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RECOVERY AND BEYOND: ENHANCING COMPETITIVENESS TO REALISE INDONESIA'S
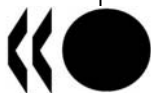TRADE POTENTIAL

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by Margit Molnar and Molly Lesher

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ABSTRACT

As Indonesia recovered from the 1997-98 Asian Financial Crisis, the economy underwent significant political and structural changes, and the role of trade policy evolved. It is clear that there is much scope for trade to enhance economic growth. However, there remain significant challenges in realising this potential, including the need to improve external competitiveness. This paper analyses Indonesian trade policy following the crisis, and identifies some key reforms that may help to increase competitiveness. In view of the evolving domestic and global environment, a comprehensive policy approach will be required involving trade policy reform moving in tandem with reforms in other policy areas. Suggested reforms include, among others, complementing applied tariff cuts with reductions in non-tariff barriers and bound tariffs, reducing trade costs by easing behind-the-border regulations, and further improving the investment climate.

Keywords: Indonesia, competitiveness, Asian Financial Crisis, comparative advantage, FDI, spillovers, horizontal linkage, backward linkage, forward linkage, productivity, micro-data, textiles.

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EXECUTIVE SUMMARY

As Indonesia recovered from the 1997-98 Asian Financial Crisis, the economy underwent significant political and structural changes, and the role of trade policy evolved. It is clear that there is much scope to use trade to further enhance growth in Indonesia, and external competitiveness represents one of the major challenges for Indonesia to realise its trade potential. This paper analyses Indonesian trade policy following the crisis, and identifies some key reforms that may help to increase competitiveness to succeed in an increasingly globalised world.

Indonesia's export performance has deteriorated since the 1997-98 crisis, and market shares in goods and services have yet to reach their pre-crisis levels. Energy still dominates trade patterns, both on the export and import side, and the share of high-technology exports is low. Patterns of revealed comparative advantages have been shifting, as traditionally competitive industries, such as textiles, garments and wood are losing in world markets, while other industries such as chemicals and motor vehicles have emerged to compete more effectively internationally. Further, services trade performance has lagged, even though services make up about 50% of GDP, and increases in foreign direct investment can help spur gross capital formation and productivity growth.

Indonesia's relatively successful efforts at achieving and maintaining macroeconomic stability in the post-crisis years have laid the foundation for further realising its trade potential. But the political transition that took place in the crisis period was associated with conditions that may impede trade and exacerbate existing weaknesses in the trade policy environment. In particular, excessive state involvement in the economy persists, and the large-scale decentralisation facilitated the erection of non-tariff barriers and contributed to the proliferation of licence requirements. This is in sharp contrast to the successful reduction of tariffs and effective protection. Further, governance and infrastructure constraints, as well as behind-the-border regulations, all increase trade costs. Trade facilitating measures, such as Indonesia's introduction of a single window for customs procedures, can play an important role in reducing these costs.

The path to realising Indonesia's trade potential involves a broad sense of competitiveness that includes the degree of flexibility of the economy. Internal constraints as well as developments in international markets have hindered Indonesia's competitiveness, some of which are associated with trade-related policies. Maintaining the competitiveness of Indonesian industries in an evolving domestic and global environment is a key challenge for policymakers. A comprehensive approach, involving trade policy reform moving in tandem with the reform of other policy areas, is the key to boosting competitiveness in the long run.

Reforms that may help boost the competitiveness of the Indonesian economy

Complement applied tariff cuts with reductions in non-tariff barriers and bound tariffs. While Indonesia has low average applied tariffs by developing-country standards, tariff dispersion has increased since 2004, implying lower economic efficiency. The medium-term tariff harmonisation schedule will bring about transparency and reduce customs administration costs, but owing to the shift of products from the 0 to the 5% tariff band, it may adversely affect trade flows. A large percentage of tariffs are bound, but the sizeable spread between bound and applied tariffs allows considerable scope for swift increases on special products, reducing predictability. Effective protection has substantially fallen over 1995-05; nevertheless there remains ample scope for additional reductions in several sectors. Moreover, since 2001

new non-tariff barriers (NTBs) have emerged, and creeping protectionism has set in. Decreasing the overall number of NTBs, as well as the percentage of sectors to which they apply, would further reduce trade barriers. A lack of a single authority over trade policies may have contributed to the proliferation of NTBs.

Reduce trade costs by easing behind-the-border regulations. Infrastructure constraints, which bear directly on the costs associated with trading goods and services, have impeded competitiveness. Indonesia has begun to reduce the number of ports handling international trade which will allow the government to focus on infrastructure improvements to those sites. There remains, however, ample scope to streamline handling procedures and lessen administrative burdens in order to reduce transport and opportunity costs. Addressing inefficiencies with road infrastructure, including cracking down on illegal road levies as well as road maintenance, would reduce trade costs. Product market regulations also contribute to sub-optimal trade performance. Costs associated with starting a business, importing and enforcing contracts are relatively high in Indonesia, as is the amount of time it takes to import. Procedural inconveniences make firing regular employees costly and therefore deter firms from taking on new workers. This in particular harms the competitiveness of industries, as it inhibits the exploitation of the large pool of low-cost labour in which Indonesia has comparative advantage. The uncertainty related to firing underperforming employees and the high material and opportunity costs of producing and trading all contribute to informal activities. Addressing these domestic regulatory barriers would improve trade performance and help realise the considerable potential hidden in the grey economy.

Further improve the investment climate. Both the sub-national and central governments have a role to play in reducing excessive investment-related regulation. The new investment law and negative list have increased transparency, but there remains room to allow for larger foreign stakes in a number of sectors. Improving the investment climate is especially important given the large scope for increasing the share of foreign firms in capital formation. Decreasing state involvement in the economy, which continues to distort incentives in several important sectors (e.g. energy), would encourage new private investment, thus creating the conditions for fostering competitive markets. And a more objective and transparent court system, as well as more far-reaching enforcement of intellectual property rights would create a more predictable environment for foreign investors, which may help to further enhance competitiveness.

Introduction

1.   The Asian Financial Crisis of 1997-98 interrupted Indonesia's robust economic growth and trade performance. Regaining its previous position, let alone expanding its share in world markets, now seems a challenge. Prior to the crisis, trade had long been an important driver of economic growth in Indonesia. On the demand side, net exports had been positively contributing to growth, while on the supply side, the expansion of production facilities for exports had boosted expansion of the entire economy. The crisis damaged structural relationships across the economy, and coupled with macroeconomic instability, firms were adversely affected, diminishing their ability to trade. Alongside these developments, several competitors emerged on the world market, increasing the competitive pressure on Indonesian industries.

2.   In this evolving global environment, it is crucial for Indonesia to identify strategies to remain competitive, including moving up the value chain, better exploiting comparative advantages and using production factors more efficiently. In a narrow sense, competitiveness refers to the price competitiveness of products in external markets, which in turn is largely determined by the costs of production, mark-ups and exchange rates. In the short term, price competitiveness can be enhanced by manipulating exchange rates or squeezing profit margins, but in the long term, it is the ability of the economy to efficiently employ factors of production that determines its competitiveness. The ability to be efficient is determined in part by the capacity of the economy to innovate, the smooth functioning of product, labour and financial markets, the quality of institutions and good governance.

3.   As Indonesia recovered from the crisis, the economy underwent significant political and structural changes, and the role of trade policy evolved. It is clear that there is much scope to use trade to further enhance growth in Indonesia, and external competitiveness represents one of the major challenges for Indonesia to realise its trade potential. This paper analyses Indonesian trade policy following the 1997-98 Asian Financial Crisis and identifies some key reforms that might help increase competitiveness. The paper first presents a broad snapshot of the Indonesian macroeconomy, followed by an analysis of the trade-related policies and select behind-the-border issues that impede competitiveness. In light of this trade policy environment, the next section discusses trade performance in recent years. The paper concludes with a brief summary of major findings.

I.   Indonesia has largely recovered from the crisis, but challenges remain

4.   Indonesia's recovery from the Asian Financial Crisis has continued in the face of several significant challenges, including the sharp depreciation of the rupiah in the wake of the crisis, a spike in global oil prices, increases in interest rates and inflation, and the debilitating 2004 tsunami. But it has yet to fully recover to pre-crisis levels of growth (Table 1), perhaps in part because of the severity of the crisis.

Table 1.   Recent GDP growth has been strong, but is below pre-crisis levels (%)

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
7.2	7.0	6.5	6.5	7.5	8.2	7.8	4.7	-13.1	0.8	4.9	3.8	4.4	4.7	5.0	5.7	5.5	6.3

Source: *IMF International Financial Statistics*.

5.   While the recovery in GDP growth has been continuous since 2000, it has not spread equally across sectors. In general, growth has been strongest in capital-intensive (non-tradable) services sectors, with the labour-intensive primary and manufacturing (tradable) sectors experiencing sluggish growth. In 2007, data from BPS (*Badan Pusat Statistik*, Statistics Indonesia) show that the primary sector accounted for the smallest share of GDP (22.5%), followed by manufacturing (27.4%) and services (50.1%). Slow growth in labour-intensive sectors has contributed to high unemployment, which at 9.1% in 2007 was almost double

the 4.8% unemployment rate in 1997. Strong population growth has also hindered the ability of the economy to accommodate adequately the inflows of new workers entering the labour market.[1]

6.   Relatively strict labour market policies also appear to be at least partly to blame for high unemployment. The OECD recently extended its coverage of its index of the restrictiveness of employment protection legislation (EPL) to cover Indonesia (OECD, 2008).[2] The EPL index for regular workers shows that Indonesia's overall score (3.3) is well above the OECD (2.1) and OECD emerging market (2.4) average, but below that of Portugal (4.2). Procedural inconveniences that limit the ability of firms to shed workers easily are the primary obstacle to a more flexible labour market. While the government has made efforts to ease restrictions – notably a proposed revision to the 2003 Manpower Law – resistance from labour unions and opposition factions in parliament has so far impeded reform.

7.   In addition to unemployment, government fuel subsidies represent another drag on the economy (fuel subsidies were cut in May 2008, but still represent a heavy drain on government finances). Until very recently, high oil prices had contributed to inflation, which together with increases in global food prices has become a real worry for the Indonesian government. Data from BPS show that inflation ran at 6.6% in 2007, above Bank Indonesia's 4-6% target, with food and beverages showing the most marked increase (11.3%).

8.   Wide-spread corruption and weak institutions also pose challenges for Indonesia's economic recovery (Henderson and Kuncoro, 2006). While Indonesia counter intuitively sustained high levels of growth with pervasive corruption in the Suharto years, it appears that different varieties of corruption impact efficiency in diverse ways, and the type of corruption that has taken hold in Indonesia after the fall of Suharto has been particularly pernicious. Governance reform thus represents an important component of improving competitiveness.

Post-crisis export performance has been disappointing…

9.   Indonesia's share in the world goods and services trade has not recovered to its pre-crisis level (Figure 1a). This is related to the sluggish growth in exports and imports following the crisis. Over the period 1994-2006, Indonesia's average annual growth rate of goods exports and imports was also below that of India, China, and other economies in the Association of Southeast Asian Nations (ASEAN), such as Singapore, Vietnam, and Thailand. In services, Indonesia ranks slightly higher in exports than imports, but growth rates clearly lag behind China's and India's, as well as many of its ASEAN neighbours.

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[1]   The Indonesian government estimates that a growth rate of 6-7% is needed to accommodate new entrants in the labour market (WTO, 2007a).

[2]   The EPL methodology involves assessing employment protection legislation across countries. The EPL index is on a 0-6 scale, with 0 indicating a minimal level of rigidity and 6 indicating the highest level of strictness. The figures quoted represent the average for regular employees (indefinite contracts) only. Data used to construct the indices are as of 2006 for all countries except Indonesia, which are as of 2007. Details on the methodology can be found in OECD (1999) and OECD (2004).

Figure 1.   The trade share has not recovered but the volume share has surged recently

Share of Indonesia's trade in goods and services in world trade (in %)

a. In value   b. In volume
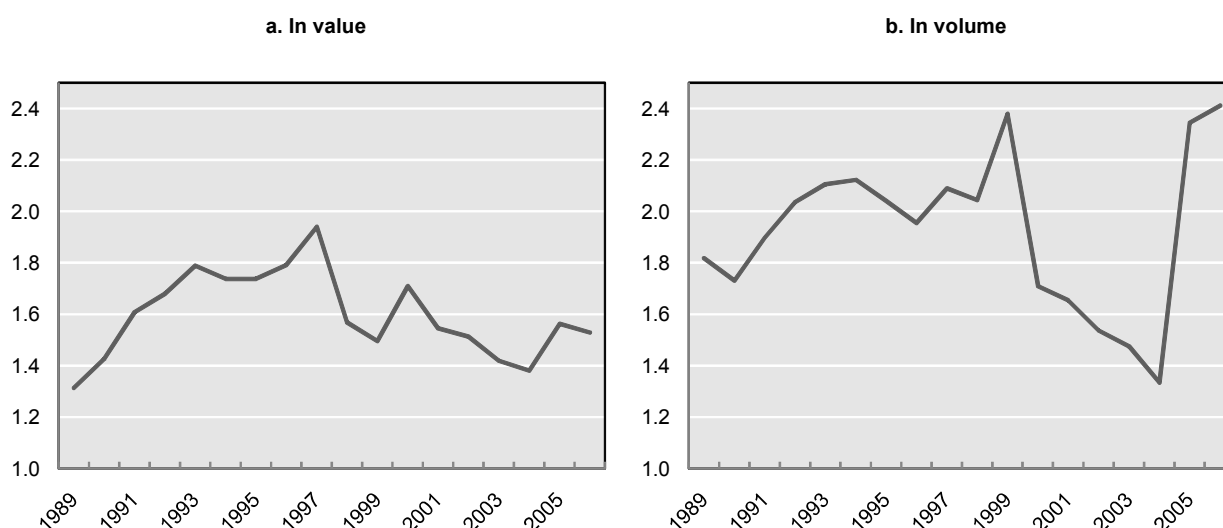
Source: *IMF International Financial Statistics.*

10.   Trade as a share of GDP in Indonesia spiked markedly in 1998, the worst year of the crisis, resulting largely from the huge exchange rate depreciation and shrinking GDP. Since then, imports as a share of GDP have yet to return to pre-crisis levels (about 25% in 2007), while export shares have slightly exceeded pre-crisis levels, and in 2007 stood at about 29%. Indonesia's trade performance lags behind many of the other ASEAN economies, such as Malaysia, Vietnam, and Thailand, as well as Korea, which in 2007 were all above pre-crisis levels of trade as a share of GDP. Only the Philippines lags behind Indonesia, as neither export nor import shares have returned to pre-crisis levels.

Box 1. Indonesia and the Asian Financial Crisis (1997-1998)

With the collapse of the Thai baht in August 1997, investors began to reassess their tolerance for exchange rate risk in Asia, creating panic across the region. Indonesia was hit particularly hard. Austerity measures, inflation, very high interest rates, and a massive credit crunch brought the crisis from the financial sector to firms and households, causing investment to collapse and real wages and consumption to decline. In January 1998, the Indonesian rupiah was worth only 15% of its USD value only six months earlier, and by the end of the year, the rupiah had depreciated 50% in real terms, one of the largest currency devaluations in recent history (Blalock and Roy, 2007). Throughout 1998 – the worst year of the crisis – GDP contracted by 13%, investment fell by 45%, and poverty rose sharply.

Perhaps the most extraordinary characteristic of Indonesia's experience in the Asian Financial Crisis is the implosion of the banking sector. The corporate sector was saddled with debt, much of which turned bad as a result of the crisis, and firms had to renegotiate their debt financing or rationalise their operations to stay afloat (Molnar, 2003). This impacted banks, and by 1998 many were insolvent, leaving firms with little or no access to credit. Without a formal deposit insurance system, the government eventually had to provide a blanket guarantee of bank liabilities to avert the threat of a system-wide financial meltdown. This led to enormous losses on the order of 40-47% of GDP, almost all of which was paid for by government revenues (McLeod, 2004).

Indonesia's export performance during and immediately after the crisis has not been robust. For one, the international prices[A] of many of Indonesia's exports fell sharply in 1998 (prices for primary products declined about 10%), and in 1999 (international prices for manufactured products declined about 17%) (Brown and Magiera, 2000). Second, the combination of the appreciation of the rupiah after its dramatic depreciation in 1997 and inflation erased much of the competitive boost from the initial currency depreciation. And third, trade financing, the foundation on which the international trading system rests, was severely curtailed during the crisis.

Box 1. Indonesia and the Asian Financial Crisis (1997-1998) (continued)

Trade financing – letters of credit, bills of exchange, and pre-shipment working capital loans, among others – was severely disrupted in Indonesia during the crisis. As exporters were unable to access letters of credit and other trade financing instruments because of concerns about credit risk, a severe liquidity problem arose. While this problem affected all firms, it was particularly difficult for firms who engaged intensively in vertical trade (*i.e.* the use of imported inputs in goods and services that are then exported) as well as firms that could not rely on foreign parent companies for financing.

Indonesia's trade performance, annual growth rates 1997-1999 (in %)

	1997	1998	1999
Goods exports	12.2	-10.5	1.7
Goods imports	4.5	-30.9	-4.2
Services exports	5.2	-35.5	2.7
Services imports	9.7	-27.2	2.4

Source: *IMF Balance of Payments Statistics*.

Because import and export contracts are forward looking, the crisis did not impact Indonesia's trade figures until 1998, when the growth rates of exports and imports of both goods and services declined significantly. Yet the overall figures mask differences across sectors. In 1998, the primary sector suffered the most, with exports falling 10-11%. In 1999, however, it was the manufacturing sector that experienced significant declines of about 17% on average. In particular, consumer electronics, footwear and toy exporters suffered, whereas furniture, leather and travel goods exporters fared very well during and after the crisis. However, these areas of trade growth could not reverse the overall disappointing trend in trade performance since the crisis.

[A] Brown and Magiera use a Laspeyres Index based on unit export values. They note that some of the underlying data used to construct the price indexes is unofficial, and thus the percent values quoted should not be interpreted strictly, but rather as an indication of the general trend in export prices during the crisis.

...amid declining terms of trade

11.   Indonesia's shrinking share in world trade in goods and services masks some important trade price developments. A volume comparison suggests that shares are moving in more or less the same direction, but their movements are more volatile (Figure 1b). This volatility is attributable to Indonesia's terms of trade. Indonesia saw a very marked improvement in its terms of trade for goods during the pre- and crisis period, but since 1999, its terms of trade have been deteriorating, with a trough coming in 2005 (Figure 2).

Figure 2.   Terms of trade for goods have deteriorated for most of the post-crisis period

(Index 2000=100)
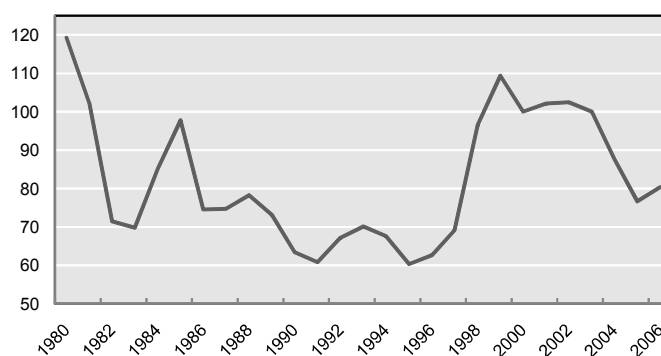
Source: *World Bank World Development Indicators*.

12. The deterioration in the merchandise terms of trade could be at least partly explained by the sharp rise in oil prices. Oil consumption has outstripped production in the 1990s and first half of the 2000s due in part to domestic fuel subsidies, which have resulted in fuel prices among the lowest in the world. Production has decreased as oil fields have matured and new investment has not been forthcoming.

13. Taken together, these data suggest that Indonesia's overall trade performance has not been as strong as many of its ASEAN and other Asian peers in the aftermath of the crisis. This could be in part due to the severity of the crisis in Indonesia, as well the structural problems that were either a direct result of the crisis or were exacerbated by policy responses made in its wake. In addition, in the years immediately preceding the crisis industrial policies to develop national champions resulted in excessive protection and hence decreased competitiveness of those industries. However, while overall trade performance has clearly been disappointing since the crisis, differences among sectors within the economy point to areas in which Indonesia can enhance its external competitiveness.

14. Important internal constraints have hindered Indonesia's ability to use trade as a tool to raise living standards. External factors, such as volatility in oil prices, have also affected Indonesia's trade policy environment. Some of these developments are related to trade policies, while others bear directly on the costs associated with trading goods and services. The next section provides insight into the aspects of Indonesia's trade policy environment that hinder the country from realising its trade potential.

II.   Reforming the trade policy environment will improve trade performance

15. Indonesia's relatively successful efforts at reaching and maintaining macroeconomic stability in the post-crisis years have laid the foundation for further realising its trade potential. But the major political transition that took place in the crisis period was associated with conditions that impede trade and exacerbate existing weaknesses in the trade policy environment.

16. Trade liberalisation in Indonesia has progressed unevenly over time, often driven by world market developments as well as internal political changes. Trade liberalisation began in response to the economic woes that followed heavy state intervention and isolation of the Sukarno regime (1960-1966). In consultation with the IMF, the 'New Order' government of President Suharto issued foreign and domestic investment laws aimed at attracting investors, simplified foreign trade procedures and significantly reduced tariffs. However, the impact of the tariff reductions was somewhat offset by the imposition of duties of 10-20% on previously duty-free intermediate and capital goods (Fane, 1999).

17. The first oil crisis changed the direction of policies. Non-oil traded production was adversely affected by the so-called Dutch disease, whereas the oil revenue boom caused the price of non-tradables to increase relative to non-oil tradables, shifting from the production of non-oil traded goods to non-tradables and impeding the development of the still infant non-oil tradable sector. In an attempt to stop the decline of non-oil tradable sectors, the government adopted protectionist policies aiming at nurturing infant industries such as textiles, food processing and engineering (Tri Sambodo, 2004).

18. Changes in international oil prices again spurred trade liberalisation in the 1980s. As the second oil crisis ended and falling oil prices resulted in revenue losses, a further round of liberalisation was initiated. Beginning in 1986 several policy packages were introduced reducing tariffs and dismantling non-tariff barriers, including the replacement of the export licensing system with a duty drawback system and the conversion of certain non-tariff barriers to tariff equivalents. These measures contributed to enhanced transparency and predictability of trade policies (Aswicahyono and Feridhanusetyawan, 2004).

19. Distinct features of this deregulation "boom" are its gradual rather than "big bang" nature, genuine unilaterality and consistent implementation (Bird *et al.* 2007). Large-scale deregulation coupled with sound

macroeconomic management significantly contributed to upgrades of the industrial and export structures during this period. The composition of manufacturing exports, which represented an increasing share in export earnings, shifted from resource-based manufacturing toward low- and medium-technology manufacturing products in the late 1980s (Aswicahyono and Feridhanusetyawan, 2004). The structural changes brought about by deregulation boosted productivity growth. In contrast to earlier decades, when growth was mainly input driven, from the mid-1980s to the mid-1990s growth rates of a similar magnitude were attributable to total factor productivity growth.

20.   The immediate period before the crisis was characterised by reform fatigue, policy failures and the proliferation of corruption, cronyism and nepotism. Structural weaknesses were present, but they had been masked by strong growth. Export growth had also slowed in the years preceding the crisis, a development that was not solely attributable to cyclical factors such as suppressed world prices or the weakening of demand in major markets. Protection implied uncompetitive prices, which together with incentives to import intermediates for export, translated into heavily import-dependent export production.

21.   Indeed, one of the most wasteful policies was the development of aircraft and shipbuilding industries, which required massive protection and therefore impeded competitiveness in related industries. The creation of monopolies (e.g. toll roads and clove distribution) and other efficiency-impeding practices designed to benefit a small cadre of elites also flourished in the years leading up to the crisis. These monopolies were often created as a result of privatisation of government monopolies, bringing about even less efficient economic outcomes. Such practices have had repercussions reaching well beyond the crisis. Over-emphasis on nurtured sectors has left the country without well-established high-technology sectors and with neglected labour-intensive industries.

22.   The Asian Financial Crisis precipitated the fall of the Suharto regime, and ushered in the *era reformasi*, or Reform Era. Trade liberalisation commenced anew, spurred on by conditions agreed to with the IMF as part of the post-crisis bail out. In addition, a new Constitution was drawn, massive decentralisation[3] was introduced, direct elections were held, an independent central bank was created, and a bevy of new laws and regulations emerged from the new parliament. The government also embarked on a strategy to boost 10 top export products,[4] 10 priority export products,[5] and 3 services.[6] In a relatively short period of time, Indonesia transformed its political and economic landscape.

Trade liberalisation has progressed unevenly since the crisis

23.   Indonesia has successfully liberalised tariffs, and now represents a relatively low-tariff country by developing-country standards. The effective rate of protection has also significantly fallen over the past decade. However, since 2001 new non-tariff barriers (NTBs) have emerged. This development may question the consistency of recent trade policy.

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[3]   Decentralisation, which was carried out pursuant to Laws 22/1999 and 25/1999, was necessary for political unity in the wake of the strong central command structure of the Suharto regime. But it has created challenges for enhancing Indonesia's competitiveness. For one, government agencies were not adequately downsized or rationalised following the crisis, which has had important budgetary implications (ADB, 2004).

[4]   Shrimp, coffee, palm oil, cocoa, rubber products, textiles and clothing, footwear, electronics, components and spare automotive parts and furniture.

[5]   Handicrafts, fisheries, medicinal herbs, leather products, processed food, jewellery, essential oils, spices, stationary products, and medical instruments.

[6]   Construction, information and technology, and professionals and trained workers.

Bound tariffs have not fallen in tandem with average applied tariffs

24.   Indonesia's MFN applied tariffs have decreased sharply over the past decade and a half, with the simple average applied tariff falling by two-thirds between 1989 and 2007 (Figure 3 and Annex Table A1) to 6.9%, a relatively low figure by both developing country and Southeast Asian standards. Notwithstanding the fall of the simple average applied tariff, its standard deviation has risen since 2004, indicating increased tariff dispersion and hence lower economic efficiency.[7] Although this trend was interrupted in 2007 with a fall in the standard deviation relative to the previous year, nevertheless the level of dispersion in 2007 was still higher than in 2003. This increase in dispersion reflects an overall decrease in tariff rates combined with the maintenance of high rates on selected goods such as alcoholic beverages and motor vehicles. The tariff structure also exhibits a number of tariff peaks.

25.   The effective tariff rate of 1-2%[8] is well below the average MFN rate reflecting the lower Common Effective Preferential Tariffs (CEPT) applied among the ASEAN countries. Averaging 2.7% in 2006, the CEPT ranged between 0-5%, resulting in duty-free imports of certain intermediate inputs in the ASEAN region.[9] The high percentage of bound tariff rates (93% in 2006) indicates predictability (WTO, 2007a). The fact that the overwhelming majority of tariffs are *ad valorem* makes the system more transparent than in many OECD countries. There are only a few non *ad valorem* tariffs, most notably those on rice and sugar.[10]

Figure 3.   Applied tariffs have fallen substantially but dispersion has widened in recent years
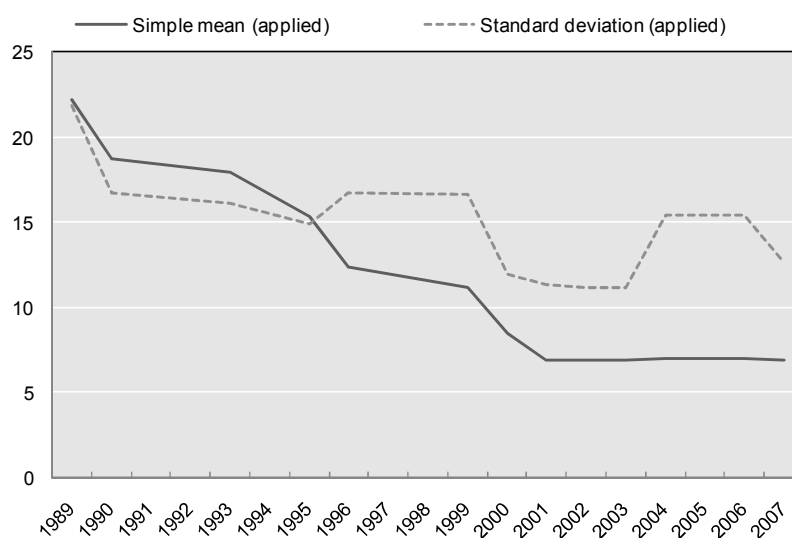
Source: *UN Trains*.

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[7]   The tariff dispersion index calculated for 2006 is 6.81, a rather high figure compared to OECD countries, but not relative to other developing countries.

[8]   The effective tariff rate is calculated as the fraction of customs duties over import value. The reference year is 2005, the most recent year for which customs duty revenues are available.

[9]   There are no recent data readily available on the share of imports entering the country duty free, but a survey of Japanese companies (JETRO, 2007b) suggests that it may be much lower than in other countries in the region as almost half of Japanese companies operating in Indonesia do not make use of this facility.

[10]   Rice is subject to a tariff of Rp 450/kg and sugar to Rp 750/kg.

26.   Indonesia's tariff structure cascades, which means that it exhibits higher rates for finished goods and lower rates for production inputs (Table 2). Under a cascading tariff structure, the resource allocation effects of the tariff structure on a given sector depend not only on the tariff rate applicable to that sector, but also on the tariffs on intermediate inputs used in that sector. This tariff structure is prevalent in most industries, but the degree of escalation is particularly apparent in the case of food, beverages and tobacco; textiles, garments and footwear; and wood and furniture, where tariffs on final goods are at least double the tariffs on inputs at the first stage of processing (WTO, 2007a).

Table 2.   MFN tariffs are lower for inputs and higher for finished goods

	Applied MFN Rates			
	Capital goods	Consumer goods	Intermediate goods	Raw materials
1989	14.67	35.10	17.92	15.38
1990	14.12	29.05	14.17	14.91
1993	13.06	28.25	13.55	13.75
1995	10.78	24.39	11.85	10.96
1996	6.27	20.20	9.86	9.93
1999	5.90	18.58	8.72	8.72
2000	4.45	13.81	7.32	4.38
2001	3.67	10.99	6.02	4.24
2002	3.71	10.98	5.97	4.23
2003	3.70	10.96	5.98	4.23
2004	3.79	10.93	6.10	4.17
2005	3.79	10.93	6.10	4.17
2006	3.79	10.93	6.10	4.17
2007	3.75	11.08	5.86	4.45

Note: Tariff rates presented here exclude preferential rates.
Source: *UN Trains.*

27.   Partly in response to commitments made under the ASEAN Free Trade Area Agreement, Indonesia has revamped its tariff structure through a two-pronged tariff harmonisation initiative.[11] The initial phase culminated in Ministry of Finance Regulation 600/2004, which covered 1 964 tariff lines, primarily in the agriculture sector (World Bank, 2006b).[12] The revised tariff schedule for these goods went into effect in the beginning of 2005. In the second phase, more than 9 100 tariff lines were revised via Regulation 132/2005, and the changes came into effect in early 2006. Overall, the tariff harmonisation initiative has resulted in a 16% increase in the number of tariff lines and a small reduction in the simple average and maximum tariff rates.

28.   At the end of the second phase of tariff harmonisation, a medium-term plan was announced to cut tariffs between 2005 and 2010 as well as further alter the tariff structure (Table 3). If fully implemented, this plan will ensure that 94% of Indonesia's tariff schedule will include rates in the range of 0-10% by 2010. The other 6% of tariff lines have been designated as special products, and are slated for cuts in a similar rate range but with an extended implementation deadline (2020). Further, the medium-term plan seeks to convert existing NTBs to tariff equivalents as well as decrease the overall number of tariff bands in the schedule.

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[11]   Indonesia has adopted the ASEAN Harmonised Tariff Nomenclature, which required large-scale tariff harmonisation.

[12]   239 lines were actually altered: 60% increased and 40% decreased (WTO, 2007a).

Table 3.   Tariff harmonisation is scheduled in the medium term

Distribution of tariff lines by tariff band

Tariff band	2004		2006		2008		2010	
	Tariff lines	% in total	Tariff lines	% in total	Tariff lines	% in total	Tariff lines	% in total
0%	2 334	21	2 454	22	2 320	23	557	5
5%	4 344	39	4 134	37	3 839	38	6 008	59
8%	0	0	74	1	17	0	119	1
10%	1 709	15	1 703	15	1 663	16	2 835	28
13%	0	0	42	0	88	1	0	0
15%	1 562	14	1 562	14	1 603	16	163	2
20%	305	3	590	5	122	1	21	0
25%	340	3	31	0	44	0	6	0
30%	11	0	43	0	13	0	14	0
≥ 35%	541	5	523	5	469	5	455	4
Total	11 146	100	11 156	100	10 178	100	10 178	100

Source: *Customs and Excise Office, Indonesia.*

29.   Tariff reform will certainly bring about efficiency gains related to lower costs of customs administration and increased transparency, but by shifting products from the 0% to the 5% tariff band, it may adversely affect trade flows. Given the low share of tariff revenue (at about 4% of revenue in 2006), even in the short run, the movement of tariffs only in the downward direction does not imply substantial revenue losses (WTO, 2007a). Moreover, the reduction in the average tariff rate will reduce tariff dispersion only slightly, and the number of tariff bands will increase due to the creation of an 8% tariff band (WTO, 2007a).

30.   Importantly, there is also a significant difference between bound and applied tariff rates in Indonesia (Annex Table A1). Since the 1990s, the spread between bound and applied tariffs has widened considerably, as tariff reduction programmes have focused primarily on applied rates. In 2006, the latest year for which comparable data are available, there was a 30 percentage point difference between the bound and applied simple average tariff rate. The difference between bound and applied rates is more pronounced for agriculture commodities than it is for manufacturing. Thus, the Indonesian government has considerable scope to swiftly increase tariff rates on particular products, reducing predictability. The government has made use of the tariff spread to raise import duties on key agriculture commodities. In 2007, for instance, the import duty on rice was raised 22%.[13]

Effective protection has substantially declined

31.   Effective rates of protection (ERPs),[14] which indicate how much protection is actually provided to the value added generated in the respective industry, have substantially fallen between 1995 and 2005 (Figure 4 and Annex Table A2). In economies with a cascading tariff structure like Indonesia, analysing ERPs in addition to nominal protection is of particular importance.

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[13]   Rice is a particularly sensitive product in Indonesia. In 2004, a total ban on imports of rice was imposed, though this ban was eased somewhat the following year. Particularities related to registration and distribution also apply.

[14]   The effective rate of protection of industry *j* is computed by the following formula: $ERP_j = \dfrac{t_j - \sum \text{int}_{ij} t_i}{1 - \sum \text{int}_{ij}}$

Where *t* is the tariff rate, int_{ij} is the share of costs for inputs from industry *i* in the output of industry *j*.

Figure 4. Effective protection varies considerably across sectors

Nominal and effective rates of protection, 1995 and 2005
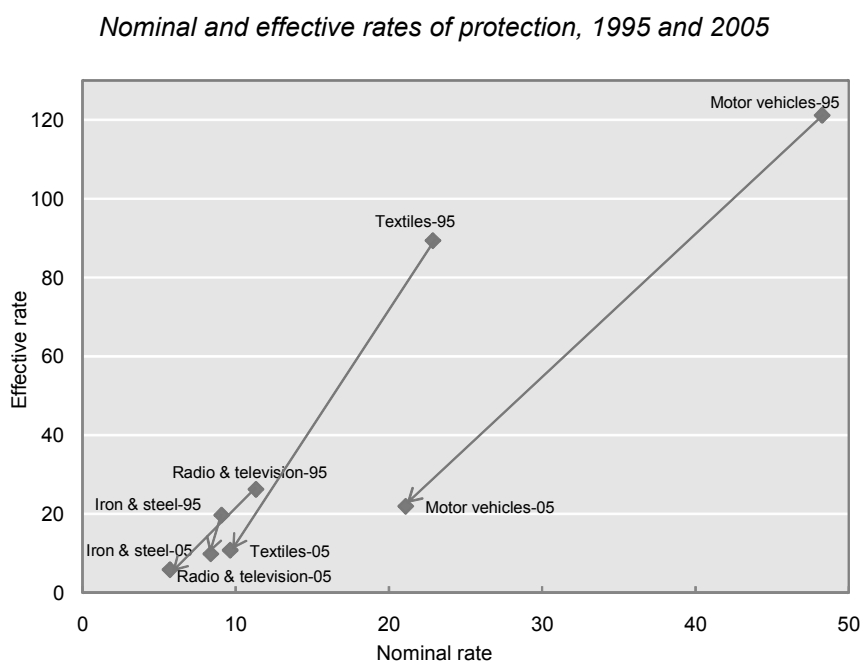
Note: Textiles includes textiles, garments, leather and footwear (ISIC 17, 18 and 19); iron and steel is the sum of the sub-categories of ISIC 271 and 2731 under basic metals; radio and television also includes communication equipment (ISIC 32); and motor vehicles is category 34 under the ISIC Rev. 3 classification.

Source: Authors' calculations based on the *2007 OECD Input-Output Database*.

32.   The overall reduction in ERP masks substantial differences across sectors. Sharp reductions in effective protection are evident, for instance, in motor vehicles and textiles and garments. The motor vehicle sector used to be one of the selected industries under the national industrialisation programme. Hence, it was one of the most protected industries with an objective of developing a national car (called the Timor). Learning from this failed approach, the industry was swiftly liberalised, and both nominal and effective rates of protection have fallen substantially between 1995-2005. The extent of the reduction of both nominal and effective protection has been much more limited in the iron and steel industry.

...though the number of non-tariff barriers has decreased, sectoral coverage remains high

33.   The number of NTBs in Indonesia has been substantially reduced, from more than 1 000 in 1995[15] to 353 [16] in 2007. While the absolute number of NTBs in Indonesia is smaller than in many of the ASEAN countries, Indonesia's NTBs affect a large percentage of sectors. In 2007, Indonesia's NTBs covered 60 out of the 79 two-digit HS product categories, reducing the transparency of trade policies.

34.   Indonesia's NTBs come in several forms, but licenses and technical measures, such as labelling and quality standards, represent a sizeable share (Table 4). A large number of NTBs in Indonesia concern agricultural products and chemicals, but there are also several important measures concerning electrical

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[15]   Ministry of Trade, Indonesia.

[16]   Data from the ASEAN Non-tariff Measure Database for 2007 (2006 for Singapore) indicates the following total number of NTBs in select ASEAN countries (the percentage of 2-digit HS codes affected by these NTBs are in parentheses): Indonesia, 353 (76%); Singapore, 555 (42%); Thailand, 217 (51%); Malaysia, 1561 (82%); and Vietnam, 896 (95%).

machinery and motor vehicles. Basri and Soesastro (2005) characterise the situation post-2001 as "creeping protectionism" when line ministries introduced a plethora of import licences. Some of these licences are so-called automatic licences (NPIK, *Nomor Pengeral Importir Khusus*), which are the most common and require only registration, while others aim at controlling import quantity (*e.g.* those for alcoholic beverages) or even restricting the importers to producers that use the commodity (*e.g.* sugar, textiles, used machinery and salt) in their production process.

Table 4. Non-tariff barriers affect many parts of the Indonesian economy, 2007

		Number of NTMs
Quantity control measures	Licensing	69
	Prohibition	34
	Quota	4
Technical measures	Labeling	40
	Quality Standard.	38
	Technical Regulations	27
	Testing, inspection and quarantine requirements	8
	Marking	6
	Packaging	6
	Pre-shipment inspections	2
	Import License	1
	Other	5
Monopolistic measures	Single channel for imports-State trading administration	12
Para-tariff Measures	Additional taxes and charges	21
	Excise tax	7
Other	Automatic import licensing	70
	Prohibition for sensitive product category	2
	Import Control	1
Total		**353**
HS codes affected		**60**

Source: Authors' compilation based on data from the ASEAN Non-tariff Measure Database.

35. A lack of consistency and a single authority over trade policies has contributed to this proliferation of NTBs. While the Ministry of Finance sets tariffs, NTBs are under the authority of line ministries without consistent co-ordination or consideration given to their economy-wide impact. The increase in NTBs following the 2001 'big bang' decentralisation is in sharp contrast to the government's commitment to reduce tariffs and may send contradictory signals to the outside world (Bird *et al*., 2007).

Pursuing multilateral, regional and bilateral strategies

36. Indonesia currently pursues several different trade liberalisation strategies – multilateral (WTO), regional (primarily via ASEAN) and bilateral. This approach allows Indonesia to simultaneously pursue different trade interests in several negotiating fora.

Indonesia is an active participant in the WTO

37. Indonesia's commitment to the multilateral trading system goes back to 1950, when Indonesia became a contracting party to the General Agreement on Tariffs and Trade (GATT), the predecessor of the WTO. Indonesia implemented its Uruguay Round obligations on schedule. In the past several years, Indonesia has made a number of notifications to the WTO, primarily on agriculture-related standards and sanitary and phytosanitary measures (WTO, 2007a). Indonesia is also a party to the Ministerial Declaration on Trade in Information Technology Products and has observer status to the WTO Plurilateral Agreement on Trade in Civil Aircraft.

38.   In the Doha Round of trade negotiations, Indonesia has consistently argued that development and developing country interests must remain at the core of any agreement. Indonesia actively participates in all of the major issue areas, usually as part of a group of developing and emerging economies. In the area of non-agricultural product market access, Indonesia is part of the NAMA-11 group together with Brazil, India and South Africa, among others. The NAMA-11 is an active group that supports the elimination of tariff peaks, high tariffs and tariff escalation in developed countries as well as flexibility to further industrial development in developing and emerging economies. NAMA-11's position that cuts in developing country industrial tariffs much be accompanied by a significant reduction in developed country support for agriculture has been firm and consistent. NAMA-11 country trade ministers worry that cuts in industrial tariffs will adversely affect several sectors important in their economies, namely in the textile and clothing, leather and footwear, furniture and automotive industries.

39.   While working vigorously through the NAMA-11 on non-agricultural market access, Indonesia has largely focused on the agriculture component of Doha (about 45% of Indonesians are engaged in the rural sector). Through its membership in the Cairns Group, Indonesia has advocated for freer trade in agricultural products. Via the G-20 group of developing countries, Indonesia has aligned itself with other developing countries in the call for more flexibility for developing countries in reducing agriculture protection. In the G-33, which Indonesia leads, Indonesia has fought particularly hard for special treatment for certain agriculture products, including less tariff liberalisation on 'special' products as well as the ability to invoke special safeguard mechanisms (SSM) to deal with import price and import volume shocks. In fact, the current thinking on special products originates from a 2002 proposal by Indonesia and the Philippines on the Food Security Mechanism, which provides flexibility in implementing market access commitments in light of food security concerns. In the May 2008 Ministerial, Indonesia played an important supporting role to several G-33 members who demanded robust special product and SSM protection. Since the collapse of the talks, Indonesia has held firm in its support for these concepts in any future Doha agreement.

40.   On services, Indonesia, along with several other developing countries, submitted a document encouraging other countries to open their tourism and travel-related services market to mode 4 (movement of natural persons) (WTO, 2004). Subsequently, Indonesia submitted a conditional initial offer in the services negotiations that proposes to remove some restrictions on mode 3 (commercial presence) in architecture, engineering, urban planning, and construction services, and adds commitments in certain types of construction services that were previously unscheduled as well as selected education, health and social services commitments (WTO, 2005).

ASEAN, the primary regional strategy

41.   Regional economic integration began with the creation of ASEAN in the 1960s. ASEAN was created by five founding Members (Indonesia, Malaysia, the Philippines, Singapore, and Thailand) to promote economic growth, social progress, cultural development, and regional peace. Brunei Darussalam joined ASEAN in 1984, and together these countries are known as the ASEAN-6. At its inception, ASEAN did not have strong trade liberalisation commitments.

42.   In 1989, Indonesia became a founding member of the Asia-Pacific Economic Co-operation Forum (APEC), which furthered regional economic integration. The 21 APEC members account for about half of all global trade. In 1994, APEC agreed to the "Bogor Goals", which include liberalised trade and investment in the developed APEC members in 2010 and in the developing country members in 2020. Liberalisation through APEC occurs primarily through individual action plans (IAPs), which are peer reviewed from time to time with a view to meeting the Bogor targets. A review in 2005 showed that overall, APEC members are far from completing their IAPs, which means that meeting the Bogor targets

on schedule looks unlikely. However, the APEC process has provided an important vehicle for using peer pressure to push for unilateral liberalisation (Feridhanusetyawan and Pangestu, 2003).

43.   Regional trade liberalisation did not take on a concrete meaning until 1992, with the creation of the ASEAN Common Effective Preferential Tariff (CEPT) scheme. The CEPT reduced tariffs to 0-5% on goods traded among the ASEAN countries that meet a 40% ASEAN content requirement.[17] Indonesia has implemented its CEPT obligations, with 80% zero tariffs, tariff elimination for the priority integration sectors, and the transformation of the CEPT package into the ASEAN Harmonised Tariff Nomenclature.[18] The spread between MFN and CEPT tariffs can be striking (Table 5), especially at a disaggregated level. In the transport equipment sector, for instance, the spread on import duties between ASEAN and non-ASEAN countries is 21.5 percentage points and 9.3 percentage points for textiles and clothing (WTO, 2007a). Overall, greater differences exist for manufacturing goods than for agricultural commodities.

Table 5.   CEPT rates are substantially lower than Indonesia's MFN tariffs, 2006

	MFN	CEPT
by sector		
Agriculture and fisheries	4.2	0.5
Manufacturing	9.8	2.8
by stage of processing		
Initial processing stage	4.7	0.7
Semi-processed goods	7.0	2.0
Final goods	11.1	3.1

Source: *WTO, 2007a.*

44.   The CEPT served as the framework for the ASEAN Free Trade Area (AFTA), which came into force in 1993. The AFTA agreement was originally signed by the ASEAN-6, and it was extended to Vietnam (1995), Laos (1997), Myanmar (1997), and Cambodia (1999) as they joined ASEAN. These newer ASEAN Members were given longer time frames in which to meet AFTA's tariff reduction obligations.

45.   After AFTA, several other trade-related ASEAN liberalisation efforts emerged to address issues such as customs administration, standards, intellectual property issues, quantitative restrictions and non-tariff barriers. ASEAN Members also signed a framework agreement for the intra-regional liberalisation of services (1995), which provides a blueprint to services trade liberalisation in the region. Since 1995, several "packages" of commitments have been negotiated on a sectoral basis in sectors such as air transport, financial services, construction, telecommunications and tourism services, among others. Efforts to expand the scope of the services framework agreement remain on-going.

46.   The ASEAN Investment Area (AIA) arrangement was signed in 1998, and represents the primary vehicle for reducing and removing barriers to intra-regional investment, with the goal of enhancing the region's competitiveness. The foundation of the AIA rests on the principles of liberalisation, co-operation, and facilitation. The AIA covers both the primary and manufacturing sectors, as well as the services incidental to these sectors. Full realisation of the AIA, including the removal of temporary exclusion lists, is slated for 2010 for the ASEAN-6 and 2015 for the newer members.

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[17]   According to the ASEAN Secretariat, the CEPT currently applies to about 99% of tariff lines in the CEPT inclusion list for the ASEAN-6 and about 80% of tariff lines for the newer members.

[18]   Legislation No. 129/PMK.011/2007 (24 October 2007) and No. 125/PMK.010/2006 (15 December 2006).

47.   Before 2005, MFN liberalisation, rather than preferential trade agreements, played the largest role in boosting intra-East Asian trade (Findlay and Pangestu, 2001). Since then, preferential agreements have become more important. To respond to challenges posed by the emergence of competitors including China and India, ASEAN countries have embarked on an accelerated integration path. Integration has deepened in the areas of trade and investment. ASEAN currently has agreements with China, Korea, India, and Japan. The "early harvest" packages on goods between ASEAN and China were implemented in 2005, and include tariff reductions on 40% of tariff lines, although a substantial number of sensitive products are omitted. The agreements with Korea and India also follow the early harvest programme format. An agreement was signed with Japan in spring 2008, and it will go into effect later in the year. It covers almost 90% of ASEAN-Japanese trade which will be tariff free in 10 years' time. ASEAN also co-operates with the EU on trade facilitation, investment promotion and standards, and with the CER (Australia and New Zealand) on trade and investment issues.

Bilaterally, Indonesia takes a tentative approach to free trade agreements, but investment treaties flourish

48.   In the last few years, Indonesia has begun to talk to potential RTA partners outside of the ASEAN bloc. One of the most important bilateral agreements for Indonesia is the Economic Partnership Agreement (EPA) with Japan, which entered into force on 1 July 2008. The EPA is a comprehensive economic agreement involving co-operation in several economic sectors. As a result of the agreement, over 93% of Indonesian products will enter the Japanese market duty free and over 90% *vice versa*. According to the Indonesian Ministry of Industry, the automotive, electronics and construction sectors will receive an immediate boost from the tariff cuts, as many Japanese investment commitments are in these sectors. A distinct feature of the EPA is the inclusion of labour mobility (mode 4) under which qualified Indonesian nurses and caretakers will have access to the Japanese labour market.

49.   Currently, Indonesia is negotiating a free trade agreement with Pakistan, although its liberalisation ambitions appear much more limited than the EPA with Japan. Indonesia continues to work to deepen economic co-operation with the United States through a trade and investment framework agreement (TIFA), although steps to move beyond the TIFA to a free trade agreement have not been made. Negotiations with India on a free trade agreement are in the very initial phase. Compared to neighbouring countries and other emerging economies, Indonesia's approach to bilateral free trade agreements can be characterised as cautious.

50.   In contrast to Indonesia's more tentative approach to bilateral free trade agreements, its strategy with respect to bilateral investment treaties (BITs) is pro-active. Since no multilateral rules for FDI exist, countries have begun to include rules on investment in trade agreements and BITs, by the most important instrument for governing flows of FDI.[19] Indonesia currently has concluded 60 BITs, with 43 in force (Annex Table A9). Indonesia's use of BITs flourished in the 1990s, with a wide range of partners. Indonesia has concluded BITs with China, India, the ASEAN countries (except Brunei Darussalam and Myanmar) and most OECD countries. Surprisingly, however, Indonesia has not concluded BITs with Japan and the United States.

Recent initiatives have improved the investment climate, but more can be done

51.   Indonesia has endeavoured to create a favourable environment for foreign investment since the 1960s, although the environment has deteriorated from time to time. To exploit Indonesia's abundant natural resources, resource-seeking FDI flows to Indonesia have been relatively steady over the past decades. Japanese, Korean and other Asian firms, who constitute the majority of early entrants into manufacturing, often established production bases to serve the home market. Recently, however, market-

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[19]   BITs usually cover four substantive areas: FDI admission, treatment, expropriation, and dispute settlement.

seeking FDI has gained importance. Indonesia's competitiveness has historically been driven in part by FDI. This is because multinational firms in Indonesia have generally been found to have higher productivity than domestic firms, and productivity increases have been transmitted to domestic firms via FDI-related productivity spillovers (Blomstrom and Sjoholm, 1999; Ramstetter and Takii, 2005).[20]

52.   In an effort to improve the investment climate and stimulate investment, Indonesia restructured the National Team for the Enhancement of Exports and Investment (*Peningkatan Ekspor dan Peningkatan Investasi* (PEPI)) to better co-ordinate investment policies and help solve high profile investment disputes efficiently.[21] Resources have been directed to PEPI from donor institutions such as the World Bank and USAID to improve institutional capacity. PEPI now helps formulate policies to boost trade and investment as well as reduce excessive regulations and administrative procedures.

53.   In addition, Indonesia has consolidated the number of ports handling international trade and the introduction of the single window for customs procedures are important trade facilitating measures aimed at accelerating the flow of goods. The number of ports handling exports and imports will be reduced from 141 to 25 to ensure more efficient clearing. The value-added tax (VAT) is being revised to provide more room for VAT refunds on capital inputs used for export products, although the VAT laws deviate at times from international best practices (e.g. the maritime sector). In addition, the government recognises the importance of stimulating trade through the temporary movement of service suppliers (*i.e.* mode 4 trade).[22] Developing bonded zones and fighting illegal trafficking (including increasing sanctions against smugglers) also feature prominently on the government's agenda. The direction of economic policy is thus encouraging, although implementation challenges remain.

A new investment policy package reshapes the investment environment

54.   Indonesia introduced a new investment policy package[23] in 2007 that provides more transparency regarding sectoral coverage, extends land use rights[24] and reduces administrative burdens (e.g. the single window for business licenses).[25,26] The new law also protects against expropriation except according to the

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[20]   The only major industry exceptions here are the apparel and footwear industries for which there are no statistically significant differences between the productivity of domestic and foreign firms (Ramstetter and Takii, 2005).

[21]   Presidential Decree No. 3/2006.

[22]   The Ministry of Manpower and Transmigration recorded over 150 000 Indonesian workers abroad as of early 2008, mostly engaged in personal, construction and other services. About a third of these workers reside in Malaysia and another third in Saudi Arabia.

[23]   The new investment policy package includes: Law 25/2007 (investment law); regulations 1/2007 (taxes on investments), 38/2007 (division of government authority), 46-48/2007 (free trade zones), 77/2007 (negative investment list) and its amendment, 111/2007.

[24]   Prior to the implementation of the new investment law, land titles were offered to foreign firms for relatively short durations (*e.g.* 20 years with the ability to extend for another equally short time period). The new law increases the lease period to 60 years for agriculture and plantation investments (with a possible 35 year extension); 50 years for construction on land purchased by the investor (with a potential 30 year extension); and 45 years for the right to use land for any purpose (with a possible 25 year extension). Further, leases and extensions can now be combined at the point of initial investment in certain cases. However, recent legal challenges have questioned whether the longer land use rights will be upheld.

[25]   Several trade-facilitating measures have been announced as part of the policy package to improve the investment climate, which alongside infrastructure building and financial sector policy, represents one of the three major pillars of recent regulatory reforms.

[26]   The single window for business licenses is implemented in several ways by sub-national governments, with varying degrees of efficiency. Authority for all licenses can be concentrated in one agency, an official from

due process of the law and attempts to more clearly separate the responsibilities of sub-national[27] and national authorities, particularly with respect to the ability to impose trade taxes, although some ambiguities remain.

55.   In addition, both domestic and foreign firms benefit from the same incentives if they invest in infrastructure, labour-intensive industries, or projects involving significant technology transfer, rural areas or joint ventures with small and medium-sized enterprises. For certain types of investments, fiscal incentives have also been introduced in the form of tax and import duty reductions and accelerated rates of depreciation and amortisation, among others.

56.   The investment policy package also introduces a new negative list of restricted and prohibited sectors for domestic and foreign investors. While there are only 23 sectors (at the 5-digit level of the ISIC Rev. 3 classification) that are completely closed to investment (such as terminal operation, alcoholic beverages and certain chemicals), there is a fairly long list of restricted sectors. At the 2-digit level, which contains 60 sectors, 22 sectors are limited to co-operatives and micro, small and medium-sized enterprises (construction and the other business activities sectors are particularly affected) and special permits are needed in 14 sectors. (These restrictions may, however, not apply to all sub-sectors within the 2-digit classification.)

Foreign investors welcome the new investment law, but also find cause for concern

57.   The new investment law narrows the disparities between domestic and foreign investors by providing national treatment and increases in the length of work permits available to foreigners. In addition, the law offers dispute settlement via international arbitration. Divesture requirements are not mentioned in the new law.[28] But the law and its implementing regulations also promulgate distinctions between domestic and foreign investors. For instance, foreign investment must take the form of a limited liability company, foreigners cannot invest in sectors limited to small and medium-sized enterprises, and several restrictions in the amended negative investment list apply only to foreigners. Using the 60 ISIC Rev. 3 2-digit sectors, the following restrictions apply (these restrictions may, however, not apply to all sub-sectors within the 2-digit classification):

  − Partnerships are required in 16 sectors (especially forestry and fisheries);

  − Limits on the percentage of capital ownership occur in 24 sectors (primarily construction, architecture and engineering services, transportation, and to a lesser extent insurance services); and

  − A 100% domestic capital requirement exists for 20 sectors, including engineering design services and many categories of retail trade.

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each relevant agency can sit together in one location, or a 'post office' can be set up in which an investor goes to a different 'window' for each license needed. Concentrating authority in one agency is the most efficient method, but also the most politically difficult to implement.

[27]   Indonesia is made up of 33 provinces (*propinsi*) which are further divided into districts that include both regencies (*kabupaten*) and cities (*kota*). The term "sub-national government" in this report refers to both provincial and district governments.

[28]   Government regulation 20/1994, which was amended via regulation 83/2001, and decree 15/1994 require all wholly foreign owned companies to divest partial ownership to an Indonesian partner after 15 years of commercial operation. The percentage to be divested is not specified, but guidance from the BKPM indicates between 1-5%. How this regulation will interact with the new investment law has contributed to uncertainty for foreign investors.

58.   Some members of the business community have noted that the length of the negative list prohibiting investment in various sectors has hurt Indonesia's ability to attract FDI. The foreign business community has also pointed to other areas that may help improve the investment climate, such as further reducing cumbersome and lengthy administrative procedures that create hurdles for investors. Moreover, weaknesses associated with corruption in the court system also continue to generate uncertainty and thus dampen the investment climate.

Box 2. The new investment law and the mining sector

The new investment law will become even more comprehensive if the government passes additional regulations for sectors in which specific difficulties currently exist. In particular, mining is one sector in which new legislation would be useful (IEA, 2008). New investment in the mining sector has decreased significantly since the crisis; indeed, spending on mining exploration has decreased 90% since 1997 (WTO, 2007a). This decrease is in part a consequence of decentralisation, which transferred some but not all authority over mining rights to sub-national governments. This transfer of power created a conflict between the laws on mining and decentralisation, generating legal uncertainty and confusion among foreign investors.[A] The mining law also comes into conflict with existing forestry laws, further complicating the regulatory landscape.[B]

Disputes between foreign investors in the mining industry and sub-national governments have mushroomed, further depressing investment. While investment opportunities in the mining sector are still attractive – the Indonesian Mining Association recorded USD 9 billion worth of investment commitments in the mining sector in 2006 – large scale realisations have not taken place because of legal uncertainty (Jakarta Post, 2008). A new draft mining law has been prepared that addresses these conflicts, but it has yet to be passed. Passage of this law, as well as streamlining the processes for obtaining permits and licenses, will provide clarity for foreign investors who wish to invest in the mining sector (IEA, 2008).

[A] Mining is governed by Law 11/1967 (the Mining Law) as well as several government regulations: 32/1969 (Mining Law implementation), 79/1992 (amendment), and 75/2001 (amendment). These laws are in conflict with Laws 22/1999 (regional governance) and 25/1999 (fiscal balance between the central government and the regions), which introduced devolved power to sub-national governments.

[B] Law 41/1999 (forestry) stipulates that mining is all or partially forbidden on certain classifications of land, including the 'conservation forest' and 'protected forest' categories, which constitute 27% of land in Indonesia (IEA, 2008).

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59.   Indeed, while the new investment law represents a positive step toward improving the investment climate, Indonesia's policies toward inward FDI remain restrictive by international standards (Table 6). Overall, Indonesia's FDI restrictions appear to be more moderate than its peers' (India and China), but as one might expect, higher than in some OECD countries, such as Japan and Korea. Indonesia falls within the range of the OECD country average in some sectors, such as the distribution and financial services sectors, but it is four times as restrictive in others, such as hotel and restaurant services. Within Indonesia, business services is the most restricted sector analysed (0.45). Telecommunications services and transport services are also fairly restrictive in Indonesia, but this pattern also holds for Korea and China.

Table 6.   FDI in Indonesia is more restricted than in the OECD, especially in some sectors

OECD FDI Restrictiveness Indexes in select countries

	Business services	Telecoms	Construction	Distribution	Finance	Hotels & Restaurant	Transport	Electricity	Manufacturing	Total
Japan	0.06	0.22	0.03	0.03	0.06	0.03	0.36	0.03	0.03	0.10
Korea	0.06	0.40	0.05	0.05	0.05	0.05	0.33	0.40	0.05	0.12
Indonesia	**0.45**	**0.35**	**0.28**	**0.08**	**0.18**	**0.28**	**0.38**	**0.18**	**0.18**	**0.26**
India	0.86	0.35	0.25	0.60	0.37	0.05	0.22	0.15	0.20	0.40
China	0.23	0.53	0.15	0.45	0.50	0.15	0.47	0.75	0.40	0.41
OECD average	0.15	0.18	0.07	0.07	0.15	0.07	0.29	0.32	0.07	0.14

Notes: Scores are on a 0-1 scale (0 represents completely open and 1 represents totally restrictive). Data cover regulations in Indonesia in 2007; data for all other countries presented are as of 2006.

Source: Reproduced from *OECD (2008)*.

60.   An analysis of the underlying components of the OECD FDI Restrictiveness Index[29] shows that across sectors, Indonesia does not impose screening and approval or input and operational requirements that restrict FDI, and limitations on the movement of people are moderate. In fact, the sectoral differences in the index are entirely driven by limitations on foreign capital participation, as set out in the negative investment list.

Anti-corruption regulation has proliferated, but enforcement remains a challenge

61.   Corruption has historically exerted a dampening effect on the investment climate in Indonesia. While corruption during the Suharto regime could be characterised as a type of one-stop shop, today a more fragmented bribe system exists in which bribes can be solicited from a wider variety of officials (Kuncoro, 2006). Moreover, the creation of a flurry of new regulations associated with decentralisation (e.g. new sub-national taxes, levies and permits) in the Reform Era have further magnified the opportunities for corruption.

62.   It is common practice, for instance, for court officials to request illicit payments to expedite cases, both for personal gain as well as to finance costs not covered by the official budget (ADB, 2004). Indeed, a lack of adequate funding for government agencies contributes to the need for 'shadow budgets', which are used in most of Indonesia's public institutions – including the police, courts, auditors, national and sub-national agencies and even schools – to cover the shortfall in their official budgets. Evidence suggests that sub-national governments that receive less money from the central government rely more on bribes and corruption (Henderson and Kuncoro, 2004). Further, the practice of low basic civil servant salary with task-based allowances is both non-transparent and leads to corruption. In 2007, for instance, the government increased employee base salary in the customs and tax departments. This reform appears to have boosted revenue, but bribery and corruption remain an issue.

63.   Indeed, in 2001 the Institute of Economic and Social Research at the University of Indonesia conducted a survey of corruption at the firm level in 64 districts in Indonesia. Their results showed that 74% of the 1 800 firms in the sample indicated that they paid bribes, and reported that average annual bribe costs represented 11% of annual production costs. Manufacturing firms paid a lower average bribe rate

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[29]   The underlying components of the index include: (i) foreign equity limits, (ii) screening and approval, and (iii) other restrictions (board of directors, movement of people, and input and operational restrictions). More detail about the typology used to construct the OECD's FDI Restrictiveness Index across countries can be found in Golub (2003).

(9%) than agriculture (10%) and services (11%). Surprisingly, exporters paid a slightly lower bribe rate than non-exporters, and foreign firms paid more than domestic firms. A second survey was conducted in 2004, albeit on a smaller geographical sample (almost entirely on Java) and only for manufacturing firms. Encouragingly, the survey indicates that overall corruption in the overlapping sample of 178 firms declined over the three-year period (Henderson and Kuncoro, 2006).[30]

64.   The Indonesian government recognises that corruption dampens trade and investment, and important steps have been taken to try to curb corruption.[31] Indonesia's Corruption Eradication Commission (KPK) has recently begun cracking down on corruption at the highest levels by investigating several prominent parliamentarians, high-ranking city officials, and the (former) head of the central bank (Economist, 2008). In addition, the government has allocated part of the 2008 budget to initiatives aimed at reducing corruption, such as increases in civil servant compensation (OECD, 2008).

65.   Efforts to reduce corruption in public procurement – one of the areas most vulnerable to corrupt practices – have also been gaining ground. Indonesia is not a party to the WTO Agreement on Government Procurement, but the government has made strides in establishing a regulatory framework, developing institutions, and addressing corruption at the employee level (Rahardjo, 2008).[32] One important aspect of this strategy is the implementation of e-procurement, which is a relatively efficient way of enhancing transparency and boosting trust in the government procurement process. But an Indonesian official notes that only about 30-40% of Indonesia's institutions are actually adhering to the public procurement regulations (Rahardjo, 2008). It appears that the good intentions of regulators at the top do not always easily trickle down to those that implement the new regulations.

66.   The lack of adherence to government regulations in the area of government procurement points to a larger problem that permeates the civil service. A lack of education and training among civil servants, particularly the more junior staff and those located in remote areas, breeds inefficiencies as well as corruption.[33] While the KPK has taken important strides in combating corruption at the highest levels of government, more education and enforcement at the middle and junior levels may help to reduce the day-to-day corrupt practices that weigh on investors.

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[30]   The survey indicates an overall decline in corruption, but this masks two competing forces. Bribes to 'smooth business operations' decreased during the period, but bribes associated with labour-related issues (strikes, severance pay, over time, etc.), assumed to be new since decentralisation, were significant.

[31]   Law 28/1999, which requires audits for public officials' assets, was enacted to try to clean up government. Law 31/1999 represents another important initiative. It established an independent corruption commission as well as defines corrupt practices and provides the basis for establishing charges and bringing cases. Law 20/2001 criminalises bribery.

[32]   Presidential Decree 8/2006 brought Indonesia's government procurement practices more in line with international standards, especially regarding transparency (WTO, 2007a). For instance, tenders valued at 1 billion rupiah (construction and services) and 200 million rupiah (consultancy projects) are now required to be published in both national and provincial newspapers.

[33]   Judges do not generally receive adequate training, especially at the district level. For instance, a junior district court judge is only required to pass a 180 day training programme from the Ministry of Justice plus 2-3 years as a district court clerk (ADB, 2004). A lack of knowledge of law at the district level leads to very high rate of appeals. Moreover, judges are not subject to effective supervision and accountability, for instance, and their opinions are non-transparent, as proper records of the cases handled are not systematic (*e.g.* court decisions – even those from the Supreme Court – are not generally published).

Intellectual property rights take hold in the Reform Era, but enforcement remains a problem

67.   In the Reform Era, Indonesia overhauled its intellectual property regime to bring it in line with the WTO and other international agreements.[34] Indonesia's IPR regime recognises copyrights,[35] trademarks,[36] trade secrets, patents,[37] industrial designs, and plant varieties. It establishes an alternative mechanism for dispute settlement via arbitration as well as the ability of the courts to issue an injunction to prevent infringement. Some experts have even argued that Indonesia's IPR regime represents the best compliance with the WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement in Southeast Asia (WTO, 2007a).

68.   As a share of total foreign patent applications in 2003, the United States (35%), Japan (23%) and Germany (11%) topped the list of foreign right requestors according to data from Indonesia's Directorate General of Intellectual Property Rights. But since the crisis, foreign patent registrations have been declining (Table 7).

Table 7.   Patents in Indonesia have been dominated by foreigners, but the tide may be turning

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Domestic	34	67	38	29	61	40	79	93	152	156	208	228	201	226	234	282
Foreign	1280	3905	2031	2305	2813	3957	3939	1608	1051	983	813	633	479	452	533	519

Source: *Indonesia's Directorate General of Intellectual Property Rights, Ministry of Justice and Human Rights.*

69.   While the overhaul of the intellectual property regime has been welcomed by foreigners, enforcement of intellectual property rights remains a challenge. Pirated optical media (recorded music and movies) is widespread, and the capacity of the authorities to combat piracy is limited (USTR, 2008). Further, the street vendors who sell pirated goods are often poor, and crackdowns on small vendors of pirated goods have sparked backlashes against law enforcement officials in the past. In 2000, for instance, rioting broke out in the Glodok shopping area of West Jakarta when police raided street vendors in the area (Jakarta Post, 2000). Progress has certainly been made, but Indonesian authorities recognise that improving

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[34]   There are seven primary intellectual property laws in Indonesia: Laws 30/2000 (trade secrets); 31/2000 (industrial design); 32/2000 (lay-out design and integrated circuits); 14/2001 (patents); 15/2001 (trademarks); 19/2002 (copyrights); and 29/2000 (plant variety).

[35]   Indonesia's copyright law came into effect in 2003, and provides 50-year protection for copyrighted materials. Importantly, this law establishes the right to license, produce, rent or broadcast audiovisual, cinematographic and computer software as well as neighbouring rights for sound recordings. Additional laws in 2004 and 2005 govern copyrights for optical discs and related machinery. Penalties for end-user piracy went into effect as well as copyright holders' ability to request civil injunctions against pirates. Importers are also required to register the origin, type, quantity and destination of all optical discs and optical-disc machinery.

[36]   The law on trade marks (2001) raised the maximum fine for violations to USD 120 000, but reduced prison sentences. Trade mark rights are determined by registration rather than commercial use, and the new law requires that all trademarks be registered. However, the registration requirement may run contradictory to both the Paris Convention and the TRIPS, and complaints about trade mark usage may only be made through the court system within five years from the registration date.

[37]   The 2001 patent law provides for 20-year patent protection (with possible 2-year extension). It also establishes an independent commission to hear patent disputes and increased the maximum fine for violation to USD 60 000. Yet an inventor must produce or utilise a product or process in Indonesia (physical presence) to patent their invention. Some experts also argue that the exclusion of patents that are contrary to the public interest appears to be stricter than as provided for in TRIPS (WTO, 2007a).

enforcement is an important element of improving the business environment, and encouraging investment in many sectors of the economy (WTO, 2007b).[38]

Trade-related structural weaknesses may hurt competitiveness

70.   Many impediments to Indonesia's external competitiveness are of a structural nature. Estimates of the real effective exchange rate and other approaches, such as the macroeconomic balances and the external sustainability, suggest that while the rupiah may be slightly undervalued, overall the country's external competitiveness may be adequate, but the declining trend is worrisome (IMF, 2007). Structural impediments related to infrastructure bottlenecks, domestic trade barriers and restrictive product market regulation as well as stringent employment protection legislation and policy uncertainty are considered to be major factors that can potentially erode the competitiveness of Indonesian industries.

71.   Some of these practices, such as complex licensing procedures, have long existed in Indonesia, but have been aggravated by the 2001 decentralisation (LPEM-FEUI, 2005). Others have became apparent after the crisis, such as infrastructure bottlenecks, and are largely related to under spending during and after the crisis, or have emerged after the crisis as a result of new regulations, such as the increased protection of regular employees. This latter measure may in particular harm the competitiveness of industries, as it inhibits the exploitation of the large pool of low-cost labour in which Indonesia has comparative advantage. Moreover, it contributes to high unemployment rates and informal activities.

Relative remoteness from major markets is aggravated by insufficient port infrastructure

72.   Indonesia's sizeable geographical distance from the major centres of economic activity is likely to cut into its competitive edge.[39] Spread across 17 000 islands over 5 000 km, internal distance also poses trade-related infrastructure challenges. Geographical distance, however, can be "shortened" by establishing efficient transport links within the Indonesian archipelago as well as with major markets. Specialising in goods and services less sensitive to distance and enhanced regional integration can also play a role in minimising the negative effects of distance. Moreover, trade facilitation measures, such as streamlining customs and administrative procedures, can also help reduce trade costs (Wilson, 2007 and Engman, 2005).

73.   Compared to other countries in the region, the maritime transport costs of a 20' container to Yokohama in Japan are substantially higher from Tanjung Priok in Indonesia, almost 50% higher than from Manila, 10% higher than from Singapore and 20% higher than from Malaysia (JETRO, 2007a). Inefficient transport links impose both material costs as well costs associated with extended transportation time. From Tanjung Priok, the closest port to Jakarta and one of Indonesia's major ports, it takes about 21 days for a ship to reach Europe or the west coast of the United States. Most ships heading for Europe or America travel via Singapore, which is about a 2-3 day trip from Tanjung Priok, but may be as long as 4-5 days if containers need to be reloaded onto another ship. Ships heading for Japan (Yokohama) often call at Shenzhen or Manila and the trip takes about 11 days, about 50% longer than from Malaysia, Singapore and Vietnam and about double the time from South China or the Philippines (JETRO, 2007a).

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[38]   The United States Trade Representative (USTR) downgraded Indonesia from 'Priority Watch List' to 'Watch List' in 2006, where it remains for the 2008 cycle. The USTR noted progress in combating piracy in 2007 through several large raids on distributors of counterfeit drugs and manufacturing plants of counterfeit digital content (CDs and DVDs), but also highlighted areas for further work, such as more stringent trademark application processes and tougher enforcement of illegal drugs (USTR, 2008).

[39]   The perception that distance drags on economic performance has been confirmed by a recent OECD study by Boulhol *et al.* (2008) (covering only OECD countries), which found that remoteness is likely to be associated with depressed economic performance.

74.   Port congestion, long clearing processes and high charges add to these costs. Congestion is partly due to port design and partly to long handling procedures. In Tanjung Priok, the proximity of the container depot to the port appears to contribute to congestion. In an attempt to rationalise the clearing process and handle exports and imports in a more efficient way, the government reduced the number of ports that are authorised to handle foreign trade from 141 to 25. Indonesia also began to implement a single window for trade with the initiation of a pilot project in Tanjung Priok in December 2007. The pilot project links five government agencies involved in import clearance electronically, so that low risk importers can obtain all five clearances through a single contact. These trade facilitating measures should make the process more transparent and efficient.

75.   Distribution costs (including procurement, the intra-firm movement of goods and the distribution of manufactures) represent 14.1% of production costs. This is relatively high,[40] with terminal handling charges, trucking, documentation and service charges making up 90% of these costs. The largest single component is terminal handling charges, with a 48% share. In 2005, the government intervened to reduce terminal handling charges.[41] The extent of the reduction was somewhat larger for 20' containers than for 40' containers. According to the Asia Shippers' Council, it helped to save tens of thousands of jobs in labour-intensive manufacturing industries where shipping costs are reducing comparative advantage the most. Nevertheless, terminal handling charges for 20' containers still remain high compared to those in Malaysia, Philippines, Singapore, Thailand or Vietnam.

Inefficiencies in the trucking industry contribute to trade-related costs

76.   Trucking costs, at 25% of distribution costs, are also high, especially in comparison with other countries in the region such as Malaysia or Thailand (JETRO, 2007a). A recently published survey on the per kilometre cost of moving goods by truck shows that it is 50% higher in Indonesia than the Asian average (Asia Foundation, 2008).[42] The largest component is not surprisingly fuel, but legal and illegal levies also make up a chunk roughly equal to the compensation of drivers. These levies comprise transit fees (46%), weigh stations fees (32%) and bribes to police and local groups for protection. At weigh stations, only overweight trucks are supposed to pay a fine (20% actually do), but given that the majority of trucks are overloaded, 84% of drivers pay bribes to avoid fines.

77.   Sizeable maintenance costs due to the poor condition of trucks, coupled with dilapidated roads, encourage overloading (which in turn implies lower speed). Weigh stations, designed to serve the public policy goals of road safety and the preservation of road quality by imposing fines on overloaded trucks, are governed by regulations of the Ministry of Transportation,[43] but are operated by sub-national governments. Closer oversight by the Ministry of Transportation would be useful to help stop the practice of abusing

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[40]   For comparison, the same share is 8.4% in the United States and 4.9% in Japan (JETRO, 2007a).

[41]   Usually, terminal handling charges are set by ocean conferences on a commercial basis between shipping line and shipper.

[42]   The survey covers nine routes, from which four are in South Sulawesi province (Bulukumba-Makassar, Parepare-Makassar, Palopo-Parepare and Mamuju-Parepare), and one in North Sulawesi (Kotamobagu-Manado), Gorontalo (Marisa-Gorontalo), West Nusa Tengggara (Sumbawa Besar-Mataram), East Java (Malang-Surabaya) and North Sumatra (Rantau Parapat-Medan), each. A truck is defined as a vehicle with at least 6 wheels and the survey was conducted through questionnaires and interviews with drivers and shipping companies. About 27% of trucks were equipped with GPS and the data collected this way was entered into the RUCKS (Road User Costs Knowledge System) developed by the World Bank.

[43]   In addition to checking weights by weigh stations, the Roadworthiness Test Centre – also governed by regulations of the Ministry of Transportation – half-yearly checks eight areas including the tyres, lamps, brakes, engine, windows and emissions. Nevertheless, due to implementation problems related to understaffing and temporary replacement of defective parts to pass the test, many vehicles with defects remain in circulation.

these facilities by sub-national governments. This could curb illegal fees and bribes and thus reduce transportation costs. There is much less room to reduce regular operating costs as the trucking market appears competitive, albeit enjoying fuel subsidies. Curbing levies on truck transport would also provide room to phase out fuel subsidies without triggering too much resistance by industry associations.[44]

78.   In addition to increased infrastructure investment – ideally financed by the public and private sectors – infrastructure maintenance should also be secured. The Indonesian government has earmarked large increases in the 2008 budget for the Ministry of Public Works (38%) and the Ministry of Transport (60%), the two major agencies in charge of infrastructure development and maintenance. Recent regulations have paved the way for private-sector participation,[45] though the effect of this initiative is not yet evident. Once public infrastructure spending rises well above the 2007 share of 3.4% of GDP (which is below the pre-crisis levels of 5-6%) and private sector investment picks up, it is necessary to ensure that these investments are well maintained. The maintenance of national and provincial roads seems less of an issue as it is financed by earmarked transfers, but that of district and city roads are covered by block transfers, which are based on population and are not related to the area. This limits lower-level governments' ability to maintain infrastructure (World Bank, 2006a).

...so do behind-the-border regulations

79.   Domestic regulations, especially those related to product and labour markets, constitute an additional drag on the competitiveness of Indonesian industries. The PMR (product market regulation) index of the OECD indicates that overall product market regulation in Indonesia (2.1) is more restrictive than in the average OECD country (1.5), including OECD emerging markets (2.0) (OECD, 2008).[46] The high score is mainly related to the scope and size of the public sector, both of which are well above most OECD countries with the exceptions of France, Norway, Poland and Turkey. The major barriers to entrepreneurship appear to be legal barriers that restrict entry. It should be noted that the effective level of restrictions in Indonesia may be higher than the indicator suggests as implementation is a much more serious problem than in OECD countries.

80.   Similar to the OECD PMR, the World Bank's Doing Business indicators highlight compliance difficulties in Indonesia. In 2008, Indonesia ranked 127 out of 178 economies in terms of the ease with which a company can do business in the country. Moreover, Indonesia does not compare favourably with many of its Asian neighbours; it only fares better than the Philippines (Annex Table A5).[47] This overall indicator suggests that there is significant scope for improving the business climate in Indonesia to boost its competitiveness.

81.   While the overall indicator suggests important general trends, it is necessary to disaggregate the overall indicator to identify the specific areas of the Indonesian economy that are most burdensome for

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[44]   In April 2008, the Organisation of Land Transportation Operators (Organda) rejected the government's plan to raise subsidised fuel prices by over 28% to bring them more in line with world oil prices (Jakarta Post, 30 April 2008). Nevertheless, the government implemented a substantial reduction of fuel subsidies shortly thereafter.

[45]   These regulations include the demonopolisation of toll roads in 2005 (GR No. 15/2005), the Road Law (No. 38/2004), which transfers the power to determine toll tariffs to the Minister of Transportation and the Railways Law (No. 23/2007), which stipulates that railways can be owned and operated by private entities. In addition, draft new laws on air, sea and land transportation have been submitted to parliament.

[46]   The index for Indonesia is calculated for 2007, while for OECD countries the most recent available update is for 2003.

[47]   Comparisons are made with the following countries: China, India, Malaysia, Thailand, Philippines and Vietnam.

business. It appears that the costs associated with starting a business, importing and enforcing contracts are relatively high in Indonesia, as is the amount of time it takes to import (27 days).

82.   The complexity of business licensing practices constitutes a barrier to firms' creation and performance and therefore to boosting long-term growth in Indonesia. Traditionally, to start a new limited liability company, a deed of establishment from a notary, tax identification registration and approval from the Ministry of Justice are needed (Asia Foundation, 2007a and 2007b). After company formation, several permits related to the physical location of the company are needed. These include the business location, construction and nuisance permits.[48] Then sectoral licences such as trade licenses and industry licenses need to be obtained.[49] Depending on the field of company activity, product-specific and activity-specific licences such as export licenses, licenses to produce commodities or engage in transportation, may also be needed. Since the large-scale decentralisation in 2001, firms must also obtain a wide range of licences needed to engage in basically any business activity from several different levels of government. The complexity of the licensing regime contributes to informal business activity across the economy.

83.   The experience with one-stop shops has been positive but will not bring about the desired efficiency gains without simplification of the licensing structure. By the end of 2007, more than half of the over 460 cities and regencies had one-stop shops for business registration, but their performance varies across the country (Asia Foundation, 2007a and 2007b). In June 2008, for example, the government established a one-stop shop for business licensing in Jakarta[50] which reduces the number of days it takes to fulfil all business licensing requirements from 204 to 38 days, although actual implementation time may vary.[51] The extension of one-stop shops for the whole country, as envisaged in a ministerial decree, will substantially reduce the costs of business licences. Given the complexity of licences, however, simplification would facilitate the realisation of further efficiency gains.

84.   Indonesia ranks last in three out of the four employment categories included in the World Bank's Doing Business indicator (Annex Table A5), suggesting that restrictive labour regulations play a role in creating a more difficult environment for business. In addition, Indonesia has a relatively high OECD EPL score, which is attributable mainly to long notification periods and procedural inconveniences, both of which are scored higher than in any OECD country.

85.   While the direct material costs of firing (such as severance pay or compensation) may not be high compared to OECD standards, it is the long and cumbersome procedures associated with notifying an underperforming employee that make firing costly. Not only do long notification periods tend to tie workers who should exit a firm to that firm for longer, but they also make firms more cautious of taking on new employees. Since demand for labour is driven by demand for products, relatively rigid product market regulations together with procedural inconveniences associated with dismissing employees create inefficiencies related to low turnover in labour markets and long-term unemployment as well as informal activities. Such stringent EPL and product market regulations may erode competitiveness of low-skilled labour-intensive manufacturing industries such as garments, even though unit labour costs may be internationally competitive.

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[48]   In addition to these permits, for large firms with sizeable land requirements in mining, forestry, plantation and real estate as well as for firms in the telecommunications sectors, a permission-in-principle permit (which amounts to a land concession) is needed beforehand.

[49]   The trading license is an entry condition to trading activities and is often required to obtain bank loans and participate in government tenders. Industry licenses are also required for small and medium-sized companies to be able to engage in industrial activities.

[50]   Government regulation 53/2008.

[51]   Indonesian Co-ordinating Ministry of Economic Affairs.

... including domestic trade barriers

86. Interregional trade barriers represent another domestic regulatory barrier, and they became widespread in Indonesia following the 'big bang' decentralisation in 2001. Typically, interregional trade levies tend to be more widespread in remote regions, far away from central monitoring, in resource-rich regions and in poor regions to make up for revenue shortfalls. In an attempt to curb the application of such levies, a 'positive list' of permitted taxes and charges was issued for sub-national governments in 2006. A lack of rigorous handling of the issue[52] has meant that cross-country commerce remains impeded.

87. The survey jointly conducted by the Institute of Economic and Social Research of the University of Indonesia (LPEM-FEUI) and the Asia Foundation found that licenses and user charges imposed by local governments act as barriers to the transportation of goods throughout the country (Asia Foundation, 2008). These licenses and user charges may be based on the truck's operations (loading or unloading or parking), on the route it covers (route permit, road-use permit or border crossing permit between provinces or districts), on the commodity transported or may be general business licences including a licence for trading activity. In the case of the route permit, for instance, although the national legislation clearly stipulates that the operation of trucks across the country is not restricted[53] and that route permits should only be issued for passenger transportation, many local governments at the sub-national level require such permits of trucking companies.[54]

...and excessive government involvement in the economy

88. Despite progress in decreasing government involvement in the market, state-owned enterprises (SOEs) continue to play a dominant role in the economy. In 2006, 158 SOEs represented about 40% of GDP, and government participation in the economy via these SOEs continues to support domestic production as well as distort trade in several important sectors, such as energy, steel, cement, mining, transportation, and banking (WTO, 2007a).[55] The electricity sector is a case in point. Expansion of the electricity grid is critical to enhancing competitiveness, but at a 54% electricification rate in 2005, the stresses of satisfying increasing demand through inadequate infrastructure have led to serious problems, including power outages, limitations on electricity use and inconsistent voltage and frequencies (IEA, 2008). The price of electricity is subsidised through the state-owned electricity company *Perusahaan Listrik Negara* (PT PLN), which has 86% of the country's generation capacity and a monopoly over distribution (IEA, 2008).[56,57]

89. Rising production costs have only been partially transferred to the customer, further decreasing the profitability of PT PLN. In May 2008 the Ministry of Finance estimated that it would need to transfer USD 20.5 billion (20% of the budget) to PT PLN to cover the revenue shortfall (IEA, 2008). Government investment in expanding the power grid is largely curtailed because of budgetary pressures, and foreign

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[52] The Ministry of Finance and the Ministry of Home Affairs undertake monitoring activities and recommend the abolition of illicit levies, but there has not been any record on the effect of such notifications (Bird *et al.*, 2007).

[53] Minister of Transportation Decree No. 69 of 1993, Art. 3.

[54] Given that the requirement of route permits is at the discretion of sub-national governments, their names and validities vary across the country.

[55] The government has plans to decrease the overall number of SOEs in the next 3-5 years, primarily through consolidation (rather than divesture).

[56] Demand reportedly grew by 9% in 2006 (IEA, 2008).

[57] In 2002, the government enacted a new electricity law that introduced competition for power generation from 2007 and abolished the PLN's monopoly in distribution by allowing the entry of both foreign and domestic private companies. This law was overturned by the Constitutional Court in 2004.

investment has dried up. Before the crisis, foreign investment helped the PT PLN keep pace with the growth in electricity demand. But the large-scale devaluation of the rupiah created financial and legal problems since power purchase agreements were largely denominated in USD, and the PT PLN could not pay (IEA, 2008). The balances sheets of the PT PLN have been further eroded in recent years as the price of oil – its primary means of generating electricity – has skyrocketed (IEA, 2008).[58] Decreasing government involvement in this sector, as well as many others, will increase competitiveness and shore up government finances.

III.   Subdued trade performance is partly a result of past policy failures and a lack of coherence

90.   Trade policies have an important bearing on the formation of domestic prices and hence on the decision to produce or invest. Industries that are protected by tariffs, quantitative restrictions or subsidies do not face import competition, and therefore tend to orient their production toward the domestic market. Producing for a protected market, in turn, will reduce pressure to upgrade production or increase efficiency, resulting in a loss of competitiveness. The lack of coherence, both in the domestic (*i.e.* with other policies that determine competitiveness) and in the international dimension (*e.g.* consistency with foreign direct investment policies) may send the wrong signal about the government's commitment to trade reforms (Drysdale and Findlay, 2006).

91.   Trade performance in Indonesia has not recovered to its pre-crisis levels, even though the economy is increasingly showing signs of full recovery. Trade seems to have decoupled from growth of the real economy and the major challenge is how to realise the country's trade potential. Some indicators of trade performance, which are largely the result of trade policies and constraints that bear on the costs associated with trading goods and services, are discussed in the following section.

Indonesia is still waiting for market shares in both goods and services to recover

92.   World market shares in both goods and services are lagging behind pre-crisis levels (Figure 5).[59] Services trade performance has in particular been muted, registering a sharp drop in 2006, the most recent year available.

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[58]   Reducing the electricity subsidies is politically difficult. Government regulation 3/2005 and Energy Law 30/2007 have recently improved the regulatory framework for the sector, but the electricity market remains uncompetitive. And confusion regarding the regulatory environment has made investors wary about making a long-term commitment to the sector. The government is trying to entice foreign investors back through the 10 000 MW Electricity Fast Track (Crash) Programme, but legal woes stemming from defaults on power purchases agreements made before the crisis continue to weigh on investors.

[59].   This figure represents exports plus imports as a share of total world trade (values), and may mask trends in the export and import shares individually. From 2005-2006, for example, Indonesian exports as a share of total world trade increased, but the import share decreased.

Figure 5. Goods and services trade performance has been subdued

Shares in world trade

a. Goods   **b. Services**
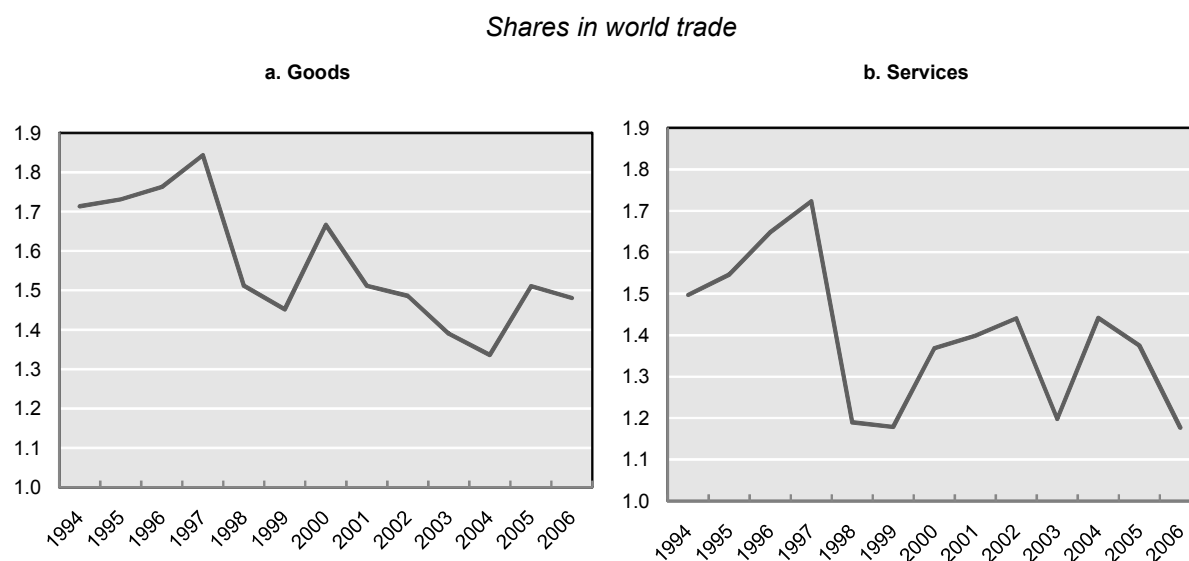
Source: *IMF International Financial Statistics*.

Energy dominates trade patterns

93.   Indonesia's trade pattern in goods is dominated by energy (Figure 6).[60] In 2006, energy-related products[61] accounted for 29% of exports and 37% of imports.[62] Manufacturing also plays an important role in the pattern of goods trade. On the import side, for instance, machinery and equipment[63] is the second largest import category at 18.5% of total imports. And on the export side, textiles, leather and footwear[64] (11%) and processed foods, beverages and tobacco[65] (10%) represent important export sectors.

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[60]   Calculations are based on values.

[61]   Energy-related products are defined as energy-related mining as well as coke, refined petroleum products and nuclear fuel quarrying (ISIC Rev. 3 codes 10, 11, 12, and 23).

[62]   Import statistics exclude activities in free trade zones.

[63]   Machinery and equipment is defined as machinery and equipment; office accounting and computing machinery; radio, television and communication equipment; and electrical machinery and apparatus (ISIC Rev. 3 codes 29, 30, 31 and 32).

[64]   Textiles, leather and footwear (ISIC Rev. 3 codes 17, 18, and 19).

[65]   Processed food, beverages and tobacco (ISIC Rev. 3 codes 15 and 16).

Figure 6. Indonesia's key exports and imports are energy related, 2006

A. Exports

Other products, 25%

Electrical machinery & apparatus, nec, 3%

Wood and products of wood and cork, 4%

Pulp, paper, paper products, printing and publishing, 4%

Radio, television & communication equipment, 4%

Mining and quarrying (non-energy), 6%

Agriculture, hunting, forestry and fishing, 7%

Mining and quarrying (energy), 26%

Textiles, textile products, leather and footwear, 11%

Food products, beverages and tobacco, 10%

B. Imports

Other products, 20%

Radio, television & communication equipment, 3%

Iron & steel , 3%

Motor vehicles, trailers & semi-trailers, 5%

Agriculture, hunting, forestry and fishing, 6%

Food products, beverages and tobacco, 6%

Chemicals excluding pharmaceuticals, 8%

Coke, refined petroleum products and nuclear fuel, 22%

Mining and quarrying (energy), 15%

Machinery & equipment, nec , 12%

Source: *UN Comtrade.*

94.   At a more detailed level of disaggregation, the trade data underscore important changes that have occurred in the Indonesian economy over the past twelve years. The non-agriculture primary sector clearly dominated Indonesia's exports in 2007. In 1995, three out of the top ten exports were agriculture-related (shrimps and prawns, coffee and crude palm oil), whereas in 2007 only palm oil remained in the top ten (Table 8). Moreover, sports footwear fell out of the top ten ranking in 2007, leaving no manufacturing products not directly related to energy and non-energy-related mining (oil, coal, rubber, copper, nickel and tin).

Table 8.   Top 10 goods exports are increasingly natural resource related, 1995 and 2007

Values in millions of USD and annual ranking

HS 6 digit code		1995	Ranking in 2007	HS 6 digit code		2007	Ranking in 1995
Total	Total Trade	45 418		Total	Total Trade	114 101	
270900	Petroleum oils and oils obtained. from bituminous minerals	5 146	1	270900	Petroleum oils and oils obtained. from bituminous minerals	9 226	1
441211	Plywood at least one outer ply tropical wood	2 684	15	270112	Bituminous coal, not agglomerated	5 151	7
400122	Technically specified natural rubber	1 821	3	400122	Technically specified natural rubber	4 296	3
260300	Copper ores and concentrates	1 537	4	260300	Copper ores and concentrates	4 213	4
640319	Sports footwear, with rubber, plastics or leather	1 001	16	151190	Palm oil, refined but not chemically modified	4 130	36
030613	Frozen shrimps and prawns	875	18	151110	Crude palm oil	3 739	9
270112	Bituminous coal, not agglomerated	867	2	750110	Nickel mattes	2 347	21
090111	Coffee, not roasted or decaffeinated	596	24	270119	Other coal, not agglomerated	1 497	60
151110	Crude palm oil	590	6	740311	Copper cathodes and sections of cathodes	1 153	2 612
441212	Plywood with >=1 outer ply of nonconiferous wood	418	2 149	800110	Tin not alloyed unwrought	1 011	22

Source: *UN Comtrade.*

95.   While these broad trends in export values show important trade shifts, the relative ranking of particular products also points to interesting trends. The most dramatic change in exports of a particular product in the top 10 was copper cathodes,[66] which moved from the 2 612nd most exported product in 1995 to 9th in 2007, a change in ranking of 28 922%. Moving in the opposite direction, but equally as remarkable, was the move of plywood with one or more outer ply of nonconiferous wood, which moved from 10th place in 1995 to 2 149th place in 2007. Plywood with at least one ply of tropical wood also fell out of the top 10 in 2007 (it ranked 2nd in 1995).

Indonesia lags behind its peers in developing high-technology export sectors

96.   High technology sectors contribute to the economy by increasing the productivity of labour and capital, and they can play an important role in moving up the value chain. Figure 7 shows that while Indonesia experienced an increase in its high technology exports as a share of total goods exports in the 1990s, since then that share has steadily declined. This decrease is in part attributable to low R&D and innovation intensity.

Figure 7.   High technology exports are lagging behind peers
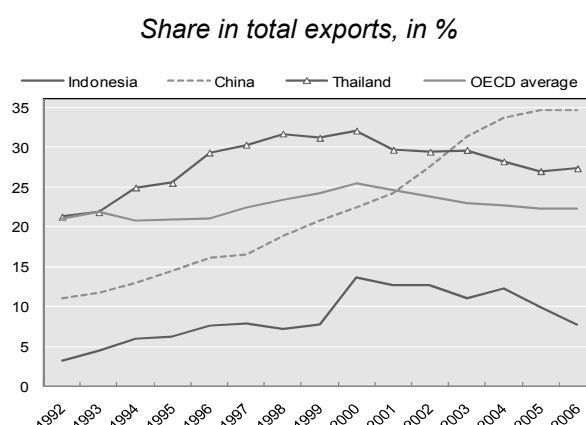
Share in total exports, in %

Note: The high technology sector includes ISIC Rev. 3 codes 30, 32, 33, 353 and 2423 pursuant to the OECD high technology definition. Calculations are based on values.
Source: *UN Comtrade.*

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[66]   Copper cathodes are used in wire rods, billets, cakes or ingots for use in electrical wiring and brass products, among others.

97.   Indonesia's exports of high technology products have consistently lagged behind those of its ASEAN neighbours in the period analysed, as well as China's and Korea's. In 2006, Malaysia, Singapore, Thailand, China, and Korea all recorded stronger high technology export shares than Indonesia. Only India posted a share lower than Indonesia's (4.9% in 2006). However, Indonesia has also consistently exported a greater share of high technology exports than the average low- and middle-income Asian country.

98.   It appears that foreign multinational enterprises export a large majority of the high technology exports from Malaysia, the Philippines, Singapore, Thailand and China in particular, which could explain in part why Indonesian policymakers have made improving the investment climate a priority (Seyoum, 2005). Indonesia's high technology sectors may suffer from a lack of infrastructure support and a shortage of technical skills. Indeed, technology is imported mainly through joint ventures.

Comparative advantages are shifting

99.   Measures of revealed comparative advantage (RCA), [67] which are useful in assessing export performance in a particular sector, suggest that the past two decades have brought about substantial shifts in the pattern of comparative advantages. In the past 10 years, RCA indexes have been increasing in the transport, metal and chemical goods sectors (Figure 8). In addition, between 1998 and 2007 Indonesia developed a comparative advantage in five goods sectors: chemicals, pharmaceuticals, electrical machinery, motor vehicles, and railroad and transport equipment. In 2007, the paper and printing sector registered the highest RCA index (2.1), followed by the building and repairing of ships sector (1.9) and the wood products sector (1.9) (Annex Table A3).

Figure 8.   Comparative advantages have been shifting

RCA indices for selected industries
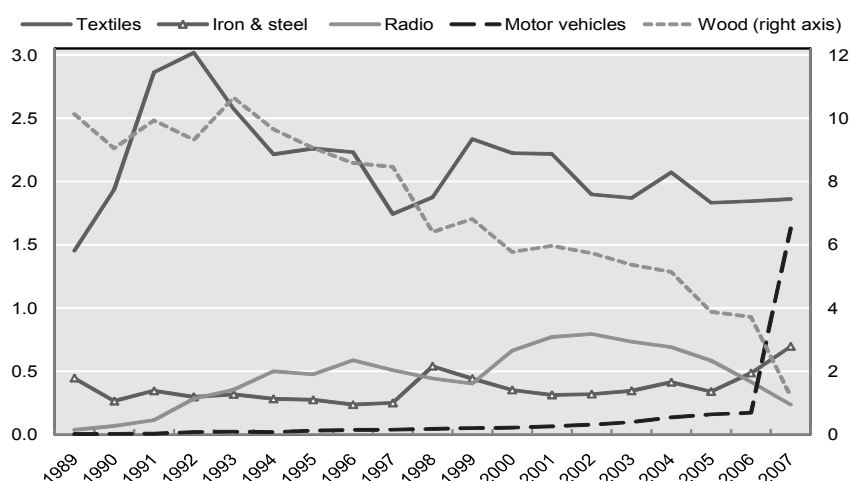
Note: Index value of above 1 indicates comparative advantage and below 1 comparative disadvantage.

Source: Authors' calculations based on *UN Comtrade*.

100.   In the same ten-year period, Indonesia experienced decreasing RCA indexes in the primary, textile, energy-related, and high technology sectors. Moreover, from 1989 to 2007, RCA indexes fell dramatically

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[67]   The RCA index of country i for product j is calculated as: $RCA_{ij} = (x_{ij}/X_{it}) / (x_{wj}/X_{wt})$, where x_{ij} and x_{wj} are the values of country i's exports of product j and world exports of product j and where X_{it} and X_{wt} refer to the country's total exports and world total exports.

in the energy-related mining and quarrying sectors (from 14.2 to 1.6) and the wood products sector (from 10.1 to 1.9), a shift related to structural reforms implemented in the mid-1980s. One of the most striking aspects of the RCA indexes presented is that values for high technology sectors[68] are all well below 1 with the exception of the pharmaceuticals sector (1.5, with average annual growth of 17.9% during the period 1998-2007). Average annual growth values in the last ten years are negative for the high technology equipment and machinery sectors but positive for the medical, precision and optical instruments sector, which posted a growth rate of about 8.7%.

...with emerging patterns of superior performers and laggards

101.   Dynamic analysis of export performance for goods using a quadrant approach[69] shows that iron and steel, as well as non-ferrous metal products, are firmly in the champions corner, suggesting that these sectors have been able to remain globally competitive in the world market over 1996-2006 (Figure 9). On the other hand, mining and quarrying, coke and refined petroleum products and radio, television and communication equipment rest in the underachievers' area. This is particularly disappointing as the "bubbles" are relatively large, showing that trade in mining products in particular represents an important share of Indonesia's overall exports. This is in part reflective of the aging infrastructure in Indonesia in these energy-related sectors.

102.   Several of the high technology sectors (chemicals and office, computing and accounting machinery) can be found clustered on the right-hand side of the figure very near the average world growth rate of all traded goods. Food, beverage and tobacco products, which represent one of the top export sectors, are found on the bottom right-hand side of the figure, suggesting that this is one sector that has gained world market share even as world trade in these products has declined. The paper and publishing, machinery and equipment, and primary sectors also fall into this area. The most undesirable corner of the figure is the bottom left-hand side, which presents sectors that are losing market share in declining sectors. Textiles, leather and footwear as well as wood products can be found here, suggesting that Indonesia may need to increase competitiveness in niche markets in these sectors to improve export performance.

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[68]   High technology sectors are defined as ISIC Rev. 3 codes 30, 32, 33, 2423 and 353.

[69]   In this approach, the horizontal axis represents the change in Indonesia's world market share for a particular product, and the vertical axis represents world trade growth of that product. Using this methodology, the top right-hand quadrant represents products in which Indonesia is increasing its market share as world trade growth is rising ("champions"). The top left-hand quadrant shows growth products in which Indonesia is losing market share ("underachievers"), while the bottom left-hand quadrant characterises products in which world trade growth is declining in tandem with Indonesia's share in world trade ("losers"). Finally, the bottom right-hand quadrant represents products in which Indonesia's market share is increasing even while world trade growth is declining ("achievers in adversity").

Figure 9.   Indonesia has been losing champions, 1996-2006
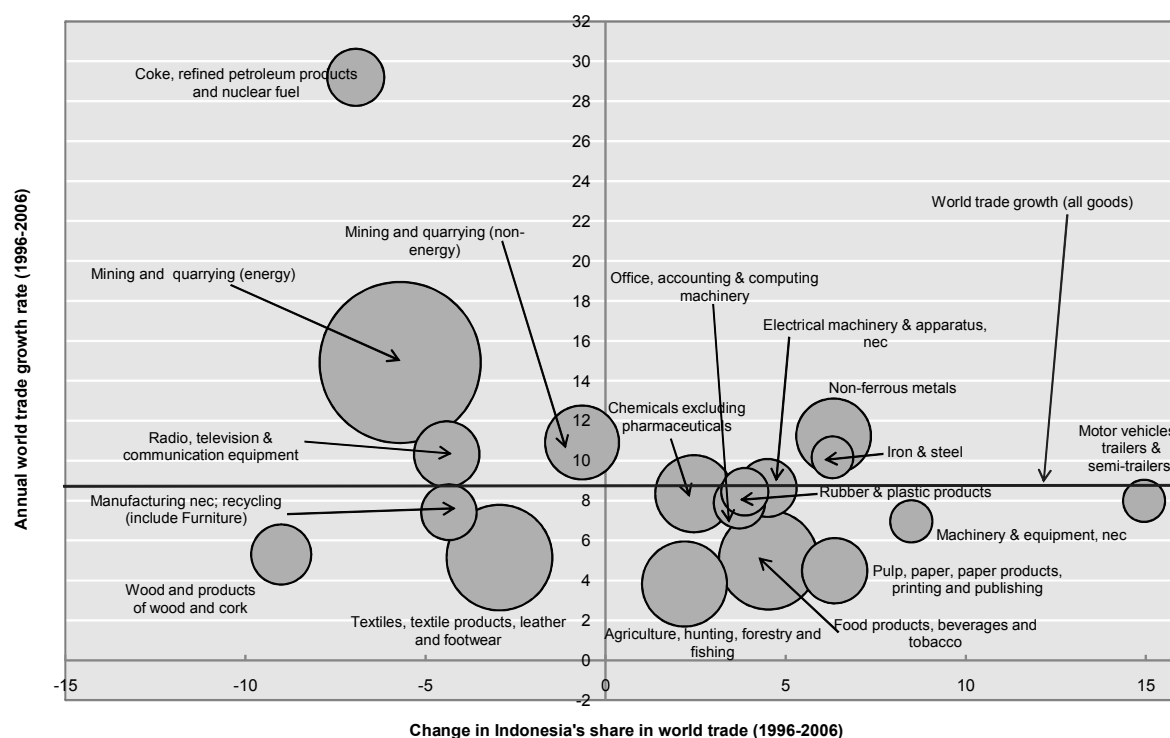
Source: *UN Comtrade.*

103.   The emergence of Indonesia's motor vehicles industry is one of the success stories related to rapid liberalisation. With a long record of policy failures related to infant industry protection, the sector is now showing increasing signs of competitiveness. It is still a small, but the fastest growing, export sector (Figure 9). Effective protection of the industry has fallen substantially between 1995 and 2005 (Figure 4) and an increasing share of inputs is sourced domestically, resulting in a domestic value-added share of nearly 64% in 2004, one of the highest (Figure 10).[70] In addition, the increase in the domestic value-added share is the largest, from 40% in 1995. The motor vehicle industry is one of the few that has regained its pre-crisis level share of exports in production.

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[70]   While much of the increase in domestic value-added is due to industry sophistication, at least some part of this increase can also be attributed to local content requirements (Feridhanusetyawan and Pangestu, 2003).

Figure 10.   Changing patterns of value added, exports and imported intermediate inputs

Selected industries (in %), 1994 and 2004
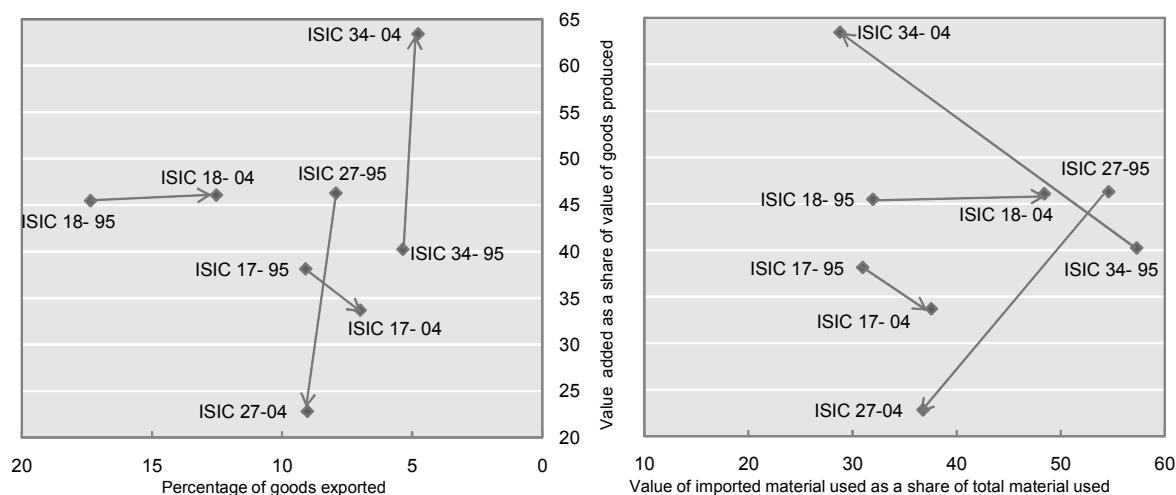
Note: ISIC Rev. 3 17 (textiles), 18 (garments), 27 (iron and steel) and 34 (motor vehicles).

Source: Authors' calculations based on the Indonesian manufacturing census.

...and weakening signs in traditionally competitive industries

104.   Indonesian products that had successfully conquered world markets in the 1980s and early 1990s were crowded out of many markets during the crisis and have not regained their pre-crisis positions yet. The loss has been especially large in wood and wood products (almost 10% over the past 10 years) and in textiles, garments, leather and shoes (2-3% over 1997-2007), where Indonesia has traditionally had comparative advantage. The development of dynamic and competitive support services, integrating domestic firms in international production networks, and boosting technological capacity are all key elements of improving competitiveness in the medium term (Aswicahyono and Pangestu, 2000).

105.   The evolution of textile and garment exports is of particular interest in light of recent global changes in the sector (for more details on the reshaping of global textile and garment trade markets, see Molnar and Kowalski, 2008). Exporters in this sector have adopted specialisation strategies (in terms of products and markets) and cut costs to maintain their positions, but these policies could not prevent losses in market shares and declines in revealed comparative advantages (Box 3).

106.   Indonesia has strong positions in some products and markets, but in the long term it needs to further advance on the value chain and better exploit its endowments. The concentration in some product categories and the consolidation of markets have helped Indonesia to weather the phase out of the textile and garment quotas under the Multifibre Arrangement (MFA) in 2005, but to remain competitive, it cannot lag behind other exporters in upgrading its technologies. Given its well-established vertically integrated industrial structure and abundant labour pool, there is ample room to expand medium- to high-quality garment production. The restriction of textile imports by a 2002 decree,[71] which originally aimed at curbing illegal imports, actually impedes the upgrading of the industrial structure by sheltering domestic firms from competition in the domestic market.

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[71]   In 2002 a decree concerning textile import arrangements was introduced, whereby only companies that have production facilities producing garments or furniture may obtain import licenses (WTO, 2007a).

Box 3. Indonesia's textile and garment industry

Indonesia ranked 14th among textile and garment exporters with a world market share of 1.8% in 2006 and is a major player in a few market segments. At the 2-digit HS level (which includes 14 sub-groups), it ranked among the top ten exporters in three categories: man-made staple fibres and knitted and non-knitted apparel. In these three markets it has a world market share of over 5%, but market shares are very imbalanced across countries.

Japan features among the top ten markets in all of the three product categories, the United States in two, Canada in one, but the EU15, as a single market, in none. With a 4.1% share in the US textile and garment market in 2006, Indonesia may not be a giant player, but it is very dependent on the US market (nearly 40% of its exports land in the US). Japan's share in Indonesia's exports has halved over 1996-2006. Indonesia is an even less important player in other OECD markets, except Turkey, where it had a 5.1% share in 2006. Moreover, it is losing market share in most OECD countries, in particular EU markets. A closer look at the largest EU market, Germany, surprisingly indicates that the major losses in market shares in most product categories are not related to uncompetitive prices, in particular, relative to China's, but to intense price competition from India and Bangladesh in the market segments in which Indonesia is relatively well established.

Increasing concentration of exports in certain markets is apparent for some product categories, such as man-made staple fibres (HS 55) – Indonesia has become Japan's No. 1 supplier with a market share of 33.3% in 2005, increasing from a low share of 3.1% in 1990. Through a sharp cut in unit prices, Indonesia has become a major supplier of men's cotton shirts (HS 6205) for the US market, achieving a market share of 9% in 2006 (a sharp rise from 6% in 2000). Indonesia's unit price for this product is comparable to China's, but is higher than Pakistan's, Bangladesh's, Guatemala's or the Dominican Republic's. A unit price analysis of textile and garment products shows that in the US market, only a very tiny share of products has a unit price double of China's (10% in the textile industry and 5% in the garment industry) or less than half of China's (10% for textiles and 1% for garments) and a large share of products are within the 10% range of the Chinese unit price (nearly 30% for textiles and nearly 40% for garments) in 2006.

Protection in the textile and garment industry, both measured in terms of average nominal and effective protection, has substantially decreased in 2000 vis-à-vis 1995, but it remains the highest among manufacturing industries (Annex Table A2). In addition, the high degree of tariff escalation in Indonesia translates into higher imported inputs and lower domestic value-added (WTO, 2007). In fact, the textile and garment sector is among the few sectors that increased its imported share of intermediate inputs and, as a result, registered a fall in the domestic value-added share. Firm-level data also show that this was accompanied by a fall in the share of exports in total production.

Indonesia's revealed comparative advantage (RCA) shows a slight decline over 1996-2006 in textiles and garments, with large variations across product categories. On the one hand, yarn of synthetic staple fibres (HS5509, with a 6.8% of share in textile and garment exports) and women's and men's shirts (HS6206 and 6205, with shares of 5% and 4.7% in textile and garment exports in 2006) have experienced a strong boost in revealed comparative advantages. On the other hand, the decline in RCA is in particular apparent for some important export products such as cotton yarn with over 85% cotton content (HS 5205, with a share of nearly 3% in exports in 2006), men's overcoats (HS 6201 with a 3.8% textile and clothing export share in 2006) and women's overcoats (HS6202, with a nearly 1% share in textile and clothing exports in 2006).

To assess where the competitive pressure is coming from, the Spearman correlation coefficients of RCA indices of selected competitors are calculated. The correlation index takes values between +1 and -1, with positive values showing that a country specialises in similar products as Indonesia and with negative values showing dissimilarity of export structures. Indonesia's major competitors are Bangladesh; Hong Kong, China; Turkey and to a lesser extent India and China. While Indonesia's export structure has become more similar to that of most of its major competitors, it has become less similar to China's. Indonesia's export structure shows less resemblance with EU and US suppliers.

Box 3. Indonesia's textile and garment industry (continued)

Spearman correlation coefficients of RCA indices
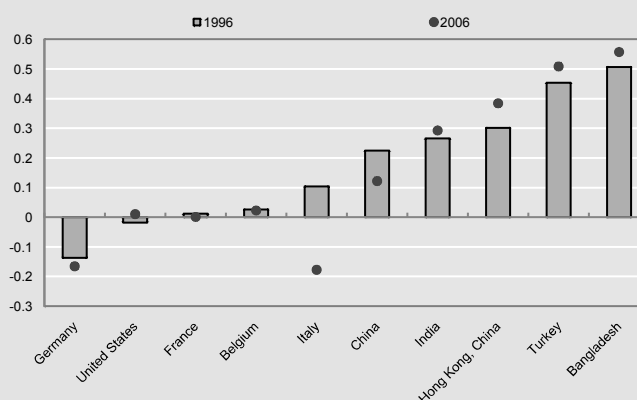
Note: 2004 for Bangladesh.

Source: Authors' calculations based on *UN Comtrade*.

In response to intensified competition in global textile and clothing markets, Indonesian exporters have adopted various strategies ranging from horizontal specialisation (including specialisation in certain markets and products) to price competition. Market concentration is in particular apparent; the US absorbed nearly 40% of Indonesian textile and garment exports in 2006, a 50% increase over 10 years. Such a skewed export market structure may allow for the exploitation of scope and scale economies both in production and transportation. Excessive dependence on a single market, however, may as well expose the industry to unnecessary volatility related to demand changes in that market.

Productivity developments differ across sectors, with faster growth in less protected ones

107.   Recent productivity estimates suggest that rapid growth was experienced by the coke and refined petroleum/nuclear fuel industry, rubber products, radio and telecommunications equipment, motor vehicles, other transport equipment, printing, machinery and equipment, leather and paper industries between 2000-05 (Annex Table A13). Productivity growth was flat in food and beverages, garments, chemicals and non-metallic minerals, while a drop is observed in textiles, basic metals, fabricated metals, wood, electronics and office machinery. These findings are robust to different specifications (for details of the estimation see Annex II), though the total factor productivity growth rates slightly differ according to methodology owing to different estimated coefficients on the inputs of the production function (Annex Table A12).

108.   Higher productivity growth rates tend to be associated with lower rates of protection (Figure 11).[72] Some industries with relatively low levels of effective protection such as machinery and equipment or paper and printing registered impressive productivity growth during the past several years, while productivity dropped in industries with high levels of protection such as fabricated metals and basic metals. In these two latter industries, protection has been relatively high with limited reductions over 1995-2005. High productivity growth rates in spite of high 2000 level of protection in motor vehicles industries may be explained by large subsequent reductions in protection. By the same token, the impressive productivity growth of the radio and telecommunications industry may be at least to a certain extent attributable to large cuts in effective protection between 2000-2005.

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[72]   Given Indonesia's cascading tariff structure, instead of the nominal rate of protection, the effective rate is used.

109. Econometric analyses confirm that higher levels of productivity are associated with lower levels of protection and suggest that in general, smaller and foreign firms tend to be more productive (Annex Table A14). A large part of productivity is explained by previous period productivity, indicating a high level of persistence. Less productive firms tend to have more rapid productivity growth and so do foreign, larger and less protected firms. Imports appear to boost productivity, while such an effect by exports is not significant. This is in line with the self-selection hypothesis in which more productive producers "self-select" to become exporters and it is not export competition that drives productivity, but rather import competition. For this reason, further liberalisation of tariffs, in particular the reduction of still high effective protection in several industries, may offer a scope for further productivity gains.

Figure 11.   Lower effective rates of protection (2000) are associated with higher productivity growth

2000-2005, in %
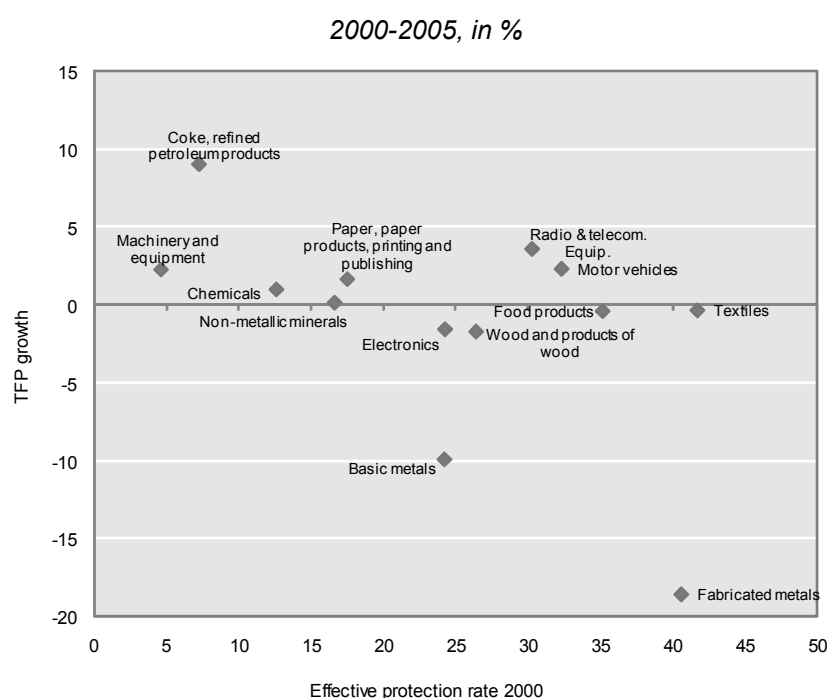
Note: Office machinery and rubber and plastics are removed for the sake of better visibility.

Source: Authors' estimation.

Asian economies are the most important trading partners

110.   Asian economies have become increasingly important export destinations (Table 9). In 2007, nine (three) out of the top ten export destinations were Asian (ASEAN) economies: Japan (21%), Singapore (9%), China (9%), Korea (7%), Malaysia (4%), India (4%), Thailand (3%) and Australia (3%). This pattern has evolved in the past ten years, with a greater number of Asian economies entering the top ten, and the importance of certain countries outside of Asia, such as the Netherlands and Germany, declining.

Table 9.   Top 10 destinations of goods exports of Indonesia in 1997 and 2007

Values in billions of USD

	1997	Ranking in 2007		2007	Ranking in 1997
Japan	12,485	1	Japan	23,633	1
United States	7,154	2	United States	11,644	2
Singapore	5,468	3	Singapore	10,502	3
Korea, Rep.	3,462	5	China	9,676	5
China	2,229	4	Korea, Rep.	7,583	4
Netherlands	1,842	10	Malaysia	5,096	11
Chinese Taipei	1,797	11	India	4,944	19
Hong Kong, China	1,785	15	Australia	3,395	9
Australia	1,517	8	Thailand	3,054	14
Germany	1,466	12	Netherlands	2,749	6

Source: *UN Comtrade.*

111.   Exports to Japan, Indonesia's largest market, are concentrated in energy and mining products (such as oil, basic metals, coke, and coal). While these products have always been important export products to Japan, they have become more dominant in the last ten years, with manufactured wood and food and beverage goods losing importance. Almost across the board, metal-related exports have become more important for all of Indonesia's top 10 trading partners, while textile and wood products have declined.

112.   The origin of imports has changed considerably over the last ten years (Table 10). Singapore has replaced Japan as the largest single origin of imports, with coke, chemicals, equipment and metals as the most important import products. Other ASEAN countries have become increasingly dominant. Thailand and Malaysia increased their shares of Indonesia's total import bill from 2% in 1997 to 6% and 9%, respectively, in 2007. China has also increased its share, moving from 4% to 11% in the ten-year period analysed. With the exception of Australia, OECD countries such as Germany, the United Kingdom and the United States have lost import shares during this time. Across countries, imports of chemical products have declined, while imports of machinery and equipment have gained ground.

Table 10. Top 10 origins of goods imports of Indonesia in 1997 and 2007

Values in billions of USD

	1997	Ranking in 2007		2007	Ranking in 1997
Japan	8,252	3	Singapore	9,840	3
United States	5,444	5	China	8,558	8
Singapore	3,411	1	Japan	6,527	1
Germany	2,629	10	Malaysia	6,412	15
Australia	2,427	9	United States	4,797	2
Korea, Rep.	2,322	8	Thailand	4,287	14
Chinese Taipei	1,591	15	Saudi Arabia	3,373	18
China	1,518	2	Korea, Rep.	3,197	6
United Kingdom	1,084	23	Australia	3,004	5
France	1,019	17	Germany	1,982	4

Source: *UN Comtrade.*

113. An analysis of bilateral trade intensities, which assess trade share relative to average world trade share by partner[73] show that Japan and Singapore emerge as the partners with which Indonesia has the highest trade intensity in goods, and these intensities have steadily increased since 1990 (Figure 12). This is perhaps not surprising given that these are Indonesia's top two export destinations. Similarly, trade intensities with Thailand and Malaysia also increased significantly during the period studied. Trade intensity has not changed very much with the euro zone and the United States, both of which represent partners with which Indonesia does not intensively trade. Trade intensity with China has slowly declined over the 1990s and into the millennium.

Figure 12.   Merchandise trade intensities between Indonesia and select partners
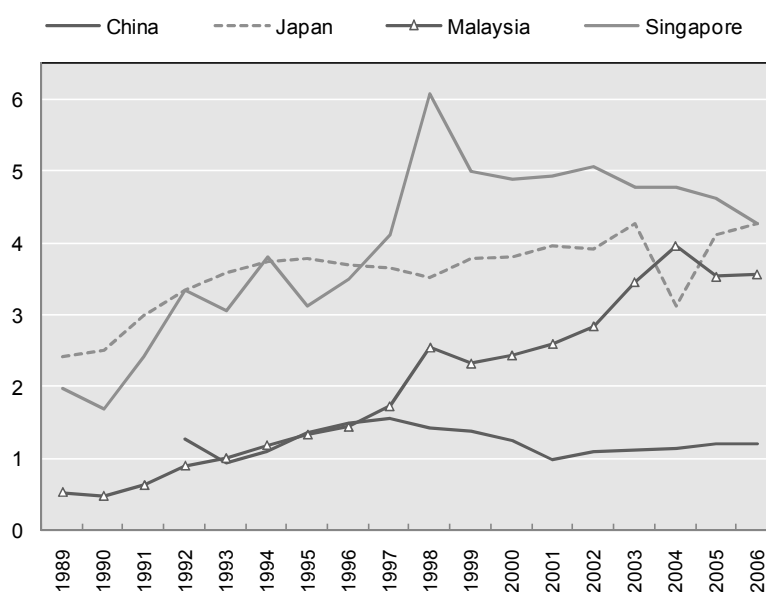
Source: *UN Comtrade.*

114.   Indonesia's sourcing is more concentrated in the ASEAN region (nearly 39% in 2006) than its export markets (over 18% in the same year). The ASEAN+3[74] framework is very important for Indonesia, representing over 57% of its export and over 68% of its import markets (as of 2006), making it the most "Asian" in terms of trade relations among ASEAN. In some sectors, this deep integration is even more apparent: Indonesia exports 82% of its IT-related parts and components to ASEAN+3 and sources over 90% of imports from the same region in this category. Even in oil, for instance, ASEAN+3 makes up over 73% of Indonesia's export and over 47% of its import market (International Trade and Investment Institute, Japan). These shares are likely to increase with the dismantling of trade barriers within ASEAN and with the strengthening integration in the larger East Asian region.[75]

115. In tandem with moving up the value chain, production is becoming increasingly technology intensive and therefore requires larger production scales. This leads to the inevitable consolidation of production bases and relocations across the region. In the ASEAN division of labour, Indonesia is assigned the wood-related as well as the automotive industries (automobile and motorcycle parts and components,

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[73]   Figures greater than 1 indicate an "intense" trading relationship.

[74]   ASEAN+3 includes the ten ASEAN members, China, Japan and Korea.

[75]   Tanaka (2008) provides some measures of integration in the region and provides insights into integration in different markets.

etc.). As the dismantling of tariffs is being done by sector groups (*i.e.* fast track and normal), the streamlining of production networks by multinational enterprises may trigger a relocation of automobile and motorcycle parts and components producers as well as wood and furniture companies to Indonesia.

FTAs with major trading partners would boost output in particular in light industries

116. A recent study by Kiyota *et al.* (2008) examining the simultaneous impact[76] of selected potential free trade agreements (FTAs) by BRIICS[77] countries suggests that Indonesia would benefit from a 1.8-5.2% increase in GDP (depending on the scenario) should it engage in free trade with other BRIICS and economies in its region.[78] The computational results thus reflect both the direct effects of the bilateral FTAs and the effects of the other postulated FTAs. The results indicate that although there are slight differences in the impact on Indonesia's trade, output and employment patterns across sectors according to the combination of FTA pairs, the overall impact would be significant increases in output and welfare in all scenarios.

117. A FTA with Japan and the full implementation of the AFTA (and at the same time FTAs between other BRIICS and selected OECD countries) would boost most light industries and selected heavy industries such as machinery and equipment and non-metallic mineral products in terms of output, employment and exports. In this scenario, services sectors would incur employment losses owing to the assumption of full employment and employment shifts across sectors and in some cases declines in output related to the shifts in employment across sectors. If in addition to Japan and ASEAN, Indonesia would extend its free trade area to the US (and the US signed FTAs with Brazil and India), there would be even larger gains stemming from a boom in the textiles, apparel and leather products sectors and other light industries, but at the same time there would be a strong specialisation resulting in declining heavy industries and services, again owing to the assumption of full employment.

118. An important finding is that free trade with China would not turn Indonesia into a natural-resource supplier but, on the contrary, even in a setting of free trade with China, Indonesia is able to expand its wearing apparel, textiles and leather exports significantly. This reflects Indonesia's strong comparative advantages and potential in these sectors even in the face of strong Chinese competition.

While services providers are exporting more, they are losing their share in total exports

119. Indonesia's recent growth has been driven primarily by a rise in domestic services industries. Indonesian services export shares both pre- and post-crisis suggest that six out of eleven of Indonesia's major services sectors that exported in 1995 increased their share of exports per unit of production in 2005 (Figure 13). The most dramatic increase in exports as a share of production can be seen in the other business activities, water transport and education sectors, which increased 13, 13, and 4 percentage points, respectively, in the ten-year period. It is also interesting to note that compared to the other services sectors,

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[76] While it is likely that FTAs would be phased in over time for some products and sectors, it is assumed for modelling purposes that all barriers are removed at the same time. The model is then solved computationally to represent the percent changes in the variables of interest and to calculate the absolute changes in employment by sector. Because full employment is assumed, the employment results presented indicate the shifts in sectoral employment that will occur with FTA liberalisation.

[77] Brazil, Russia, India, Indonesia, China and South Africa.

[78] The analysis uses the Michigan Model of World Production and Trade, which is a multi-country, multi-sectoral CGE model of the global trading system. The version of the model that is used includes 31 countries/regions plus the rest of the world and 27 sectors in each country/region. The main data source is "The GTAP-6.0 Database" of the Purdue University Centre for Global Trade Analysis Project (Dimaranan and McDougall, 2005).

transport and travel services exports have the highest share of output, underscoring the importance of tourism and transportation in the economy. At a 13 percentage point decrease, the finance and insurance sector shows the strongest decline.

Figure 13. Volatility characterises export/output ratios in many services sectors

Industry exports as a share of industry output, in %
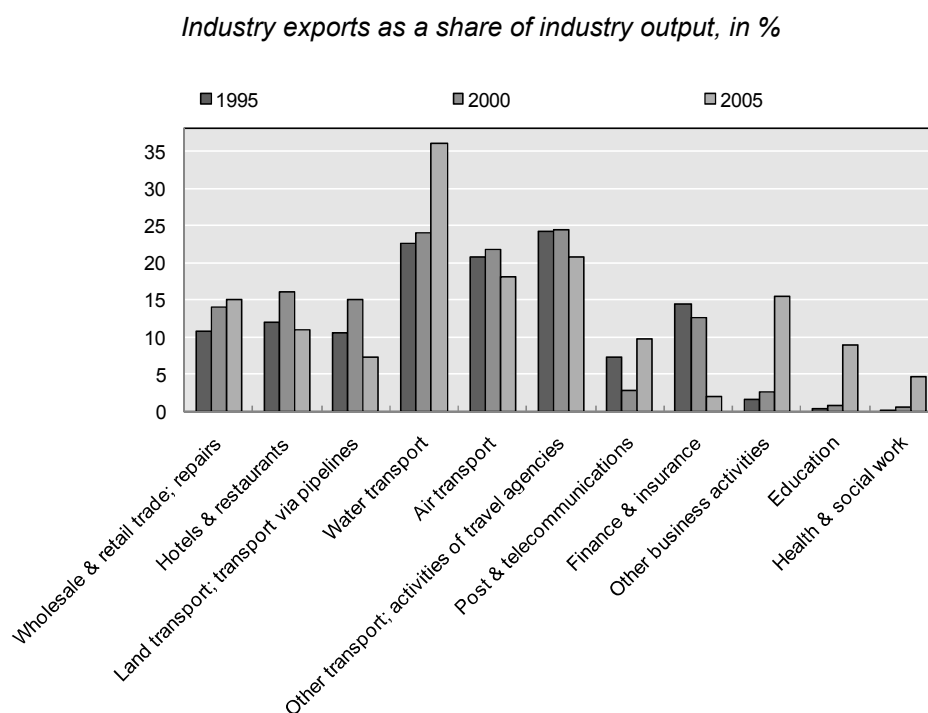
Source: *2008 OECD Input-Output Database.*

120.   Using the same dataset to assess services exports as a share of total exports, it is clear that Indonesia exports much more agriculture and manufactured products than services. Services share of total exports was 20.6% in 2005, down from 26.1% in 1995. The share of primary product exports in total exports dropped from 23.2% in 1995 to 21.3% in 2005, whereas the share of manufactured exports in total exports rose strongly from 50.7% in 1995 to 58.1% in 2005. There were no particularly marked changes across services sectors, as most sectors showed no change or a slight decline from 1995 to 2005.

Comparative advantage in communications services is on the rise

121.   The RCA indexes for services show that communications services is by far the sector in which Indonesia has the highest comparative advantage (Figure 14 and Annex Table A4). And not only is the actual index value high, but it has increased the most in the five-year period. The other two sectors that boast relatively high RCA indexes are the construction and government services sectors. However, while the index value for government services has grown stronger during the period, the RCA index for construction services has remained steady.

Figure 14.   Some services industries record increasing comparative advantage

RCA indices, 2002-2006, available years
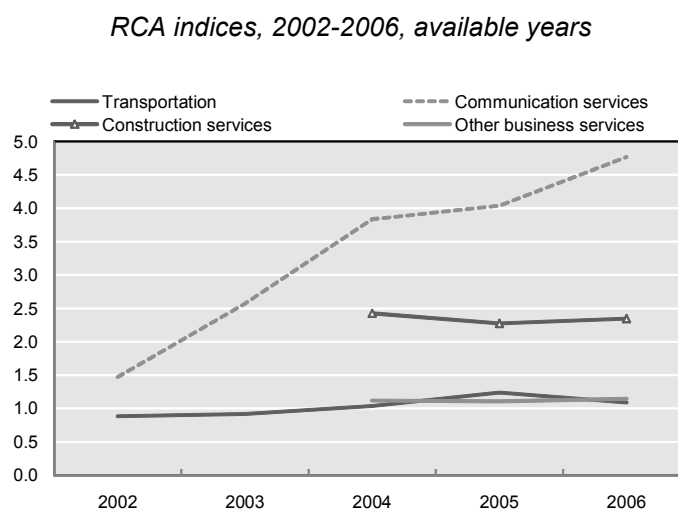
Source: *IMF Balance of Payments Statistics*.

122.   The most remarkable decline in comparative advantage emerges in the travel services sector, although the index value still remains well above 1. The tsunami in 2004 and the bombings in tourist resorts in Bali in 2002 and 2005 likely played some role in the decline. Another declining sector is the computer and information services sector, which limits Indonesia's ability to realise the substantial benefits from access to a diverse set of business services. However, it is important to note that these data do not include mode 3 services trade data (commercial presence), which can be an important mode of supply.

Among OECD countries, Japan, Australia and the United States top the list of services trading partners

123.   Available (mirror) data from the OECD and some non-member economies[79] on Indonesian exports and imports of services show that Japan is by far the most important services trade partner. Japan increased its share of Indonesia's total import bill from 29% in 2001 to 34% in 2006. Japan's share of Indonesia's total exports was even higher, but exhibits a modest downward trend (from 47% to 45%) during the period. In 2006, Australia was the second most important partner on the export side (12%) and the third most significant on the import side (12%), but these shares are a far cry from Japan's, and show a marked declining trend over the 6-year period. The United States represents another important partner, with a 14% share of the import bill and a 7% share of exports in 2006.

124.   Other key trading partners include China and the United Kingdom, and to a lesser extent the Netherlands. Data show shares in the 8-10% range of Indonesia's total imports for China and the United Kingdom, and 7% for the Netherlands in 2006. Indonesia's export shares were generally smaller to these countries, but they still were more significant than other trading partners. In 2006, Germany also showed a relatively strong import share at 5%, and France an important export share (7%). It is possible that import and export shares of services from other economies, particularly in Asia, have been rising, but data availability limits the possibility to test this hypothesis.

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[79]   Mirror import data come from the UN's *Service Trade Statistics Database*. Countries that report include all OECD countries (except Canada, Finland, Iceland, Korea, Mexico, New Zealand, Norway, Portugal, Spain, Switzerland and Turkey) as well as China, Estonia, Russian Federation and Slovenia for the period 2000-2006. Germany and Luxembourg are also included in the mirror export data. The reference year is 2005.

Moving closer to realising Indonesia's FDI potential

125.   The fallout from the crisis has negatively affected FDI in Indonesia (Figure 15). Indonesia, along with other countries in Southeast Asia, has experienced a decline in FDI stocks as a share of GDP since 2000. However, if the 80% increase in 2007 in investment approvals – concentrated in machinery-related sectors as well as those sectors with large multinationals, primarily from Japan – are realised, FDI could pick up going forward.

Figure 15.   Inward FDI stocks in Indonesia are low

As a percentage of GDP, select years
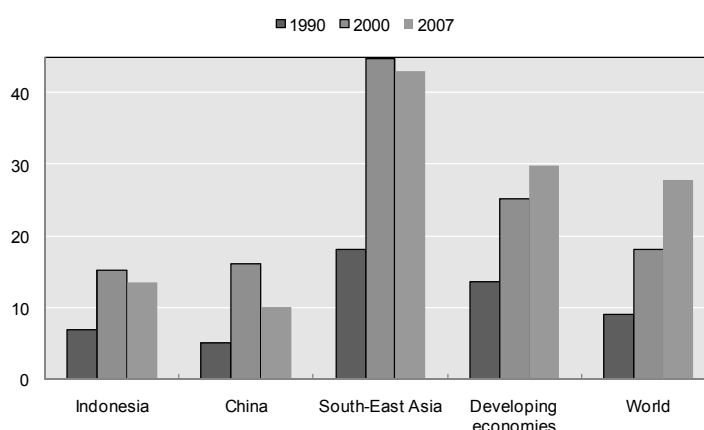
Source: *World Investment Report 2008.*

126. An indicator of FDI performance [80] from UNCTAD shows a similar trend (Figure 16). FDI performance suffered during the crisis, but has recently begun to rebound, although it remains below pre-crisis levels. Thailand, the other ASEAN country presented in Figure 16 also shows declines in the mid-1990s and early part of the millennium, but in 2006 it had well surpassed its index value in 2004. UNCTAD's FDI potential index, [81] which captures factors other than market size that affect the attractiveness of an economy to foreign investors, presents a more sombre picture of FDI prospects in Indonesia. FDI potential in Indonesia, as well Thailand and the United States, has declined steadily since 1994. Only China has improved in its ranking consistently over the ten-year period.

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[80]   The indicator ranks countries by the FDI they receive relative to their economic size, and is calculated as each country´s share in global FDI inflows to its share in global GDP. Values above one indicate that a country receives more FDI than would be expected given its economic size, and a value below one suggests that it receives less than would be expected (a negative value indicates disinvestment).

[81]   The index is a simple average of the values of 12 variables (normalised to yield a score between zero, for the lowest scoring country, to one, for the highest). The 12 indicators include: (1) GDP per capita, (2) the GDP growth rate over the previous 10 years, (3) the share of exports in GDP, (4) the average number of telephone lines per 1 000 inhabitants and mobile telephones per 1 000 inhabitants (5) commercial energy use per capita, (6) the share of R&D spending in GDP, (7) the share of tertiary students in the population, (8) country risk, (9) the world market share in exports of natural resources, (10) the world market share of imports of parts and components for automobiles and electronic products, (11) the world market share of exports of services, and (12) the share of world FDI inward stock. Details on these components can be found on the UNCTAD website: http://www.unctad.org, accessed 23 May 2008.

Figure 16.   Select FDI indicators suggest a recent rebound

Inward FDI perfomance index

Inward FDI potential index
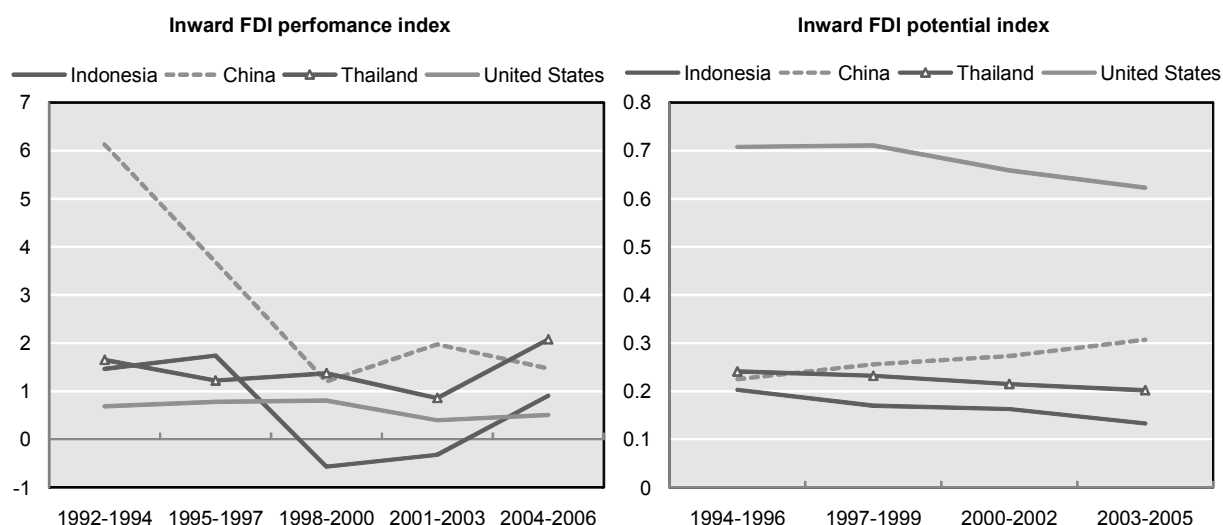
Source: UNCTAD website, http://www.unctad.org, accessed 23 May 2008.

Box 4. FDI spillovers in Indonesian manufacturing

Using an unbalanced firm-level dataset of Indonesian manufacturing firms over the period 1995-2005, a production function approach is used to test whether FDI spillovers exist in the Indonesian manufacturing sector (see Annex III). Horizontal spillovers occur when domestic firms increase productivity because of the presence of foreign firms in the same industry. Backward spillovers arise when domestic firm productivity increases as the result of the presence of foreign firms in downstream sectors. In contrast, forward spillovers take place when increases in domestic firm productivity are derived from foreign presence in upstream sectors. Annex III includes a discussion of the methodology as well as the regression results. A useful typology of these three types of spillovers as well as the theory behind the concept of FDI spillovers can be found in Lesher and Miroudot (2008).

Regression results show a consistently positive and significant coefficient on the foreign share variable, which indicates that foreign firms in the Indonesian manufacturing sector tend to be more productive than domestic firms. Since the inclusion of the foreign share variable controls for foreign presence, the coefficients on the other variables reflect domestic firm effects only.[A] The estimations find some evidence of horizontal spillovers, although they are most strong in the baseline specification and lose significance in the other two models (indeed, they are insignificant in the dynamic panel model). This result is not entirely surprising as other researchers studying horizontal spillovers in manufacturing panel datasets have not found strong evidence of horizontal spillover effects (see Javorcik (2004) for Lithuania and Blalock and Gertler (2005) for Indonesia).

The OLS estimations find positive productivity-related spillover effects from foreign presence in upstream sectors (forward spillovers) and negative effects from foreign presence in downstream sectors (backward spillovers). In other words, the production of domestic manufacturing firms is positively correlated with contacts with (and learning from) foreign suppliers, but not with contacts with foreign customers. This makes sense insofar as it is often in the best interests of foreign firms to transfer knowledge to its customers (for instance, improving production capacity and quality may lead to increased reliance on the foreign firm for inputs). The consistently negative coefficient on the backward spillover variable is curious, however, and suggests that contacts with foreign customers negatively correlate with domestic firm production. These results reflect opposite effects from those found in a study of high-income EU countries using both manufacturing and services data (Lesher and Miroudot, 2008), suggesting the spillover dynamics may vary according to the level of development as well as be affected by the inclusion of services in the analysis.

[A] The foreign share variable is not included in the dynamic panel estimations because it is collinear with the panel fixed effect used in this methodology. Instead, estimations are run on a sample that includes firms with less than 10% foreign capital participation.

Foreign investment can play a more important role in domestic capital formation

127.   Foreign investment, with a share of 6.4% in 2007, does not play as key a role in Indonesia's gross domestic capital formation as in its neighbours.[82] This share is roughly in line with that in 1997 (7.7%), the first year of the crisis, suggesting that there is considerable scope for foreign investment to play a more prominent role in the economy. Most FDI flows into manufacturing, in particular the chemical, pharmaceutical, and paper and printing industries, but there have been substantial inflows into the food, metal, machinery and electronics industries as well in recent years. In services, the biggest inflows were recorded in the transport and telecommunications sectors, largely as a result of the privatisation of incumbents in telecommunications. There have also been sizeable inflows into utilities, construction and real estate and business services.

128.   Indonesia does not publish data on FDI stocks, but the total from the International Financial Statistics database and bilateral mirror data suggest that Japan, Singapore and the United States make up about two-thirds of FDI stocks in Indonesia with Canada, Germany, Netherlands and the UK having a combined share of 20% in 2005. Interestingly, the three major investors specialise in three different sectors: Japan's investments are mainly flowing to the manufacturing sector, making it the biggest foreign manufacturer in Indonesia. Over 95% of Singapore's investment is in services, in particular finance and telecommunications, while almost two-thirds of US investment is in mining. The US also made substantial investments in chemicals, metals and other industries. For smaller countries, investment by sector is not disclosed due to confidentiality issues, except the UK, which seems to concentrate its investment in services, chemicals and food industries. Among services, Germany only invested in transportation, but the magnitudes are not disclosed. Data on activities of foreign affiliates are even scarcer, but sporadically available mirror data suggest that foreign enterprises have a share about 1-2% in total employment.

Box 5. Production base or attractive market?

Judging from trends in the activities of affiliates of multinational manufacturing enterprises from OECD countries, Indonesia seems to be used to a decreasing extent as a production base for exports to the parent's country and to an increasing extent MNEs sales are concentrated in the domestic or the larger ASEAN market.

Japanese affiliates show increasing "localisation" in sales and procurement

The relatively high extent of "localisation" in terms of both the direction of sales and the procurement source is confirmed by a survey of Japanese manufacturing affiliates in the ASEAN region by the Japan External Trade Organisation (JETRO) (2007b). On the direction side of sales, Indonesia has the lowest share of affiliates with export ratios of at least 70% in the ASEAN region (32.4% in 2006), which is 2% lower than in 2005 and 23% lower than in 2002. The average export ratio of affiliates in Indonesia is 42.9%, the second lowest after Thailand (41.7%). Among those companies that specialise in production mainly for exports, most export mainly to Japan (16.7% of firms export 100% of their production to Japan) and other ASEAN markets (10.8% of companies export 100% of their production to other ASEAN countries), with the United States and Europe in third place (0.8% of companies export 100% of their production to the United States or Europe).

On the procurement side, the share of companies that purchase at least 70% of their materials locally is higher than in the Philippines, Singapore and Vietnam, but lower than in Thailand. This relatively high extent of "localisation" on the procurement side reflects the long-standing presence of Japanese companies in Indonesia, as well as clustering of

Japanese and local companies. Indeed, 40.2% of materials are purchased from local companies and about the same share from local Japanese affiliates (30.1%) and local affiliates of companies from other countries (29.7%).

Another interesting finding that supports the above high degree of "localisation" by Japanese companies in Indonesia is the absence of an employment-reducing effect at home as a result of moving abroad. This finding is in strong contrast with those for all foreign affiliates and affiliates in Asia, in particular in China (Molnar *et al.* 2008), regardless of specification.*

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82   In 2007, foreign direct investment as a share of gross fixed capital formation in Indonesia was low compared to Singapore (60%), the Philippines (14.3%), Malaysia (20.6%), Thailand (14.6%), and Vietnam (25.4%) according to the IFS.

Box 5. Production base or attractive market? (continued)

Material input costs are high and duty-free imports are not fully utilised

Manufacturing production by affiliates in Indonesia is characterised by a relatively high share of material inputs in manufacturing costs. The JETRO survey also indicates that among ASEAN countries, Indonesia has the highest share of material costs at 50.4%, at least 10% higher than in other countries. Moreover, most Japanese affiliates in Indonesia plan to further increase the share of local procurement, but the immediate obstacles to this are the lack of observance of delivery dates and transportation and logistics infrastructure bottlenecks.

Affiliates operating in Indonesia tend to benefit from duty-free imports to a lesser extent than in most other ASEAN countries. 25.6% of Japanese affiliates reported no access to duty-free imports, the second highest share after Thailand at 27.5%. Most of these companies are in the iron and steel and ceramics and cement industries. Similarly, the share of those companies that import 100% of their inputs duty free at 17.3% is second lowest to Thailand (9.5%).

But manufacturing costs are competitive and expansion is envisaged in a number of industries

When respondent affiliates that also have operations in China were asked to compare costs with those in China, surprisingly almost half of them replied that manufacturing costs are about the same (i.e. in the range of 90-110%). Moreover, almost 20% of companies reported lower than 90% of costs in China and none reported above 140%. This may suggest that the comparative disadvantages relative to China's lie more in other structural impediments than in high costs of production.

Japanese affiliates view Indonesia as an optimal production base in the medium term (5-10 years) for automobile and motorcycle parts and components, chemicals and general machinery, followed by electronics and plastics. As part of the restructuring and streamlining of activities related to strengthening ASEAN integration, Japanese affiliates in the region see Indonesia as No. 1 destination for relocation, with most companies to be relocated from Thailand and Japan.

* Note: The method in Molnar *et al.* (2008) is applied with an extended dataset to include affiliates located in Indonesia and to cover the period of 1995-2004. The equations estimated take the basic form set out in [1] and [2] (augmented by additional lags of output and wage growth where possible):

$$\Delta \ln L_{i,t} = \alpha_0 + \alpha_1 \Delta \ln Y_{i,t} + \alpha_2 \Delta \ln RW_{i,t} + \alpha_3 \Delta \ln LF_i + \varepsilon_{i,t} \quad [1]$$

$$\Delta \ln L_{i,t} = \alpha_0 + \alpha_1 \Delta \ln Y_{i,t} + [\alpha_2 + \gamma(LF_{i,t-1}/L_{i,t-1})]\Delta \ln RW_{i,t} + \alpha_3 \Delta \ln LF_i + \varepsilon_{i,t} \quad [2]$$

Here, L_i denotes domestic employment in industry *i*, Y and RW denote output and real wages respectively, and LF denotes employment in the foreign affiliates of home country parent companies. Industry fixed effects are included to pickup any otherwise excluded industry specific factors. The specification shown in [2] enables a test to be undertaken of whether a rising share of employment in foreign affiliates has any short-run effect on the response of employment to a change in wages ($\gamma \neq 0$). [1] and [2] were estimated using the OLS (ordinary least squares) and IV (instrumental variables) methods.

IV. Conclusion and recommendations

129. Indonesia's export performance has deteriorated since the 1997-98 crisis, and market shares in goods and services have yet to reach their pre-crisis levels. Indonesia's relatively successful efforts at reaching and maintaining macroeconomic stability in the post-crisis years have laid the foundation for further realising its trade potential. But the major political transition that took place in the crisis period was associated with conditions that impede trade and exacerbate existing weaknesses in the trade policy environment. Policies adopted following the crisis, governance and infrastructure constraints, as well as excessive state involvement in the economy and behind-the-border regulations, all increase trade costs and dampen exports. Trade facilitation can play an important role in reducing these costs.

130. Energy still dominates trade patterns, both on the export and import side, and the share of high-technology exports is low. Patterns of revealed comparative advantages have also been shifting, as traditionally competitive industries, such as textiles, garments and wood are losing in world markets, while other industries such as chemicals and motor vehicles have emerged to compete more effectively internationally. Trade integration with ASEAN countries and other countries in the region is deepening. Further, services trade performance has lagged, even though services make up about 50% of GDP, and increases in foreign direct investment can help spur gross capital formation and productivity growth.

131. The path to realising Indonesia's trade potential involves a broad sense of competitiveness that includes the degree of flexibility of the economy. Internal constraints as well as developments in international markets have hindered Indonesia's competitiveness, some of which are associated with trade-related policies. Maintaining the competitiveness of Indonesian industries in an evolving domestic and global environment is a key challenge for policymakers. A comprehensive approach, involving trade policy reform moving in tandem with the reform of other policy areas, is the key to boosting exports in the long run. The policy recommendations below will help Indonesia realise its trade potential.

Reforms that may help to boost the competitiveness of the Indonesian economy

Complement applied tariff cuts with reductions in NTBs and bound tariffs. While Indonesia has low average applied tariffs by developing-country standards, tariff dispersion has increased since 2004, implying lower economic efficiency. The medium-term tariff-harmonisation schedule will indeed bring about transparency and reduce customs administration costs, but owing to the shift of products from the 0% to the 5% tariff band, it may adversely affect trade flows. A large percentage of tariffs are bound, but the sizeable spread between bound and applied tariffs allows considerable scope for swift increases on special products, reducing predictability. Effective protection has substantially fallen over 1995-2005, nevertheless there remains ample scope for additional reductions in several sectors. Moreover, since 2001 new non-tariff barriers have emerged, and creeping protectionism has set in. Decreasing the overall number of NTBs, as well as the percentage of sectors to which they apply, would further reduce trade barriers. A lack of a single authority over trade policies may have contributed to the proliferation of NTBs.

Reduce trade costs by easing behind-the-border regulations. Infrastructure constraints, which bear directly on the costs associated with trading goods and services, have impeded competitiveness. Indonesia has begun to reduce the number of ports handling international trade which will allow the government to focus on infrastructure improvements to those sites. There remains, however, ample scope to streamline handling procedures and lessen administrative burdens in order to reduce transport and opportunity costs. Addressing inefficiencies with road infrastructure, including cracking down on illegal road levies as well as road maintenance, would help. Product market regulations also contribute to sub-optimal trade performance. Costs associated with starting a business, importing and enforcing contracts are relatively high in Indonesia, as is the amount of time it takes to import. Procedural inconveniences make firing

regular employees costly and therefore deter firms from taking on new workers. This in particular harms the competitiveness of industries, as it inhibits the exploitation of the large pool of low-cost labour in which Indonesia has comparative advantage. The uncertainty related to firing underperforming employees and the high material and opportunity costs of producing and trading all contribute to informal activities. Addressing these domestic regulatory barriers would improve trade performance and help realise the considerable potential hidden in the grey economy.

Further improve the investment climate. Both the sub-national and central governments have a role to play in reducing excessive investment-related regulation. The new investment law and negative list have increased transparency, but there remains room to allow for larger foreign stakes in a number of sectors. Improving the investment climate is especially important given the large scope for increasing the share of foreign firms in capital formation. Decreasing state involvement in the economy, which continues to distort incentives in several important sectors (e.g. energy), would encourage new private investment, thus creating the conditions for fostering competitive markets. And a more objective and transparent court system, as well as more far-reaching enforcement of intellectual property rights would create a more predictable environment for foreign investors, which may help to further enhance competitiveness.

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ANNEX I : TABLES AND CHARTS

Annex Table A1. Indonesia's tariffs have fallen substantially

Selected characteristics of the tariff structure, 1989-2006 (in % and in numbers)

A. Applied MFN rates

	Simple average	Weighted average	Std dev	Minimum	Maximum	Nbr of lines	Nbr domestic peaks	Nbr international peaks	Value of imports
1989	22.18	12.96	21.84	0	200	9,047	78	4,966	16,358,501
1990	18.70	13.32	16.74	0	200	9,255	77	4,930	21,834,557
1993	17.92	12.51	16.07	0	200	9,384	56	4,877	28,327,360
1995	15.34	10.89	14.89	0	200	9,373	68	4,051	40,628,408
1996	12.35	7.73	16.69	0	200	7,258	79	2,369	42,928,464
1999	11.19	6.05	16.61	0	200	7,219	90	2,206	24,003,079
2000	8.43	5.16	11.91	0	170	7,252	80	894	33,514,771
2001	6.89	4.31	11.28	0	170	7,285	113	259	30,962,109
2002	6.90	5.79	11.14	0	170	7,532	115	265	26,351,777
2003	6.90	5.22	11.13	0	170	7,532	112	257	48,845,459
2004	6.95	6.09	15.41	0	170	11,153	526	1,173	60,519,014
2005	6.95	6.07	15.41	0	170	11,153	526	1,173	70,147,344
2006	6.95	6.07	15.41	0	170	11,153	526	1,173	70,148,034
2007	6.90	4.35	12.62	0	150	8,732	230	1,525	23,041,626

B. Bound MFN rates

	Simple average	Weighted average	Std dev	Minimum	Maximum	Nbr of lines	Nbr domestic peaks	Nbr international peaks	Value of imports
1995	37.19	37.65	13.24	0	210	7,755	40	7,458	40,628,408
1996	37.13	37.95	13.14	0	210	7,092	36	6,845	42,928,464
1999	37.13	45.05	13.14	0	210	7,092	36	6,845	24,003,079
2000	37.13	38.86	13.14	0	210	7,092	36	6,845	33,514,771
2001	37.13	38.53	13.14	0	210	7,092	36	6,845	30,962,109
2002	37.14	36.43	12.51	0	210	8,027	36	7,776	26,351,777
2003	37.14	33.30	12.51	0	210	8,027	36	7,776	48,845,459
2004	37.14	32.81	12.51	0	210	8,027	36	7,776	60,519,014
2005	37.14	33.71	12.51	0	210	8,027	36	7,776	70,147,344
2006	37.14	33.71	12.51	0	210	8,027	36	7,776	70,148,034

Source: *UN Trains*.

Annex Table A2. The effective rates of protection indicate a falling trend

1995, 2000 and 2005

	Nominal			Effective		
	1995	2000	2005	1995	2000	2005
Food products, beverages and tobacco	18.5	10.2	10.2	77.9	35.2	12.1
Textiles, textile products, leather and footwear	22.9	12.7	9.6	89.3	41.7	10.8
Wood and products of wood and cork	16.7	8.6	6.3	71.1	26.4	8.3
Pulp, paper, paper products, printing and publishing	13.2	7.3	4.4	34.3	17.5	4.7
Coke, refined petroleum products and nuclear fuel	4.5	4.0	3.7	10.3	7.3	3.8
Chemicals excluding pharmaceuticals	5.9	4.8	4.2	13.4	12.6	4.6
Pharmaceuticals	9.3	6.7	5.3	29.0	17.4	6.3
Rubber & plastics products	23.8	16.2	12.4	141.8	73.5	13.9
Other non-metallic mineral products	18.2	6.9	5.9	53.9	16.6	6.5
Iron & steel	9.1	7.9	8.4	19.7	29.6	9.8
Non-ferrous metals	8.0	5.7	5.0	20.1	18.9	5.1
Fabricated metal products, except machinery & equipment	20.8	12.0	10.0	69.4	40.6	10.6
Machinery & equipment, nec	10.3	3.2	2.8	21.0	4.6	2.8
Office, accounting & computing machinery	17.8	3.7	1.7	52.6	8.3	2.3
Electrical machinery & apparatus, nec	14.5	8.4	6.6	41.2	24.3	6.9
Radio, television & communication equipment	11.3	7.9	5.7	26.2	30.3	5.8
Medical, precision & optical instruments	10.7	6.6	4.8	-11.0	17.4	5.2
Motor vehicles, trailers & semi-trailers	48.3	21.0	21.1	121.2	32.4	21.9
Building & repairing of ships & boats	2.8	1.6	1.5	4.1	0.6	1.4
Aircraft & spacecraft	0.7	0.0	0.0	-2.2	-0.7	-0.1
Railroad equipment & transport equip n.e.c.	0.3	0.3	0.3	-0.2	-0.1	0.3
Manufacturing nec; recycling (include Furniture)	28.8	14.8	11.0	123.4	61.9	11.9

Source: Authors' calculations based on the *2007 OECD Input-Output Database*.

Annex Table A3. Revealed comparative advantage indexes for goods in Indonesia, select years

	1989	1994	1998	2002	2005	2006	2007	Annual average growth rate 1998-2007
1 Agriculture, hunting, forestry and fishing	2.74	2.08	2.38	1.79	2.23	2.83	1.64	-4.04
2 Mining and quarrying (energy)	14.22	6.19	5.79	3.77	2.92	2.89	1.63	-13.16
3 Mining and quarrying (non-energy)	1.54	2.91	3.69	3.74	3.50	4.00	1.61	-8.80
4 Food products, beverages and tobacco	1.16	1.14	1.28	1.56	1.82	1.91	1.25	-0.26
5 Textiles, textile products, leather and footwear	1.45	2.21	1.87	1.90	1.83	1.84	1.86	-0.07
6 Wood and products of wood and cork	10.12	9.65	6.40	5.73	3.89	3.72	1.21	-16.87
7 Pulp, paper, paper products, printing and publishing	0.26	0.52	1.73	1.84	1.70	1.88	2.13	2.39
8 Coke, refined petroleum products and nuclear fuel	1.31	1.02	1.01	0.23	0.71	0.70	0.36	-10.91
9 Chemicals excluding pharmaceuticals	0.34	0.41	0.80	0.70	0.68	0.70	1.01	2.64
10 Pharmaceuticals	0.17	0.23	0.33	0.21	0.15	0.14	1.46	17.85
11 Rubber & plastic products	0.23	0.37	0.45	0.75	0.85	0.85	0.80	6.55
12 Other non-metallic mineral products	0.88	0.54	0.56	1.02	0.88	0.87	0.99	6.50
13 Iron & steel	0.45	0.28	0.54	0.32	0.34	0.49	0.70	2.88
14 Non-ferrous metals	1.86	0.85	1.14	1.04	1.74	1.55	1.48	2.98
15 Fabricated metal products, except machinery & equipment	0.17	0.35	0.37	0.37	0.34	0.35	0.65	6.41
16 Machinery & equipment, nec	0.01	0.05	0.12	0.16	0.19	0.19	0.74	22.05
17 Office, accounting & computing machinery	0.00	0.15	0.33	0.70	0.68	0.50	0.18	-6.14
18 Electrical machinery & apparatus, nec	0.08	0.30	0.56	0.72	0.72	0.74	1.04	7.26
19 Radio, television & communication equipment	0.04	0.50	0.44	0.79	0.59	0.42	0.24	-6.63
20 Medical, precision & optical instruments	0.04	0.16	0.17	0.17	0.13	0.15	0.35	8.67
21 Motor vehicles, trailers & semi-trailers	0.00	0.02	0.05	0.08	0.16	0.17	1.63	48.68
22 Building & repairing of ships & boats	0.04	0.20	1.08	0.17	0.33	0.61	1.92	6.54
23 Aircraft & spacecraft	0.06	0.07	0.02	0.04	0.08	0.14	0.40	40.41
24 Railroad equipment & transport equip n.e.c.	0.12	1.02	0.75	0.70	0.63	0.67	1.32	6.59
25 Manufacturing nec; recycling (include Furniture)	0.58	1.54	1.77	1.24	1.10	1.03	1.07	-5.42

Note: The industry classification in ISIC Rev. 3 can be found in Annex Table A10.

Source: *UN Comtrade*.

Annex Table A4. Revealed comparative advantages in services, Indonesia

	2002	2003	2004	2005	2006
Transportation	0.88	0.92	1.04	1.24	1.09
Travel	3.24	3.22	1.70	1.57	1.79
Communication services	1.47	2.57	3.84	4.04	4.77
Construction services	..	..	2.43	2.27	2.35
Insurance services	0.02	0.02	0.03	0.07	0.16
Financial services	..	..	0.49	0.53	0.27
Computer and information services	..	..	0.32	0.32	0.27
Royalties and license fees	..	..	0.43	0.48	0.03
Other business services	..	..	1.12	1.10	1.14
Personal, cultural and recreational	..	..	0.36	0.44	0.71
Government services nie	0.92	1.19	1.08	1.30	1.96

Source: *IMF Balance of Payments Statistics*.

Annex Table A5. The business environment in select Asian economies, as of June 2008

Select indicators, with a low overall score indicating fewer restrictions

		China	India	Indonesia	Malaysia	Philippines	Thailand	Vietnam
Overall indicator		**90**	**120**	**127**	**25**	**136**	**19**	**87**
Starting a Business	Procedures (number)	13	13	**12**	9	15	8	11
	Time (days)	35	33	**105**	24	58	33	50
	Cost (% of income per capita)	8.4	74.6	**80.0**	18.1	31.8	5.6	20.0
Dealing with Licenses[a]	Procedures (number)	37	20	**19**	25	21	11	13
	Time (days)	336	224	**196**	285	177	156	194
	Cost (% of income per capita)	840.2	519.4	**286.8**	10.0	75.9	10.7	373.6
Employing Workers	Difficulty of Hiring Index	11	0	**72**	0	56	33	0
	Difficulty of Firing Index	40	70	**60**	30	30	0	40
	Rigidity of Employment Index	24	30	**44**	10	35	18	20
	Firing costs (weeks of wages)	91	56	**108**	75	91	54	87
Registering Property	Procedures (number)	4	6	**6**	5	8	2	4
	Time (days)	29	62	**39**	144	33	2	67
	Cost (% of property value)	3.6	7.7	**10.5**	2.4	4.2	6.3	1.2
Trading Across Borders	Time for export (days)	21	18	**21**	18	17	17	24
	Cost to export (US$ per container)	390	820	**667**	432	800	615	669
	Time for import (days)	24	21	**27**	14	18	14	23
	Cost to import (US$ per container)	430	910	**623**	385	800	786	881
Enforcing Contracts	Procedures (number)	35	46	**39**	30	37	35	34
	Time (days)	406	1,420	**570**	600	842	479	295
	Cost (% of debt)	11.1	39.6	**122.7**	27.5	26.0	14.3	31.0
Closing a Business	Time (years)	1.7	10	**5.5**	2.3	5.7	2.7	5
	Cost (% of estate)	22	9	**18**	15	38	36	15
	Recovery rate (cents on the dollar)	35.9	11.6	**12.6**	38.3	4.2	41.8	18.0

a) 2007

Source: *World Bank Doing Business Indicators*.

Annex Table A6. Merchandise trade intensities, select partners

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
TII Indonesia / China	..	..	1.25	0.92	1.07	1.36	1.49	1.55	1.41	1.36	1.23	0.96	1.08	1.11	1.13	1.19	1.20
TII Indonesia / EU25	0.31	0.45	0.43	0.46	0.37	0.35	0.38	0.39	0.39	0.36	0.37	0.36	0.36	0.33	0.35	0.31	0.30
TII Indonesia / India	0.13	0.19	0.21	0.33	0.91	1.07	1.36	1.65	1.84	2.08	2.24	2.16	2.34	2.72	2.77	2.26	2.08
TII Indonesia / Japan	2.50	2.99	3.34	3.57	3.73	3.77	3.70	3.66	3.50	3.77	3.80	3.96	3.92	4.27	3.11	4.12	4.26
TII Indonesia / Malaysia	0.46	0.61	0.89	0.99	1.17	1.32	1.43	1.72	2.54	2.31	2.43	2.59	2.83	3.45	3.96	3.53	3.56
TII Indonesia / Philippines	..	..	..	..	..	..	1.99	2.04	2.42	2.40	2.22	2.48	2.08	2.67	3.70	3.38	2.95
TII Indonesia / Singapore	1.68	2.40	3.32	3.04	3.79	3.12	3.49	4.10	6.06	4.99	4.88	4.92	5.04	4.77	4.77	4.61	4.25
TII Indonesia / Thailand	0.30	0.47	0.63	0.78	0.69	1.02	1.14	1.35	2.40	1.82	1.66	1.83	2.08	2.21	2.89	2.24	2.39
TII Indonesia / United States	..	0.45	0.58	0.67	0.79	0.85	0.83	0.79	0.80	0.73	0.68	0.70	0.69	0.68	0.79	0.67	0.67

Source: UN Comtrade.

Annex Table A7. High technology exports in select countries, 1992-2006

As a percentage of total goods exports

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Indonesia	**3.2**	4.4	**6.0**	6.2	**7.6**	**7.9**	**7.3**	**7.8**	**13.7**	**12.7**	**12.7**	**11.0**	**12.3**	**9.9**	**7.7**
China	11.1	11.7	13.0	14.5	16.2	16.5	18.9	20.8	22.4	24.2	27.5	31.4	33.7	34.6	34.6
India	3.4	3.6	3.9	4.4	4.9	4.9	4.3	4.8	5.1	5.9	5.9	5.9	5.1	4.9	4.9
Korea	26.3	26.5	27.8	29.4	27.1	28.2	29.0	35.2	38.9	32.2	34.9	35.9	35.9	34.5	32.6
Malaysia	38.4	43.4	48.4	50.5	50.8	52.7	55.1	59.2	60.2	58.7	56.8	53.0	49.8	47.9	47.2
Singapore	53.2	56.3	60.0	57.8	63.9	59.6	64.2	65.4	62.0	60.1	59.6	55.0	54.9	52.7	53.1
Thailand	21.3	21.8	24.9	25.5	29.3	30.3	31.7	31.1	32.0	29.6	29.4	29.6	28.2	27.0	27.3
Low- and middle-income Asian country average	2.9	3.1	3.3	4.0	4.4	4.4	3.7	4.5	4.5	5.1	5.2	4.7	4.3	4.4	4.6
Japan	30.0	30.5	31.2	31.9	31.1	31.1	30.7	31.2	32.9	30.7	28.9	28.7	28.2	26.1	24.7
United States	30.9	30.2	30.5	29.9	31.1	32.7	34.7	36.4	36.5	35.8	34.2	33.4	32.8	31.8	31.6
OECD country average	21.0	21.9	20.7	20.9	21.0	22.4	23.4	24.3	25.4	24.7	23.8	22.9	22.7	22.3	22.2
World average	20.0	21.1	20.6	20.6	20.6	22.2	23.2	24.6	25.3	24.5	24.1	23.4	23.3	22.6	22.8

Note: The high technology sector includes ISIC Rev. 3 codes 30, 32, 33, 353, and 2423 pursuant to the OECD high technology definition.
Source: *UN Comtrade.*

Annex Table A8. Select inward FDI indicators

	Inward FDI perfomance index					Inward FDI potential index			
	1992-1994	1995-1997	1998-2000	2001-2003	2004-2006	1994-1996	1997-1999	2000-2002	2003-2005
Indonesia	**1.466**	**1.742**	**-0.570**	**-0.324**	**0.908**	**0.203**	**0.170**	**0.163**	**0.133**
China	6.127	3.678	1.198	1.969	1.472	0.225	0.256	0.273	0.307
India	0.243	0.534	0.155	0.357	0.568	0.165	0.165	0.159	0.159
Japan	0.035	0.018	0.053	0.087	0.014	0.457	0.442	0.389	0.353
Malaysia	9.099	4.951	1.248	1.079	1.693	0.287	0.304	0.292	0.280
Philippines	2.482	1.375	0.641	0.675	0.747	0.197	0.210	0.212	0.178
Singapore	10.322	9.416	3.737	6.000	7.622	0.490	0.497	0.465	0.459
Thailand	1.649	1.220	1.375	0.858	2.075	0.241	0.232	0.215	0.202
United States	0.684	0.780	0.805	0.396	0.505	0.708	0.711	0.659	0.623
Vietnam	10.325	6.396	1.488	1.923	1.343	0.174	0.178	0.184	0.166

Source: UNCTAD website, http://www.unctad.org, accessed 23 May 2008.

Annex Table A9. Indonesia's bilateral investment treaties

	Partner	Date of Signature	Date of Entry into Force		Partner	Date of Signature	Date of Entry into Force
1	Belgium and Luxembourg	15-Jan-70	17-Jun-72	31	Turkey	25-Feb-97	28-Sep-98
2	France	14-Jun-73	29-Apr-75	32	Mongolia	4-Mar-97	13-Apr-99
3	Switzerland	6-Jun-74	9-Apr-76	33	Mauritius	5-Mar-97	28-Mar-00
4	United Kingdom	27-Apr-76	24-Mar-77	34	Morocco	14-Mar-97	21-Mar-02
5	Singapore	28-Aug-90	28-Aug-90	35	Romania	27-Jun-97	21-Aug-99
6	South Korea	16-Feb-91	10-Mar-94	36	Syria	27-Jun-97	20-Feb-00
7	Italy	25-Apr-91	25-Jun-95	37	Cuba	19-Sep-97	29-Sep-99
8	Vietnam	25-Oct-91	3-Apr-94	38	Bangladesh	9-Feb-98	22-Apr-99
9	Norway	26-Nov-91	1-Oct-94	39	Sudan	10-Feb-98	----
10	Tunisia	13-May-92	12-Sep-92	40	Thailand	17-Feb-98	5-Nov-98
11	Hungary	20-May-92	13-Feb-96	41	Yemen	20-Feb-98	----
12	Sweden	17-Sep-92	18-Feb-93	42	Czech Republic	17-Sep-98	21-Jun-99
13	Poland	6-Oct-92	1-Jul-93	43	Jamaica	10-Feb-99	----
14	Australia	17-Nov-92	29-Jul-93	44	India	10-Feb-99	22-Jan-04
15	Egypt	19-Jan-94	29-Nov-94	45	Zimbabwe	10-Feb-99	----
16	Malaysia	22-Jan-94	27-Oct-99	46	Cambodia	16-Mar-99	----
17	Netherlands	6-Apr-94	1-Jul-95	47	Mozambique	26-Mar-99	25-Jul-00
18	Turkmenistan	2-Jun-94	----	48	Chile	7-Apr-99	----
19	Laos	18-Oct-94	14-Oct-95	49	North Korea	21-Feb-00	----
20	China	18-Nov-94	1-Apr-95	50	Algeria	21-Mar-00	----
21	Slovak Republic	12-Jul-94	1-Mar-95	51	Qatar	18-Apr-00	----
22	Spain	30-May-95	12-Feb-97	52	Venezuela	18-Dec-00	23-Mar-03
23	Kyrgyzstan	19-Jul-95	23-Apr-97	53	Philippines	12-Nov-01	----
24	Suriname	28-Oct-95	----	54	Croatia	20-Sep-02	----
25	Argentina	7-Nov-95	1-Mar-01	55	Germany	14-May-03	----
26	Pakistan	8-Mar-96	3-Dec-96	56	Bulgaria	13-Sep-03	23-Jan-05
27	Ukraine	11-Apr-96	22-Jun-97	57	Tajikistan	28-Oct-03	----
28	Sri Lanka	10-Jun-96	21-Jul-97	58	Iran	22-Jun-05	----
29	Uzbekistan	27-Aug-96	27-Apr-97	59	Finland	12-Sep-06	----
30	Jordan	12-Nov-96	9-Feb-99	60	Denmark	22-Jan-07	----

Source: UNCTAD website, http://www.unctad.org, accessed 23 May 2008.

Annex Table A10. Industry classification

ISIC Rev.3 code	Description
1+2+5	Agriculture, hunting, forestry and fishing
10+11+12	Mining and quarrying (energy)
13+14	Mining and quarrying (non-energy)
15+16	Food products, beverages and tobacco
17+18+19	Textiles, textile products, leather and footwear
20	Wood and products of wood and cork
21+22	Pulp, paper, paper products, printing and publishing
23	Coke, refined petroleum products and nuclear fuel
24 excluding 2423	Chemicals excluding pharmaceuticals
2423	Pharmaceuticals
25	Rubber and plastics products
26	Other non-metallic mineral products
271+2731	Iron & steel
272+2732	Non-ferrous metals
28	Fabricated metal products, execpt machinery and equipment
29	Machinery and equipment, nec
30	Office, accounting and computing machinery
31	Electrical machinery and apparatus, nec
32	Radio, television and communication equipment
33	Medical, precision and optical instruments
34	Motor vehicles, trailers and semi trailers
351	Building & repairing of ships and boats
353	Aircraft and spacecraft
352+359	Railroad equipment and transport equipment nec
36+37	Manufacturing nec; recycling (include furniture)
401	Production, collection and distributiono of electricity
402	Manufacture of gas; distribution of gaseous fuels through mains
403	Steam and hot water supply
41	Collection, purification and distribution of water
45	Construction
50+51+52	Wholesale and retail trade; repairs
55	Hotels and restaurants
60	Land transport; transport via pipelines
61	Water transport
62	Air transport
63	Supporting & auxiliary transport activities; activities of travel agencies
64	Post and telecommunications
65+66+67	Finance and insurance
70	Real estate activities
71	Renting of machinery and equipment
72	Computer and related activities
73	Research and development
74	Other business activities
75	Public administration and defence; compulsory social security
80	Education
85	Health and social work
90-93	Other community, social and personal services
95+99	Private households with employed persons & extra-territorial organisations & bodies

Source: Authors' compilation.

ANNEX II : PRODUCTIVITY ESTIMATES FOR INDONESIAN MANUFACTURING SECTORS

Productivity and its growth are major indicators reflecting the economy's growth potential and providing valuable information on prospective comparative advantages, therefore they are important figures to follow when formulating trade policies. As productivity is not directly observable, it needs to be estimated. For estimating sectoral level productivity, sectoral or more disaggregated data can be used.

How is productivity estimated?

In estimating productivity, a major issue is the simultaneity between the decision of input choice and productivity. That is, the firm will be able to change its factor input bundle depending on the evolution of productivity that it can at least partly observe. In econometric estimation, this means that the regressors and the error term are correlated.

To solve the simultaneity problem, a couple of methods have been proposed with varying pros and cons. If productivity that influences firms' choice is assumed to be a time-invariant firm-specific attribute, the simultaneity problem can be easily overcome by including firm fixed effects in the regression. An alternative to the fixed effect estimator is Olley and Pakes' (1996) consistent semi-parametric estimator, which uses investment as a proxy to control for correlation between input levels and unobserved productivity shocks. The major drawback of this methodology is that it can only be used for firms reporting non-zero investment, thus leading to truncation of the dataset. To avoid this unnecessary loss of information owing to truncation, Levinsohn and Petrin (2003) proposed to use firms' material inputs to correct for the simultaneity. While this approach is more efficient in the use of data, it requires assumption on the dynamic evolution of productivity and capital, *i.e.* the demand function for materials needs to be monotonic in the firm's productivity for all relevant levels of capital for materials to serve as a valid proxy. In addition, labour should not react more elastically to productivity shocks than materials.

The choice of methodology to estimate productivity for Indonesian manufacturing industries

For the estimation, the functional form of the production function is assumed to be Cobb-Douglas. Notwithstanding this functional form's restrictive nature (such as that the elasticity of substitution between all factors is 1), owing to its simplicity, it appears to be the preferred form in empirical analyses.

$$Y_{it} = A_{it} L_{it}^{\beta} K_{it}^{\gamma} M_{it}^{\delta}$$

where Y_{it} is a measure of output and L_{it}, K_{it} and M_{it} of labour, capital and material inputs, respectively. Taking its natural logarithm the following is obtained:

$$y_{it} = \beta l_{it} + \gamma k_{it} + \delta m_{it} + u_{it}$$

where the lower-case letters are the logarithms of the corresponding upper-case variable and u_{it} is the residual, which captures firm-specific total factor productivity (TFP). This equation is estimated using the Levinsohn-Petrin (2003) methodology. The choice fell on this methodology as it does not assume time-invariant productivity shocks and in lack of investment data in the Indonesian firm-level dataset. Once the input coefficients are obtained by this methodology, estimates of the hicks-neutral TFP are calculated by subtracting a firm's predicted output from its actual output. Then, for the sake of comparability across sectors, a TFP index is constructed as a logarithmic deviation of a group's productivity from that of the reference group in that industry in the base year (for details see Topalova, 2004 and Pavcnik, 2002).

The dataset of Indonesian manufacturing firms

For the analyses the Indonesian Manufacturing Census is applied, which is conducted annually by Statistics Indonesia (Badan Pusat Statistik, BPS) covering all manufacturing establishments with at least 20 employees. The dataset at the firm level is sufficiently rich to conduct productivity-related analyses as it includes major production-related variables, details of costs and some variables related to the financial situation in addition to general firm characteristics. Data started to be collected some 30 years ago, but due to classification and questionnaire revisions and other compatibility issues, recent studies mainly rely on post-1990 waves. Although the plant-level identification codes are available, due to recoding, individual companies can only be traced until 2000. The 2001 wave's codes suffer from double-entries those in 2002-03 are changed. In 2004-05 the original (pre-2001) codes are used again, but only a mere 150 firms can be identified. To solve this problem with the identification of individual firms in the sample after 2001, there are 2 possibilities: (i) to use pre-2001 data only at the plant level, (ii) to aggregate the data at a higher than plant but lower than industry level. Here the latter option was chosen in order to exploit recent information and therefore to be more relevant for policy discussion.

Aggregating firm-level data

[1] has the advantage of exploiting the information that would be lost if used firm-level data due to the impossibility of following individual firms post-2001. Nevertheless, it has the drawback of losing firm-specific information. The aggregation was chosen to be made by firm sizes (measured by value added) with the aim to achieve the most equitable distribution in an intermediate year of the sample (Annex Table A11). The year of 1999 was chosen as it is close to the median years but is not distorted by the effect of the crisis. This way the thresholds could be maintained without risking the possibility of having too few firms in a group.

Annex Table A11. Thresholds for group sizes and the number of companies by group and year

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1 Less than 35 108	5,060	4,404	3,992	3,155	2,743	2,796	2,478	2,323	1,530	1,103	983	733	729	575	426	403
2 35 109-54 038	1,920	1,924	1,966	2,064	2,039	2,330	2,325	2,085	1,403	1,104	796	448	496	370	299	312
3 54 039-71 999	1,126	1,122	1,281	1,294	1,440	1,697	1,886	1,622	1,315	1,103	913	501	465	425	306	256
4 72 000-90 315	783	772	884	997	1,059	1,314	1,387	1,387	1,161	1,104	929	588	577	488	394	291
5 90 316-111 086	648	627	708	783	987	1,148	1,307	1,201	1,179	1,103	1,042	696	621	572	536	386
6 111 087-135 660	554	548	648	749	829	1,021	1,078	1,114	1,124	1,104	1,132	794	804	701	535	549
7 135 661-164 034	514	504	586	669	728	906	999	964	1,003	1,103	1,109	912	806	742	672	634
8 164 035-200 973	509	510	582	664	720	818	927	949	1,015	1,104	1,161	1,009	996	966	875	749
9 200 974-250 900	478	533	583	636	738	857	942	932	982	1,103	1,208	1,055	1,010	1,088	1,026	922
10 250 901-320 906	580	532	619	676	715	903	953	966	962	1,104	1,147	1,105	1,124	1,161	1,159	1,120
11 320 907-417 120	493	490	619	712	723	833	965	956	971	1,103	1,180	1,134	1,129	1,097	1,061	1,128
12 417 121-562 232	520	610	647	674	745	826	900	924	1,007	1,104	1,181	1,307	1,216	1,152	1,315	1,390
13 562 233-785 471	528	586	638	684	786	888	993	903	987	1,103	1,192	1,446	1,232	1,245	1,432	1,605
14 785 472-1 143 180	558	633	687	743	721	896	998	986	983	1,104	1,135	1,268	1,354	1,280	1,393	1,455
15 1 143 181-1 752 394	565	608	702	784	811	806	905	944	986	1,103	1,155	1,306	1,289	1,261	1,342	1,419
16 1 752 395-2 834 574	471	599	691	776	810	894	928	941	955	1,104	1,121	1,313	1,353	1,286	1,407	1,426
17 2 834 575-5 093 345	456	561	641	719	819	839	999	1,000	1,012	1,103	1,207	1,380	1,456	1,396	1,582	1,542
18 5 093 346-10 665 883	399	475	578	689	736	815	842	868	983	1,104	1,202	1,455	1,462	1,463	1,635	1,730
19 10 665 884-27 782 49	258	307	390	450	542	570	704	770	1,016	1,103	1,181	1,386	1,459	1,438	1,593	1,655
20 More than 27 782 499	114	149	206	245	325	394	472	543	849	1,104	1,200	1,445	1,561	1,617	1,697	1,757
Total	16,534	16,494	17,648	18,163	19,016	21,551	22,988	22,378	21,423	22,070	22,174	21,281	21,139	20,323	20,685	20,729

For the estimation of productivity, in addition to the value of goods produced, all the necessary input variables (in nominal terms) are readily available in the dataset, though the names of variables may change over the years. For capital, the book value of total fixed assets is used, for labour, the sum of the number of

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[1]   In fact, the Indonesian manufacturing data are collected at the plant level, without any information about ultimate owners. This may distort the result somewhat as firms belonging to the same conglomerate may exhibit more similar behaviour to each other than to other firms in their sectors. Here, due to lack of information on ownership linkages, "firm" and "plant" are used interchangeably.

production and other workers, and for materials the material inputs variable. The deflators needed to be obtained from other sources. Output is deflated by the sectoral level production price index obtained from the BPS for the years 1993-2005 and backcasted with the manufacturing production price index for 1990-92. Capital is deflated by the economy-wide fixed asset investment deflator obtained from the BPS for 1996-2005 and backcasted with the estimates by Saleh (1997). The domestically produced part of materials is deflated by the sector-specific wholesale price index and imported materials by the sector-specific import price index.

Annex Table A12. Coefficients on inputs

	Labour		Capital		Materials	
	OLS	Levinsohn-Petrin	OLS	Levinsohn-Petrin	OLS	Levinsohn-Petrin
Food and beverages	0.0733	0.2667	0.0276	0.0204	0.5598	0.8293
	0.0101	0.0169	0.0038	0.0088	0.0052	0.0592
Textiles	0.0827	0.3767	0.0096	0.0420	0.5877	0.6961
	0.0157	0.0254	0.0061	0.0117	0.0091	0.0489
Garments	0.0559	0.2720	0.0121	0.0000	0.6289	0.9228
	0.0155	0.0237	0.0069	0.0173	0.0098	0.0399
Leather products	0.0854	0.3943	0.0287	0.0185	0.5095	0.7429
	0.0197	0.0365	0.0088	0.0194	0.0113	0.0859
Wood products	0.1112	0.3655	0.0050	0.0000	0.5888	0.7426
	0.0104	0.0215	0.0042	0.0123	0.0062	0.0884
Paper products	0.0170	0.2703	0.0646	0.0807	0.5516	0.4575
	0.0192	0.0504	0.0076	0.0296	0.0110	0.1928
Printing	0.0330	0.3570	0.0253	0.0183	0.5334	0.8187
	0.0178	0.0300	0.0062	0.0138	0.0092	0.0560
Cokes and refined petroleum	0.0734	0.3004	0.0533	0.0000	0.4763	0.9625
	0.0368	0.0615	0.0188	0.0511	0.0190	0.2563
Chemicals	0.2368	0.4128	0.0293	0.0165	0.5054	0.7982
	0.0156	0.0282	0.0055	0.0227	0.0073	0.1205
Rubber products	0.0630	0.2990	0.0299	0.0004	0.6535	0.8773
	0.0136	0.0149	0.0063	0.0155	0.0084	0.0862
Non-metallic minerals	0.2581	0.5129	0.0206	0.0383	0.4277	0.7357
	0.0140	0.0234	0.0058	0.0280	0.0068	0.1178
Basic metals	0.2700	0.4356	0.0235	0.0000	0.6516	0.8862
	0.0210	0.0487	0.0091	0.0191	0.0111	0.1125
Fabricated metals	0.2863	0.4946	0.0061	0.0177	0.6590	0.6790
	0.0183	0.0329	0.0071	0.0142	0.0099	0.1087
Machinery and equipment	0.1490	0.3579	0.0064	0.0000	0.5955	0.9009
	0.0186	0.0380	0.0080	0.0178	0.0098	0.1087
Office machinery	0.4234	0.4229	-0.0280	0.1011	0.6003	0.9000
	0.3618	0.2457	0.1578	0.1265	0.1067	0.1822
Eletronics	0.1259	0.3799	0.0207	0.0000	0.5873	0.9066
	0.0243	0.0389	0.0095	0.0205	0.0139	0.1358
Radio and telecommunications	0.0485	0.2353	0.0212	0.0068	0.6040	0.6817
	0.0271	0.0294	0.0115	0.0249	0.0152	0.1264
Motor vehicles	0.1105	0.3598	0.0257	0.0106	0.5680	0.6671
	0.0229	0.0554	0.0090	0.0153	0.0118	0.0939
Other transport equipment	0.1157	0.4333	0.0345	0.0136	0.5388	0.5434
	0.0198	0.0468	0.0064	0.0175	0.0105	0.1492

Note: The tobacco and medical equipment industries were dropped from the sample due to insufficient variation in the data to estimate the input coefficient and to insufficient number of observations, respectively. In addition, the Furniture and non elsewhere classified manufactured products and recycling was dropped as these sectors are too diverse to have a common production function. The data cover 1990-2005. The second row indicates standard errors.
Source: Authors' estimation.

Annex Table A13. Sectoral estimates of total factor productivity growth 2000-2005

	OLS	Levinsohn-Petrin
Food and beverages	0.00	0.00
Textiles	-0.03	-0.04
Garments	0.00	0.01
Leather	0.03	0.05
Wood	-0.02	-0.04
Paper	0.01	0.02
Printing	0.02	0.00
Coke and petroleum products	0.09	5.03
Chemicals	0.01	-0.03
Rubber and plastics	0.05	0.26
Non-metallic minerals	0.00	0.00
Basic metals	-0.10	-1.03
Fabricated metals	-0.19	-0.26
Machinery and equipment	0.02	0.00
Office machinery	-0.18	-0.45
Electronics	-0.02	-0.39
Radio & telecommunications equipment	0.04	0.05
Motor vehicles	0.02	0.02
Other vehicles	0.01	0.01

Note: In the first column, estimates by OLS with fixed effects and in the second, estimates using the Levinsohn-Petrin methodology are shown. For the latter, the revenue approach was applied with intermediate inputs as proxy variable.
Source: Authors' estimation.

Examining trade liberalisation effects on productivity

Empirical evidence shows that Indonesia has been benefiting from trade liberalisation. Although the theoretical literature on the effect of trade liberalisation on firm-level efficiency is inconclusive, analysis of Indonesia micro-data confirms that at least until the late 1990s, trade liberalisation had boosted firm-level productivity. Representative studies capturing the impact of trade liberalisation include Takii (2004) that shows the positive impact of trade liberalisation on exports and on the redirection of sourcing from Japan to ASEAN in the automotive industry and Amiti and Konings (2007) that distinguish between lowering tariffs on final and on intermediate goods and interpret the productivity gains arising from the latter as evidence of learning, variety and quality effects. One of the few studies focusing on post-crisis export performance is by Narjoko and Atje (2007) that find high fixed costs to entering into the export business. They identify these costs as the major barrier preventing Indonesian firms to benefit to a larger extent from the depreciation of the currency following the crisis. They also support the self-selection hypothesis of exporting firms, *i.e.* it is more efficient firms that enter export markets.

Annex Table A14. Trade liberalisation has boosted productivity

	Dependent variable: ln(TFP)				Dependent variable: TFP growth		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
TFP-1	0.2097***	0.2850***	0.2091***	0.2842***	-0.0937***	-0.0958***	-0.0986***
	(0.0057)	(0.0115)	(0.0057)	(0.0115)	(0.0030)	(0.0030)	(0048)
log(size)	-0.0051***	0.0003	-0.0076***	-0.0041***	0.0019***	0.0012***	0.0014
	(0.0013221)	(0.0024)	(0.0014)	(0.0026)	(0.0008)	(0.0008)	(0.0011)
Tariffs	-0.0047***		-0.0049***				
	(0.0007819)		(0.0008)				
ERP		-0.0007***		-0.0007***	-0.0002***	-0.0002***	-0.0002***
		(.00027)		(0.0003)	(0.0000)	(0.0000)	(0.0000)
Foreign equity share				0.0018***	0.0003***		
				(0.0004)	(0.0001)		
Trend					-12.5223***	-11.6738***	-12.4848***
					(0.7548)	(0.74040)	(1.4876)
Imported intermediate input share						0.0682***	
						(0.0055)	
Share of goods exported							0.0001
							(0.0001)
Constant	1.1762***	-0.8007	-0.5959***	-0.8007	96.7188***	90.284***	96.4610
	(0.0390)	(0.1961)	(0.0598)	(0.1961)	(5.7484)	(5.6382)	(11.3236)
Time fixed effects	yes	yes	yes	yes	no	no	no
Sector fixed effects	yes	yes	yes	yes	no	no	no
Group fixed effects	no	no	no	no	yes	yes	yes
R-squared	0.886	0.850	0.886	0.851	0.252	0.287	0.249
No. observations	27,155	5,700	27,155	5,700	6,037	6,037	4,016

Note: The estimation was done using data between 1990-2005. Effective rates of protection were only calculated for 1995, 2000 and 2005 in lack of input-output data for other years.
Source:

ANNEX III : FDI SPILLOVER ANALYSIS USING THE FIRM-LEVEL DATASET

The Indonesian firm-level dataset used covers 30 provinces in 23 manufacturing sectors over the period 1995-2005. The dataset represents an unbalanced panel, with a majority of the observations coming from the following five provinces: *Jawa Barat, Jakarta Raya, Jawa Tengah, Jawa Timur* and *Sumatera Utara.*

Annex Table A15. Industry classification in the micro-dataset

ISIC Rev 3		ISIC Rev 3	
15	Food products and beverages	27	Basic metals
16	Tobacco products	28	Fabricated metal products
17	Textiles	29	Machinery and equipment n.e.c.
18	Wearing apparel	30	Office, accounting and computing machinery
19	Tanning and dressing of leather	31	Electrical machinery and apparatus
20	Wood and of products of wood	32	Radio, television and communication equipment
21	Paper and paper products	33	Medical, precision and optical instruments, clocks
22	Publishing, printing and reproduction of recorded media	34	Motor vehicles, trailers and semi-trailers
23	Coke, refined petroleum products and nuclear fuel	35	Other transport equipment
24	Chemicals and chemical products	36	Furniture; manufacturing n.e.c.
25	Rubber and plastics products	37	Recycling
26	Other non-metallic mineral products		

Annex Table A16. Provinces covered in the micro-dataset

1	Aceh	16	Kepulauan Riau
2	Bali	17	Lampung
3	Bangka-Belitung	18	Maluku
4	Banten	19	Maluku Utara
5	Bengkulu	20	Nusa Tenggara Barat
6	Gorontalo	21	Nusa Tenggara Timur
7	Jakarta Raya	22	Riau
8	Jambi	23	Sulawesi Selatan
9	Jawa Barat	24	Sulawesi Tengah
10	Jawa Tengah	25	Sulawesi Tenggara
11	Jawa Timur	26	Sulawesi Utara
12	Kalimantan Barat	27	Sumatera Barat
13	Kalimantan Selatan	28	Sumatera Selatan
14	Kalimantan Tengah	29	Sumatera Utara
15	Kalimantan Timur	30	Yogyakarta

The firm-level production function

$$lnoutput_{pkt} = \alpha + \beta_1 lncapital_{pkt} + \beta_2 lnlabour_{pkt} + \beta_3 lnmaterials_{pkt} + \beta_4 foreignshare_{pkt}$$
$$+ \beta_5 \sum spillovers_{pkt} + \gamma_p + \kappa_k + \lambda_t + \varepsilon_{pkt}$$

Where: *output* = value of all income in constant prices; *capital* = estimated value of total capital goods in constant prices; *labour* = number of workers; *materials* = value of materials used in constant prices; foreignshare = percentage of capital held by foreigners; *spillovers* = various spillover measures; α = a constant; γ = province fixed effects; κ = sector fixed effects; λ = year fixed effects; *p* = province subscript; *k* = sector subscript; *t* = time subscript; and ε = the error term.

Horizontal spillovers

The measure of horizontal spillovers captures the degree of foreign presence in a given sector *j* in province *p* at time *t*. It is calculated as the average level of foreign ownership across each sector weighted by each firm's share in total sector output. It varies by sector (*j*), province (*p*) and year (*t*):

$$Horizontal_{jpt} = \left[\sum_{i \in j} ForeignShare_{it} * Output_{it} \right] \Big/ \sum_{i \in j} Output_{it}$$

Where: *ForeignShare*$_{it}$ = the percentage of capital in manufacturing plant *i* owned by foreign entities in year *t* and *output*$_{it}$ = the total output of manufacturing plant *i* in year *t*.

Backward spillovers

The backward spillover variable proxies the spillover effects on sector *j* from foreign presence in downstream sectors. Assuming that a firm's share of sector demand is equal to its output share, the backward spillover variable is calculated as the share of sector output that is sold to foreign firms. This measure varies by sector, province and year. It is defined following Javorcik (2004):[2]

$$BackwardSpillover_{jpt} = \sum_{k \text{ if } k \neq j} \alpha_{jkt} Horizontal_{kpt}$$

Where: α_{jkt} = the share of sector *j* output demanded by sector *k*, and it is derived from Indonesia's input-output tables for 1995, 2000 and 2005 from the OECD Input-Output Database.

Forward spillovers

The forward spillover variable proxies the spillover effects on sector *j* from foreign presence in upstream sectors. Assuming that a firm's share of sector demand is equal to its input share, the forward spillover variable is calculated as the share of sector input that is sourced from foreign firms. This measure varies by sector, province and year, and it is defined following Javorcik (2004):[63]

$$ForwardSpillover_{jpt} = \sum_{m \text{ if } m \neq j} \alpha_{jmt} Horizontal_{mpt}$$

Where: α_{jmt} = the inputs purchased by sector *j* output from sector *m* as a share of total inputs demanded by sector *j*, and it is derived from Indonesia's input-output tables for 1995, 2000 and 2005 from the OECD Input-Output Database.

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[2]   Note that unlike Javorcik (2004), however, the output shares are calculated strictly on inter-industry use, thus allowing us to focus directly on the inter-industry spillover effects in the domestic economy.

Methodology

Two different sets of spillover variables are calculated. The first set includes horizontal, backward and forward spillover variables by sector and year and the second set estimates the same three spillover variables by province, sector and year. While spillover variables in this later set can be considered more precise, they lead to difficulties in estimation because of the unbalanced nature of the sample. Estimations were run according to three different methodologies.

First, regressions are estimated using OLS with robust standard errors and year, sector and province fixed effects. This methodology corrects for heteroscedasticity and provides the most straightforward baseline methodology. Second, regressions are estimated using OLS with clustered standard errors (sector, year) as well as year, sector and province fixed effects. This methodology ensures that the standard errors are not underestimated as a result of using both aggregate and micro-level data (see Moulton, 1990). This type of underestimation can lead to the generation of false significance for variables at the aggregate level. Third, a dynamic panel estimation is performed using the Arellano-Bover/Blundell-Bond GMM estimator to correct for the 'simultaneity problem', that is the possible correlation between input selection and unobserved firm-related productivity shocks (see Levinsohn and Petrin (2003) and Olley and Pakes (1996)).

These methodologies are used on two different datasets: one covering the period 1995-2000 and a second covering 1995, 2000 and 2005. The first dataset is useful insofar as it covers a consecutive time series. The downside, however, is that the spillover variables have to be interpolated between 1995 and 2000 as the necessary input-output table data is unavailable for the in-between years. The second dataset is useful because no variables have to be interpolated (input output data exist for 1995, 2000 and 2005). The drawback of this dataset is that only three time periods exist, which makes the dynamic panel estimation impossible.[3]

Robustness checks

The backward and forward spillover variables have been calculated both with and without the diagonal (i.e., intra-industry inputs are excluded in the equation because they are accounted for by the horizontal variable). But as a robustness check, the regressions were estimated with the diagonal as well (no material differences are noted). The dynamic panel models are also estimated with 1 lag (instead of the 2 lags reported), and again no major differences are noted. More than 2 lags cannot be supported because of the limited time period covered.

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[3]   Both the Olley-Pakes and Levinsohn-Petrin approaches – which use investment and intermediate inputs, respectively, as proxies for unobservable productivity shocks – are inappropriate for dealing with the simultaneity problem in this sample. These approaches employ a bootstrapping sampling technique that does not work well with a dataset that includes many dummy variables. Thus, the Arellano-Bover/Blundell-Bond GMM estimator is used to correct for the simultaneity problem. This estimator – which uses output lags as instruments and lagged variables as inputs – is ideally suited to this dataset because it includes many panels and a limited number of time periods (see Arellano and Bover (1995) and Blundell and Bond (1998)).

Annex Table A17. Regression results for the FDI Spillover Analysis

Panel A: Spillovers by sector and year

Dependent variable: output	Dataset covering 1995-2000 with spillover variables generated by sector and year									Dataset covering 1995, 2000 and 2005 with spillover variables generated by sector and year					
	OLS with robust standard errors and year, sector and province fixed effects			OLS with clustered standard errors and year, sector and province fixed effects			Dynamic Panel Estimation with 2 lags			OLS with robust standard errors and year, sector and province fixed effects			OLS with clustered standard errors and year, sector and province fixed effects		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Capital	0.115***	0.116***	0.115***	0.115***	0.116***	0.115***	0.0336***	0.0292***	0.0302***	0.0971***	0.0972***	0.0971***	0.0971**	0.0972**	0.0971**
	(0.00209)	(0.00232)	(0.00232)	(0.00508)	(0.0056)	(0.00559)	(0.00685)	(0.0072)	(0.0071)	(0.00248)	(0.00248)	(0.00248)	(0.0225)	(0.0225)	(0.0225)
Labour	0.322***	0.327***	0.327***	0.322***	0.327***	0.327***	0.231***	0.236***	0.237***	0.305***	0.305***	0.305***	0.305***	0.305***	0.305***
	(0.00378)	(0.0041)	(0.0041)	(0.000737)	(0.00364)	(0.00372)	(0.0236)	(0.0258)	(0.0257)	(0.00471)	(0.00472)	(0.00472)	(0.0168)	(0.017)	(0.0169)
Materials	0.653***	0.649***	0.650***	0.653***	0.649***	0.650***	0.623***	0.626***	0.627***	0.678***	0.678***	0.678***	0.678***	0.678***	0.678***
	(0.00288)	(0.0032)	(0.0032)	(0.00788)	(0.00766)	(0.00761)	(0.0161)	(0.0171)	(0.017)	(0.00349)	(0.00349)	(0.0035)	(0.0344)	(0.0346)	(0.0345)
Foreign Share	0.237***	0.251***	0.249***	0.237***	0.251***	0.249***				0.192***	0.192***	0.191***	0.192**	0.192**	0.191**
	(0.0124)	(0.0138)	(0.0138)	(0.0133)	(0.0101)	(0.0105)				(0.0147)	(0.0147)	(0.0147)	(0.0436)	(0.0436)	(0.0426)
Horizontal spillover	-0.299***	-0.474***		-0.299	-0.474*		0.0437	0.156		-0.0732	-0.136*		-0.0732	-0.136	
	(0.0642)	(0.0727)		(0.205)	(0.222)		(0.101)	(0.0982)		(0.0733)	(0.0747)		(0.254)	(0.303)	
Backward spillover		-0.742***	-0.603***		-0.742***	-0.603**		-0.473**	-0.458**		-0.380***	-0.362***		-0.38	-0.362
		(0.0994)	(0.0974)		(0.151)	(0.171)		(0.222)	(0.223)		(0.0538)	(0.0534)		(0.189)	(0.137)
Forward spillover		0.211***	0.205***		0.211**	0.205*		-0.0303	-0.0237		0.0604**	0.0620***		0.0604	0.062
		(0.0336)	(0.0337)		(0.0725)	(0.0949)		(0.0931)	(0.093)		(0.024)	(0.024)		(0.0596)	(0.0608)
Output lag (1)							0.435***	0.368***	0.355***						
							(0.0492)	(0.0496)	(0.0476)						
Output lag (2)							0.0210***	0.0144*	0.0137*						
							(0.00727)	(0.00789)	(0.00783)						
Labour lag (1)							-0.126***	-0.0851***	-0.0807***						
							(0.0229)	(0.0239)	(0.0233)						
Materials lag (1)							-0.254***	-0.208***	-0.200***						
							(0.0352)	(0.0333)	(0.0321)						
Capital lag (1)							0.0231***	0.0248***	0.0262***						
							(0.00473)	(0.00499)	(0.0049)						
Observations	68 740	57 180	57 180	68 740	57 180	57 180	28 077	24 650	24 650	41 281	41 281	41 281	41 281	41 281	41 281
R-squared	0.945	0.946	0.946	0.945	0.946	0.946	.	.	.	0.948	0.948	0.948	0.948	0.948	0.948
Number of panels							12 757	11 718	11 718						

Robust standard errors in parentheses. Fixed effects for year, province and sector are included but not reported.
*** p<0.01, ** p<0.05, * p<0.1

Panel B: Spillovers by province, sector and year

Dependent variable: output	Dataset covering 1995-2000 with spillover variables generated by province, sector and year									Dataset covering 1995, 2000 and 2005 with spillover variables generated by province, sector and year					
	OLS with robust standard errors and year, sector and province fixed effects			OLS with clustered standard errors and year, sector and province fixed effects			Dynamic Panel Estimation with 2 lags			OLS with robust standard errors and year, sector and province fixed effects			OLS with clustered standard errors and year, sector and province fixed effects		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Capital	0.115***	0.115***	0.115***	0.115***	0.115***	0.115***	0.0337***	0.0299***	0.0299***	0.121***	0.121***	0.121***	0.121*	0.121*	0.121
	(0.00209)	(0.00232)	(0.00232)	(0.00508)	(0.00566)	(0.00564)	(0.00677)	(0.00716)	(0.00716)	(0.00328)	(0.00328)	(0.00328)	(0.01)	(0.0101)	(0)
Labour	0.322***	0.326***	0.326***	0.322***	0.326***	0.326***	0.232***	0.234***	0.234***	0.321***	0.321***	0.321***	0.321***	0.321***	0.321
	(0.00378)	(0.0041)	(0.0041)	(0.000782)	(0.00376)	(0.00375)	(0.0236)	(0.026)	(0.0259)	(0.00587)	(0.00587)	(0.00587)	(0.000843)	(0.000538)	(0)
Materials	0.653***	0.650***	0.650***	0.653***	0.650***	0.650***	0.624***	0.626***	0.626***	0.643***	0.643***	0.643***	0.643**	0.643**	0.643
	(0.00288)	(0.0032)	(0.0032)	(0.0079)	(0.00777)	(0.00773)	(0.0161)	(0.0172)	(0.0172)	(0.00454)	(0.00454)	(0.00454)	(0.0158)	(0.0158)	(0)
Foreign Share	0.231***	0.245***	0.250***	0.231***	0.245***	0.250***				0.233***	0.233***	0.239***	0.233**	0.233**	0.239
	(0.0124)	(0.0139)	(0.0139)	(0.0136)	(0.0117)	(0.0104)				(0.0198)	(0.0198)	(0.0197)	(0.0103)	(0.0117)	(0)
Horizontal spillover	0.0587***	0.0673***		0.0587**	0.0673**		0.0235	0.00226		0.0810**	0.0898***		0.081	0.0898	
	(0.021)	(0.0231)		(0.0183)	(0.0238)		(0.058)	(0.0567)		(0.0323)	(0.0325)		(0.0356)	(0.0392)	
Backward spillover		-0.312***	-0.298***		-0.312**	-0.298**		0.429	0.428		-0.271***	-0.261***		-0.271*	-0.261
		(0.0591)	(0.0589)		(0.0768)	(0.0825)		(0.336)	(0.337)		(0.0787)	(0.0786)		(0.0419)	(0)
Forward spillover		0.218***	0.204***		0.218**	0.204**		-0.664**	-0.663**		0.214***	0.200***		0.214	0.2
		(0.0467)	(0.0465)		(0.0548)	(0.061)		(0.268)	(0.268)		(0.0622)	(0.0618)		(0.036)	(0)
Output lag (1)							0.433***	0.385***	0.384***						
							(0.0476)	(0.0505)	(0.0498)						
Output lag (2)							0.0208***	0.0182**	0.0181**						
							(0.00719)	(0.00816)	(0.00812)						
Labour lag (1)							-0.125***	-0.0913***	-0.0911***						
							(0.0227)	(0.0236)	(0.0236)						
Materials lag (1)							-0.252***	-0.219***	-0.219***						
							(0.0341)	(0.0341)	(0.0337)						
Capital lag (1)							0.0233***	0.0252***	0.0252***						
							(0.00467)	(0.00498)	(0.00495)						
Observations	68 740	57 180	57 180	68 740	57 180	57 180	28 077	24 650	24 650	27 823	27 823	27 823	27 823	27 823	27 823
R-squared	0.945	0.945	0.945	0.945	0.945	0.945	.	.	.	0.943	0.943	0.943	0.943	0.943	0.943
Number of panels							12 757	11 718	11 718						

Robust standard errors in parentheses. Fixed effects for year, province and sector are included but not reported.
*** p<0.01, ** p<0.05, * p<0.