these two issues appear among the bottom five constraints for small non-exporting firms may reflect a combination of selective enforcement of the regulations (e.g., Indonesian authorities choose to focus on large firms), as well as simpler rules and tax exemptions for small firms, with implications for the size structure of the manufacturing sector in Indonesia, as documented in Policy Note 5.

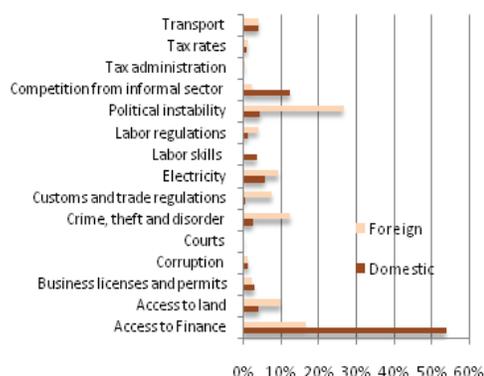
Electricity and political instability are among the top five business constraints faced by the Indonesian manufacturing sector, while transport also appears to be a major constraint. Electricity and political instability are identified by small, medium and large firms, foreign and domestic, and exporters and non-exporters alike as a major constraint (Figures 1a, 1b, 1c and 1d).

**Figure 1: Major business constraints vary across the type of firms (WBES 2009)**  
(Percentage of firms within each group reporting the following issues as the most important obstacle for doing business)

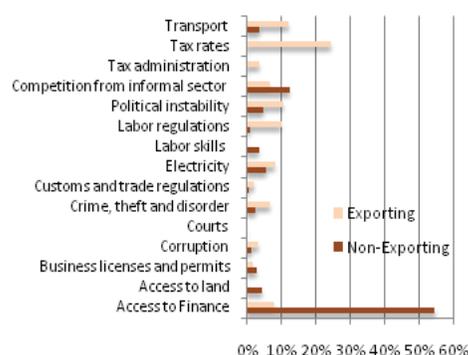


<sup>1</sup> The anecdotal evidence provides an argument that tax administration and unclear tax regulations actually create the space for different interpretations in taxation that can have an impact on tax rates. WBES 2009 asserts that large and exporting firms perceive that tax rates are one of main business constraints as discussed, while MICI 2009 clarifies this more in the sense that the prevailing tax rates are reasonable and it is more the tax administration that is actually a constraint for expansion, as discussed in Section 3b.

c. By ownership



d. By export activities



Note: These results are representative of the whole universe of firms in Indonesia.  
Source: World Bank Enterprise Survey (2009) and World Bank staff calculations.

This section discusses business constraints by firm characteristics based on the MICI 2009 survey. The reason that we also include MICI 2009 is that it provides insights on business constraints for medium and large firms. MICI 2009 highlights that electricity, transportation and logistics, macroeconomic stability, cost finance and courts/conflict resolution are major business constraints in Indonesia's manufacturing sector.<sup>2</sup>

MICI 2009 finds that more than 40 percent of manufacturing firms see electricity as a major business constraint. Overall, electricity is viewed as the top business constraint in Indonesia's manufacturing sector (Figure 2a, 2b, 2c and 2d). The reason for electricity being seen as the main business constraint is that electricity outages can disrupt production, forcing firms to invest in the additional expense of acquiring private power generating capacity.

About 38 percent of manufacturing firms see transportation and logistics as a major business constraint. Large firms, foreign-owned firms and exporting firms regard transportation as the second and the third top business constraints (Figure 2b, 2c and 2d). Based on the Logistics Performance Index, Indonesia ranks 75th out of 155 countries and is the lowest compared with its peer countries in the region (China 27th, Malaysia 29th, Thailand 35th, the Philippines 44th, India 47th and Vietnam 53rd) in all aspects of logistics, including efficiency in customs clearance, quality of infrastructure, competitive shipment costs, logistics competence, tracking and tracing, and the timeliness of shipping (LPI, 2010).

Macroeconomic instability is also perceived as a major business constraint in Indonesia. About 35 percent of firms claim that macroeconomic instability is a main business constraint (Figure 2a, 2b, 2c, and 2d) with exporting firms placing slightly more emphasis on macroeconomic conditions than other categories of firms, as their activities are more vulnerable to movements in real exchange rates and perceptions of macroeconomic conditions as the whole (Figure 2d). In fact, this is in line with the findings in Policy Note 4. Indonesia's exchange rate has been more volatile than those of other countries in the region, and these fluctuations have adversely affected export performance.

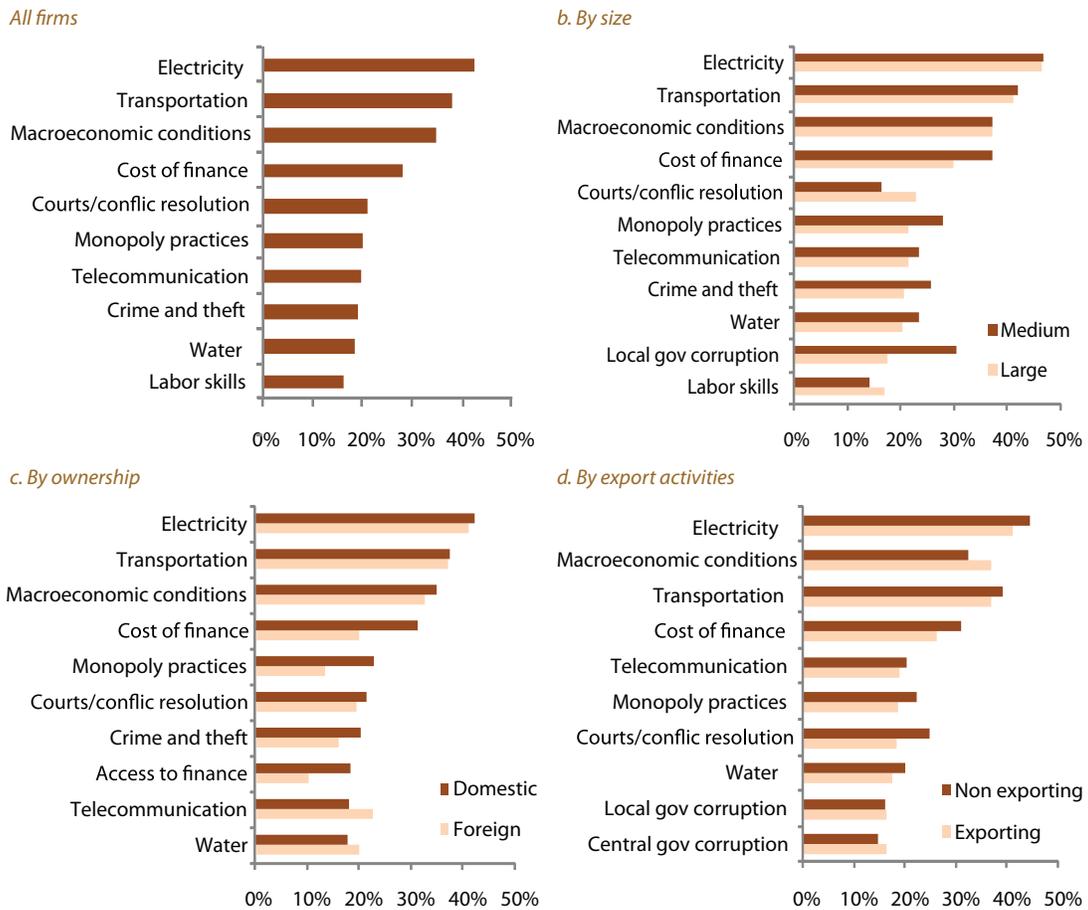
The cost of finance is perceived as a more severe business constraint by domestic or medium firms than by foreign or large firms. The cost of finance is seen by 37 percent of medium firms as being a major business constraint, while only 30 percent of large firms share the same concern. Likewise,

<sup>2</sup> The findings from the MICI survey show that all firms perceive business constraints in a similar pattern (Figure 2a, 2b, 2c and 2d). This could be because of the fact that the MICI survey covers mostly large and exporting firms.

32 percent domestic firms claim that the cost of finance is a major business constraint, while only 22 percent of foreign-owned firms highlight the same issue (Figure 2b and 2c). Domestic firms even value both the cost of, and access to, finance as major business constraints, higher than foreign-owned firms (Figure 2b). The reasons could be that both large firms and foreign firms have higher collateral and wider access to finance, and are thus able to find more competitive pricing for finance.

**Courts/conflict resolution are seen as being among the top five business constraints in Indonesia.** About 21 percent of firms cite courts/conflict resolution as being major business constraints. The anecdotal evidence supports this argument, as firms claim they can include expenditure on roads, ports and infrastructure as capital expenditure and rationalize these as they are treated as attenuation expenditures, while dealing with the legal system is costly, time-consuming, unpredictable and hard to manage. As a measure of this, Indonesia ranks 154th out of 183 countries in enforcing contracts (Doing Business, 2011).

**Figure 2: Top 10 major business constraints vary across the types of firm (MICI 2009)**  
 (Percentage of firms within each group reporting the following issues as severe or most severe constraints for business)



Note: There are no small firms included in the Monitoring Investment Climate Survey (2009).  
 Sources: Monitoring Investment Climate Survey (2009) and World Bank staff calculations.

**The findings from both surveys confirm that ‘business risks’ appear to affect manufacturing activities in Indonesia.** Unpredictable costs due to power outages, labor regulations, and delays in trading activities due to transportation bottlenecks are considered severe constraints for manufacturers operating in Indonesia. To a large extent the above examples are consistent with the

World Bank's 2004 report titled the Investment Climate Assessment on Indonesia, which highlighted that 'risk elements' such as labor market disruption and regulatory uncertainty have the greatest negative impact on manufacturing firms' productivity. Given that this uncertainty entails difficulties in assessing the outcomes of business decisions, riskier scenarios can adversely affect manufacturers' incentives and result in delayed investment or shorter and smaller investment projects.

### **b. How do manufacturing firms perceive different elements of the business climate: the case of Indonesia, the Philippines and Vietnam**

This section explains how manufacturing firms perceive different elements of the business climate: the case of Indonesia, the Philippines and Vietnam is based on WBES 2009. The reasons for selecting these countries are that, first, they have similar levels of development and, second, the surveys of Indonesia, the Philippines and Vietnam were all conducted in the same year, 2009.

**What type of firm is likely to benefit the most from improving a certain aspect of the business climate?** Given the diversity in firms' responses to the question of which aspect of the business environment constitutes the main constraint to production highlighted above (five top major business constraints selected based on firm characteristics), in the following we carry out a systematic analysis of how different firm characteristics are associated with different valuations attached to eight key elements of the business environment: access to finance, labor regulations, electricity, practices of the informal sector, political instability, transport, access to land, and crime, theft and disorder. As mentioned, these are among the most important business constraints faced by key actors within Indonesia's manufacturing sector.<sup>3</sup> In addition, a cross-country dimension is incorporated into the analysis by adding the Philippines and Vietnam into the sample. From a policy perspective, this is useful as it allows for the identification of the types of firm most likely to benefit from specific policy interventions aimed at improving certain dimensions of the business environment (see Appendix Table A.1 for detailed analysis results).<sup>4</sup>

**Indonesian firms are 7 percent more likely to identify access to finance as a constraint than their counterparts in Vietnam and about 14 percent more likely than those in the Philippines.** More productive, new, foreign-owned, large or registered firms perceive access to finance as less of a constraint than those not in these categories. The constraint appears to affect firms in both labor- or capital-intensive sub-sectors equally, as well as those firms that are expanding as opposed to those that are contracting, together with those firms that compete with the informal sector.

**Labor regulations are 1.5 percent more likely to be perceived as a constraint in Indonesia than in Vietnam or the Philippines.** Firms that are large, exporters or those that are producing in labor-intensive sub-sectors attach the greatest importance (negative value) to this constraint, since these regulations likely have a larger effect on their costs. The valuation is lowest among firms that are new

<sup>3</sup> Access to finance is by far the most important obstacle, labor regulations appears in the top five of large and exporting firms, electricity, is identified as a top constraint across the board, small and medium size firms identify 'practices of the informal sector' among the top five constraints. Political instability, crime theft and disorder and access to land are among the most important constraints of foreign firms, while transport is highly quoted by exporters as an obstacle.

<sup>4</sup> The intuition behind this approach, due to Carlin, Schaffer and Seabright (2010), can be better understood as follows. Each business climate element is an input for the firm. The firm makes optimal production decisions given the quality of that business climate element, whose quality or quantity cannot change. The answer to the question "what is the most important obstacle for production?" reveals the ranking of the "costs" associated with the inadequacy of different business climate elements. In turn, these costs could be seen as the difference between the profits under a "high quality" provision of the business climate elements, and current profits given the actual provision of these. The responses to the subjective severity of the different business climate dimensions can be interpreted as their 'shadow prices'. The actual empirical analysis carried out here consists of running a Probit model for each of the eight selected business climate obstacles (the dependent variable takes value 1 if the firm identifies it as the major obstacle, 0 otherwise) against a country and sector effects, and the following firm's characteristics: average educational attainment of personnel, whether the firm is newly established, whether it is formally registered, size, whether it has expanded output in the last period, whether it has training programs for its employees, export condition, percentage of imported inputs used in production, average number of competitors in the market, whether it competes with firms in the informal sector, the percentage of foreign ownership, whether it produces in labor intensive sectors, the percentage of capacity utilization.

in the market, expanding or more productive. Among labor regulations, those related to severance payments, minimum wages and lay-off procedures seem to be mostly perceived as obstacles. This is found when we examine in detail which dimension of labor regulation is found to be most problematic using data from the MICI survey. These specific areas of regulation are identified as such by those firms that export the most. The vulnerability of exporters to labor-market rigidities may be accentuated by the fact that exporters are typically exposed to tougher competition, and are likely to operate under smaller profit margins.

**The supply of electricity is as likely to be identified as a main constraint in Indonesia as it is in the Philippines or Vietnam.** More productive firms, larger firms or firms that are registered, value this input the most. This would appear to be reasonable since these firms are likely to face the highest opportunity costs from disruptions in their power supply. Looking specifically at Indonesian firms, firms that own a generator also attach a high value to this input, suggesting that the use of their own generators may place extra pressure on their production costs and may not be an adequate solution to electricity disruption.

**Practices of the informal sector are about 12 percent less likely to be perceived as an obstacle in Indonesia compared with the Philippines.** Naturally, it is considered to be more of an obstacle by those firms that compete directly with the informal sector, while expanding firms, firms that are exporters or more productive firms perceive this factor to be less of a constraint, as they are likely to operate in different markets.

**Political instability is over 11 percent more likely to be perceived as a major obstacle in Indonesia than in Vietnam and about 5 percent more likely than in the Philippines.** This aspect of the business climate seems to be equally valued among all firms — small and large, old and new, expanding and contracting, and exporters and non-exporters alike. However, comparing registered and unregistered firms, the registered firms are slightly more likely (about 2 percent) to identify this factor as a major obstacle than are unregistered firms.

**Transport appears to be equally valued across a varied spectrum of firms.** Poor transportation is valued as a major business constraint by all firms, including large and small, exporters and producers for the domestic market, and foreign- and domestic-owned firms. Expanding firms, however, seem to attach a higher valuation to transport infrastructure than those firms that are contracting. Despite this, in Indonesia transport infrastructure is identified as a constraint less frequently than in Vietnam or the Philippines.

**Crime, theft and disorder is also equally valued across firms.** A similar picture emerges with ‘crime, theft and disorder’, for which no specific firm characteristic seems to significantly matter for the valuation of this dimension of the business climate. When it comes to access to land, as one would expect, registered firms seem to find it a less important constraint to business than unregistered firms.

### 3. How Do Business Constraints Affect Manufacturing Performance?

**Business climate constraints in Indonesia have had a significant negative effect on the productivity and growth of the manufacturing sector.** In order to assess the costs that an inadequate business climate imposes on the sector, we examine the impact of some of these constraints on two performance variables that are key for competitiveness and growth of the sector: firms’ productivity and firms’ investment plans.

### a. How do business constraints affect productivity?

**We analyze the effect of three key business climate constraints on firms' productivity for which objective data that vary at the firm level are available.** We deliberately excluded from the list of potential explanatory variables those that were perception-based in nature, and did not vary at the firm-level in order to reduce the scope for endogeneity biases – which is already a problem in this analysis due to the cross-sectional nature of the data.<sup>5</sup> First, we look at imperfections in capital markets, quoted as the most important obstacle that firms face in Indonesia, by measuring difficulties in access to finance as a percentage of working capital that is financed by firms' own profits. Second, we consider electricity, and measure the constraint as the average monthly duration of power outages. Third, we examine the effect of excessive government regulation, measured as the percentage of senior managers' time that is spent dealing with government regulation and the number of inspections that firms receive by government officials.<sup>6</sup>

Business climate constraints faced by manufacturing firms in Indonesia have reduced average productivity levels, on average, by about 10 percent.

#### *Access to Finance*

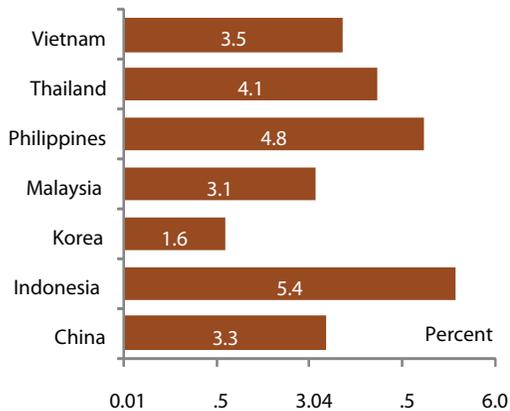
**Difficulty in accessing finance reduces firms' productivity, on average, by 6 percent.**<sup>7</sup> On average, Indonesian firms have to finance 84 percent of their working capital from retained profits, finding it difficult to access credit. Only 6 percent of firms use working capital from bank financing, which is lower than the average 16 percent of firms in the Asia Pacific region. Anecdotal evidence supports this assessment, indicating that the low use of working capital from bank financing is due to uncompetitive lending rates. These difficulties in accessing finance may prevent firms from adjusting to shocks, thus reducing their productivity. In fact, Indonesia faces the highest financial intermediation costs in the region, with a spread of loan-to-deposit rates averaging 5.4 percent from 2005 to 2010 (Figure 3). In addition, even large firms face difficulties obtaining funding, as options outside of the banking system are limited, with a bond market in Indonesia that is under-developed and dominated by government bond issuances (Figure 4).

<sup>5</sup> An example is helpful to explain better the reasons of that exclusion. Take, for example, "political instability". The amount of actual political instability is common to all firms in Indonesia, and so it will be captured by the country dummy. However, the variable that measures political instability as an obstacle varies at the firm level, since different firms perceive and value political instability differently, and therefore for some it may be a severe obstacle for operations, while for others it may be a minor one. By introducing that variable in the regression we will not capture the effects of political instability on production, since, as argued before, that would be captured by the country dummy. Instead, the variable is likely to capture other effects, introducing a source of multicollinearity and endogeneity biases. This is because that valuation is determined by a number of objectively measurable characteristics that are already included in the regression (such as size, export condition, registration, etcetera), and by how productive the firm is in dealing with the obstacle, which in turn is part of that residual in the regression that we are trying to extract to get a sense of total factor productivity in the sector.

<sup>6</sup> There are other business constraints not considered here that have been identified by firms as key obstacles for operations. Unfortunately, for important obstacles, such as "practices of competitors in the informal sector", "political instability", etc., the necessary objective and quantitative data are not available. The effects of these investment climate constraints on productivity were identified using a one-step approach in which a translog production function is estimated and firm-level controls, sector fixed effects and investment climate variables are included to model the portion of output variance that is left unexplained by the variance associated to the factors of production. This is akin to concept of 'productivity'. The portion of 'productivity' that is found to be explained by investment climate variables is what we refer here as the effects of investment climate on productivity. We follow the exposition of Pena, J. (2007). One important caveat in the analysis relates to the possibility of endogeneity biases that are difficult to address in the context of the Enterprise survey dataset, which is a cross-section. The results should best be interpreted as a set of conditional correlations.

<sup>7</sup> The "access to finance" constraint is measured as the portion of working capital that a firm has to finance with own funds.

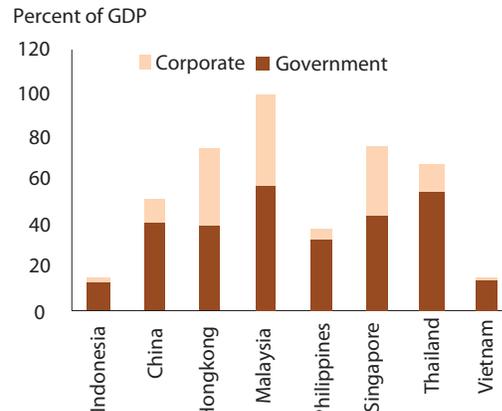
**Figure 3: Indonesia has higher financial intermediation costs than other countries**  
(Financial intermediation cost, averages for 2005-10)



Source: World Development Indicators and World Bank staff calculations.

Note: Financial intermediation cost is proxied by interest rate spread which is lending minus deposit rate.

**Figure 4: Indonesia's domestic bond market is small and dominated by government issuance**  
(Bond issuance as % of GDP by sector)



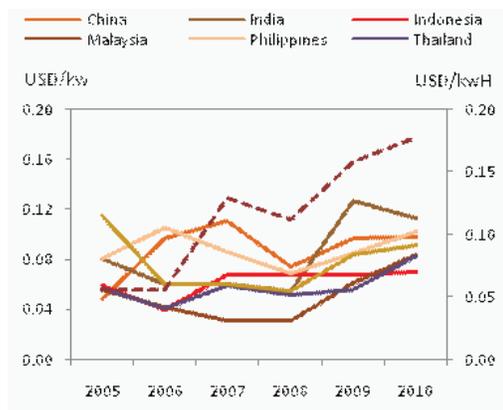
Source: ADB Asian Bond Market Monitor.

**Electricity**

**Disruptions in electricity supply reduce average productivity levels by about 0.7 percent.** In Indonesia, power outages are relatively frequent. This is likely to constrain the choice of production processes that can be undertaken and often leads firms to use their own generators, thus increasing costs (Figure 6).

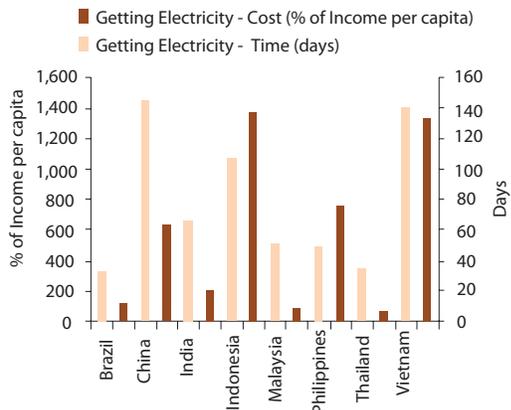
**Reliability is the issue, not the price. It is not the price of electricity that concerns manufacturers in Indonesia, but the quality and reliability of electricity services.** Although the cost of electricity (US\$ per kWh) is relatively low compared with other countries in the region, the process of getting electricity is expensive and lengthy (Figure 5 and Figure 6). In fact, according to the Doing Business 2012 report, Indonesia ranks 161th out of 183 countries in terms of the ease of getting electricity. In addition, firms report frequent power outages and often need to rely on their own generators. As shown below, this is likely to affect efficiency levels and place Indonesian firms at a disadvantage compared with other firms in the region.

**Figure 5: Electricity is relatively cheap...**  
(Cost of electricity per kWh)



Source: JETRO survey

**Figure 6: ...but getting electricity is an expensive and lengthy process**  
(Cost and length of getting electricity)



Source: Doing Business Database, World Bank (2011).

### Government Regulations

The effects of excessive regulation on productivity are also significant, but of a smaller magnitude, accounting for a 3.3 percent reduction on average productivity levels.<sup>8</sup> Nonetheless, excessive regulation implies a misallocation of resources, thus reducing efficiency.<sup>9</sup> Anecdotal evidence suggests that regulations in Indonesia leave the space for different interpretations resulting in uncertainty. Indonesia is still perceived as having a complex regulatory and legal environment. Despite the implementation of some reforms, the tax and customs administrations in Indonesia are still perceived by many in the business community as non-transparent, and many regulations as onerous. Small- and medium-sized firms could be relatively more affected by such an environment than large firms due to their limited capacity and market power, as they report paying a larger percentage of their income in facilitation payments (Trust Law, 2011). Evidence also suggests that Indonesia is still lagging behind its peer countries in establishing a regulatory environment that facilitates growth of the private sector (Table 1).

**Table 1: Regulatory quality, 2010**

*Indonesia is still lagged behind its peer countries in terms of regulation quality*

	Percentile Rank (0-100)	Regional Average Percentile	Governance Score (-2.5 to +2.5)	Standard Error
China	45.0	41.1	-0.23	0.17
Indonesia	39.7	41.1	-0.38	0.17
Malaysia	71.3	41.1	+0.58	0.17
Philippines	44.0	41.1	-0.26	0.17
Thailand	56.5	41.1	+0.19	0.17
Vietnam	31.1	41.1	-0.58	0.16

Source: Worldwide Governance Indicators.

The costs in terms of productivity that these three constraints impose on Indonesia's manufacturing sector depend on two elements: (a) the average effect of these obstacles on firm's productivity (as previously discussed), and (b) whether affected firms are predominantly large or small, discussed in the following section.

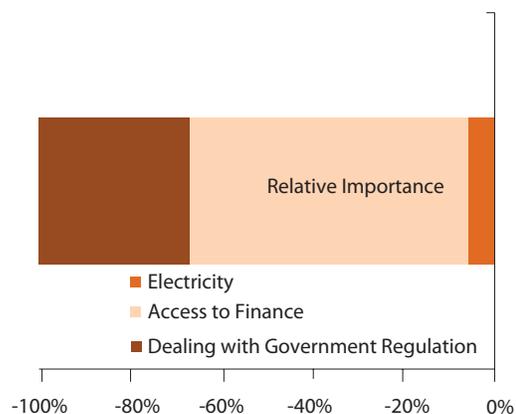
### The Allocative Effect

In Indonesia, the greatest burden of business climate constraints is faced by firms with large market shares, making the overall reduction in productivity due to these constraints larger. This is found when we separate the total effect of business constraints on productivity into an 'average effect' and an 'allocative effect'. The latter can strengthen or weaken the average effect of a constraint on productivity: if the burden of business climate constraints falls predominantly on larger firms, the allocative effect strengthens the average effect. If instead the burden falls on smaller firms, the allocative effect weakens the average effect.

<sup>8</sup> In questionnaires some examples of government regulation are taxes, customs, labor regulations, licensing and registration, including dealings with officials and completing forms.

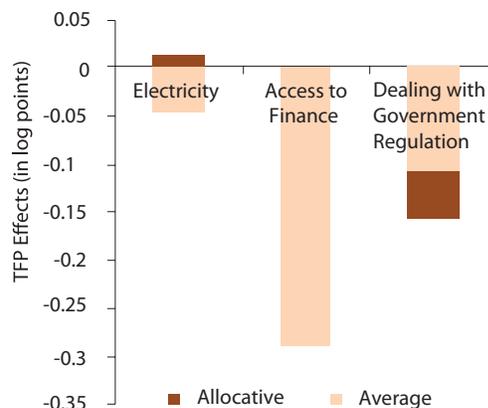
<sup>9</sup> The effects of these investment climate constraints on productivity were identified using the one-step approach in which a translog production function is estimated and firm-level controls, sector fixed effects and investment climate variables are included to model the portion of output variance that is left unexplained by the variance associated to the factors of production. This is akin to concept of 'productivity'. The portion of 'productivity' that is found to be explained by investment climate variables is what we refer here as the effects of investment climate on productivity. We follow the exposition of Pena, J. (2007)

**Figure 7: Relative contributions of business climate constraints to TFP reductions**



Source: World Bank staff calculations based on Enterprise Survey data (2009).

**Figure 8: Average and allocative effects of constraints on TFP**



Source: World Bank staff calculations based on Enterprise Survey data (2009).

However, this allocative effect varies substantially across the three constraints considered. Electricity supply disruptions tend to affect small firms with small market shares, as larger firms are more likely to have their own generators. This makes the aggregate effect on productivity smaller than the average. Conversely, the effects of excessive regulation tend to fall predominantly on firms with large market shares, which makes the aggregate effect on productivity greater than the average. Finally, the correlation between the access to finance constraint burden and market share is virtually zero (Figure 8).

**Box 2: Gender, Firms’ Constraints and Performance in Indonesian Manufacturing**

In 2009, about 32 percent of firms in the manufacturing sector in Indonesia were led by female managers, while 44 percent had at least one female owner. It is in food processing, textile and garments, and the chemical sectors where the share of firms with female managers is the highest, surpassing in some cases 40 percent.

Firms managed by females are predominantly small. Among small firms (with less than 20 employees), 1 in 3 is led by a female manager, while for those that are large (with more than 100 employees) only 1 in 7 has a woman as the top manager. This is why female led firms are 12 percentage points more likely to operate informally, as most informal firms are small. Interestingly, when considering foreign plants operating in Indonesia, the proportions with women as top managers rise to 1 in 2, and 1 in 5 for small and large firms respectively.

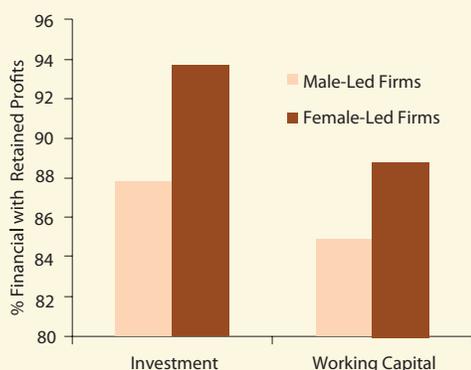
The constraints faced by firms do not seem to be gender specific, although minor differences exist. Ranking the main obstacles faced by male and female-led firms reveal that the most important obstacles are common for both. Access to finance, the practices of the competitors in the informal sector, and electricity appear in the top five of the ranking, both for female and male-led firms. However, female-led firms tend to find more problematic issues related to crime, theft and disorder and the level of education of the labor force than do male-led firms. When it comes to access to finance, and focusing only on small firms, female led enterprises rely more heavily on internal funds both for financing investment and working capital, although the differences are not substantial (Figure 9).

<sup>10</sup> The measure of productivity, analogous to the one used in Section 3. a, is akin to the concept of ‘Total Factor Productivity’, and is obtained as the residual of a translog specification for a production function estimated for 2009 only, with data obtained from the World Bank Enterprise Survey.

<sup>11</sup> Evidence in line with this result has been reported in the literature, for example, by Sabarwal and Terrell (2008), who find that female-owned businesses in the formal sector in 26 transition countries are significantly less profitable than male-owned businesses. Also Amin (2011) find an important gender gap for firms in the informal sectors of Argentina and Peru, and argues that an important determinant of it, relates to differences in size.

There seems to be a gender based gap in performance among manufacturing firms in Indonesia. Focusing again on small firms, those that are female-led display on average, 47 percent lower productivity than those led by males (Figure 10). Explaining the source of this gap is challenging, as there may be many factors behind it, however, size (even among the 'small' class considered here), as well as gender-specific differences in how binding obstacles are, may contribute to the explanation.

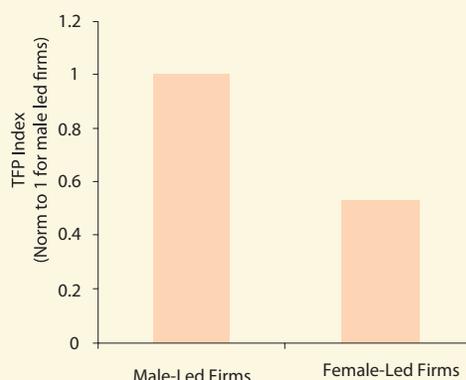
**Figure 9: Female led firms may have more difficulty accessing finance than male-led ones.**



Source: WBES (2009)

**Figure 10: ...which may have implications on performance...**

TFP Index for Male and Female Led Firms

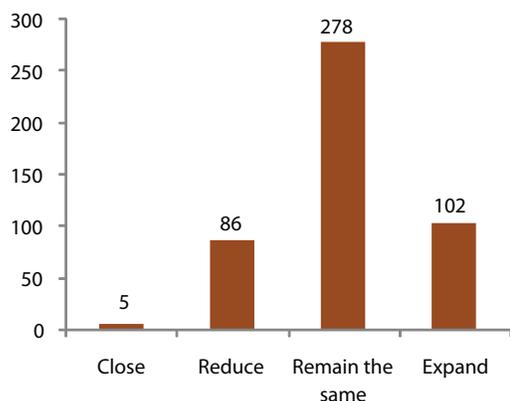


Source: WBES (2009)

## b. How do business constraints affect decisions to invest?

**Figure 11: Probability of decision to invest**

(Indonesia's manufacturers have a probability of 20 percent for expansion in a one-year timeframe)



Source: World Bank staff calculations using Ordered Probit estimation, based on MICI 2009 (the manufacturing sector covers commodities SITC 5-9).

While the WBES can explain business constraints on productivity and provide a comparative picture of how manufacturers perceive business constraints across countries in the region, the MICI survey 2009 allows us to analyze how business constraints affect decisions to invest.

The probability of Indonesia's manufacturing firms expanding in a one-year time is about 20 percent. Based on the MICI survey 2009, opinion in the current investment landscape is divided equally between optimism and pessimism (Figure 11). The survey shows that the probability of firms expanding in a one-year timeframe is 20 percent given the current investment landscape. These observations lead us to ask: What factors are holding firms back the most from expanding?

Decisions to expand a business in Indonesia are significantly affected by the clarity of procedures for investment, the availability of technical skills, tax administration, and the legal system for enforcing contracts.<sup>12</sup> It is argued that excessive taxation and regulation would not only keep firms

<sup>12</sup> The results are estimated by Ordered Probit. We categorize willingness to invest in the following year as close business 0; reducing business scale 1; maintain the same level of investment 2; and expand investment 3. The interpretation of estimation is based on 90 percent interval level of confidence. Probit estimation is also conducted to test the robustness of decisions to invest. We categorize maintain the same level or increase investment 1; otherwise 0. The results show that firm location, technical skills and legal system in conflict resolutions are the main

small and informal (de Soto, 1989), but they could also restrain firms from expanding investment. This finding is consistent with a survey conducted by JETRO 2010, which finds that tax administration and a lack of technical skills are the top two business constraints in Indonesia. The following sections explain in detail how these two business constraints affect decisions to expand. The estimation results are contained in Appendix Table A.3.1, respectively.<sup>13</sup>

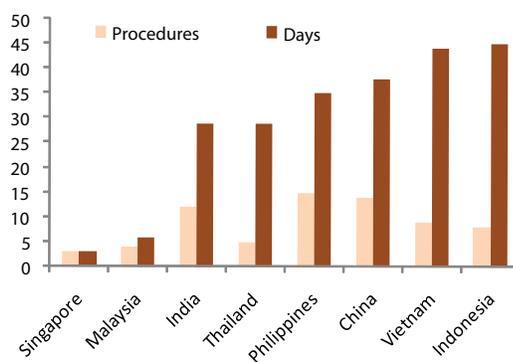
### Uncertainty in investment procedures

**Firms' willingness to invest would increase by 10 percent if the procedures for expanding business were about 4.5 days shorter.** The length of time and the cost of business expansion in Indonesia seem to be about the same as those for starting a new business. An expansion permit is needed if a firm wants to produce a different product or to produce more than an additional 30 percent of its currently permitted production capacity (Nuridzki, 2010). Similar to the application for an industrial license, additional documents are needed, e.g. an environmental impact permit and documents stipulating technical information relating to the expansion plan, for instance the use of raw materials, human resources, etc. So, basically, this means that a firm should go through the same process to undertake an expansion as that for starting up a new business.

As the information on procedures for business expansion is limited, we refer to the procedures for starting-up a new business as a proxy for business expansion procedures. Starting a new business in Indonesia takes about 45 days for 8 procedures, compared with only 38 days for 7 procedures in the Asia Pacific region (Figure 12). If the days needed to expand a business could be cut by 4.5 days, this would raise the willingness to invest by 10 percent. Among business registrations, decisions to invest are highly sensitive to company registration procedures.

**Figure 12: Starting-up a business as a proxy for business expansion procedures**

(Indonesia has relatively a high number of business start-ups)



Source: Doing Business, 2012.

### Lack of skilled labor combined with a rigid labor market

**The lack of technical skills is another top constraint for business expansion.**<sup>14</sup> It is estimated that an increase of 1 percent in skill availability proxied by educational attainment — say the percentage of the labor force with both secondary and tertiary education — would increase the willingness to invest by 0.5 percent. In other words, an increase of 10 percent in educational attainment would increase the willingness to invest by 5 percent.

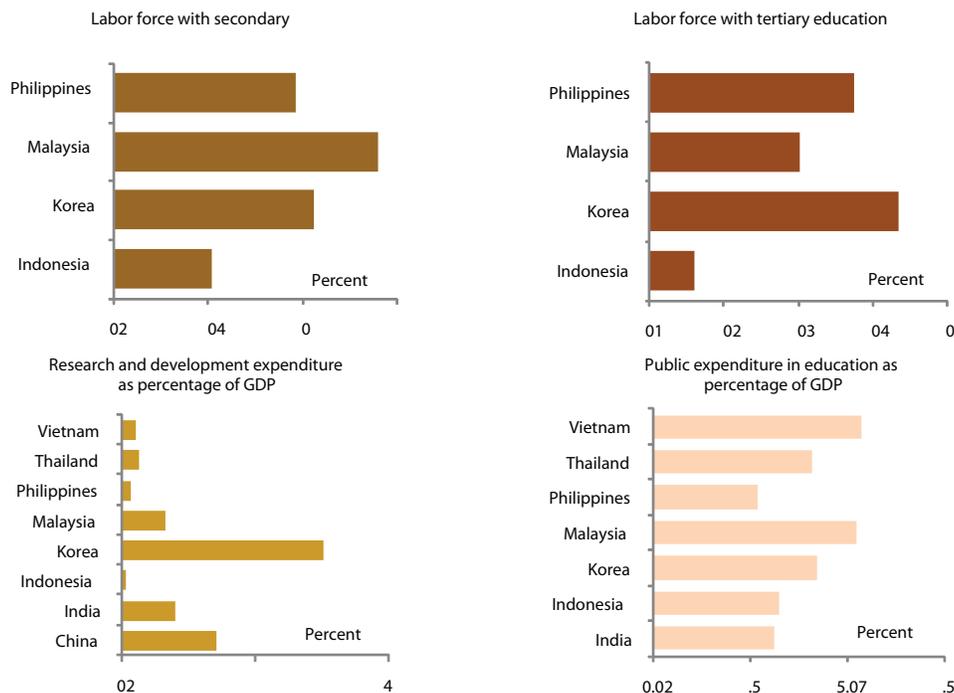
**Figure 13: Human capital indicators (averages 2005-10)**

(Human capital is relatively low in Indonesia)

obstacles to expansion.

<sup>13</sup> One may argue that perceptions are highly correlated with decisions for investment expansion. Therefore, this study also analyzes the effects of average perceptions of business constraints on decisions to expand investment. Average perceptions are measured by the average perception of firms controlled by size and type of industry. The results are in Appendix Table A.3.2.

<sup>14</sup> Interestingly, "inadequately educated workforce" is not identified as an obstacle for doing business, when we analyze the Enterprise Survey. Investment and expansion activities may differ from doing business as usual, with the former activities requiring higher or new skills than the latter.



Source: World Development Indicators, 2011.

**Among its peer countries, Indonesia has the lowest percentage of a labor force with both secondary and tertiary education.** Moreover, Indonesia also had the lowest percentage of public expenditure on research and development and education to GDP relative to its peer countries in 2000-10 (Figure 13). As a young age-population country with more than 1.5 million entrants into the labor force annually, more effort to improve labor skills is crucial. Expenditure on education has increased to more than 20 percent of total public spending in recent years, but the efforts should include not only increased expenditure on education and R&D but also on how to best allocate that expenditure.

**The lack of skilled labor combined with a rigid labor market may be preventing firms from expanding.** The current labor regulations, particularly those on severance payments and hiring-and-firing procedures, may have a distortionary impact on firms and wider competitiveness. While firms can still find ways of hiring workers, severance payments and firing procedures are perceived as too costly. Anecdotal evidence illustrates that firms use outsourcing services in order to hire workers so that the firms themselves are not directly bound by labor regulations on hiring. Normally, the current regulations permit firms to hire a contract worker for up to two years after which the worker should be offered a permanent position. However, severance payments and lay-off procedures are perceived as too costly for some firms to expand by hiring contract workers as permanent employees, as this would also make it even more problematic for firms to downsize should the need arise.

**Severance pay and firing procedures could have undesirable unintended consequences, such as driving firms to use more contract workers and restraining firms from offering workers permanent positions.** This may also lower firms' productivity by reducing the incentive to train workers. About 24 percent and 18 percent of firms in the MICI survey cite severance pay and firing procedures as severe or the most severe business constraints, respectively. Table 2 illustrates that only 37.5 percent of large firms in Indonesia offer formal training to their workforce, which is about half the level in the East Asia Pacific region. These factors are also cited as causes of the rigid labor market, restricting knowledge

flows across firms and constraining overall manufacturing productivity, as labor is less mobile across firms and industries. Countries with more flexible labor markets are thought to experience greater growth-enhancing structural change (McMillan and Rodrik, 2011). This also stands to reason, as rapid structural change is facilitated when labor can flow easily across firms and sectors.

**Table 2: Percentage of firms offering formal training programs to workforce**  
(A low number of Indonesian firms offer formal training)

	Indonesia	EAP	World
Small (5-19)	2.8	31.6	26.4
Medium (20-99)	13.2	39.9	42.0
Large (100+)	37.5	70.5	64.3
Exporter	31.9	58.2	52.7
Non-exporter	4.0	41.5	34.1
Domestic	4.5	41.0	34.1
Foreign	15.5	56.9	53.7

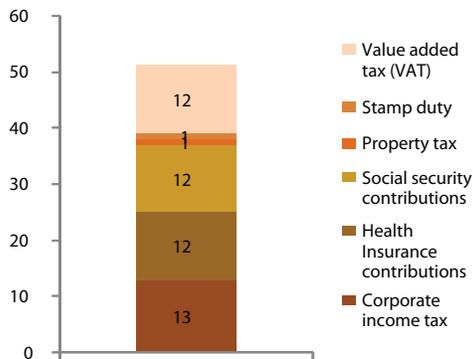
Source: Enterprise Survey, 2009.

Note: Firms are considered exporters if direct exports are more than 10 percent of sales. Foreign-owned firms are those with more than 10 percent foreign ownership.

**Tax administration**

Tax administration seems to be more of a constraint to expansion than actual tax rates. While tax rates are claimed to be at ‘considerable levels’ by the private sector, it is tax administration that appears to be one of the major hurdles to expansion.<sup>15</sup> While tax rates as a percentage of profits moderately declined from 37 percent in 2008 to 35 percent in 2011, taxpayers still had to go through 51 tax payments annually in 2011, placing Indonesia in 134th position in the “paying taxes” ranking of the World Bank Group’s Doing Business 2012 report.

**Figure 14: Tax payment procedures**  
(Indonesia has relatively a high number of tax procedures)



Note: Tax on interest is included in other taxes.  
Source: Doing Business, 2011.

The 51 annual tax procedures in Indonesia (Figure 14) are far higher than its regional peers. This figure of 51 annual tax procedures is higher than an average of 25 procedures in the East Asia and Pacific region, and also higher than Vietnam (33), the Philippines (15), and China (7). These procedures require at least 266 hours or 33 days annually from internal management staff to complete. The relatively high number of tax administration procedures may create space for ‘a short-cut deal’ as shown by at least 1 to 2 meetings a year spent by management staff with tax officials (MICI, 2009). Also, 14 percent of firms claim that they are expected to provide ‘unofficial payments’ to tax officials (Enterprise Survey, 2009). It is estimated that a reduction of 10 percent in tax administration procedures (i.e., five procedures) or the equivalent of merging 51 procedures into 46 procedures would increase the willingness to invest by 5 percent.

<sup>15</sup> The anecdotal evidence support the argument that tax administration and not-so-clear tax regulations actually create spaces for different interpretation in taxes which could have impacts on tax rates. The WBES 2009 asserts that large and exporting firms perceive that tax rates are one of main business constraints as discussed in Section 2a, and the MICI 2009 clarify more in the sense that the prevailing tax rates are reasonable, it is more tax administration that is actually a constraint for expansion.

**The findings from the survey are confirmed by the results of interviews with the private sector across Indonesia.** The complex administration procedures in paying tax, as well as in tax refunds and duty drawbacks, do not only take time and effort. They can also adversely affect productivity by causing delays in tax refunds and duty drawbacks that strain cash flow, particularly for firms whose production activities largely rely on exports and imports.

### *Enforcing Contracts*

**Investors also see the Indonesian legal system as being one of the major constraints for business expansion, as they need assurance on business continuity.** Some firms in the interviews claimed difficulties in enforcing contracts of payment in domestic transactions, which could cause cash flow problems. Moreover, large firms argue that while spending on buildings, training and infrastructure can be included in capital expenditure and rationalized as attenuation expenditure (i.e. amortized down to zero over time), dealing with the legal system is costly, time-consuming, unpredictable and hard to manage. An improvement in the business legal system, particularly in enforcing contracts, would not only provide basic assurance in those running businesses, but it would also encourage firms to expand.

**Despite the fact that some reforms have been put in place, investors still highlight corruption, red tape and an uncertain legal system as major constraints to doing business in Indonesia.** Investors face unpredictable problems in relation to the legal system, where there is a sense that personal connections and corrupt relationships could determine the outcome of legal disputes. In Indonesia, enforcing business contracts can take 570 days and the cost of claims can consume about 60 percent of the total sum claimed, higher than 532 days and 25 percent in the Asia Pacific region (Doing Business, 2011).<sup>16</sup> Indonesia is ranked 154 in enforcing contracts, far lower than the Philippines (118), Vietnam (31) and China (15). As there is no easy way to measure improvements in the results of legal disputes, we estimate the improvement in perceptions of the legal system on decisions to invest. A reduction of 10 percent in enforcing contracts proxied by the length of time needed to enforce a business contract and the costs of making a claim as the percentage of total sum claimed (equivalent to 57 days out of 570 days and 6 percent out of 60 percent of total claims) would increase the willingness to invest by 6 percent.

### *Transportation and Logistics*

**Bottlenecks in hard and soft transportation and logistics infrastructure are posing major problems for manufacturers.** Although it is not possible to statistically identify a well-defined effect of logistics related issues on firms' decisions on expansion using the MICI 2009 survey, case study evidence and the results from interviews conducted among private sector managers suggest that road and port infrastructure, as well as connections to international shipping lines, are

#### **Box 3: How transport affects the manufacturing sector**

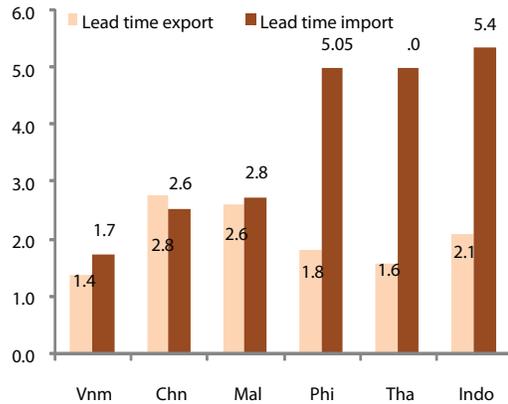
A study by the University of Indonesia as quoted in LPI 2010 indicates logistics inefficiencies increase the cost of firms in the textiles, electronics, automotive, and food and beverage industries by about 14 percent. Electronics manufacturers claim that unpredictability affects their Just-In-Time inventory system and furniture producers also claim difficulties in delivering their products to agreed schedules as a result of logistics bottlenecks (LPI, 2010).

top concerns, particularly for exporting and foreign-owned firms. The costs and the length of time for imports and exports to and from Indonesia were still relatively higher than those in peer countries (Figure 15 and Figure 16). While the Indonesia National Single Window (INSW) on trade launched by the Government in February 2009 has been progressing well, some problems remain, particularly with the unpredictability of rules and varying interpretations. About 40 percent of respondents

<sup>16</sup> Indicators on enforcing contracts measure the efficiency of the judicial system in resolving a commercial dispute.

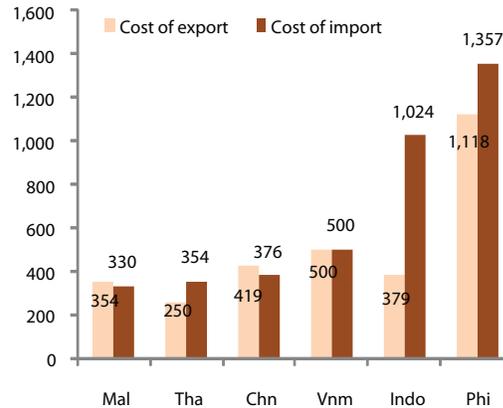
claim that clearance procedures are hardly ever or rarely transparent, and 50 percent indicate that they hardly ever or rarely receive adequate and timely information on regulatory changes related to changes in customs clearance procedures (LPI, 2010)

**Figure 15: Comparison of speed of export and import** Importing in Indonesia not only takes time...



Source: Logistics Performance Index, 2010.

**Figure 16: Cost of export for a 40-foot container (USD)...** but also costs relatively higher compared to that in its peer countries



Source: JETRO, 2011.

#### 4. Potential Areas for Intervention Wins

*Firms in Indonesia face a challenging business environment. Difficulties in accessing finance, inadequate electricity supply services and transport infrastructure, rigidities in the labor market and burdensome, unclear and often excessive regulation are some of the most important obstacles affecting Indonesia's manufacturing sector.*

**These obstacles have significant adverse effects on firms' productivity, that is to say, on how efficient they are at transforming inputs into output, and on their ability to invest and expand operations.** According to our estimates, difficulties in accessing finance, for example, reduced firms' productivity by 6.7 percent, inadequate electricity supply reduced productivity by slightly less than 1 percent, while burdensome government regulations reduced productivity by 3.3 percent. On the other hand, business licensing and a lack of labor skills, combined with rigid labor regulations, burdensome tax administration, inadequate logistics and an unpredictable legal system, were found to significantly affect expansion decisions of manufacturing firms.

From the analysis above, some policy recommendations emerge that could contribute to making the business environment more conducive to growth and greater efficiency.

**Business licensing should be simplified, both by cutting the number of licenses and, most importantly, by clarifying procedures on how to obtain licenses and pointing to the right institutions in charge of producing them.** The simplification of business licensing should be a top priority in improving the investment climate and providing potential quick-wins. Simplification of business licensing does not necessarily only mean cutting the number of regulations, but also means being transparent about them by making publicly available information on how to obtain licenses, including the requirements, the institutions (and persons) in charge of producing licenses, and the length of time required and the costs involved.

**Improvements in connectivity are essential if manufacturing firms are to be able to efficiently source their inputs and deliver their outputs.** As highlighted in this note, manufacturing firms in Indonesia point to transport-related problems as one of the main constraints to their operations. This is linked to an insufficient level of investment in infrastructure that has not kept pace with Indonesia's growing demand for transportation facilities. In terms of intra-island connectivity, it is vital to provide stronger incentives for local governments to build and maintain their own infrastructure, especially roads. In addition, the quality of spending could be improved through a number of means, including performance-based transfers for infrastructure; improvements in budget management capacities; and the establishment of clear guidelines for local borrowing and financing mechanisms. Another important goal should be to reduce the cost of inter-island shipping. In order to achieve this goal, the operational efficiency of ports needs to be improved and, given budget limitations, a greater focus should be placed on priority ports (those that have the greatest efficiency problems, or those that deal with the highest volume of trade or occupy the most strategic locations). In this respect, the introduction 24/7 port operations, an Indonesia National Single Window (INSW) for border clearances, and the development of a dry port at Cikarang are important steps forward, but these do not suffice. Short-term actions should aim at reducing dwell times at ports by, for example, requiring all stakeholders to provide flexible services 24/7 and promoting pre-arrival submission of import declarations. This includes improving services in ports, including customs clearance and improving payment systems in customs clearance, as well as increasing the number of priority lanes if necessary. In the longer term, and given that the traffic congestion surrounding Indonesia's largest port is only likely to increase, an expansion of Tanjung Priok and a major investment in a new container port are essential. Moreover, improving skills for personnel related to export and import procedures, shipping lines and custom clearance is also important.

**Tax administration procedures should be simplified and the length of time required in dealing with tax procedures reduced.** First, the system should provide clear guidelines on categories and procedures for paying taxes, how to pay taxes, institutions (and persons) in charge, and the length of time and the costs of paying tax, as well as claiming tax refunds. Second, there should be an improvement in endorsing the maximum length of time of value-added tax refunds and duty drawbacks. Third, the system should also provide an online help-desk to deal with problems faced by users. Finally, these efforts should be accompanied by a well-designed evaluation system on how tax payments and tax refunds could be further improved, including the implementation of an efficient help-desk to provide assistance in dealing with tax administration. Indonesia should consider merging tax procedures, as well as speeding up full implementation of electronic filing, payment, and refund systems.

**Labor market reform efforts need to focus on ensuring that vulnerable workers are protected while trying to find a win-win solution for firms and unions.** Labor market regulations, in particular those related to severance payments and lay-off procedures, were identified as severe obstacles by large and exporting firms. In this respect, as argued in the World Bank's Jobs Report, labor flexibility could be improved while still increasing protection for employees by negotiating a "grand bargain" to lower severance rates in exchange for introducing unemployment benefits.<sup>17</sup> Simplifying the regulatory complexities of current severance regulations and adjusting rates downwards would bring Indonesia into line with regional standards. Also, it is important to simplify severance pay calculations in order to make it easier for firms to know what they are responsible for paying. The current system, with a compliance rate of 7 percent, does not seem to be protecting vulnerable workers. Instead, it may be providing incentives for firms to remain small and avoid formalizing.

<sup>17</sup> Indonesia Jobs Report: Towards Better Jobs and Security for All, World Bank (2010).

**Access to finance could be improved by providing temporary assistance for productive start-ups, providing competitive lending rates, and improving the intermediation role of financial institutions.** Low levels of access to finance can stem from three main issues. First is the difficulty in access to finance for small and medium enterprises due to prudential banking regulation. Second is the weak appetite to use loans from financial institutions due to uncompetitive interest rates. Third is a need to optimize the role of financial institutions in intermediation. To address these issues the first step should be to provide initial temporary assistance for productive start-ups (which are invariably also small enterprises). Start-ups tend to exhibit faster productivity growth and to create more employment than the average firm, which is discussed in Policy Note 5. By focusing micro loan allocations on productive start-ups rather than on small and medium enterprises, resources would be allocated to relatively higher-productivity and employment-creation enterprises. Second, the competitiveness of domestic funding could be improved by providing incentives for good debtors to enjoy competitive interest rates by improving information-sharing on their debt and credit history. Progress in this area should be accompanied by improvements in efficiency in the financial sector in order to reduce operating costs and thus help to provide competitive lending rates. Finally, there is a need to improve the performance of financial institutions in their role of intermediation in the financial sector.

**A more efficient market for electricity services could arise if competition were encouraged.** Although the cost of electricity is relatively low in Indonesia compared with other countries in the region, it is claimed that the process of actually getting electricity is expensive and lengthy. In fact, this problem appears to be more of a constraint for larger firms in the sense that the frequent power outages push them to rely on their own generators, which are usually more expensive to operate. This is likely to affect efficiency levels and place Indonesian firms at a disadvantage compared with others in the region. One possible way of improving services in electricity is by increasing the degree of competition between electricity providers. Greater competition among electricity service providers would not only reduce costs but also improve efficiency, including the provision and expansion of capacity of electricity services.

**Incentivizing training, designing labor quality certification and improving the quality of graduates would improve the skills level of the labor force.** Aside from the typical recommendation of increasing public expenditure in human capital accumulation, public policy should also focus on how to cooperate with the private sector to optimize skills, including: (1) incentivizing on-the-job training; (2) designing labor quality certification to ensure labor quality; (3) promoting an apprenticeship system; (4) encouraging the return of Indonesian graduates from abroad using different type of incentives, while at the same time improving the quality of domestic graduates; and (5) making cash transfers aimed at reducing poverty conditional on educational attainment (e.g. training vouchers). These efforts should be underwritten by improvements in severance payment and lay-off procedures as a result of a consensus between the Government, the private sector and labor unions to provide a win-win solution for both employees and employers. An agreement between these three parties could be used to clarify the labor law.

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## ANNEX

Annex Table A.1.  
Business constraints: the case of Indonesia, the Philippines and Vietnam

	VIET-INDO-PHILI	VIET-INDO-PHILI	VIET-INDO-PHILI	VIET-INDO-PHILI	VIET-INDO-PHILI
	Access to Land	Crime Theft Disorder	Transport	Access to Finance	
Dummy Indonesia	-0.043 (4.79)**	0.026 (2.91)**	-0.0323 (3.05)		0.0715***
Dummy Philippines	-0.063 (7.04)**	0.014 (1.66)	-0.0216 (2.24)		-0.0237
Average Educ. Attainment Workers	0.003 (1.26)	0 (0.44)	-0.0012 (0.52)		-0.0218
Firm Established after 2005	-0.013 (0.96)	0.01 (0.80)	0.0094 (0.54)		-0.0133***
Registered	-0.032 (1.99)*	0.006 (1.03)	0.00728 (0.47)		-0.00389
Size	-0.003 (0.61)	-0.005 (1.07)	-0.0016 (0.22)		-0.0795***
Expanding Firm	0.01 (1.35)	0.009 (1.83)	0.02364 (2.75)		-0.0287
Has formal training programs	-0.007 (0.83)	-0.007 (1.21)	-0.0066 (0.72)		-0.0593**
					-0.029
					-0.0888***
					-0.0134
					-0.0111
					-0.0167
					-0.0215

Exporter	0	0	0	-4E-05	-0.0203
	(0.91)	(1.04)	(1.04)	(0.35)	-0.00021
Average % of imported inputs	0	0	Average % of imported inputs	-0.0002	-0.00026
	(1.31)	(0.51)		(1.31)	0.000135
Average number of competitors	0.002	0.003	Average number of competitors	-0.0025	-0.00027
	(0.82)	(1.87)		(1.24)	0.00313
Competes with Informal	-0.007	-0.008	Competes with Informal	-0.0127	-0.00484
	(1.03)	(1.73)		(1.50)	-0.00068
% of firm foreign owned	0	0	% of firm foreign owned	5.2E-05	-0.0166
	(0.76)	(0.60)		0.42	-0.000907***
Labor Intensive Sectors	-0.023	-0.002	Labor Intensive Sectors	-0.0111	-0.00029
	(3.13)**	(0.39)		(1.26)	0.0194
% Capacity Utilization	0	0	% Capacity Utilization	0.00012	-0.0176
	(1.59)	(0.38)		0.59	-0.000665*
Observations	2477	2477	Observations	2477	-0.00037
					2,777

VIET-INDO-PHIL		VIET-INDO-PHIL		VIET-INDO-PHIL		VIET-INDO-PHIL		VIET-INDO-PHIL	
VARIABLES	Labor Regulation	VARIABLES	Electricity	VARIABLES	Informality	VARIABLES	Pol. Instability	VARIABLES	Pol. Instability
Dummy Indonesia	0.0149*	Dummy Indonesia	-0.00915	Dummy Indonesia	-0.0694***	Dummy Indonesia	0.114***	Dummy Indonesia	0.114***
	-0.00822		-0.0153		-0.018		-0.019		-0.019
Dummy Philippines	0.0109	Dummy Philippines	-0.0215	Dummy Philippines	0.0489***	Dummy Philippines	0.0657***	Dummy Philippines	0.0657***
	-0.00866		-0.014		-0.0183		-0.0195		-0.0195
Average Educ. Attainment Workers	0.000176	Average Educ. Attainment Workers	-0.00021	Average Educ. Attainment Workers	0.0229***	Average Educ. Attainment Workers	0.0029	Average Educ. Attainment Workers	0.0029
	-0.00131		-0.00285		-0.00654		-0.00263		-0.00263
Size	0.0241***	Firm Established after 2005	-0.003	Firm Established after 2005	-0.00483	Firm Established after 2005	0.0331	Firm Established after 2005	0.0331
	-0.00395		-0.025		-0.0277		-0.0231		-0.0231
Firm Established after 2005	-0.0167**	% of firms that are registered	0.0483***	% of firms that are registered	0.0379*	% of firms that are registered	0.0191***	% of firms that are registered	0.0191***
	-0.00749		-0.0158		-0.0219		-0.00631		-0.00631
Expanding Firms	-0.0158***	Size	0.0169*	Size	0.0116	Size	0.00515	Size	0.00515
	-0.00501		-0.00932		-0.011		-0.00471		-0.00471
Has formal training programs	0.00372	Expanding Firms	-0.0033	Expanding Firms	-0.0334**	Expanding Firms	-0.00197	Expanding Firms	-0.00197
	-0.00595		-0.0115		-0.0132		-0.00578		-0.00578
Exporter	0.000110*	Has formal training programs	0.0114	Has formal training programs	-0.0341**	Has formal training programs	4.40E-05	Has formal training programs	4.40E-05
	-6.29E-05		-0.0136		-0.0148		-0.00727		-0.00727
Average % of imported inputs	-0.000172**	Exporter	8.78E-05	Exporter	-0.000395**	Exporter	-2.85E-06	Exporter	-2.85E-06
	-8.06E-05		-0.00015		-0.00019		-8.29E-05		-8.29E-05
Average number of competitors	0.000723	Average % of imported inputs	-0.00026	Average % of imported inputs	-0.000354*	Average % of imported inputs	8.77E-05	Average % of imported inputs	8.77E-05
	-0.00157		-0.00018		-0.00021		-0.0001		-0.0001

Competes with Informal	-0.00961*	Average number of competitors	0.00276	Average number of competitors	-0.00513	Average number of competitors	-0.00099
% of firm that that is foreign owned	-0.00538	Competes with Informal	-0.00301	Competes with Informal	-0.00453	Competes with Informal	-0.0013
Labor Intensive Sectors	-9.96E-05	% of firm that is foreign owned	-0.00847	% of firm that is foreign owned	0.173***	% of firms foreign owned	4.44E-05
% Capacity Utilization	-7.40E-05	Labor Intensive Sectors	-0.0115	Labor Intensive Sectors	-0.0144	Labor Intensive Sectors	-0.00614
Ratio of Skilled to Unskilled Workers	0.0151**	% Capacity Utilization	4.04E-05	% Capacity Utilization	-0.00019	% Capacity Utilization	-6.93E-05
Observations	-0.00678	Dummy Owns a generator	-0.00016	Observations	-0.00021	Observations	-9.21E-05
Robust standard errors in parentheses	2.21E-05	% Capacity Utilization	0.00277	Observations	0.01	Observations	-0.00149
*** p<0.01, ** p<0.05, * p<0.1	-0.00012	Observations	-0.0125	Observations	-0.0149	Observations	-0.00623
		Observations	0.000470*	Observations	-9.36E-05	Observations	4.57E-05
		Observations	-0.00028	Observations	-0.00031	Observations	-0.00012
		Observations	0.0105	Observations		Observations	
		Observations	-0.0127	Observations	2.777	Observations	2.777
		Observations	2.770	Observations		Observations	

Annex Table A.2. Marginal Effect of Business Constraints on Firm's Productivity

Explanatory variables	All Firms logY	Registered Firms Only logY
logK	0.177*** (0.0664)	0.196*** (0.0696)
ogL	0.534*** (0.135)	0.457*** (0.155)
logM	0.364*** (0.0828)	0.467*** (0.0805)
logL2	0.0311 (0.0301)	0.0198 (0.032)
logK2	0.0871*** (0.0132)	0.0949*** (0.0105)
logM2	0.0993*** (0.0146)	0.104*** (0.0134)
logKM	-0.0811*** (-0.0138)	-0.0914*** (-0.0122)
logLM	-0.0318* (-0.0168)	-0.0315* (-0.0177)
logKL	0.00549 (0.0135)	0.0118 (0.0137)
Average % of imported inputs	0.000965 (0.000675)	0.000651 (0.000661)
Average Age of the Firm (in years)	-0.00299 (-0.0022)	-0.00257 (-0.00222)
Average Expertise of the Top Manager (in years)	-0.000673 (-0.00257)	-0.00125 (-0.00252)
Average % of Sales Exported	0.00165* (0.000979)	0.00145 (0.000966)
% of firms foreign owned	-0.00105 (-0.00067)	-0.00101 (-0.000674)
% of firms that own a generator	0.0121 (0.0512)	-0.0101 (0.0517)
% of firms that use internet	0.0668 (0.0667)	0.0468 (0.0683)
% of firms listed in the Stock Exchange	0.109 (0.107)	0.13 (0.105)
Average number of competitors	0.0149 (0.0171)	0.0217 (0.0178)
Average % of Utilized Capacity	0.00171 (0.00106)	0.00222** (0.00107)
sector==2	0.347**	0.328**

	(0.141)	(0.138)
sector==3	0.201**	0.193*
	(0.0973)	(0.106)
sector==5	0.0653	0.0412
	(0.0897)	(0.101)
sector==7	0.0426	0.0244
	(0.0875)	(0.092)
sector==8	0.233	0.216
	(0.154)	(0.157)
sector==9	0.141	0.0854
	(0.113)	(0.125)
sector==11	-0.117	-0.168
	(-0.126)	(-0.134)
sector==12	-0.00236	-0.0437
	(-0.0824)	(-0.0898)
sector==15	-0.0416	-0.0695
	(-0.154)	(-0.162)
sector==16	0.174	0.145
(a3a below are regional dummies)	(0.133)	(0.136)
a3a==2	0.172	0.228**
	(0.115)	(0.0956)
a3a==3	0.0993	0.09
	(0.0851)	(0.0856)
a3a==4	-0.0899	-0.112
	(-0.0755)	(-0.0775)
a3a==5	0.105*	0.155**
	(0.0616)	(0.0633)
a3a==6	-0.0363	-0.136
	(-0.16)	(-0.138)
a3a==7	-0.131	-0.267
	(-0.156)	(-0.176)
a3a==8	0.187	0.305
	(0.254)	(0.316)
a3a==9	0.0125	-0.0366
	(0.184)	(-0.274)
Average Duration of power Outages	0.00579***	0.00560***
	(0.00197)	(0.00193)
Indonesia Specific Effect	-0.0104***	-0.00773**
	(-0.00225)	(-0.0034)
Average % of Working Capital Financed with Own Funds	0.00273***	0.00228***
	(0.000738)	(0.000742)

Indonesia Specific Effect	-0.00617***	-0.00635***
	(-0.00113)	(-0.00122)
Average % of Senior Management Time Spent on Dealing with Regulation	-0.00336*	-0.00345*
	(-0.0019)	(-0.0019)
Indonesia Specific Effect	0.00793	0.00994
	(0.00658)	(0.0068)
Number of Times inspected or met with tax officials	0.0121	0.00992
	(0.0117)	(0.0115)
Indonesia Specific Effect	-0.0568*	-0.0467*
	(-0.0321)	(-0.0271)
Constant	4.356***	3.442***
	(0.483)	(0.58)
Observations	1,344	1,202
R-squared	0.973	0.969
Robust standard errors in parentheses. Note: *** p<0.01, ** p<0.05, * p<0.1		

Annex Table A.3. Marginal Effect of Perception on Business Constraints on Decision for Expansion

Table A.3.1: Marginal Effect of Perception on Business Constraints on Decision for Expansion		Table A.3.2: Marginal Effect of Average Perceptions on Business Constraints controlled by Size and Type of Industry on Decision for Expansion <sup>1</sup>	
Probability of investment expansion = 0.20 (20 percent)		Probability of investment expansion = 0.20 (20 percent)	
Explanatory Variable	Marginal Effect on Decision for Expansion	Explanatory Variable	Marginal Effect on Decision for Expansion
<b>Firm Characteristics</b>		<b>Firm Characteristics</b>	
Total employees	0.000	Total employees	0.000
	(0.99)		(1.60)
Location (DKI and Java)	0.087***	Location (DKI and Java)	0.097***
	(2.73)		(3.16)
Product variety	0.009	Product variety	-0.018
	(0.28)		(-0.58)
Exporting firm	0.021	Exporting firm	0.034
	(0.59)		(0.89)
Importing firm	0.051	Importing firm	0.054
	(1.41)		(1.49)
In domestic or international distribution network	0.025	In domestic or international distribution network	0.032
	(0.75)		(0.96)
Location in industrial or bonded zone	0.009	Location in industrial or bonded zone	-0.001
	(0.28)		(-0.04)
Investment ownership (FDI=1)	-0.085***	Investment ownership (FDI=1)	-0.100***
	(-2.42)		(-2.96)

<b>Perception on Clarity in Procedure of Business Licenses</b>		<b>Perceptions on Business Constraints</b>	
Company Registration	0.052***	Clarity Procedure of Business Licenses (a)	-0.170
	(2.41)		(-0.50)
Business Location Permit	-0.007	Perception on Labor Regulations as business constraints (b)	0.288
	(-0.40)		(0.73)
Principle Permit	-0.014	Perception on labor quality as business constraints	-0.332
	(-1.04)		(-0.84)
Location Permit/ State Land Usage Permit	0.011	Training for workers	-0.206
	(0.71)		(0.43)
Environmental Permits	-0.005	Perception on unofficial payments as business constraints	-0.019
	(-0.31)		(-0.36)
<b>Perception on Labor Regulations as Business Constraints</b>		Time spent in dealing with government officials	1.526
			(0.89)
Minimum wages	-0.008	Perception on tax administration as business constraint	0.199
	(-0.53)		(0.49)
Severance payment	-0.021	Perception on customs as business constraints	0.183
	(-1.55)		(0.88)
Regulation on using local workers	0.013	Perception on electricity as business constraints (c)	-0.188
	(0.85)		(-0.18)
Foreign worker regulation	0.020	Perception on road as business constraints	-0.226
	(1.24)		(-0.44)
Social security regulation	-0.014	Perception on land procurement as business constraints	0.132
	(-0.84)		(0.96)
<b>Perception on Labor Quality as a Business Constraint</b>		Perception on macroeconomic stability as business constraints	-0.258
			(-0.94)
Technical skill	-0.023*	Perception on monopoly practices as business constraints	-0.200
	(-1.67)		(-1.02)
Training for workers	0.035	Perception on legal system as business constraints	-0.383
	(1.44)		(-1.14)
<b>Perception on Corruption as a Business Constraint</b>		Observations	471
Unofficial payments	-0.005	LR $\chi^2$ (22)	34.7

	(-1.12)
Time spent in dealing with government officials	0.027
	(1.05)
<b>Perception on Taxes and Customs as Business Constraints</b>	
Tax administration	-0.022*
	(-1.65)
Customs	-0.011
	(-0.78)
<b>Perception on Infrastructure as Business Constraints</b>	
Physical road condition	-0.024
	(-1.17)
Road capacity	0.008
	(0.41)
Telecommunication	0.027
	(1.63)
Electricity	0.007
	(0.46)
Water	-0.018
	(-1.19)
<b>Perception on other obstacles as business constraints</b>	
Land procurement	0.013
	(0.98)
Macroeconomic stability	0.017
	(1.16)
Monopoly practices	0.006
	(0.41)
Legal certainty and conflict resolutions	-0.030***
	(-2.03)
Observations	471
LR $\chi^2$ (33)	67.01

t-statistics in parentheses

\*\*\* significant at 1 percent, \*\* significant at 5 percent, \* significant at 10 percent

**Note Table A.3.1:** Marginal effects should be interpreted as an improvement of one stage of perception on business constraint or 1/5 since there are five stages of improvement will increase willingness to expand by the value of coefficients.

(1) The marginal effect of perception on clarity in company registration on decision to invest is 0.052 which means that an increase of 1 percent in clarity of starting up business procedures will increase willingness to invest by 1 percent ( $0.052 \times 1/5$ ). If currently it takes about 45 days for starting up a new business in Indonesia, a reduction of 4.5 days (10 percent of 45 days) will increase willingness to invest by 10 percent.

(2) The marginal effect of perception on lack of skills as a business constraint is -0.023 which means that an increase of 1 percent

in perception lack of skills as a business constraint will reduce willingness to invest by 0.5 percent ( $-0.023 \times 1/5$ ). In other words, an increase of 1 percent in skill availability proxied by education attainment will increase willingness to invest by 0.5 percent or an increase of 10 percent of education attainment will increase willingness to invest by 5 percent.

(3) The marginal effect of perception on tax administration as a business constraint is  $-0.022$  which means that an increase of 1 percent in perception of tax administration as a business constraint will reduce willingness to invest by 0.5 percent ( $-0.022 \times 1/5$ ). In other words, a reduction of 10 percent in tax administration procedures or equivalent to 5 procedures out of 51 procedures will increase willingness to invest by 5 percent.

(4) The marginal effect of perception on legal system/court as a business constraints is  $-0.030$  which means that an increase of 1 percent in perception of legal system/court as a business constraint will reduce willingness to invest by 0.6 percent ( $-0.030 \times 1/5$ ). Legal system in this context is associated with enforcing business contract. In other words, a reduction of 10 percent in perception of enforcing business contract proxied by length of time of enforcing business contract and the cost of claim (as the percentage of total claims) or equivalent to 57 days out of 570 days and 6 percent out of 60 percent of total claims will increase willingness to invest by 6 percent.

**Note Table A.3.2:** Only firm characteristics such as firm location and ownership statistically significant in affecting willingness to investment expansion. Firms located in DKI Jakarta and Java are 9 percent more likely to expand their investment than their peers off Java. Meanwhile, foreign firms are 10 percent less like likely to expand their investment than domestic firms. The perceptions on regulations are statistically insignificant affecting decision to invest.

(1) Table A.3.2 present marginal effect of average perceptions on business constraints controlled by firm size and type of industry (kelompok lapangan usaha 1,2,...,9) on decision for investment expansion. As some of variables on perceptions are highly correlated when they are averaged, we use the average value of one category variable, for example (a) business licenses are a collection of business procedures ranging from business registrations to environmental licenses, (b) labor regulations comprises a collection of severance pay to social security regulation and (c) electricity consists of electricity, telecommunication and internet.

