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A Background Paper on FDI: Analysis for APEC Economies

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THE AUSTRALIAN
APEC STUDY CENTRE
Asia-Pacific
Economic Cooperation

A background paper on FDI Analysis for APEC economies

Regional Investment Analytical Group

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KEY POINTS:

- Evaluation of country performance in attracting FDI is essential for accountability, policy debate and continued success. Performance indicators allow policy makers to assess achievement of policy objectives, identify strengths and weaknesses, and prioritise reforms.
- Since the inception of Regional Investment Analytical Group (RIAG), an assessment of available FDI indicators and statistics has been conducted. Available indicators are broadly based on macroeconomic fundamentals or perceptions thereof. They lack the focus that is useful for specific and evidence based policy guidance. Moreover, they do not cover all APEC economies and some may be discontinued.
- The standard sources of FDI data are not disaggregated by industry, possibly leading to insufficient policy specificity, for example regarding greenfield FDI projects.
- An FDI performance indicator (with scales of A, B, C and D) shows that APEC economies have varied experiences in attracting FDI, with some economies advancing considerably and some slipping backwards.
- RIAG analysis has used unconventional data source on greenfield investments to illustrate the benefits of having sectoral FDI data. To the best of our knowledge, this is the only study which attempts to fill the gap in the analysis of sectoral FDI for APEC economies. Limitations of the current study highlight the potential value of filling gaps in and between the available databases.
- Value of inward greenfield FDI in developing economies was growing before the Global Financial Crisis (GFC) but experienced a deceleration after 2008 in all of primary, secondary and tertiary sectors with a slight upturn from 2012.
- The share of secondary sector greenfield FDI into developed economies has been increasing since the GFC.
- In recent years, more than half of the greenfield FDI attracted by developing APEC economies has been in the tertiary sector.
- An FDI sectoral concentration index developed by RIAG reached very high levels in almost half of APEC economies during 2003-2014, leading to less diversified portfolios of greenfield FDI.

RECOMMENDATIONS TO ABAC COUNCIL:

APEC economies be encouraged to:

- take steps to enhance the capacity of statistical agencies to collect sectoral FDI statistics based on OECD and IMF standards.

- agree to develop and advance FDI benchmarking toolkit for APEC economies in cooperation with OECD & World Bank's Investment Policy and Promotion Framework, including gathering of data on flows and stock of FDI on a sectoral basis.

- endorse further work by RIAG to deepen analysis to individual economy levels and sectors and develop a coherent policy toolkit based on the assessment schema developed in this study.

1. INTRODUCTION

Foreign direct investment (FDI) has experienced strong growth over the last thirty years globally and in APEC economies. While in 1985 inward FDI flows to APEC economies stood at US\$ 31 billion, by 2013 they had reached US\$ 788 billion. During this period, trade also experienced significant expansion with exports from APEC increasing from 37% of (growing) world total exports in 1985 to 48% in 2013. As the environment for FDI is competitive and investors exercise choice in the risks they take, it is important that APEC economies and their Investment Promotion Agencies (IPA) improve understanding of the policies most likely to attract investment flows.

A September 2013 dialogue in Beijing on the regional investment environment noted that APEC economies do not at present attract more FDI than non-APEC economies, and affirmed that regional economies need increased investment flows to sustain higher rates of economic growth. While APEC economies have become more open over the last two decades, policy differences remain across the region and no economy unequivocally applies national treatment to foreign investment.

Quantitative indicators are widely agreed to be useful in measuring the performance of investment policies in attracting FDI, but they remain controversial due to lack of ownership amongst regional economies. To improve economies' understanding of the use of quantitative indicators and their nuances, at the initiative of the APEC

Business Advisory Council a Regional Investment Analytical Group (RIAG) was formed¹. Its aim is to encourage the use and advance the value, integrity, and development of relevant indicators and quantitative analysis to assess investment policy frameworks, best practices and performance in the Asia-Pacific region. RIAG has an open ended membership and specialists from across the region are invited to participate in its work. It presently comprises specialists from the World Bank Group, OECD, UNCTAD, ADB, the APEC Secretariat (Policy Support Unit), the ASEAN Secretariat, the Australian Treasury and academics from Victoria and RMIT Universities. The APEC Investment Experts' Advisory Group was represented at the first meeting of RIAG (in March 2015) by Mr. Clarence Hoot, of PNG and Co-Convenor of IEG. ABAC was represented by Mr. Wayne Golding, of ABAC PNG. Its chairman is Mr. Jonathan Coppel, a commissioner at the Australian Productivity Commission.

The primary purpose of RIAG is to contribute to investment policy decision-making in regional economies by objectively reviewing and using quantitative indicators of investment policies to undertake comparative analysis while promoting the value and use of benchmarking.

Since its first meeting in March 2015, RIAG has worked on a gap analysis of available investment related indicators as well as on

¹ A list of participants in the first RIAG meeting is provided in the Appendix

the availability of FDI related statistics for APEC economies.

This report provides preliminary findings and analysis and directions for future work of RIAG. The report is organized as follows. Section 2 provides a brief overview of FDI indicators and discusses the availability of FDI statistics, both at aggregate and sectoral levels. Section 3 uses an unconventional source to analyse greenfield FDI data by industries. Section 4 provides a new approach to assess country performances followed by FDI concentration index in Section 5. Section 6 concludes the report.

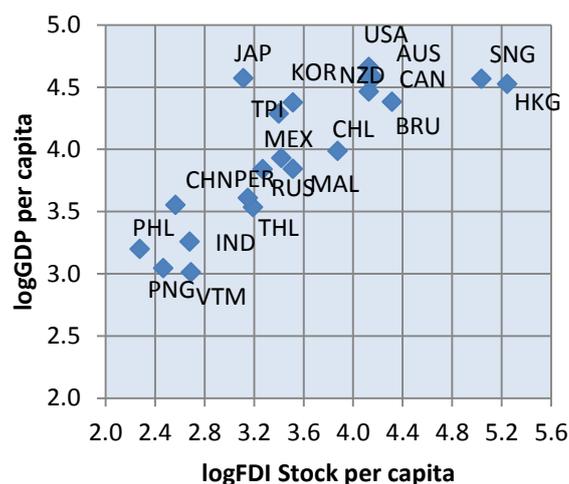
2. FDI INDICATORS AND FDI STATISTICS

There is a general consensus that successful FDI practices require sound macroeconomic performance with real growth, low inflation and best trade practices locally and globally, strong legal and regulatory regimes that protect property rights, transparent rules of law, good transportation and communication infrastructure, and well-trained labour allocated efficiently through market mechanisms. In addition, investment promotion agencies need to communicate and disseminate information, and advocate activities aimed at improving the business environment in the host country². In this regard, **country performance evaluation is essential for accountability, policy debate and continued success in attracting FDI. Performance indicators allow policy makers to assess**

² Morisset and Andrews-Johnson (2004)

achievement of policy objectives, identify strengths and weaknesses, and prioritise reforms. Moreover, comparative assessments with peers illuminate further reform options by identifying leading practices and lessons³. A positive correlation of FDI and economic growth due to the FDI's anticipated spillover effects is not new and has been confirmed in both macro level⁴ and microeconomic level⁵ studies. Figure 1 illustrates this through the observed positive correlation between FDI stock per capita and GDP per capita.

Figure 1. LogGDP per capita and LogFDI stock per capita, APEC, 2013



2.1. FDI Indicators

Over the last two decades, the number of available indicators evaluating country performances has been increasing exponentially based on macro and micro level data. For example, Bandura (2008) cites more than 178 composite indicators as of 2008. These composite indicators provide comparisons of countries on various

³ Coppel, 2013.

⁴ Alfaro et al., 2008.

⁵ Haskel et al., 2007; Blalock and Gertler, 2003

parameters including macroeconomic performance, business and regulatory environment, sustainability, and environment, among others. These indicators are usually grouped into unidimensional and multidimensional indicators. A unidimensional indicator is simply an assessment of a single fact, while a multidimensional indicator summarizes several facts in the form of a composite indicator. Composite indicators are useful to identify trends and draw policymakers' attention to particular issues such as the general business environment (e.g., World Bank's Ease of Doing Business ranking). While there are many advantages to using quantitative indicators, potential shortcomings of using such indicators should not be underestimated. A summary of the pros and cons of composite indicators is presented in Table 1.

A brief review of the available indicators related to FDI attached in the appendix for APEC economies discloses that ***most indicators are broadly based on macroeconomic fundamentals or perceptions thereof; their use lacks policy advocacy; they do not cover the full set of APEC member economies; or they lack future plans for updates.*** Moreover, there are a very limited number of indicators based on sectoral FDI and indicators based on IPAs' performance.

Based on the broadly different areas of current interest, more effort could be devoted to evaluation of the available indicators and assessing their contributions to prescription of best policy practices.

RIAG is currently conducting a gap analysis of available indicators based on the World Bank/OECD's framework to attract, enable and retain foreign direct investment⁶. A standalone report will be published after consultation with stakeholders.

Table 1. Pros and Cons of Composite Indicators

Pros	Cons
<ul style="list-style-type: none"> • Can summarise complex, multi-dimensional realities with a view to supporting decision-makers. • Are easier to interpret than a battery of many separate indicators. • Can assess progress of countries over time. • Reduce the visible size of a set of indicators without eliminating the underlying information base. This makes it possible to include more information within the existing set size. • Place issues of country performance and progress at the centre of the policy arena. • Facilitate communication with the general public (i.e. citizens, media, etc.) and promote accountability. • Help to construct/underpin narratives for the public. • Enable users to compare complex dimensions effectively. 	<ul style="list-style-type: none"> • May send misleading policy messages if poorly constructed or misinterpreted. • May invite simplistic policy conclusions. • May be misused, e.g. to support a desired policy, if the construction process is not transparent and/or lacks sound statistical or conceptual principles. • The selection of indicators and weights could be the subject of political dispute. • May disguise serious failings in some dimensions and increase the difficulty of identifying proper remedial action, if the construction process is not transparent. • May lead to inappropriate policies if dimensions of performance that are difficult to measure are ignored.

Source: OECD (2008)

2.2. FDI Statistics

The quality of research and development of performance indicators significantly depends on the availability of data. While there has been considerable effort to collect FDI data, available data sources are far from perfect due to differences in FDI definitions among countries, even though FDI statistics are subsequently presented

⁶ World Bank's Framework is attached in the appendix.

according to a standardised format for all countries. One such database is the OECD's FDI Statistics database launched in March 2015 according to the latest OECD's Benchmark Definition of FDI and the IMF's Balance of Payments and International Investment Position Manual. It includes FDI aggregates on annual and quarterly bases for 34 OECD member countries and for seven non-OECD G20 countries (Argentina, Brazil, China, India, Indonesia, Saudi Arabia and South Africa). The sectoral data covers Agriculture, forestry and fishing; Mining and quarrying; Manufacturing; Utilities; Construction and Services from 2009 and includes Special Purpose Entities for some countries⁷. Less than half of the APEC economies are covered in the database. RIAG assessed that the broad categorisation of sectors and the limited coverage of APEC economies meant that this source was of limited value to its work.

Another source for FDI statistics is the Investment Map produced by the International Trade Centre (ITC) and the United Nations Conference on Trade and Development (UNCTAD) in partnership with the World Association of Investment Promotion Agencies (WAIPA) and the Multilateral Investment Guarantee Agency (MIGA), part of the World Bank Group. The Investment Map database collects yearly FDI statistics for about 200 countries and detailed FDI sectoral and/or country breakdown for about 115 countries from 2010. The data for 14 APEC economies is

available for 2011 and 2012 in incomplete form (for some economies only a single year's data is available). According to Investment Map information, their data suffers from incorrect classification, multiple sources, reporting of Special Purpose Entities and other issues which make this source unsuitable for RIAG's purposes. RIAG understands that there might be other available sources for FDI Statistics. However, we believe that other sources are likely to suffer from similar limitations.

Limitations and the unavailability of data is further confirmed by a search of economic articles. A search in EconLit for professional economics journal articles with "FDI" in the title returns 2,403 articles. "Sectoral FDI" returns less than 10 articles based on specific country analysis. The main reason for such a low number of articles for sectoral FDI is again the limited coverage of reliable statistics. Researchers and policy makers mainly rely on data based on the IMF balance of payments (BOP) framework. The issue is that the aggregation of direct investment flows based on the BOP framework comprises equity capital, reinvested earning and other direct investment capital, and utilising this data for policy purposes may lead to inappropriate policy measures. Data would not necessarily reveal the dominant component of actual investment flows. **Moreover, the standard sources of FDI data, not broken by industry level, may also lead to undesirable policy measures⁸ and insufficient selectivity in the exercise of**

⁷ OECD recommends excluding such entities as they inflate the FDI statistics.

⁸ Kirkegaard, 2012

investment policy choices. For example, in discussing a new generation of research using the sectoral level data, Theodore Moran (2011) puts it as:

“the impact of FDI in the electrical power industry in Indonesia depends on policies related to the mismatch between foreign currency obligations and local currency, the impact of FDI in the electronics industry of Malaysia depends on policies related to backward linkages and vertical spillovers, and the impact of FDI by Wal-Mart in the retail service sector in Mexico depends on policies related to the crowd-in/crowd-out investment debate”.

Doytch and Uctum emphasize sectoral FDI research arguing:

“Since industry-specific FDIs differ in the technology they transfer to the host country, it is crucial that the analysis of the growth effects of FDI is conducted at the level of the absorbing sector”.

Inadequacies in sector specific FDI flows is an important issue as suggestions for policy options for both developing and developed countries depend on whether FDI flows into primary, secondary or tertiary sectors⁹, further disaggregated at industry level.

The review of existing data and its limitations suggests that APEC economies could enhance the capacities of their statistical agencies in collecting sectoral FDI statistics. RIAG therefore proposes to ABAC that it recommends to APEC that relevant statistical agencies in regional economies

⁹ For a discussion of importance of sectoral FDI see, for example, Moran (2011)

collect data which would facilitate answers to the following major questions relevant to the framing of investment policies for economies in the region:

- What are the trends of FDI at the sectoral level in APEC countries?
- Does FDI flow into export oriented industries and allow the countries to participate in Global Value Chains (GVCs)?
- Which sectors are popular in attracting FDI?
- How are economies performing individually/competitively compared to others, based on sector flows?

RIAG understands that the collection and compilation of FDI Statistics is work in progress and advancing considerably. In the meantime, RIAG focused its immediate work on unconventional sources for sectoral FDI to partially answer the questions posed above and show the benefits of having a detailed FDI data.

Specifically, RIAG utilised a database devised by the *Financial Times* (fDimarkets.com) for greenfield investment to develop some preliminary findings¹⁰. This database is also the source UNCTAD relies on for its *World Investment Reports* to show sectoral developments in FDI.

¹⁰ Greenfield investment data alone may not provide a clear picture as FDI can also occur in the form of Mergers & Acquisitions. To overcome this limitation, RIAG is exploring the possibility of accessing Reuters-Thompson SDC Platinum database for analysis. An update will be presented in the next progress report of RIAG.

3. SECTORAL GREENFIELD INVESTMENT ANALYSIS

This report covers only inward greenfield investment statistics¹¹ provided by fDi Markets. fDi Markets tracks cross-border investment in new physical projects or expansion of existing investments. Mergers & Acquisitions (M&A) and other equity investments are not tracked. The data includes FDI projects that have either been announced or opened by a company. The data is not comparable to official FDI flows as the investment can be made over a period of time, and might be channelled through different countries for taxation purposes. Moreover, the database does not account for unannounced projects and falls short of monitoring factual investments of announced projects. Despite these limitations, it provides a useful guide to FDI flows by sectors.

Sectors are disaggregated based on the North American Industry Classification System (NAICS). The database provides capital investment in nominal values from 2003 to the present. RIAG has converted all values to constant 2005 US dollars using GDP deflators for APEC economies. In this report RIAG presents results grouped into APEC developed and developing economies¹². This approach recognises that policy measures may differ based on different stages of economic development.

¹¹ In interpreting the results, one should keep in mind that M&A constitute more of FDI than greenfield investment in developed countries. Unfortunately, RIAG did not have access to M&A data at the time of writing this report.

¹² Developed economies are high-income economies with a GNI per capita of \$12,736 or more (World Bank)

To the best of our knowledge, this is the only study which fills the gap in the analysis of sectoral FDI for APEC economies. It should be emphasized that this is work in progress and feedback from ABAC members and others would help RIAG to advance its future work plan.

Figures 2 and 3 present gross inward greenfield investment levels over the 2003-2013 period. The reduction of FDI between 2003-2005 might be due to enhancement of data collection efforts by FT and does not necessarily correspond with any economic downturn during this period. Thus, one should be cautious interpreting the downturn during this time. At first glance, it is interesting to note that inward greenfield FDI in developing economies was growing before the Global Financial Crisis (GFC) but experienced a deceleration of investment after 2008 in all of primary, secondary and tertiary sectors. In contrast, primary sector investments in developed economies were volatile, secondary sector FDI maintained steady growth from 2005 before it started to decline in 2011, and the tertiary sector was steady (on average) during 2003-2013 with a slight upturn from 2011.

Figure 2. Inward Greenfield investment by sector, APEC **developing** economies, (in \$2005)

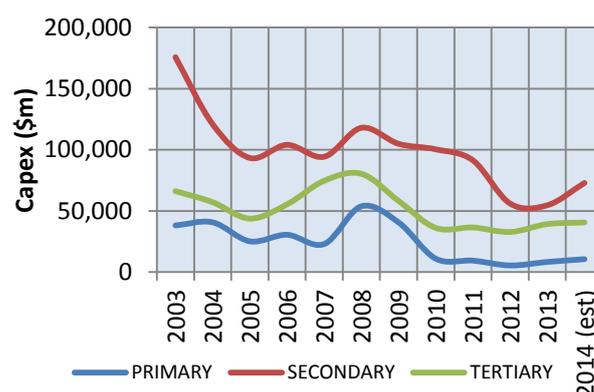
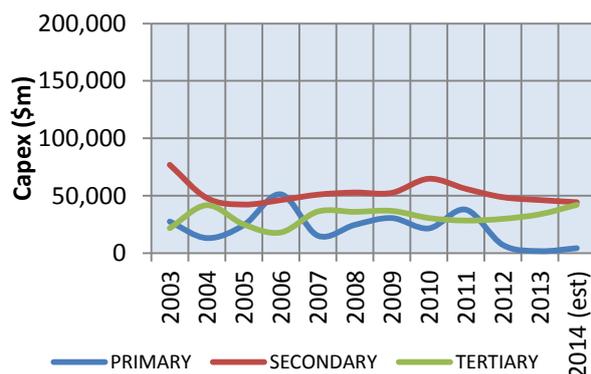


Figure 3. Inward Greenfield investment by sector, APEC **developed** economies, (in \$2005)



Source: fDi markets; Authors' calculations

Figures 4 to 6 show the distribution of greenfield investment between developed and developing APEC economies. While primary sector investment does not exhibit any particular trend in its allocation between developed and developing economies (Figure 4), Figure 5 shows that the share of secondary sector FDI going to developed economies has increased from 31% in 2008 to 46% in 2013. This contrasts with developing economies where the share reduced from 69% to 54% over the same period. Detailed analysis needs to be conducted to determine the factors causing this trend. Nevertheless, this may indicate that the cost of production has become more competitive in the developed world since the GFC.

According to Figure 6, **the shares of tertiary sector greenfield investments are roughly equally distributed between developed and developing economies since 2010**. A priori one would expect developed economies to attract more tertiary FDI compared to developing economies. These developments indicate that economies have to compete for the

same pool of foreign capital regardless of their economic development stage.

Figure 7 and 8 illustrates structural changes within developed and developing economies. Growth rates of the tertiary sector FDI in the developed APEC economies were slightly higher compared to developing economies with the primary sector attracting less greenfield FDI in both groups of economies¹³.

Figure 4. Distribution of Primary Sector Inward Greenfield FDI

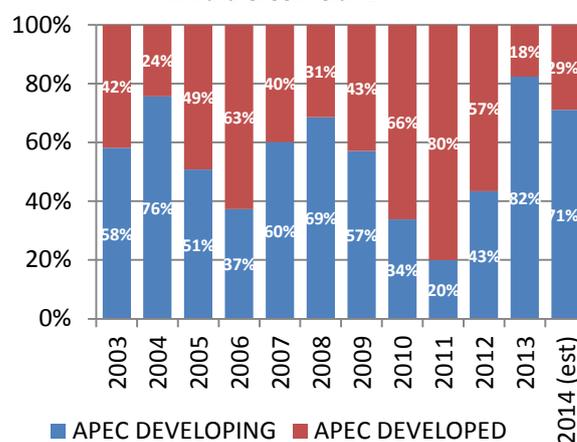
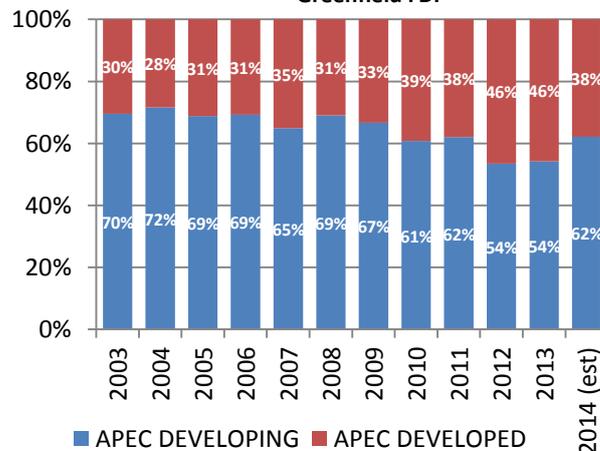


Figure 5. Distribution of Secondary Sector Inward Greenfield FDI



¹³ This may be due to projects turning from investment to production phase (e.g. Australia).

Figure 6. Distribution of Tertiary Sector Inward Greenfield FDI

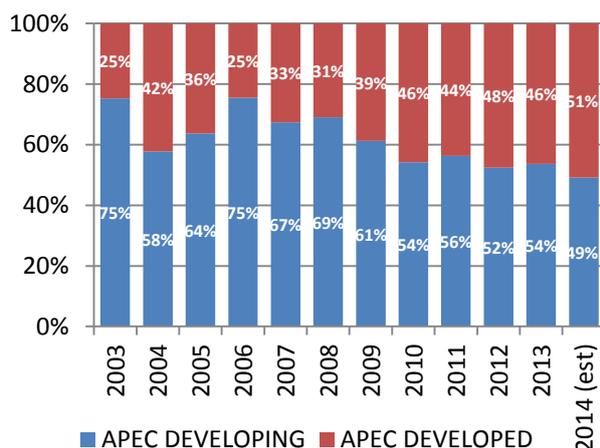


Figure 7. Distribution of Inward Greenfield FDI in APEC Developing Economies

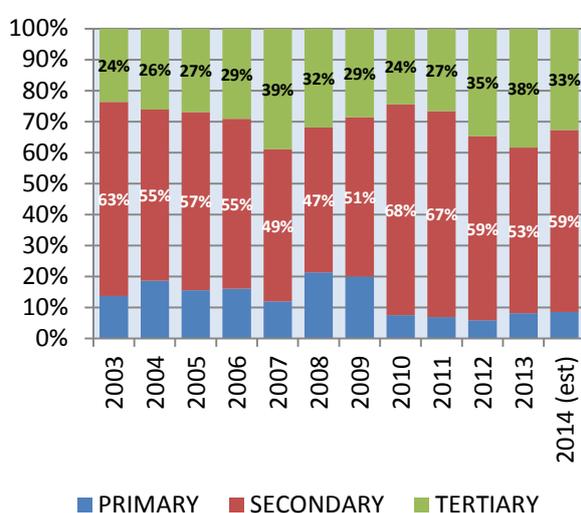
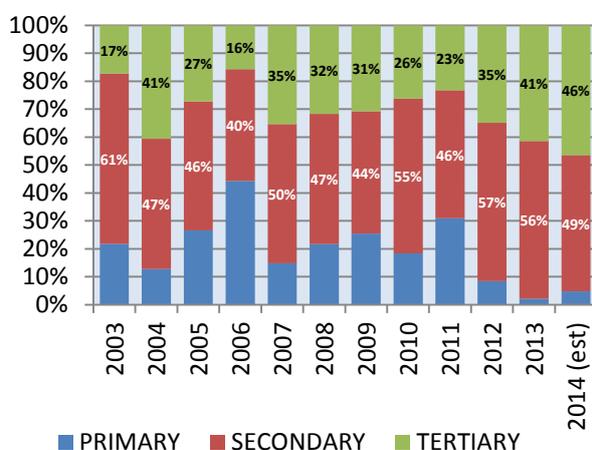


Figure 8. Distribution of Inward Greenfield FDI in APEC Developed Economies



3.1. Motives for investment

There are a number of both policy and non-policy factors which determine a firm's investment in foreign markets¹⁴, which can be established through different approaches. Specifically, one could conduct a firm specific survey to obtain an accurate picture of factors determining FDI. For the purpose of this analysis, RIAG uses motives derived from the FT database. The distribution of firms' stated motives are presented in Tables 2 and 3 for developed and developing economies. The data includes only firms who indicated a specific motive and thus do not represent all firms¹⁵. According to the results, domestic growth potential was cited almost twice as frequently (58.5%) in developing economies as in developed economies (33.6%). Proximity to markets and customers were determined to be a major factor in developed economies, followed by skilled workforce availability, regulations, business climate, industry cluster and infrastructure. 8.3% and 3.5% of companies identified lower costs to be a major factor for investment in developing and developed economies, respectively. Interestingly, IPA and government support was stated to be important more frequently for investing in developed economies (7.3%) than developing economies (2.5%). Table 3 shows the distribution of motives across selected APEC economies comprising Australia, Canada, Singapore, China,

¹⁴ For a discussion see the seminal work of Dunning 1993, 2000.

¹⁵ Responses are based on announced motives by projects and are not firm-specific.

Mexico, Malaysia, Vietnam and Russia¹⁶. Domestic market growth potential is a main driver for FDI into these economies except Singapore, where proximity to markets and customers is the main factor for inward FDI,

indicating saturation of the market. IPA or government support was identified to be one of the main determinants in Australia, Canada and Singapore with Malaysia almost on par with these economies.

Table 2. Motives for investment in APEC economies (2003-2014)

Motive	APEC Developed	APEC Developing
	% of Projects	
Proximity to markets or customers	41.4%	28.2%
Domestic Market Growth Potential	33.6%	58.5%
Skilled workforce availability	19.3%	10.3%
Regulations or business climate	13.5%	11.5%
Industry Cluster / Critical Mass	11.0%	6.3%
Infrastructure and logistics	10.6%	6.9%
IPA or Govt support	7.3%	2.5%
Lower Costs	3.5%	8.3%
Other Motive	22.2%	13.5%

Note: Sum doesn't equal to 100% as some projects indicate more than one motive.

Table 3. Motives for investment in selected APEC economies (2003-2014)

	Australia	Canada	Singapore	China	Mexico	Malaysia	Vietnam	Russia
	% of projects							
Domestic Market Growth Potential	54.7%	36.0%	25.0%	66.2%	41.5%	39.8%	61.2%	66.0%
Proximity to markets or customers	40.3%	35.4%	42.7%	28.5%	38.5%	25.3%	22.6%	31.0%
Skilled workforce availability	9.7%	23.7%	24.2%	6.1%	15.5%	26.0%	10.4%	5.5%
Regulations or business climate	8.3%	9.8%	26.0%	6.5%	13.5%	24.3%	12.9%	8.6%
IPA or Government support	5.5%	6.7%	8.0%	1.7%	3.0%	6.9%	-	-
Industry Cluster / Critical Mass	5.4%	7.2%	16.0%	7.6%	3.9%	6.6%	4%	3.9%
Infrastructure and logistics	4.2%	5.6%	17.5%	5.2%	11.4%	17.9%	7.2%	5.8%
Lower Costs	3.1%	-	-	6.8%	14.1%	12.5%	12.7%	3.9%
Other Motive	13.6%	27.0%	25.9%	10.9%	17.0%	21.6%	14.4%	15.4%
Number of projects with responses	576	616	752	2725	537	396	398	579

Note: Sum doesn't equal to 100% as some projects indicate more than one motive. The responses suffer from sample selection bias as motives of companies making a real investment are recorded. Accordingly, the data does not provide an objective means of comparing countries. A firm specific survey is required to obtain an accurate picture of factors determining FDI and benchmark analysis.

¹⁶ Selection of countries are not based on any specific criteria.

4. FDI PERFORMANCE IN APEC ECONOMIES

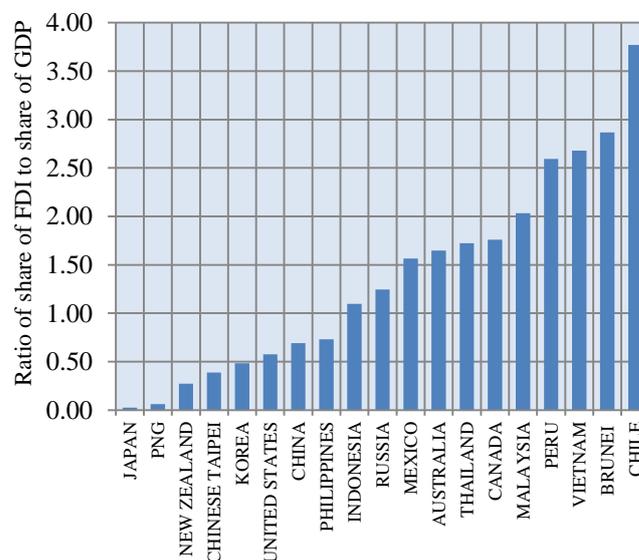
As mentioned in Section 2 of this report, there are a number of shortcomings in the currently available FDI indicators. RIAG seeks to be transparent and policy relevant and provide indicators of FDI that are useful tools for policy discussions. As a starting point, RIAG has developed an FDI inflow performance indicator using total FDI inflow and an FDI concentration index based on greenfield investment for APEC economies¹⁷.

The FDI inflow performance indicator follows UNCTAD's Inward and Outward FDI Performance Index. Firstly, each APEC economy's share of global FDI inflow and its relative GDP share in global GDP are calculated, and then the ratio of FDI share to GDP share is calculated. If the country's FDI share matches its GDP share then the flow value is equal to one. A value greater than one indicates a larger share of FDI relative to GDP; a value less than one indicates a smaller share of FDI relative to GDP. A negative value means foreign investors disinvested in that period. The values have no upper or lower limits. A similar approach was used by The Conference Board of Canada (2015) to rate 16 developed countries including Canada.

The FDI performance for 2013 is presented in Figure 9 below. The APEC economies with higher proportional FDI inflows at that time were Chile, Brunei, Vietnam, and Peru,

followed by Malaysia. Japan, PNG, New Zealand, Chinese Taipei and Korea showed significantly less proportionate FDI inflows.

Figure 9. FDI Inflow Performance in APEC economies, 2013



Source: WDI database; Authors' calculations

These values are normalised¹⁸ to render them comparable over longer periods. Hong Kong and Singapore were excluded as their shares of FDI (and trade) are much higher than other APEC economies and their extreme values may influence subsequent steps in analysis. Accordingly, the highest ratings are assigned for Hong Kong and Singapore without including them in the calculations.

¹⁸ Normalisation is based on the formula:

$$I_c^t = \frac{x_c^t - \min_c(x^t)}{\max_c(x^t) - \min_c(x^t)} \times 100$$

Each FDI inflow indicator x_c^t for a generic country c and time t is transformed according to formula above, where $\min_c(x^t)$ and $\max_c(x^t)$ are the minimum and the maximum values of FDI (x_c^t) across all countries c at time t . In this way, the normalised indicators I_c^t have values lying between 0 and 100. Using this formula results in a data series where the best-performing economy has a score of 100 and the worst-performing economy has a score of zero.

¹⁷ For detailed methodology, refer to Abdullaev, Brooks, and Waller (2015) in *Current Issues in Asia Pacific Foreign Direct Investment*, edited by Errol Muir.

Each economy is then allocated to one of four quartiles, based on its score. An economy receives a rating of “A” on a given indicator if its score is in the top quartile, a “B” if its score is in the second quartile, a “C” if its score is in the third quartile, and a “D” if its score is in the bottom quartile.

The results of normalisation and FDI performance for selected economies performance is given in Table 4¹⁹. Malaysia maintained rating of ‘A’ during 1990s and then scored ‘B’ from 2001 until 2012. Various factors could explain these changes, for example maturity of markets (e.g. increasing average wages) and government’s emphasis on domestic investment compared to foreign investment. The change to an ‘A’ in 2013 may well have reflected several government initiatives including Economic and Government Transformation Programs and others. New Zealand’s performance has been falling, scoring ‘D’ in 2013 from an ‘A’ rating in 1989-95²⁰. This may have been as a consequence of policy issues and screening procedures of foreign investment in slowing down FDI in New Zealand. Improvements in inward FDI were observed in Mexico. This may well reflect easing restrictions on foreign ownership, free trade agreements, such as NAFTA, and the new economic policies of 1990s and variations in Russia may have resulted from changes in property

¹⁹ For policy evaluations, evaluating the trend rather than single year performance may be preferable.

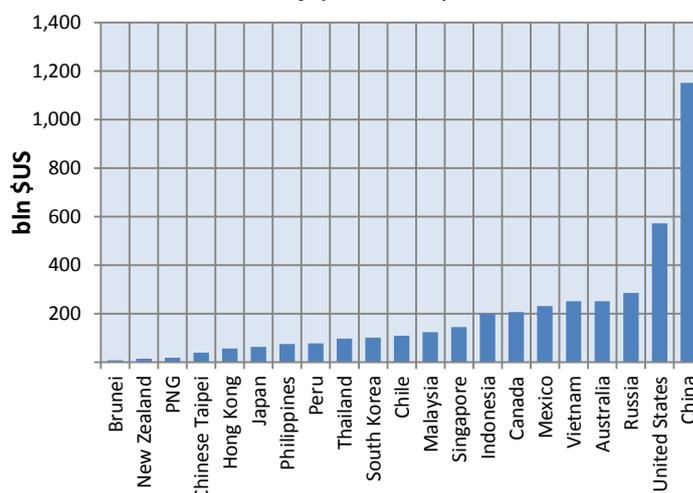
²⁰ This may be due to regulatory barriers in New Zealand (e.g. screening regimes). Further, country analysis will be presented in RIAG’s future work.

rights and easing ownership restrictions for foreign investors as well as the creation of industrial special economic zones.

This summary analysis suggests that this type of indicator may be useful for evaluating impacts and changes in policy regimes over time, as they influence the quantity of inflows.

According to the FT database, China attracted the highest level of greenfield investments followed by the United States, Russia, Australia, Vietnam, Mexico, Canada and Indonesia from 2003 to 2014.

Figure 10. Total greenfield investment by economy (2003-2014)



The results of assessing per capita secondary and tertiary sectoral greenfield investments are displayed in Table 5 for the same set of economies as for total FDI inflow. Malaysia and Mexico maintained ‘B’ in both sectors with improvement observed in the secondary sector in 2013. While New Zealand was the leader in attracting the highest shares of greenfield investment into the tertiary sector over 2011 and 2013, its secondary sector remained at the same level over 2006-2013 period. Changes were not observed in Russia’s secondary and tertiary sectors.

The sectoral assessment does not show similar patterns as those observed in Table 4²¹. Overall, it is consistent with the aggregate picture with differences attributed to investments in the primary sector. This suggests the importance of analysis at the sectoral level, which will hopefully be undertaken in RIAG's future work to the extent data allows.

It would also be relevant to consider how ratings could be improved by, for example, implementing best practices aligned with IFAP principles. This rating system reflects only the performance of total gross FDI inflow, with an implicit presumption that more is better. It leaves the reasons behind such performance open for further analysis²³.

Table 4. FDI inflow performance (1989-2013)

Economy	1989-1995	1996-2000	2001-2005	2006-2010	2011	2012	2013
MALAYSIA	A	A	B	B	B	B	A
MEXICO	C	C	B	B	C	C	B
NEW ZEALAND	A	B	C	C	B	C	D
RUSSIA	D	D	C	B	B	B	B

Table 5. FDI Greenfield inflow performance by sector in selected APEC economies (2003-2014).

Economy	Secondary Sector				Tertiary Sector			
	2006-2010	2011	2012	2013	2006-2010	2011	2012	2013
MALAYSIA	A	B	B	B	B	B	B	B
MEXICO	B	B	B	A	C	B	B	B
NEW ZEALAND	C	C	C	C	B	A	A	A
RUSSIA	C	C	C	C	B	C	C	C

Source: WDI database; Authors' calculations

On the basis of these ratings it would seem appropriate for policy makers to consider the reasons in detail, why ratings have changed over time and their possible policy responses in combination with other indicators such as UNCTAD's FDI Potential Index²².

5. FDI CONCENTRATION INDEX

The effects of FDI on the host economy depend on various factors such as absorptive capacity, policy parameters and economic structure. FDI's contributions to production of new and/or advanced products may have direct effects on the composition of the host country's exports and make them more diversified and sophisticated²⁴. This can also lead to the transfer of new and/or more sophisticated productive capabilities to local firms²⁵. Thus,

²¹ Calculations do not follow a similar concept as that relating total FDI inflow and total GDP.

Measurements are simply based on per capita inward greenfield FDI at present. Although, the rating follows similar methodology as for total FDI inflow.

²² UNCTAD's 2011 Potential Index included in the appendix

²³ See, for example, Mencinger (2003) and Fortanier (2007) for a discussion

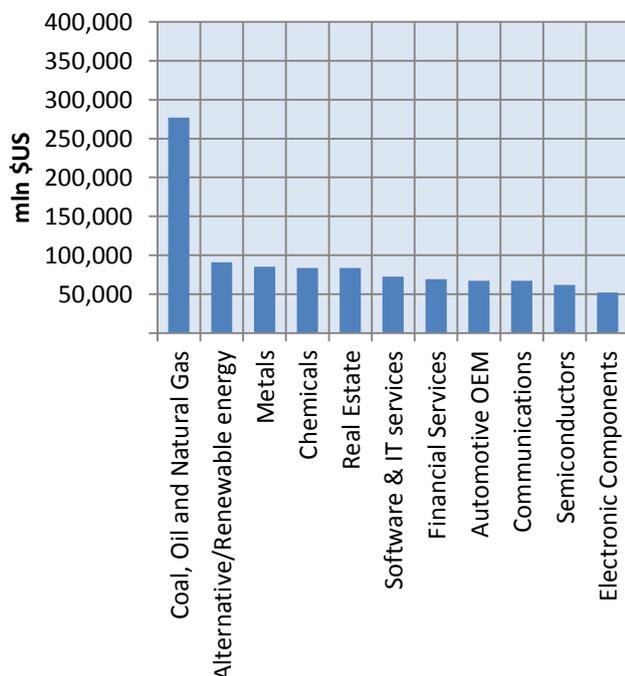
²⁴ Tadesse and Shukralla, 2011

²⁵ Manabu and Nabeshima, 2012

it is likely that diversified FDI will have positive spill-over effects, enhance a country's export potential, and help integrate it into Global Value Chains. Further, limited base of FDI may signify lack of competitiveness and raise concerns of the concentrated sector to external shocks and jeopardize stable economic growth.

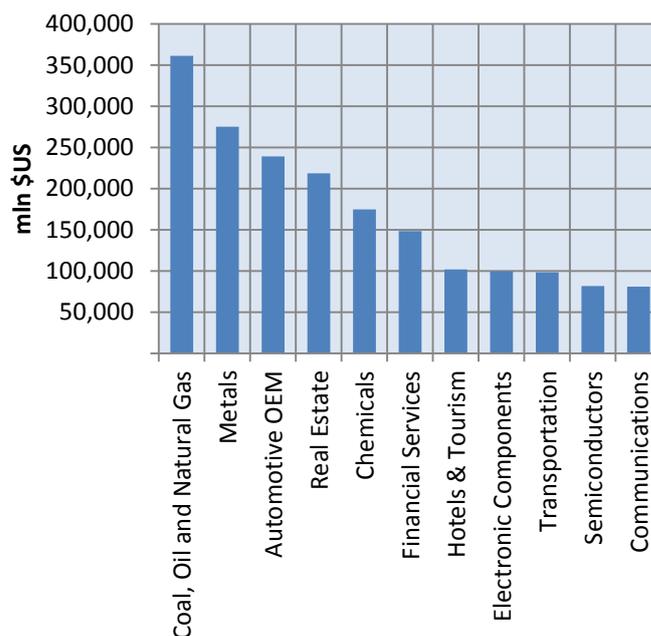
Figures 11 and 12 illustrate the top sectors for greenfield foreign direct investment in two groups of economies. As the figures show, the bulk of greenfield investment in developed APEC economies went into coal, oil and natural gas sectors with other sectors receiving between 50 and 100 bln. US dollars from 2003 to 2014.

Figure 11. Top Sectors in APEC **Developed** Economies (2003-2014)



The top sectors in developing APEC economies were almost similar with hotel & tourism, and transportation creating a difference and significantly higher values of greenfield investment compared to developed APEC economies.

Figure 12. Top Sectors in APEC **Developing** Economies (2003-2014)



The above figures affirm that policy-makers would benefit from a metric that shows FDI concentration so as to develop appropriate FDI attraction strategies based on their economy's sectoral development needs. Taking this into account RIAG has developed a simple concentration index for FDI. The FDI concentration index is calculated according to the formula²⁶:

$$CI_{FDI} = \sum_{i=1}^{39} w_i^2$$

Where i is a sector²⁷ and w is the share of the sector's investments in total FDI. The

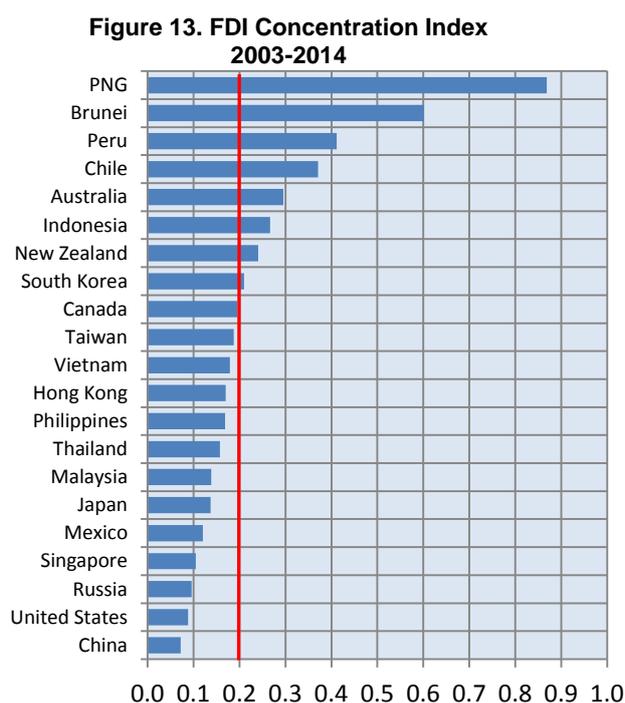
²⁶ This index is known in the literature as the Herfindahl-Hirschman index. The index was developed independently by the economists A.O. Hirschman (in 1945) and O.C. Herfindahl (in 1950). This index is widely used in competition law and antitrust. The 1992 Horizontal Merger Guidelines issued by the U.S. Department of Justice and the Federal Trade Commission regard a market in which the post-merger Herfindahl Index is below 0.1 as 'unconcentrated'; those between 0.1 and 0.18 as 'moderately concentrated', and those above 0.18 as 'highly concentrated'.

²⁷ Data is available for 39 sectors.

results of calculating the FDI concentration index for APEC economies during 2003-2014 are presented in Figure 13 below.

Based on the available information and expertise of RIAG members, a value of less than 0.05 is considered to not be concentrated FDI; a value between 0.05 and 0.10 to be moderately concentrated FDI; a value between 0.10 and 0.20 to be highly concentrated FDI; and a value more than 0.20 to be extremely concentrated FDI.

According to the results, greenfield investments in PNG, Brunei, Peru, Chile, Australia, Indonesia, New Zealand and South Korea are extremely concentrated, followed by high concentration in Canada, Taiwan, Vietnam, Hong Kong, Philippines, Thailand, Malaysia, Japan, Mexico, and Singapore. Greenfield investments in Russia, United States and China were moderately concentrated with none of the economies scoring diversified greenfield FDI.



6. CONCLUSION

In this report, we have presented preliminary work of the Regional Investment Analytical Group under the coordination of the Australian APEC Study Center.

A review of available indicators related to FDI for APEC economies disclosed that available indicators are broadly based on macroeconomic fundamentals or perceptions thereof; and lack the focus that is useful to provide policy makers with the means by which to provide focussed policy guidance grounded in evidence. Moreover, they do not cover all APEC economies and some may be discontinued.

RIAG identified a real gap in the availability of sectoral FDI statistics. Thus, more efforts could usefully be made in collecting sectoral FDI data to monitor, categorize and select FDI according to the sectoral investment needs of the economy.

Using transactional FDI statistics on greenfield investments, RIAG has shown benefits of sectoral data analysis. To the best of our knowledge this is the only such study covering all APEC economies.

FDI performance indicators using total FDI inflow statistics and an FDI concentration index using inward greenfield investments data are discussed in this report.

On the one hand, FDI performance ratings show that APEC economies experienced varying success in attracting FDI, some economies advancing considerably and others showing some slippage .

On the other hand, FDI concentration index results point to moderate to extreme concentrations of inward greenfield investments in APEC economies, with few of the economies showing a widely diversified portfolio.

RIAG intends to deepen the analysis to individual economy levels and its sectors and proposes to develop a coherent policy toolkit based on the assessment schema developed in this study.

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8. APPENDIX

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Economy rankings by Inward FDI Potential Index, 2011

Economy	Economic determinants groupings			Overall rank	
	Market attractiveness	Availability of low-cost labour and skills	Enabling infrastructure		Presence of natural resources
Australia	25	..	39	4	5
Brunei Darussalam	77	..	60	136	77
Canada	17	51	27	3	17
Chile	13	12	74	53	29
China	6	3	43	6	1
Hong Kong, China	7	74	1	103	40
Indonesia	31	2	89	8	9
Japan	51	11	11	19	10
Korea, Republic of	10	5	13	28	4
Malaysia	19	15	53	33	26
Mexico	27	12	69	9	13
New Zealand	69	70	24	88	71
Papua New Guinea	92	..	165	94	127
Peru	23	8	108	31	36
Philippines	71	10	111	42	51
Russian Federation	14	24	31	2	6
Singapore	8	38	3	70	23
Thailand	90	4	58	20	20
United States	20	25	11	1	2
Viet Nam	56	..	65	35	38

Source: UNCTAD

(www.unctad.org/fdistatistics).

Note: The Inward FDI Potential Index ranking is based on the simple average of a country's percentile rank in each of the economic determinants areas. A country's ranking within each group of determinants is based on the simple average of the country's percentile rank of each variable included in the group.

APEC Potential List of Foreign Direct Investment Indicators

Indicator	Variable	Source	Notes
Economic Fundamentals			
Macro- performance	Real GDP growth (%)	WEO and WDI	Annual % growth at market prices based on constant local currency
	GDP per capita (US\$)	WDI	Gross domestic product in current U.S. dollars divided by midyear population
	Inflation (annual %)	WDI	As measured by the annual % change in consumer price index. Deviation from optimal inflation levels (2-3%)
	Real interest rate	WDI	The lending interest rate adjusted for inflation as measured by the GDP deflator
Openness	Trade openness	WDI	(Exports + imports)/GDP
	Direct investment openness	UNCTAD	FDI inflows/GDP
Labour force	Unit labour cost	EIU	Hourly wage in U.S. dollars
	Life expectancy at birth (years)	WDI	The number of years a newborn would live if prevailing patterns of mortality at time of birth were to persist throughout its life
	Secondary education (% population)	WDI	The proportion of the labor force with a secondary education as % of total labor force
	Age dependency ratio	WDI	% of dependents (people younger than 15 or older than 64) to the working-age population (ages 15-64)
Financial infrastructure	Market cap of listed companies (% GDP)	WBMC	The share price times shares outstanding as % of GDP
	Public bond market cap (% of GDP)	BIS	Total market cap of government-issued bonds as % of GDP
	Private bond market cap (% of GDP)	BIS	Total market cap of bonds issued by financial institutions and corporations as % of GDP
	Bank assets (% of GDP)	IFS	Bank assets as % of GDP
	Domestic credit provided to private sector (% GDP)	WDI	Financial resources provided to the private sector
Physical Infrastructure	Road density	WDI	Km of road per 100 sq. km of land
	Rail line density	WDI	Km of rail line per 100 sq. km of land
	Internet users (per 100 people)	WDI	People with access to the worldwide network
	Mobile phone subscriptions	WDI	Subscriptions per 100 people. Post-paid and prepaid subscriptions are included
	ATMs (per 100,000 adults)	WDI	Automated teller machines per 100,000 adults
Millennium Challenge Corporation	Fiscal Policy (index)	MCC	IMF WEO
	Inflation	MCC	IMF WEO
	Regulatory Quality (index)	MCC	WB/WGI
	Trade Policy (index)	MCC	Heritage Foundation

	Gender in the Economy (index)	MCC	IFC
	Land Rights and Access (index)	MCC	IFAD/IFC
	Access to Credit (index)	MCC	IFC
	Business Start-up (index)	MCC	IFC
	Health Expenditures (index)	MCC	WHO
MCC Investing in People	Primary Education Expenditures (index)	MCC	UNESCO
	Natural Resource Protection (index)	MCC	CIESIN/YCELP
	Immunization Rates (index)	MCC	WHO/UNICEF
	Girls Secondary School Enrolment (index)	MCC	UNESCO
	Child Health (index)	MCC	CIESIN/YCELP
	Capital controls (index)	AREAER	Weighted average of three indicators: controls on securities, controls on money markets, and controls on direct investment
Controls on freeflow of capital	Controls on other cross-border capital flows	AREAER	Capital transactions controls on: money market instruments; collective investment securities; derivatives and other instruments; commercial and financial credit
	WTO membership	WTO	Members=1, 0 otherwise
Restrictions on international trade	Tariff rate, all products (%)	WDI	Weighted mean applied tariff is the average of effectively applied rates weighted by the product import shares corresponding to each partner country
	Services Trade Restrictiveness Index	OECD	The STRIs are composite indices taking values between zero and one, zero representing an open market and one a market completely closed to foreign services providers
	Services Trade Restrictions Database	WB	Borchert, Ingo, Batshur Gootiiz and Aaditya Mattoo (2012), "Guide to the Services Trade Restrictions Database", World Bank Policy Research Working Paper (WPS6108).
	Restrictiveness on financial conglomerates	WBS	Weighted average of three indicators: the extent to which banks may own and control nonfinancial firms; the extent to which nonfinancial firms may own and control banks; the extent to which nonbank financial firms may own and control banks
Restrictions on bank ownership	Limits on foreign bank entry/ownership	WBS	Weighted foreign banks may own domestic banks or enter a country's banking industry. (Lower values indicate greater stringency)
	Limits on foreign bank entry/ownership	WBS	Weighted foreign banks may own domestic banks or enter a country's banking industry. (Lower values indicate greater stringency)
Ease of Doing Business			
Starting a business	Starting a business: Time (days)	WBDB	
	Cost (% income per capita)	WBDB	
	Time (days)	WBDB	

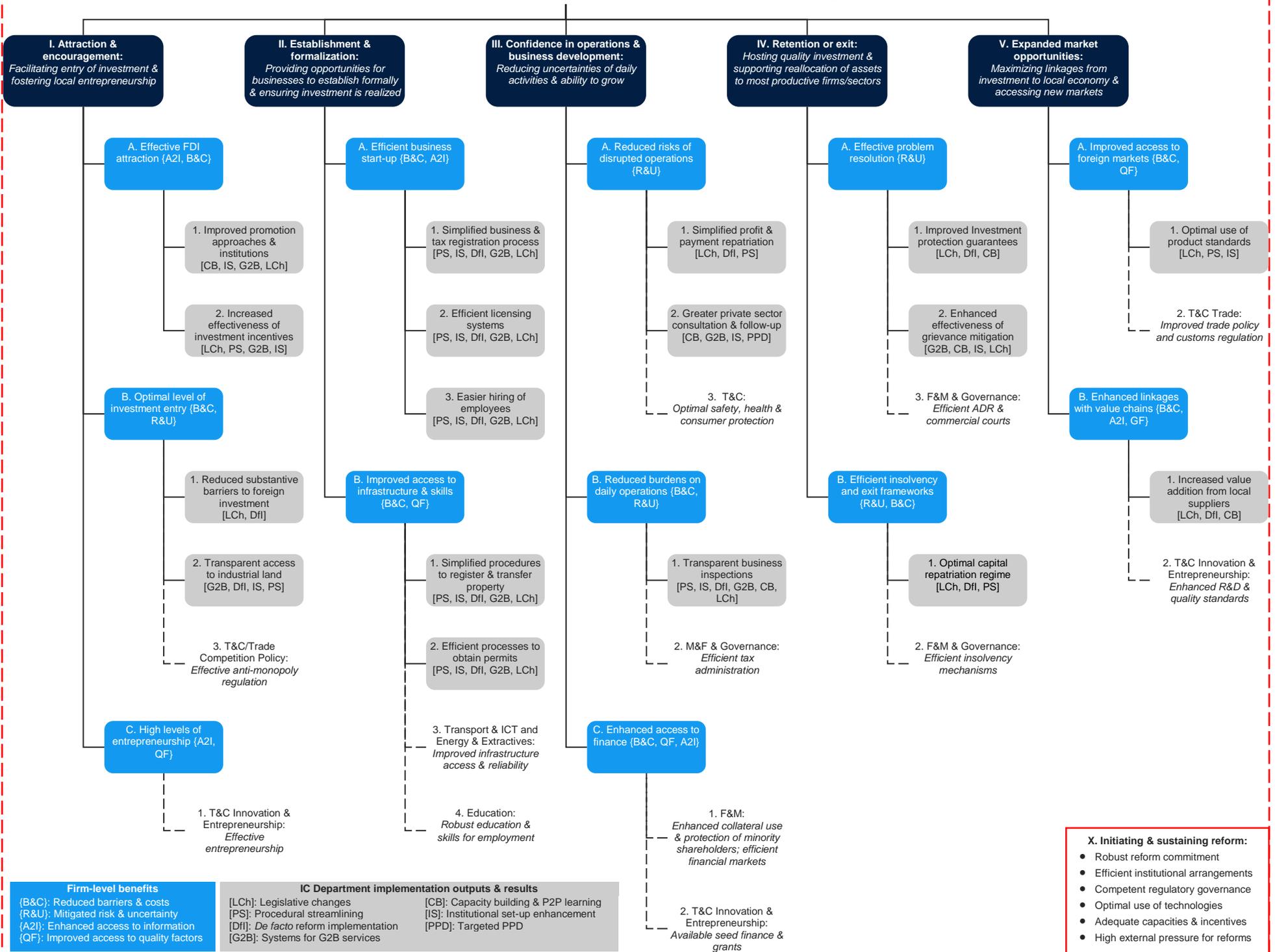
Enforcing Contracts	Cost (% of claim)	WBDB	
	Procedures (number)	WBDB	
	Time (years)	WBDB	
Resolving insolvency	Cost (% of estate)	WBDB	
	Recovery rate (cents on the dollar)	WBDB	
	Depth of credit information index	WBDB	Measures rules and practices affecting the coverage, scope, and accessibility of credit information available through either a public credit registry or a private credit bureau
Accounting and disclosure	Public credit registry coverage (% of adults)	WBDB	Reports the number of people and firms listed in a public credit registry with current information on repayment history, unpaid debts, or credit outstanding
	Private credit bureau coverage (% of adults)	WBDB	Reports the number of people or firms listed by a private credit bureau with current information on repayment history, unpaid debts, or credit outstanding
	Convergence to IFRS-Publicly listed companies	IASPlus	0-IFRSs not permitted; 1-IFRSs permitted; 2-IFRSs required for some; 3-IFRSs required for all
	Convergence to IFRS-Private companies	IASPlus	0-IFRSs not permitted; 1-IFRSs permitted; 2-IFRSs required for some; 3-IFRSs required for all
	Business costs of terrorism (index)	GCI	To what extent does the threat of terrorism impose costs on businesses in your country? [1 = to a great extent; 7 = not at all]
Costs of terrorism and crime	Business costs of crime and violence (GCI)	GCI	To what extent does the threat of terrorism impose costs on businesses in your country? [1 = to a great extent; 7 = not at all]
	Organized crime (index)	GCI	To what extent does the threat of terrorism impose costs on businesses in your country? [1 = to a great extent; 7 = not at all]
	Ethnic tensions (index)	GCI	An assessment of the degree of tension within a country attributable to racial, nationality, or language divisions. Lower ratings are given to countries where racial and nationality tensions are high, and higher ratings are given to countries where tensions are minimal.
	Paying taxes: time (hours/year)	WBDB	Measures the time taken to prepare, file, and pay the corporate income tax, value-added or sales tax, and labor taxes, including payroll taxes and social contributions
Tax burden	Extent and effect of taxation (index)	GCI	What impact does the level of taxes in your country have on incentives to work or invest? [1 = significantly limits incentives to work or invest; 7 = has no impact on incentives to work or invest]
	Corporate tax (%)	IEF	Top marginal corporate tax rate
	Personal tax (%)	IEF	Top marginal personal income tax rate
	Public debt (% GDP)	WEO	General government gross debt, per cent of GDP

Regulatory Quality			
Burden of regulation			
	Credit market regulation (index)	EFW	Ownership of banks; foreign bank competition; private sector credit; interest rate controls/negative interest rates
Regulatory quality	Labor market regulation (index)	EFW	Hiring regulations and minimum wage; hiring and firing regulations; centralized collective bargaining; hours regulations; mandated cost of worker dismissal; conscription
	Regulation of security exchanges (index)	GCI	How would you assess the regulation and supervision of securities exchanges in your country? [1 = ineffective; 7 = effective]
	Quality of bureaucracy (index)	ICRG	High points are given to countries where the bureaucracy can govern without drastic policy changes or interruptions in services. In these low-risk countries, bureaucracies are relatively free from political pressure and have established mechanisms for recruitment and training. Countries that lack the cushioning effect of a strong bureaucracy receive low points.
Quality of policymaking	Transparency (index)	GCI	How easy is it for businesses in your country to obtain information about changes in government policies and regulations affecting their activities? [1 = impossible; 7 = extremely easy]
	Corruption Perceptions Index	TI	An aggregate e indicator calculated using data from 17 sources that measures the extent of corruption (frequency and/or size of bribes) in the public and political sectors. Countries are ranked
Corruption	Public trust of politicians (index)	GCI	How would you rate the level of public trust in the ethical standards of politicians in your country? [1 = very low; 7 = very high]
	FDI Regulatory Restrictiveness Index	OECD	Four types of restrictions: Sectoral equity limits; Screening ; Restrictions on key personnel: managers, directors; Other restrictions: land, reciprocity, capital repatriation, branches, etc. Weighting : Each restriction given a score based on an assessment of its importance.; Aggregate score is weighted average of sectoral scores
Regulatory restrictiveness	FDI Confidence Index	ATKearney	
	Political Rights (index)	MCC	Gathered from Freedom House
Millennium Challenge Corporation	Civil Liberties (index)	MCC	Gathered from Freedom House
	Freedom of Information (index)	MCC	Gathered from Freedom House/Oni/ FRINGE
	Government Effectiveness (index)	MCC	WB and Brookings WGI
	Rule of Law (index)	MCC	WB and Brookings WGI
	Control of Corruption (index)	MCC	WB and Brookings WGI
	Judicial independence (index)	GCI	Extent the judiciary is independent of influences from members of government, citizens, or firms? [1 = heavily influenced; 7 = entirely independent]

Legal infrastructure	Efficiency of legal framework in settling disputes (index)	GCI	How efficient is the legal framework in your country for private businesses in settling disputes? [1 = extremely inefficient; 7 = highly efficient] To what extent is the judiciary in your country independent of influences from members of government, citizens, or firms? [1 = heavily influenced; 7 = entirely independent]
	Efficiency of legal framework in challenging regulations (index)	GCI	How efficient is the legal framework in your country for private businesses in challenging the legality of government actions and/ or regulations? [1 = extremely inefficient; 7 = highly efficient]
	Law and order (index)	ICRG	The law subcomponent assesses the strength and impartiality of the legal system, while the order subcomponent assesses popular observance of the law. Thus, a country can enjoy a high rating – 3 – in terms of its judicial system, but a low rating – 1 – if it suffers from a very high crime rate, indicating that laws are often ignored or effective sanctions are lacking (for example, widespread illegal strikes)
	Property rights (index)	GCI	How would you rate the protection of property rights, including financial assets, in your country? [1 = very weak; 7 = very strong]
Property Rights	Property rights (index)	IEF	Measures the degree to which a country's laws protect private property rights and the extent of government enforcement. Also assesses the likelihood that private property will be expropriated and analyses the independence of the judiciary, the level of corruption within the judiciary, and the ability of individuals and businesses to enforce contracts
	Ease of shareholder suits (index)	WBDB	A measure of shareholders' ability to sue corporate officers and directors for misconduct
Investor Protection	Extent of disclosure (index)	WBDB	A measure of transparency of related-party transactions
	Strength of legal rights (index)	WBDB	Measures the degree of protection collateral and bankruptcy laws provide to borrowers and lenders, thus facilitating lending
	Extent of director liability (index)	WBDB	A measure of liability for self-dealing
	Strength of investor protection (index)	WBDB	The Average of indexes gauging the extent of disclosure, extent of director liability, and ease of shareholder suits
	Strength of investor protection (index)	WBDB	The Average of indexes gauging the extent of disclosure, extent of director liability, and ease of shareholder suits
Investment Facilitation			
	The Enterprise Survey Indicators	WBES	Various indicators related to corruption, crime, finance, firm characteristics, gender, informality infrastructure, innovation and technology, performance, regulations and taxes, trade, workforce
	FDI Performance Index	UNCTAD	Average of the values (normalized to yield a score between zero, for the lowest scoring country, to one, for the highest) of 12 variables published in World Investment Report

WEO – World Economic Outlook (<http://www.imf.org/external/pubs/ft/weo/2015/01/index.htm>)
WDI – World Development Indicators – (<http://data.worldbank.org/data-catalog/world-development-indicators>)
UNCTAD - The United Nations Conference on Trade and Development (www.unctad.org)
EIU – Economic intelligence Unit (www.eiu.com)
WBMC – World Bank Market Capitalization (<http://data.worldbank.org/indicator/CM.MKT.LCAP.GD.ZS/countries>)
BIS - Bank for International Settlements (<http://www.bis.org/>)
IFS - International Financial Statistics, IMF (www.imf.org/external/data.htm)
AREAER - Annual Report on Exchange Arrangements and Exchange Restrictions, IMF (<http://www.elibrary-areaer.imf.org/Areaer/Pages/Home.aspx>)
WTO - World Trade Organization (<https://www.wto.org>)
WBS – World Bank Survey, Barth, James R., Caprio, Gerard, Jr., and Ross Levine. 2013. "Bank Regulation and Supervision in 180 Countries from 1999 to 2011."
National Bureau of Economic Research Working Paper 18733 (http://faculty.haas.berkeley.edu/ross_levine/Regulation.htm)
WBDB – World Bank Doing Business Report (www.doingbusiness.org)
IASPlus – Deloitte (<http://www.iasplus.com/en/standards>)
GCI – Global Competitiveness Index, World Economic Forum (<http://reports.weforum.org/global-competitiveness-report-2014-2015/rankings/>)
IEF – Index of Economic Freedom, The Heritage Foundation and WSJ (<http://www.heritage.org/index/fiscal-freedom>)
EFW – Economic Freedom of the world, Fraser Institute (<http://www.freetheworld.com/release.html>)
ICRG – International Country Risk Guide (<http://www.prsgroup.com/about-us/our-two-methodologies/icrg>)
TI – Transparency International (<https://www.transparency.org/>)
ATKearney - global management consulting firm (<http://www.atkearney.com.au/>)
GPR – Global Production Research (www.global-production.com/scoreboard)
WBES – World Bank Enterprise Surveys (<http://www.enterprisesurveys.org/>)
MCC-Millennium Challenge Corporation (<http://www.mcc.gov>)

Pathway to the Twin Goals: Private sector productivity, job creation, and inclusive growth



Pathway to the Twin Goals: Private sector productivity, job creation, and inclusive growth



		Raw or firm-level data			Actionable/regulatory indicators							Perception surveys & Non-Actionable indicators			Internal tools		Standardized policy notes	
		WDI	ES	Other	DB	OECD PMR	IAB/FDI Reg	GIPB	WBL	WGI	Other	WEF	WIPR	Other	Internal instruments	Ad hoc project surveys	DB Memo	IRM
Country Coverage	Kenya	Spotty	Good	N/A	Good	None	OK	Good	Good	Good	N/A	Good	By region only	N/A	N/A	N/A	Good	Scarce
	OECD	Good	Good	N/A	Good	Good	Good	Good	Good	Good	N/A	Good	None	N/A	N/A	N/A	None	None
Total country count		Varies	135	N/A	189	34	87	200	143	215	N/A	144	N/A	N/A	N/A	N/A	About 80	Fewer than 10
Year coverage		Annual	Sporadic	N/A	Annual	4 total	2 total	Triennial	3 total	Annual	N/A	Annual	5 total	N/A	N/A	N/A	Spotty	Scarce
I.A.	Effective FDI attraction	1	0	FDI Markets	0	0	0	0	0	1	0	1	1	UNCTAD FDI Potential and Performance; EY Investor Attractiveness Survey	0	1	0	1
I.A.1.	Improved promotion approaches & institutions	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	1
I.A.2.	Increased effectiveness of investment incentives	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1
I.B.	Optimal level of investment entry	1	1	FDI Markets, UNCTAD FDI statistics, WEO Macroeconomic forecasts	0	0	0	0	0	0	0	1	0	0	0	0	1	1
I.B.1.	Reduced substantive barriers to foreign investment	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0	1
I.B.2.	Transparent access to industrial land	0	1	0	1	1	1	0	1	0	0	1	0	0	0	1	1	1
I.B.3.	Effective anti-monopoly regulation	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0
I.C.	High levels of entrepreneurship	0	0	Global Entrepreneurship Database	1	0	0	0	0	0	0	1	0	0	0	0	1	0
I.C.1.	Effective entrepreneurship	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0
II.A.	Efficient business start-up	0	1	KILM, MSME-CI, Schneider	1	1	1	0	0	1	0	1	0	0	0	1	1	1
II.A.1.	Simplified business & tax registration process	0	1	0	1	0	1	0	0	0	0	1	0	0	0	1	1	1
II.A.2.	Efficient licensing systems	0	1	0	1	1	1	0	0	0	0	0	0	0	1	1	1	1
II.A.3.	Easier hiring of employees	0	0	EUI	1	1	1	0	1	0	0	1	0	0	0	1	1	1
II.B.	Increased access to infrastructure & skills	1	1	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1
II.B.1.	Simplified procedures to register & transfer property	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	1	0
II.B.2.	Efficient processes to obtain permits	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	1	0
II.B.3.	Improved infrastructure access & reliability	1	1	0	1	0	0	0	0	0	0	1	0	0	0	1	1	1

II.B.4	Robust education & skills for employment	1	1	Barro-Lee	0	0	0	0	0	0	0	1	0	0	0	1	1	
III.A	Reduced risks of disrupted operations	0	1		1	0	0	0	0	1	CPI	1	0	AT Kearney FDI Confidence Indicator	0	0	1	1
III.A.1	Simplified profit & payment repatriation	0	0		0	0	1	0	0	0	OECD FDI Restrictiveness, I-Tip, WBG STRI	0	0		1	1	0	1
III.A.2	Greater private sector consultation & follow-up	0	0		0	1	0	0	0	1	Citizen Engagement in Rulemaking	1	0		1	1	1	1
III.A.3	Optimal safety, health, & consumer protection	0	1		0	0	0	0	0	0		0	0		0	0	0	0
III.B	Reduced burdens on daily operations	0	1		0	0	0	0	0	1	CPI	1	0		0	1	1	1
III.B.1	Transparent business inspections	0	0		0	0	0	0	0	0		0	0		1	1	1	0
III.B.2	Efficient tax administration	1	1		1	0	0	0	0	0	TADAT	1	0		1	1	1	0
III.C	Enhanced access to finance	1	1		0	0	0	0	0	0	FINDEX	1	0	FSAP	0	0	1	1
III.C.1	Enhanced collateral use & protection of minority shareholders, efficient financial markets	0	0		1	0	0	0	0	0	IASPlus	1	0		0	0	1	0
III.C.2	Available seed finance & grants	0	0		0	0	0	0	0	0		0	0		0	0	0	0
IV.A	Efficient problem resolution	1	1		0	0	1	0	0	0		1	0		0	1	1	1
IV.A.1	Improved investment protection guarantees	0	0	Moody's, Fitch, S&P	0	0	0	0	0	0	I-Tip	1	1		1	1	0	1
IV.A.2	Enhanced effectiveness of grievance mitigation	0	0		0	0	0	0	0	0		0	1		1	1	0	1
IV.A.3	Efficient ADR & commercial courts	0	0		1	0	1	0	1	0		1	0		0	0	1	0
IV.B	Efficient insolvency & exit frameworks	0	0		0	0	0	0	0	0		0	0		0	1	1	0
IV.B.1	Optimal capital repatriation regime	0	0	Moody's, Fitch, S&P	0	0	1	0	0	0	AREAER, I-Tip, OECD FDI Restrictiveness, WBG STRI	0	0		1	0	0	1
IV.B.2	Efficient insolvency mechanisms	0	0		1	0	0	0	0	0		1	0		0	0	1	0
V.A	Improved access to foreign markets	0	1	OFDI statistics	0	0	0	0	0	0	UNCTAD IIA database	0	0		0	1	0	1
V.A.1	Optimal use of product standards	0	1		0	0	0	0	0	0		1	0		0	0	0	1
V.A.2	Improved trade policy and customs regulations	1	1	Exported dynamics, WITS, Observatory of Economic Complexity	1	1	0	0	0	0	GPTA	1	0	LPI	0	1	1	1
V.B	Enhanced linkages with value chains	0	0	TIVA, GTAP, UNCTAD Eora, WITS	0	0	0	0	0	0		0	0		0	1	0	1
V.B.1	Increased value addition from local suppliers	0	1		0	0	0	0	0	0		1	0		1	0	0	1
V.B.2	Enhanced R&D quality standards	0	1		0	0	0	0	0	0		1	0		0	0	1	1
X	Initiating & sustaining reform	0	0	Kefer	1	0	0	0	0	1	Citizen Engagement in Rulemaking, ICRG	1	0		1	0	1	1

Attachment I

Indicators to measure trade facilitation in APEC economies

Sinclair Davidson *

Abstract

While economists have long understood the gains to be made from international trade, they have tended to ignore the transactions costs associated with actually trading across international borders. Maintaining an international border is costly. In particular international borders constitute an impediment to trade and impose additional costs on trade. Trade facilitation consists of a suite of policies and practices to simplify and rationalise the process of goods and services crossing international borders.

In this paper I analyse some of the better known trade facilitation indicators that have been developed by the World Bank. These indicators work reasonably well and should be adopted as policy benchmarks. There is one important caveat. Trade facilitation itself is associated with high fixed costs that high income economies can more easily bear.

The APEC region performs well above average world standards in the area of trade facilitation.

1. Introduction

Economists since Adam Smith have argued in favour of free trade – not only amongst individuals within any particular country, but especially for international trade. Since David Ricardo's work in the early 19th century economists have based their support for free trade on the theory of comparative advantage. That theory suggests that the gains from trade are driven by differences in opportunity cost. What is missing from that theory, however, is the actual process of trade – it is a theory of production. Goods are produced and then exchanged at zero cost. As we know following the work of Ronald Coase the costs of exchange are an important component of economic analysis and they need to be incorporated into any full analysis of economic activity.

It is not enough to simply produce goods at a price consumers are willing to pay. In practice goods need to be transported from the place of production to consumers. Furthermore intermediate goods need to be transported to production locations and, in the absence of a vertically integrated production process, traded between firms. So trade involves support services in order to take place. Most obviously transport infrastructure is necessary to facilitate trade, but also legal, accounting, warehousing services, and the like are also necessary.

In recent years there has been a lot of attention paid to international trade in services, but less attention has been paid to those services that facilitate trade in goods (and services). In this paper I examine the interaction between international trade and services productivity that facilitates that trade.

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The structure of the paper is as follows. Section 2 contains some background information relating to economists' understanding of trade theory and trade facilitation. Section 3 contains a discussion of the definitions of trade facilitation. Section 4 describes some of the indicators used to measure trade facilitation while section 6 contains some empirical analysis of those measures. Section 6 concludes.

2. Theoretical Antecedents

Classical economic theory revolved around production. The first industrial revolution saw the application of steam power to production processes and dramatically increased the amount of goods that could be produced. The absence of cheap and reliable transportation technology, however, ensured that both production and consumption tended to remain localised. The second industrial revolution, that saw the widespread introduction of rail transportation, broke the link between local production and local consumption. At this point the relative size of markets increased very dramatically leading to greater specialisation. At the same time developments in communications technology saw organisational innovation as firms were able to expand in size following increased market size.

In traditional style production processes all inputs to the production process would be assembled at a single plant (or location) and then the product would be manufactured. The location of the plant being either close to the source of materials or close to the market would depend on relative transportation costs. In a world, however, of dramatically reduced communications and transportation costs there is no reason to assemble all the production inputs at a single location and then assemble the product. Rather it may be efficient to produce the various component parts of the final product in various locations and then perform a final assembly at a single location.

In short the second industrial revolution not only broke the nexus between local production and local consumption, it also fragmented the production process itself where goods no longer were manufactured from raw materials into final products at a single location.

It is in this environment that services play an important role in both a theoretical and a practical sense. In small localised economies marketing and distribution services tended to be undertaken by producers in effectively vertically integrated firms. As market size increases, however, distribution costs become more important and need not occur within a vertically integrated firm. Arrow (1970) emphasised the linkage between transaction costs and vertical integration:

It is usually though not always emphasized that transaction costs are costs of running the economic system. An incentive for vertical integration is the replacement of the costs of buying and selling on the market by the costs of intrafirm transfers; the existence of vertical integration may suggest that the costs of operating competitive markets are not zero, as is usually assumed in our theoretical analysis.

Firms may now sub-contract out the distribution of their product, in turn giving rise to demand for other services (legal facilities and audit functions and the like). Classical economics pre-dates the second industrial revolution and the subsequent expansion in the services economy and as such tends to underplay the role of services in the economy.

This oversight has important real world consequences.

The theoretical argument for free trade rests on David Ricardo's theory of comparative advantage. In the example that Ricardo sets out England manufactures cloth and Portugal manufactures wine.

Portugal was assumed to be a superior producer of both cloth and wine but only have a comparative advantage in wine, while England had a comparative advantage in cloth. Both countries are better off in the example if they specialise in the production of cloth in England and wine in Portugal and then trade.

Ricardo's theory is entirely silent as to how the cloth gets to Portugal or the wine to England. Of course, Ricardo being a stock broker would have well understood the business of transporting goods to market and the costs associated with doing so. Yet what economists now recognise as being transaction costs are entirely absent from his analysis. Very likely, of course, those transaction costs are absent from any policy analysis and understanding that informs trade policy.

Miroudot, Sauvage and Shepherd (2013) describe these transaction costs as follows:

In goods markets, these costs include tariffs, non-tariff measures, transport charges, costs imposed by 'behind-the-border' regulatory measures, and costs related to geographical, cultural, and institutional differences. In services sectors, trade costs are largely related to regulatory measures that either create entry barriers or increase the cost burdens facing firms, in addition to geographical, cultural, and institutional differences.

It is well recognised that transaction costs can inhibit markets from developing at all. As Blinder (2006) has explained, "At any point in time, the available technology – especially in transportation and communications – largely determines what can be traded internationally and what cannot". So the notion of comparative advantage may not be as helpful in this area as economists' implicitly assume. Service industries that facilitate trade (as opposed to being exports in and of themselves) must be cost effective.

The current state of play in international trade has been summarised by Hoekman (2014) as follows:

Goods and services are increasingly produced in international supply chains, with suppliers in one country producing inputs that are processed in another and then shipped to one or more other countries. Each stage of the supply chain requires efficient logistics and other services to move products across borders.

Similarly Hoekman and Shepard (2013) make the linkage between the costs of international trade and transaction costs quite explicit.

Trade facilitation can therefore be seen as the "technology" of international trade—the set of policies and procedures that makes it possible for exporters and importers to engage in mutually beneficial transactions and that defines the total cost of getting a good from one country into another.

These arguments all underpin the notion that global trade – either in a traditional sense or in a global supply chain sense – can only work well when goods can be easily and efficiently transported from one place to another, and business service providers can facilitate local production and transport.

Once the point is made, it does seem obvious. Yet Debaere, Gorg and Raff (2013) point out:

At this point, however, there is little empirical evidence to link manufacturing firms' sourcing decisions to services beyond the general observation that any reduction in service-related costs will, just like any reduction in transportation costs, increase trade.

While as recently as 2014 Alan Deardorff wrote, "The Ricardian model has been around so long that someone must surely have worked out the role of trade costs within it. But if so, I have not seen it ...".

By contrast, however, a synthesis study undertaken by the Asia-Pacific Research and Training Network on Trade and the United Nations Network of Experts for Paperless Trade in Asia and the Pacific (2011) indicated that it was a "now well-established finding that benefits from trade facilitation generally exceed those that may be achieved through further tariff cuts".

It is possible to reconcile these two perspectives. The first relates to actual decision making by individual firms while the latter relies on macroeconomic logic. It is very possible for economists to understand that a process does work, while not having full understanding of the precise mechanisms that make the process work.

3. What is Trade Facilitation?

According to the Asian Development Bank and United Nations Economic and Social Commission for Asia and the Pacific (2013) trade facilitation constitutes the "plumbing" of the system of international trade. Specifically they argue that the "main objective" of trade facilitation is "to simplify the process and minimise transaction costs in international trade, while maintaining effective levels of government control". To be clear then, trade facilitation seeks to maintain government control over national borders – consistent with notions on national sovereignty – while ensuring that the benefits and gains from trade are maximised. Consistent with this definition, APEC defines trade facilitation as follows:

The simplification and rationalization of customs and other administrative procedures that delay or increase the costs of moving goods across international borders.

In practice this means that those service industries associated with trade should operate at the same levels of cost and efficiency in an international setting as they do in a domestic setting. Given that the costs of shipping goods across international borders is unlikely to be zero, trade facilitation then requires that those costs be minimised.

An additional consideration is that trade facilitation policies themselves be subject to a benefit-cost analysis. The benefits of trade facilitation policies are likely to be macroeconomic in nature and thus less amenable to precise measurement. By contrast the costs of trade facilitation are microeconomic in nature and much easier to measure. Benefits include improved trade competitiveness, improved economic growth prospects, and increased levels of Foreign Direct Investment. Costs include regulatory change costs, equipment costs, and potentially revenue losses from border operations. Nonetheless most economists and many policy analysts argue that the gains from trade are so large that trade facilitation should be actively pursued.

4. Measuring Trade Facilitation

In order to measure trade facilitation we must first have an understanding of what we are looking for. In this sense Deardorff (2001) has provided theoretical pointers to what is important. In his model there are three sources of gains from trade when service provision is liberalised:

- Comparative Advantage as traditionally described. Making use of the least cost service provider to provide the entire service constitutes the gains from trade as originally described by Ricardo.
- Reduced distance. This relates to travel distance undertaken by goods. In the absence of a single service provider (or integrated service providers) the actual distance to market may be greater than the economically least-cost distance to market.
- Reduction in fixed costs. Reducing the number of service providers eliminates double handing and the associated fixed costs.

In addition to these factors, Deardorff (2001) speculates that other (additional) considerations may play a role:

- Economies of distance. Some service provision may be cheaper to operate over longer distances than shorter distances.
- Economies of scale. Liberalisation in trade service provision may see more efficient service providers displace less efficient service providers (thereby becoming larger).
- Border Frictions. Arbitrary segmentation of trade routes adds to the cost of trade. Integration of trade routes reduces costs.
- Time.
- Regulatory costs. Segmented service provision would (potentially) have to comply with very different government regulations.
- Red tape costs.

As Deardorff (2001) admits many of these costs are implicit within each other and may well overlap. What is particularly problematic from a theoretical perspective is that it is not necessarily clear whether the costs are large or small.

From a practical perspective the problem is even greater.

Existing measures of trade facilitation do not capture the three sources of gain that Deardorff (2001) actually identifies in his theoretical model. At best they capture some of the sources that he speculates about as being important.

Broadly speaking there are two categories of empirical measure of trade facilitation. First various indices have been constructed that measure specific aspects of trade facilitation (or very often trade restrictiveness). Second estimates of trade barriers have been calculated from econometric models. In these models actual trade is compared to (empirical estimates of) theoretical trade levels and the difference between the two ascribed to the existence of trade barriers.

4.1 Indices

In this section I want to draw attention to two performance indicators that can be used to measure trade facilitation. Both of these indicators are indices created by the World Bank.

- Logistics Performance Index (LPI): Here the World Bank creates indices based on surveys of logistics operators. The World Bank creates indices in six areas:
 - Customs: The efficiency of customs and border management.
 - Infrastructure: The quality of trade and transport infrastructure.
 - Ease of shipment: The ease of arranging competitively priced shipments.
 - Quality of service: The competence and quality of trucking, forwarding, and customs brokerage.
 - Tracking: The ability to track shipments.
 - Timeliness: The frequency of shipments reaching consignees in expected delivery times.

These series are available with a two year lag since 2007 and are released every two years. The most recent data are available for 160 economies.

- Doing Business: This index attempts to measure “objective measures of business regulations and their enforcement” for small and medium sized companies. The latest data set covers 189 economies and has 11 indicators. Data are available from 2002 and are released every year with a one-year lag. For the purposes of this paper, the “Trading across borders” is of interest.

In addition the Business Enterprise dataset also provides some useful indicators. The disadvantage of this dataset is that the data are not updated frequently.

4.2 Econometric Estimates

Econometric estimates of trade transaction costs usually employ the so-called gravity model. The underlying principle of this model comes from Newtonian physics - the gravitational force between two objects in space is inversely related to the distance between them. In econometric terms the force between the two countries (objects) is measured by trade (exports and imports) and the distance between the two countries is measured by various costs and impediments to trade.

While there has been substantial academic interest in these estimates and estimation techniques (see Anderson and Wincoop 2003, 2004, Novy 2013 and Miroudot, Sauvage and Sheperd 2012, 2013) the literature is relatively recent, and it is computationally and data intensive. Specifically the estimation techniques are useful for bilateral trade situations but they do not provide easily available and understandable insights into specific trade policy debates. While this literature is important in a general sense, and should not be ignored, much more work needs to be undertaken before the results of this research program can be routinely employed by policy makers.

5. Empirical Analysis

In this section I explore the usefulness of the Doing Business Trading across Borders measures and the Logistics Performance Indices. I collect data for the year 2012 from the World Bank. That is the latest year that provides comprehensive and complete data for the variables on interest and the economic data being used to evaluate the variables. In total I am able to collect data for 144 economies.

In the first instance, I segment by Trade as a percentage of GDP and GDP per capita. The data are divided into above and below median and then assigned to one of four quadrants. Table one sets out the features of each quadrant.

Table 1: Quadrants I

Quadrant	Features	Count	Average GDP per capita	Average Trade % GDP
1	High GDP per capita; High Trade % GDP	38	34924.72	151.75
2	High GDP per capita; Low Trade % GDP	34	26634.56	62.87
3	Low GDP per capita; High Trade % GDP	34	5512.24	112.02
4	Low GDP per capita; Low Trade % GDP	38	4788.99	58.27

Source: World Bank Development Indicators, Author calculations

The first regularity to note is the difference in GDP per capita in high and low trade economies. Those economies with higher levels of trade also have higher levels of GDP per capita. The difference between GDP per capita in quadrants 1 and 2 is statistically significantly different from zero ($t = 2.15$). The difference in GDP per capita in quadrants 3 and 4, however, is not statistically significantly different from zero ($t = 0.89$).

I then examine the World Bank Doing Business indicators by quadrant and test the summary statistics for statistically significant differences. Results are shown in table 2.

Table 2: Doing Business Trading Across Borders I

	Cost to Export (US\$)	Cost to Import (US\$)	Export Documents	Import Documents
Average	1393.92	1627.41	6.01	6.97
1	1006.68	1132.26	4.55	5.24
2	1493.97	1636.71	5.21	6.29
3	1596.26	1880.38	7.12	8.06
4	1510.61	1887.89	7.21	8.32

Source: World Bank Doing Business, Author calculations

In each instance high GDP per capita and high Trade economies outperform all other economies by a statistically significant margin. In the case of quadrant 1 economies the US\$ cost to export or import a container is substantially lower than that for all other economies. Similarly the bureaucratic paperwork associated with exporting and importing a container is substantially (and statistically significantly) lower than in all other economies.

In the same way I also examine the Logistics Performance Index – results shown in table 3.

Table 3: Logistics Performance Index I

LPI Indicator (1=low to 5=high)/Quadrant	1	2	3	4	Average
Ability to track and trace consignments	3.32	3.28	2.55	2.58	2.96
Competence and quality of logistics services	3.25	3.16	2.51	2.54	2.89
Ease of arranging competitively priced shipments	3.19	3.14	2.53	2.58	2.88
Efficiency of customs clearance process	3.12	2.95	2.38	2.36	2.73
Frequency with which shipments reach consignee within scheduled or expected time	3.62	3.62	2.94	3.00	3.32
Quality of trade and transport-related infrastructure	3.27	3.20	2.47	2.40	2.86
Overall	3.30	3.22	2.56	2.58	2.94

Source: World Bank Connecting to Compete, Author calculations

In each case those economies in quadrants 1 and 2 clearly outperform economies in quadrants 3 and 4. The differences that we see between quadrants 1 and 2 are not statistically significantly different from zero – so too for the differences between quadrants 3 and 4. The differences, however, between quadrants 1 and 2 and then 3 and 4 are statistically significantly different from zero. What this means is that high income economies perform well on the Logistics Performance indicators irrespective of whether they perform well in trade. In essence the Logistics Performance Index (and its component parts) are telling us more about the level of income in the economy than they are about trade.

There is an explanation for this finding: the policy of trade facilitation itself is not costless and maintaining an efficient border entails incurring high fixed costs. Clearly higher income economies are better able to incur those costs than lower income economies and as such have better facilities and infrastructure. While this result is consistent with economic theory, it is less helpful for economic policy.

I then reverse the analysis – and recalculate quadrants by segmenting the data by Export Costs and Import Costs. As before I break up the data by median and allocate economies to one of four quadrants depending on whether the economy is above or below the median Export or Import Cost (see table 4).

Table 4: Quadrants II

Quadrant	Features	Count	Average GDP per capita	Average Trade % GDP
1	Low Import Cost, Low Export Cost	60	23152.44	105.64
2	Low Import Cost, High Export Cost	11	10544.60	86.22
3	High Import Cost, Low Export Cost	11	22059.69	101.50
4	High Import Cost, High Export Cost	62	13779.33	89.09

Source: World Bank Development Indicators, Author calculations

The first point to note is that most economies are consistent in their approach to trade costs. The costs of Exports and Imports are either high or low. There are very few economies that have high (low) Export Costs and low (high) Import costs. The average GDP per capita in quadrant 1 economies is statistically significantly higher than that of quadrant 2 and 4 economies, but not quadrant 3. On the other hand, there are no statistically significant differences between the average Trade % GDP for any of the quadrants. Even between the polar cases of quadrants 1 and 4 the t-statistic for no

difference = 1.84. This result is consistent with the previous observation that trade facilitation is associated with high fixed costs and higher income economies are better able to incur those costs.

In table 5 I investigate the Logistics Performance Index relative to Trade Costs.

Table 5: Logistics Performance Index II

LPI Indicator (1=low to 5=high)/Quadrant	1	2	3	4	Average
Ability to track and trace consignments	3.18	2.65	2.97	2.76	2.96
Competence and quality of logistics services	3.08	2.64	2.90	2.73	2.89
Ease of arranging competitively priced shipments	3.08	2.69	2.90	2.70	2.88
Efficiency of customs clearance process	2.93	2.42	2.72	2.57	2.73
Frequency with which shipments reach consignee within scheduled or expected time	3.52	3.06	3.34	3.14	3.32
Quality of trade and transport-related infrastructure	3.07	2.50	2.82	2.70	2.86
Overall	3.14	2.66	2.94	2.77	2.94

Source: World Bank Connecting to Compete, Author calculations

As before the average indicators for quadrant 1 are statistically significantly different (higher) than those in quadrants 2 and 4, but not quadrant 3. In this sense the Logistics Performance Index works well. It correctly identifies economies with high and low trade costs. Unfortunately those costs are very highly correlated with national income.

Finally I gather up data from the World Bank Trade Facilitation web-page that contains summary data from a range of World Bank and non-World Bank sources and examine the differences by the two quadrant measures. Results are shown in table 6. The results are qualitatively similar to the previous results.

Table 6: World Bank Trade Facilitation Summary Indicators

		Logistics performance index	Burden of customs procedures	Lead time		Documents		Liner shipping connectivity index	Quality of port infrastructure	Freight costs to the United States
				To export	To import	To export	To import			
		1-5 (worst to best)	1-7 (worst to best)	days	days	number	number	0-100 (low to high)	1-7 (worst to best)	\$
		2014	2014	2014	2014	2014	2014	2014	2014	2015
Average		2.99	4.14	3.19	3.83	5.99	6.92	30.12	4.17	148.72
Quadrant I	1	3.39	4.71	1.29	2.16	4.55	5.21	41.16	4.97	147.13
	2	3.25	4.32	2.38	2.58	5.21	6.26	38.72	4.58	137.09
	3	2.59	3.72	2.95	3.35	7.12	8.09	14.20	3.30	157.36
	4	2.65	3.66	6.80	7.84	7.13	8.18	21.85	3.55	152.70
Quadrant II	1	3.20	4.44	1.92	2.32	5.22	5.97	40.62	4.77	145.44
	2	2.54	3.22	4.00	8.25	5.82	7.82	11.78	3.54	134.30
	3	3.06	4.05	2.38	3.25	6.00	6.73	15.76	3.79	161.50
	4	2.81	3.94	4.65	5.22	6.77	7.73	22.42	3.66	152.15

Source: World Bank, Author calculations

Table 7: How well does APEC perform on the World Bank Trade Facilitation Summary Indicators?

	Logistics performance index	Burden of customs procedures	Lead time		Documents		Liner shipping connectivity index	Quality of port infrastructure	Freight costs to the United States
			To export	To import	To export	To import			
	1-5 (worst to best)	1-7 (worst to best)	days	days	number	number	0-100 (low to high)	1-7 (worst to best)	\$
	2014	2014	2014	2014	2014	2014	2014	2014	2015
Average	2.99	4.14	3.19	3.83	5.99	6.92	30.12	4.17	148.72
APEC	3.46	4.65	1.72	2.00	4.58	5.42	60.31	4.91	115.71
Non-APEC	2.91	4.05	3.49	4.20	6.21	7.15	24.09	4.03	153.48

Source: World Bank, Author calculations

In table 7 I repeat the analysis shown in table 6 but segment the data by APEC membership. APEC performs very well in trade facilitation as a group. With the exception of Lead Time to Export the differences between APEC and non-APEC economies is statistically significantly different from zero.

6. Conclusion

International trade generates massive economic gains both in the home economy and the trading partner. Economists have known and understood this principle for hundreds of years. What is less well understood in a theoretical framework is how transactions costs impede international trade. In particular is it expensive to move goods and services across international borders. Those transactions costs require the provision of services to facilitate international trade.

Policy orientated trade economists and policy orientated organisations (such as the World Bank) have developed a suite of indicators to measure the extent of trade facilitation. As I have shown in this paper, these measures work well in an empirical context, although they do not capture the theoretical aspects of trade facilitation (as spelt out by Deardorff 2001). It is not clear that consistent and coherent indicators could be developed along the lines he suggests – indeed the three factors he identifies as being the greatest sources of gain from trade facilitation are highly related to entrepreneurial insight and consequently are not observable.

Those measures of trade facilitation that are observable and have been empirically estimated are shown to work reasonably well and should be employed for policy reform and discussion. There is, however, an important caveat that the research identifies: moving goods across an international border is costly; attempts to ameliorate those costs are themselves costly. High income economies are better able to bear the fixed costs associated with trade facilitation than are lower income economies. This insight, of course, merely emphasises the importance of greater international cooperation in trade policy.

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8. Appendices

Table A.1 Quadrant I Segmented Country List

High GDP per capita, High Trade % GDP	High GDP per capita, Low Trade % GDP	Low GDP per capita, High Trade % GDP	Low GDP per capita, Low Trade % GDP
1	2	3	4
Antigua and Barbuda	Algeria	Angola	Albania
Austria	Australia	Belize	Armenia
Bahamas, The	Azerbaijan	Bosnia and Herzegovina	Bangladesh
Bahrain	Brazil	Cambodia	Benin
Belarus	Canada	Fiji	Bolivia
Belgium	Chile	Gambia, The	Burundi
Botswana	Colombia	Georgia	Cameroon
Brunei Darussalam	Costa Rica	Ghana	China
Bulgaria	Croatia	Guinea	Comoros
Cyprus	Dominican Republic	Honduras	Congo, Dem. Rep.
Czech Republic	Finland	Kyrgyz Republic	Dominica
Denmark	France	Lao PDR	Ecuador
Estonia	Greece	Lesotho	Egypt, Arab Rep.
Germany	Iraq	Liberia	El Salvador
Hong Kong SAR, China	Israel	Macedonia, FYR	Ethiopia
Hungary	Italy	Malawi	Grenada
Iceland	Japan	Maldives	Guatemala
Ireland	Kazakhstan	Mauritius	Guinea-Bissau
Jordan	Malta	Moldova	Haiti
Korea, Rep.	Mexico	Mongolia	India
Kuwait	New Zealand	Morocco	Indonesia

Latvia	Norway	Namibia	Kenya
Lebanon	Portugal	Nicaragua	Mozambique
Libya	Romania	Paraguay	Nepal
Lithuania	Russian Federation	Sierra Leone	Niger
Luxembourg	Saudi Arabia	Solomon Islands	Nigeria
Malaysia	South Africa	St. Lucia	Pakistan
Netherlands	Spain	St. Vincent and the Grenadines	Peru
Oman	St. Kitts and Nevis	Swaziland	Philippines
Panama	Turkey	Tajikistan	Rwanda
Poland	United Kingdom	Tunisia	Samoa
Seychelles	United States	Ukraine	Sao Tome and Principe
Singapore	Uruguay	Vanuatu	Sri Lanka
Slovak Republic	Venezuela, RB	Vietnam	Sudan
Slovenia			Tanzania
Sweden			Tonga
Switzerland			Uganda
Thailand			Zambia

Table A.2 Quadrant II Segmented Country List

Low Import Cost, Low Export Cost	Low Import Cost, High Export Cost	High Import Cost, Low Export Cost	High Import Cost, High Export Cost
1	2	3	4
Angola	Antigua and Barbuda	Algeria	Albania
Armenia	Bahamas, The	Bosnia and Herzegovina	Australia
Bahrain	Benin	Comoros	Austria
Brunei Darussalam	Dominica	Croatia	Azerbaijan
Cambodia	Guinea	Czech Republic	Bangladesh
Chile	Lebanon	Ireland	Belarus
China	Mozambique	Italy	Belgium
Costa Rica	St. Kitts and Nevis	Liberia	Belize
Cyprus	St. Lucia	Libya	Bolivia
Denmark	St. Vincent and the Grenadines	Nicaragua	Botswana
Dominican Republic	Tanzania	Norway	Brazil
Egypt, Arab Rep.			Bulgaria
El Salvador			Burundi
Estonia			Cameroon
Fiji			Canada
Finland			Colombia
Gambia, The			Congo, Dem. Rep.

Germany			Ecuador
Ghana			Ethiopia
Greece			France
Hong Kong SAR, China			Georgia
Hungary			Grenada
India			Guatemala
Indonesia			Guinea-Bissau
Israel			Haiti
Japan			Honduras
Jordan			Iceland
Korea, Rep.			Iraq
Kuwait			Kazakhstan
Latvia			Kenya
Lithuania			Kyrgyz Republic
Malaysia			Lao PDR
Malta			Lesotho
Mauritius			Luxembourg
Morocco			Macedonia, FYR
Netherlands			Malawi
New Zealand			Maldives
Oman			Mexico
Pakistan			Moldova
Panama			Mongolia
Peru			Namibia
Philippines			Nepal
Poland			Niger
Portugal			Nigeria
Samoa			Paraguay
Sao Tome and Principe			Romania
Saudi Arabia			Russian Federation
Seychelles			Rwanda
Singapore			Sierra Leone
Slovenia			Slovak Republic
Solomon Islands			South Africa
Sri Lanka			Spain
Sweden			Sudan
Thailand			Swaziland
Tonga			Switzerland
Tunisia			Tajikistan
Turkey			Uganda
United Kingdom			Ukraine
United States			Uruguay
Vietnam			Vanuatu
			Venezuela, RB
			Zambia

Table A.3 APEC Quadrant Allocations

Country Name	Quadrant I	Quadrant II
Australia	2	4
Brunei Darussalam	1	1
Canada	2	4
Chile	2	1
China	4	1
Chinese Taipei	-	-
Hong Kong SAR, China	1	1
Indonesia	4	1
Japan	2	1
Korea, Rep.	1	1
Malaysia	1	1
Mexico	2	4
New Zealand	2	1
Papua New Guinea	-	-
Peru	4	1
Philippines	4	1
Russian Federation	2	4
Singapore	1	1
Thailand	1	1
United States	2	1
Vietnam	3	1