

Foreign Direct Investment, Regulation, and Trade Costs :

A Focus on Landlocked Developing Countries¹

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Abstract

Landlocked developing countries (LLDCs) across regions tend to have higher export costs -as measured by Doing Business indicators- than their coastal neighbors, and attract less FDI. The negative correlation between FDI and trade costs across developing countries may be suggestive of the important role trade costs may play in attracting FDI. Using bilateral data of FDI in a gravity model context, we find a negative and significant impact of export costs on incoming FDI. In regard to the policy agenda, trade facilitation reform to lower trade costs through domestic reform and through regional cooperation may also have an “FDI facilitation” effect.

1. Introduction: LLDCs and the business regulatory environment.

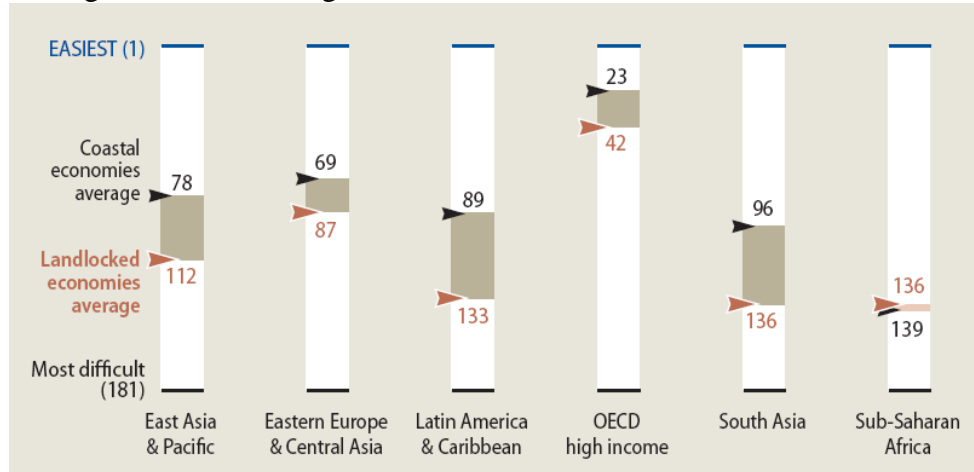
The most recent *Doing Business* data shows that landlocked economies’ business regulatory environments are generally far less conducive to private sector development than those of developed and coastal developing economies². Indeed, the average ranking of landlocked economies in *Doing Business 2009* is 107. This compares with an average ranking of 27 for OECD high income countries. Moreover, coastal developing countries outperform landlocked economies, in terms of average *Doing Business* ranking, in every region except for Sub-Saharan Africa (Botswana – has a relatively business-friendly regulatory framework) as shown in Figure 1.

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² See Box 1 for a short explanation on Doing Business indicators.

Figure 1

Doing Business Ranking of Landlocked economies vs. Coastal Economies



Source: Doing Business in Landlocked Economies (2008)

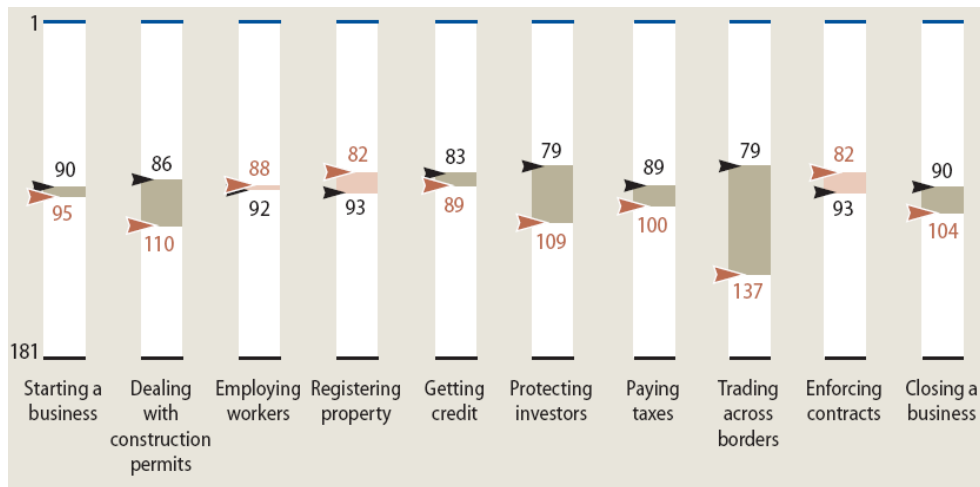
Landlocked countries, as a group, perform worse than coastal economies in seven of the ten areas measured by the *Doing Business* survey: starting a business, dealing with construction permits, getting credit, protecting investors, paying taxes, trading across borders, and closing a business. The differences between these two groups of countries in the ‘trading across borders’ indicators are large. Moreover, as the *Doing Business* rankings, landlocked countries face average export times and cost that are about double the respective averages for coastal economies despite the fact that the average number of documents for export is only slightly higher.

Box 1. Doing Business Indicators

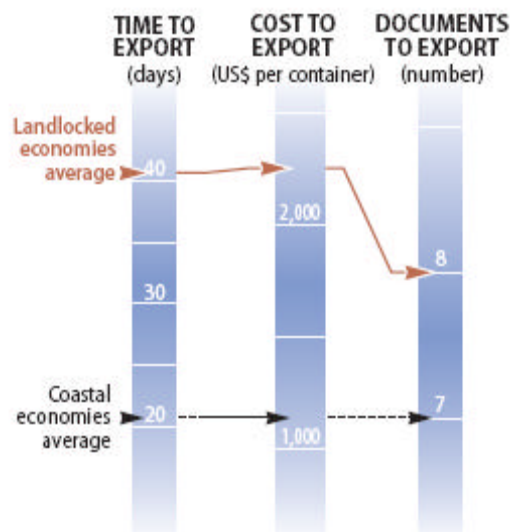
Doing Business ranks 181 economies based on 10 indicators of business regulation that record the time and cost to meet government requirements in starting and operating a business, trading across borders, paying taxes, and closing a business. The rankings do not reflect such areas as macroeconomic policy, quality of infrastructure, currency volatility, investor perceptions, or crime rates.

The ten categories across which economies were measured include: Starting a Business, Obtaining Construction Permits, Employing Workers, Registering Property, Getting Credit, Protecting Investors, Paying Taxes, Trading across Borders, Enforcing Contracts, and Closing a Business. *Doing Business 2009* identifies 239 reforms between June 2007 and June 2008 that make it easier to do business in 113 economies.

Figure 2
Doing Business indicators for LLDCs and coastal economies



Longer delays, higher costs for exporters in landlocked economies



Source: Doing Business in Landlocked Economies (2008)

Box 2. Doing Business – Trading Across Borders Indicators

Doing Business – Trading across Borders compiles procedural requirements for exporting and importing a standardized cargo of goods by ocean transport. Every official procedure for exporting and importing the goods is recorded—from the contractual agreement between the two parties to the delivery of goods—along with the time and cost necessary for completion. All documents required for clearance of the goods across the border are also recorded. For exporting goods, procedures range from packing the goods at the factory to their departure from the port of

exit. For importing goods, procedures range from the vessel's arrival at the port of entry to the cargo's delivery at the factory warehouse.

Information on required documents and cost as well as the time to complete each procedure are provided by local freight forwarders, shipping lines, customs brokers and port officials. However, in order to make the data comparable across countries, several parameters are used with respect to the types of businesses and the traded goods that are surveyed.

Parameters. The business must: Have 100 or more employees.

- Be located in the country's most populous city.
- Be a private, limited liability company. It does not operate within an export processing zone or an industrial estate with special export or import privileges.
- Be domestically-owned with no foreign ownership.
- Export more than 10 percent of its sales.

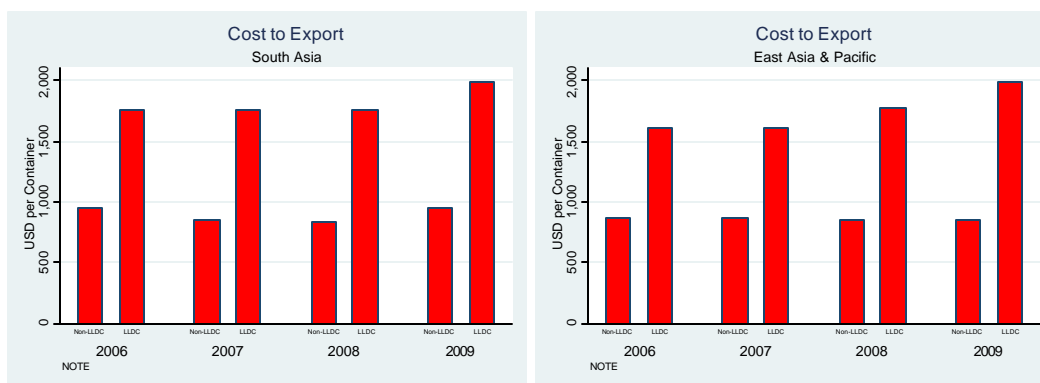
The traded good must:

- Travel in a dry-cargo, 20-foot, full container load.
- Not be hazardous nor include military items.
- Not require refrigeration or any other special environment.
- Not require any special phytosanitary or environmental safety standards other than accepted international standards.

Landlocked developing countries, as a result of their geographical disadvantage, face trade costs that are, on average, much higher than those faced by coastal developing countries.

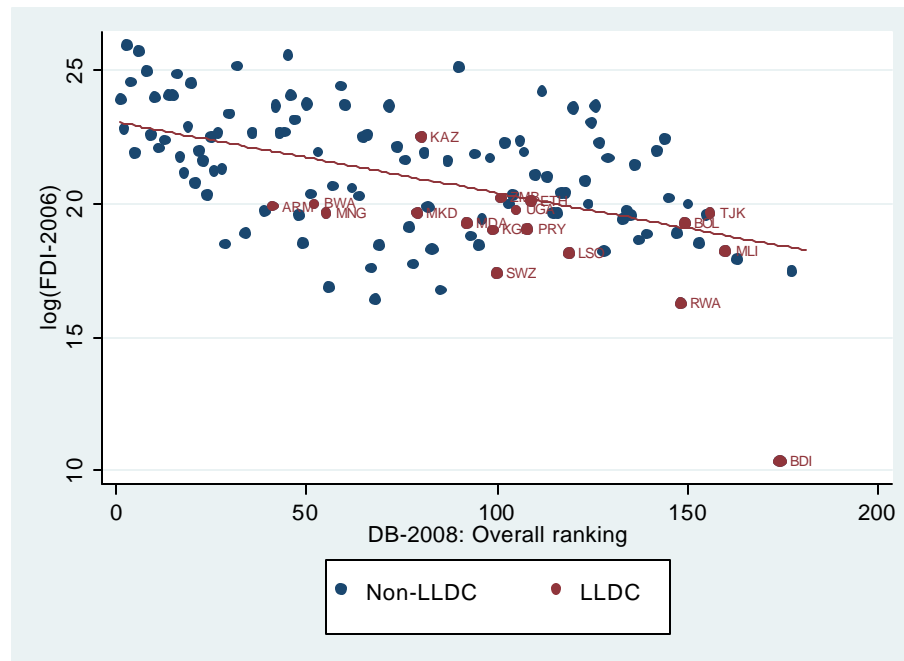
This same pattern is apparent *within* most developing regions, as well. For example, within East Asia and Sub-Saharan Africa, the average cost to export from coastal states has either decreased slightly or remained more or less the same between 2006 and 2009. In contrast, landlocked economies have seen export costs increase significantly.

Figure 3
Trading-Across-The-Borders indicators



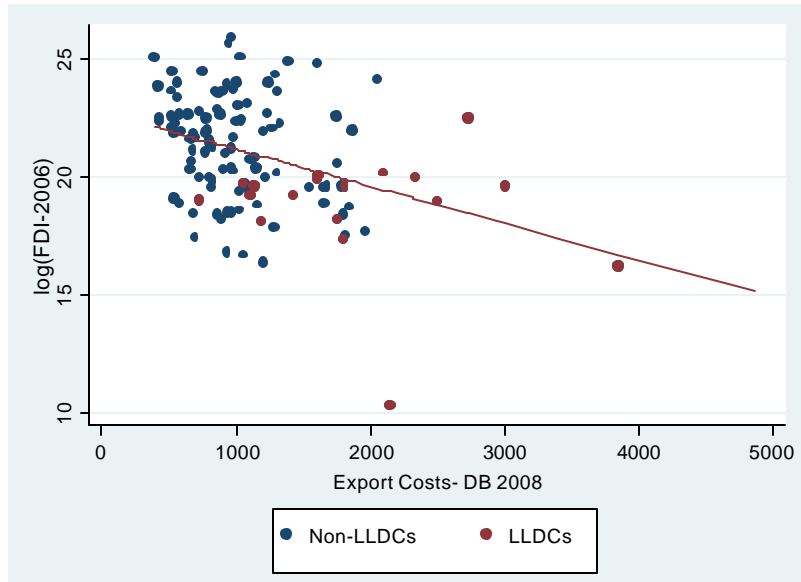
A negative correlation also exists between economies' Doing Business scores and the amount of inward foreign direct investment (FDI) they attract, as shown in figure 5. This seems logical, as a lower overall Doing Business rank represents a less friendly business regulatory environment. Interestingly, however, this negative correlation is much stronger for landlocked developing countries than it is for coastal developing countries.

Figure 5
FDI and the Doing Business ranking



Trade costs -as measured here by average export costs - also seem to exert a considerable influence on FDI inflows. Indeed, figures 6a and 6b portray FDI in levels and in per capita terms against the costs of exports. As mentioned previously, the Doing Business 'trading across borders' indicators show the biggest differentials between landlocked and coastal developing countries amongst all Doing Business categories. This may suggest that trade costs may play an important role in determining FDI attractiveness and would be empirically explored in next section.

Figure 6
FDI and Export-costs: A Negative Relationship.
a) FDI In Levels (logarithmic scale) vs Export Costs



b) FDI per capita (logarithmic scale) vs Export Costs

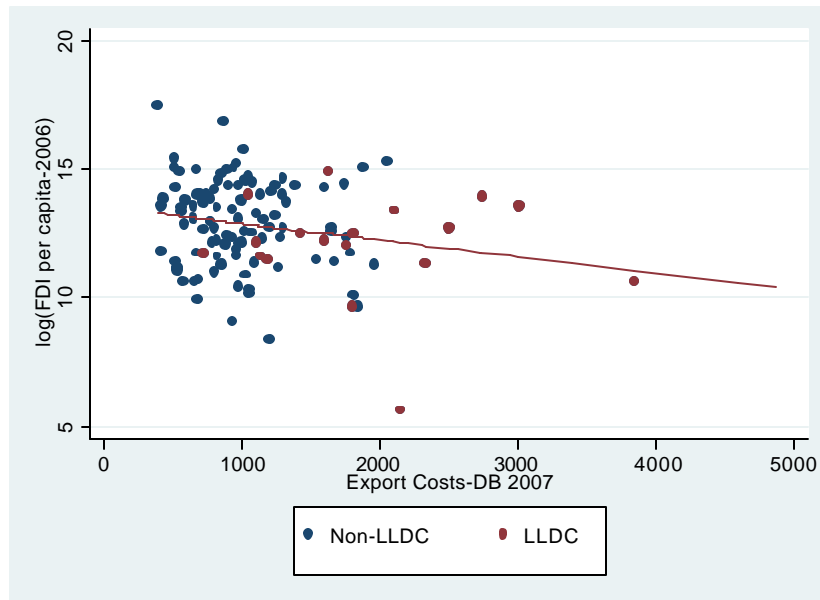
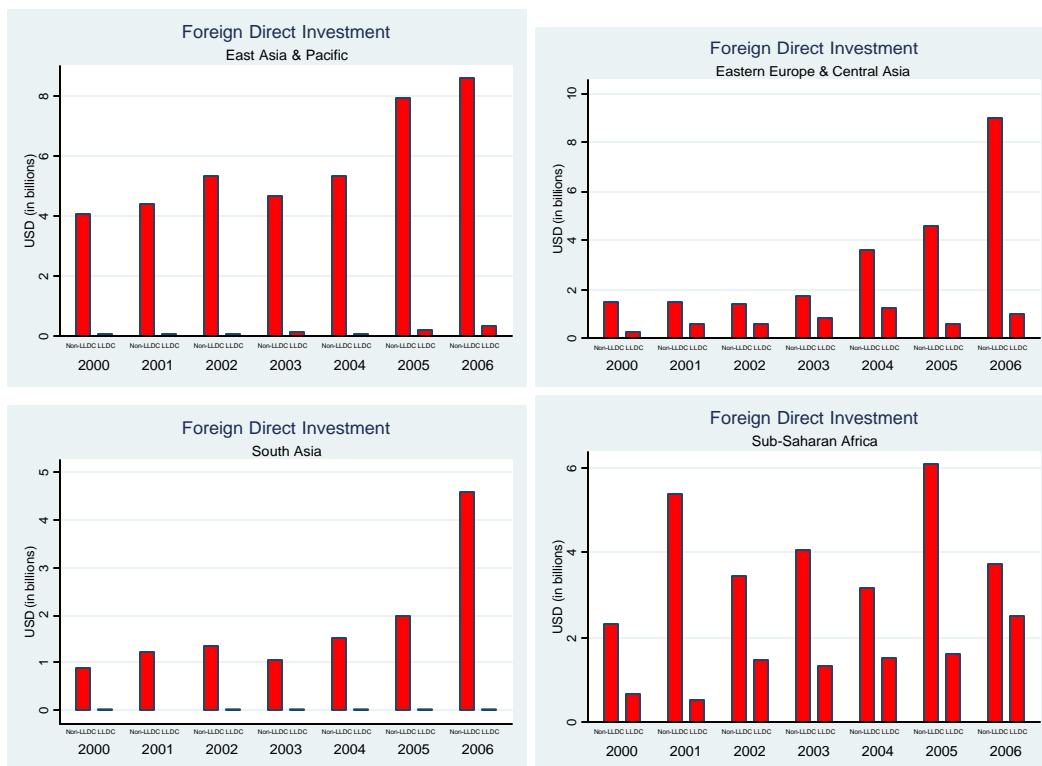


Figure 7 breaks down the average FDI incoming flows between LLDCs and coastal developing countries by region. Indeed, coastal economies attract in average much more FDI than their regional landlocked counterparts. In some regions, such as South Asia and East Asia, the amount of FDI flowing into LLDC's has been more or less constant, while amounts flowing into coastal states have risen exponentially. Although some of this differential may be attributed to differences in GDP across countries, this FDI trend holds when expressed both in per capita terms and as a ratio of GDP.

Figure 7
Average incoming flows of FDI for LLDCs and Coastal Developing Countries



3. The impact of trade costs measures and incoming flows of FDI: preliminary estimates

The previous section has highlighted the negative relationship between FDI and trade costs, as measured by Doing Business. In this section, we employ a gravity-based FDI model to further explore the impact of trade costs on FDI. Although there are no theoretical foundations similar to the ones stated by Anderson and van Wincoop (2003) for the gravity model of trade, there have been several attempts to provide a modeling structure underlying the FDI gravity model, notably by Markusen and Venables (1998

and 2000). In addition, this empirical approach has been widely adopted in the literature to explain bilateral FDI.³

The basic equation to be estimated in cross section is:

$$\ln(FDI_{ij}) = \mathbf{b}_0 \ln(ExportCost_j) + \mathbf{b}_1 \ln(GDP_i) + \mathbf{b}_2 \ln(GDP_j) + \mathbf{b}_3 \log(dist_{ij}) \\ \dots + \mathbf{b}_4 X_{ij} + \mathbf{b}_5 \mathbf{h}_i + \mathbf{b}_6 \mathbf{m}_j + \mathbf{e}_{ij}$$

Where FDI_{ij} is FDI from source country (i) to host country (j) ; $ExportCost_j$ is the cost of exporting the host country (j) as reported by Doing Business in 2008; (GDP_i) and (GDP_j) are GDPs in US dollar for the source country (i) and the host country (j); $dist_{ij}$ the geographical distance between the host and source countries; X_{ij} is a vector of dummies capturing source-host specific aspects such as the existence of colonial ties and a common primary language; \mathbf{h}_i denotes unobserved source-country effects ; \mathbf{m}_j stands for unobserved host-country effects; and \mathbf{e}_{ij} is an error term.

We use the OECD database on bilateral stocks and flows⁴. Our sample consists of a cross section of FDI bilateral flows and stocks between 30 OECD source countries and 174 host countries. GDP data was compiled from the World Bank World Development Indicators. Standard gravity variables were compiled from CEPII. We use source-country and host-country specific dummies to account for unobserved effects.

Table 1 presents the results of estimating the basic gravity model on different FDI measures. Overall, all coefficients have the expected sign. Higher trade costs, as measured by Doing Business, have a negative impact on FDI even controlling for other variables. A country having a larger GDP tends to attract more FDI. Similarly, richer OECD countries will tend to invest more. Column 1 reports the truncated OLS method with the logarithm of the average FDI stocks between 2004 and 2006 as the dependent variable.

The average values of FDI are used to attenuate the variability of FDI yearly data as well as potential measurement error. A logarithmic transformation is used to avoid giving too much weight to lines with high-levels of FDI and. The use of logarithms, however, brings in a truncation problem as observations with zero-FDI –which constitute about two-thirds of the sample - are left out. To address the truncation problem, we estimate the gravity equation with a variation of the Tobit Model proposed by Eaton and Tamura (1996) and also used in the case of FDI gravity by Wei (2000) in which a parameter a_v is added to FDI prior using a logarithmic transformation $\ln(a_v + FDI_{ij})$. Accordingly, the maximum likelihood (ML) function is modified to endogenize the choice of the

³ See for instance Wei (2000), Bénassy-Quéré et al (2007), Hattary and Rajan (2008)

⁴ Other papers having used bilateral FDI data from the are Bénassy-Quéré, Coupet and Mayer (2007), Daude and Stein (2004), Head and Ries (2008), Loungani, Mody and Razin (2002), Razin, Rubinstein and Sadka (2003), and Stein and Daude (2007).

parameter a_v . This means that the ML estimator includes an estimate of the value of a_v among the set of estimates which means that the dependent variable will be censored at the value among the set of estimates which means that the dependent variable will be censored at the value (see de Melo and Portugal-Perez (2008) for details in the so called Eaton Tamura (ET) tobit model)

Table 1
Some preliminary results.

	1	2	3	4
	OLS	ET-Tobit	ET-Tobit	ET-Tobit
	ln(FDI 04-06) (stock)	ln(a_v+FDI 04-06) (stock)	Ln(a_v+FDI 06) (stock)	ln(a_v+FDI 04-06) (flow)
$\ln(ExportCost_j)$	-1.8	-2.79	-2.96	-1.75
	[0.97]*	[0.56]***	[0.78]***	[0.58]***
$\ln(\overline{GDP}^{04-06}_j)$	0.3	1.15		0.98
	[0.31]	[0.08]***		[0.09]***
$\ln(\overline{GDP}^{04-06}_i)$	1.04	0.82		0.75
	[0.10]***	[0.05]***		[0.05]***
Ln(dist_{ij})	-1.33	-1.92	-1.96	-1.42
	[0.08]***	[0.09]***	[0.11]***	[0.08]***
Colonial_{ij}	1.21	1.92	1.8	1.13
	[0.20]***	[0.23]***	[0.32]***	[0.22]***
Common language_{ij}	0.52	0.64	0.33	0.85
	[0.19]***	[0.20]***	[0.26]	[0.18]***
$\ln(GDP^{2006}_j)$			1.24	
			[0.11]***	
$\ln(GDP^{2006}_i)$			0.82	
			[0.06]***	
Constant	-8.4	-9.06	-9.24	-17.24
	[10.83]	[4.84]*	[6.51]	[5.61]***
Observations	1802	5130	4950	5130
R-squared	0.75			

Standard errors in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

All regressions include host-country specific fixed effects as well as source-country fixed effects.

Column 2 reports ET-Tobit estimates. Notice that all coefficients remain unchanged. Regression 3 only considers the stock in FDI 2006. Regression 4 takes into account an average of the FDI flow between 2004 and 2006.

(To complete.....)

The analysis in the previous section requires additional revisions and augmentation. We will add additional variables to the model and also address endogeneity issues and employ IV approach in revisions and robustness checks.

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4. Why trade costs matter

Trade costs matter to export success and developing countries. Trade costs can be broadly defined to encompass costs incurred in getting a final good to a final user, other than the cost of producing the good. In a review of the literature on different trade costs sources, Anderson and Van Wincoop (2004) provide a rough estimate of 170% (in terms of ad-valorem equivalent) of representative trade costs for industrialized countries. They breakdown this estimate into three components: a 21% ad-valorem equivalent for transportation costs, 44 % for border-related trade barriers, and 55% percent for retail and wholesale distribution costs⁵.

While approximate and subject to data limitations, the data suggest that trade costs for developed countries -including both international trade costs and domestic distribution costs- are likely larger than the cost of producing the good itself. Evidently, trade costs have different magnitude and patterns across countries and regions, as well as across goods and sectors and trade costs as a ratio of production costs is much more larger for developing countries.

Among developing countries, LLDCs are particularly in disadvantage. To access overseas markets, landlocked countries rely not only on the physical infrastructure and logistic capacity of transit countries, but also on their administrative practices and political stability. Dependence on a transit country implies higher transaction costs and associated fees including the costs for documents, administrative fees for customs clearance and technical control, terminal handling charges and inland transport and exclude tariffs or trade taxes. Not surprisingly, export costs are ranked among the highest for most landlocked countries, as discussed before.

It is not surprising that a company willing to invest in, say, natural resources extraction activities and having two similar potential country candidates will take into account the difference in export costs. At the policy agenda, trade facilitation measures at the domestic level or at regional level –such as investment in transit corridors- may also be conducive to “FDI facilitation”.

(To complete)

⁵ The costs components are expressed in ad-valorem equivalent terms: $1.7=1.21*1.44*1.55-1$. The first two components amount for total international trade costs that are about 74% ($0.74=1.21*1.44-1$).

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