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AID FOR TRADE AND VALUE CHAINS IN TRANSPORT AND LOGISTICS

Aid for Trade and Value Chains in Transport and Logistics

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Acronyms

AfDB	African Development Bank
AFT	Aid for Trade
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
ASYCUDA	Automated System for Customs Data
COMESA	Common Market for Eastern and Southern Africa
CRS	Creditor Reporting System
DPT	Diphtheria, Pertussis, and Tetanus
ETI	Global Enabling Trade Index
EU	European Union
FDI	Foreign Direct Investment
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GCI	Global Connectedness Index
GDP	Gross Domestic Product
GNI	Gross National Income
GVCs	Global Value Chains
HDI	Human Development Index
ICT	Information and Communication Technologies
IPPC	International Plant Protection Convention
IRU	International Road Transport Union
LPI	Logistics Performance Index
OECD	Organisation for Economic Co-operation and Development
OSBP	One Stop Border Posts
PPP	Public Private Partnerships
SPS	Sanitary and Phyto-sanitary

TFI	Trade Facilitation Indicators
TRACECA	Intergovernmental Commission for the Transport Corridor Europe-Caucasus-Asia
TRS	Time Release Studies
WCO	World Customs Organization
WEF	World Economic Forum
WTO	World Trade Organization

Executive Summary

Transport and logistics is a sector in which global value chains (GVCs) play a vital role in connecting countries, spreading technology, and promoting best practice around the world. The transport and logistics GVC is notable for the variety of lead firms involved in it—including major shipping, express delivery, and freight forwarding firms—and the range of local operators they partner with. Increasingly, transport and logistics GVCs are extending their reach into developing countries, including some low income countries and least-developed countries.

In addition to its role as a GVC in its own right, the transport and logistics sector is also key for the performance of other sectors of the economy. Manufacturing and agriculture both depend on being able to ship their goods to consumers quickly, cost-effectively, and reliably. Indeed, the GVC business model that has become so important in sectors such as electronics or agrifood is impossible to implement without a strong transport and logistics sector in each of the countries involved. The data suggest that countries with better logistics performance tend to specialize more in manufacturing GVCs. Delays, which are related to poor transport and logistics performance, can be costly: an extra day can reduce exports by at least 1%, and can also impede export diversification.

Indeed, transport and logistics have a number of direct and indirect links with important economic and social development goals. On the one hand, transport and logistics can boost trade performance, which, under appropriate circumstances, leads to higher incomes, employment gains, and lower poverty rates. Sectoral performance is also a key determinant of a government's ability to move important human development goods—like basic foodstuffs and vaccines—to its population, particularly in remote areas, at the lowest possible cost.

The available data suggest that there is an encouraging trend of improvement in many aspects of transport and logistics sector performance in the developing world. Of course, performance varies considerably from one region to another—which suggests that there is a significant potential for South-South knowledge exchange to take place in this area. In terms of the main areas that influence performance of the transport and logistics value chain, new OECD/WTO survey data from the private sector as well as cross-country datasets from the World Bank reveal the following trends:

1. Infrastructure: Trade and transport infrastructure remains a serious constraint in many developing countries. However, there is some evidence of improvement over recent years in Sub-Saharan Africa, and the Middle East and North Africa. The most striking trend, however, is the rapid diffusion of information and communication technologies (ICTs) in most developing regions. It stands out as an area in which donors—multilateral and bilateral—partner country governments and the private sector have all made important contributions to a significant development outcome.

2. Customs and Other Border Procedures: Although improvements are evident in most regions in border procedures, they are more pronounced in customs than in other areas. In part, this dynamic reflects the global dispersion of best practice through international

instruments, as well as the active involvement of donors and partner countries in upgrading customs. However, other border agencies, such as health/quarantine agencies and agencies administering sanitary and phyto-sanitary measures also need attention in order to improve supply chain performance. These other agencies are particularly important for developing countries involved in emerging agrifood value chains.

3. Private Services and Regulation: The data suggest that the quality of private providers of transport and logistics services is generally improving around the world. Efforts at private sector development in this area would therefore appear to be bearing fruit. By contrast, improvement in the regulatory measures that support and shape the private sector's performance is taking place at a slower pace. It is important that policymakers and sectoral regulators ensure that further private sector upgrading is not inhibited by an unduly restrictive regulatory environment.

4. Red Tape: Data from the World Bank's Doing Business project suggest that although performance improvements are evident in many areas of the transport and logistics value chain, red tape still remains a serious issue facing importers and exporters in many developing countries. Reductions in documentary formalities have been minimal in recent years, and costs have actually increased in many countries. Many countries have scope to further reduce delays and improve supply chain performance by rationalizing red tape burdens.

5. Governance: More red tape often means that operators are more willing to make unofficial "speed money" payments, which undermines the objective of improving governance. Indeed, the data suggest that governance remains a significant constraint in many developing countries. The uncertainty associated with poor supply chain governance can translate into increased indirect costs for operators. Transport and logistics service providers often find it easier to deal with a known delay, even if it is not as short as it could be, than with a highly uncertain one. Governance should therefore be an important aspect of value chain upgrading around the world.

Going forward, there is a clear case for donor countries, partner countries, and the private sector to continue to work together to improve the transport and logistics value chain, and help bring about the positive economic and social development outcomes it can support. In a new OECD/WTO survey analyzed in this paper, partner countries consistently see domestic and foreign private investment, as well as official development assistance, as important sources of financing for development of the transport and logistics value chain.

According to the priorities expressed by partner countries in the same survey, the following areas will remain key for the aid-for-trade (AfT) agenda in the transport and logistics sector:

1. Hard infrastructure: Many developing countries still require significant investments in basic infrastructure like ports, airports, roads, and rail links. Mobilizing funds for an initial investment is not enough, however. It is also important to ensure that funds are available for continuous maintenance, so that facilities remain productive in years to come.

2. "Soft" infrastructure: Hard infrastructure development only brings maximum benefits if it is combined with other components of a comprehensive AfT agenda. Transport sector

regulation is important, because it governs the conditions under which operators can do business, and often determines the conditions under which they can access key international gateways. Customs and border procedures also matter, as they can have serious impacts on delays and uncertainty faced by traders. The multilateral Agreement on Trade Facilitation, currently under negotiation at the WTO, would help promote more efficient customs and border procedures to allow goods to cross borders more quickly and more cheaply and ensure legal certainty between trading partners. Finally, private sector development is also key, as the private sector is the engine of technological upgrading in the sector, a role that is enhanced as the transport and logistics GVC develops further.

3. Coordination and collaboration: The case studies examined in this paper show that the best results are achieved when multilateral and bilateral donors, as well as partner countries and the private sector, are all engaged in improving transport and logistics performance. It is important for the process to be driven by partner country priorities, with the private sector playing a key role in their development. In terms of donor collaboration and coordination, different agencies clearly have comparative advantage in different areas, but transport and logistics work is inherently multi-dimensional. It therefore requires coordinated input from a range of sources.

1. Why do transport and logistics matter for development?

There are many connections—both direct and indirect—between the transport and logistics sector and important development outcomes. The significance of transport and logistics for development is reflected in the fact that over 80% of partner country respondents to an OECD/WTO survey on Aid for Trade (AfT) included transport and trade facilitation among their top three new AfT priorities. Moreover, all respondents indicate that their national development strategies identify transport as a specific source of growth. No other sector has such unanimous recognition as a core lever for growth and development.

One well known connection between transport and logistics and development is in facilitating international trade transactions, which, under appropriate circumstances, boost national income, reduce poverty, and thus contribute to economic and social development.[1] The OECD/WTO survey of partner countries provides a useful overview of the development effects of increased trade connections, in particular through global value chains (GVCs). Partner countries clearly have a strong belief that increased participation in GVCs can be good for economic growth and social development. The areas they highlight are listed in Table 1. For a full overview of the rise of GVCs, the issues involved in measuring countries' participation in them, and their development implications, see OECD (2013).

Table 1 Factors listed as the 'most important' or 'important' impacts of trade on the economy – particularly through GVCs

Factor	Percent of Respondents
Increased exports	100%
Increased exports and imports	98%
Export diversification	100%
Increased economic growth	100%
Employment	100%
Poverty alleviation	100%
Greater environmental sustainability	87%
Women's economic empowerment	89%

Source: OECD/WTO.

Since there is an intervening mechanism in this case—international trade—we discuss such linkages in the next sub-section, under the heading of "indirect effects". Such effects

[1] Although gross national income (GNI) is not itself a social development indicator, it is one of three pillars of the broader Human Development Index (HDI) used by the United Nations, along with health and education. Simple statistical analysis using data from the most recent Human Development Report shows that the HDI and (log) GNI correlate very strongly (r = 0.94). Squaring the correlation coefficient gives the coefficient of determination (R2 = 0.88), which indicates that variation in (log) GNI accounts for 88% of the observed variation in the HDI. Income is therefore an extremely important determinant of both economic and social development.

are generally well known, so we deal with them first. Less well known are the "direct effects" of transport and logistics on development outcomes of importance. We discuss them in the second sub-section.

Indirect impacts on development outcomes

International trade can, under the right circumstances, be an important engine of economic growth and poverty alleviation. There is now overwhelming evidence that trade liberalization is associated with faster productivity growth among developing country firms (*e.g.*, Pavcnik, 2002 for Chile). Productivity growth, in turn, is a crucial source of economic growth and technological upgrading.

However, trade does not affect all of a country's economic activity equally. On the one hand, trade can cause dislocation of workers within sectors, for which appropriate adjustment policies need to be put in place. The impact of tariff liberalization on poverty depends to a certain extent on whether particular households tend to be net buyers or net sellers of goods in liberalized sectors. In the former case, they tend to gain from reductions in import protection. In the latter, they may lose. Particularly in areas such as agricultural production the impact of trade liberalization on poverty may be ambiguous (OECD, 2012b). However, emerging empirical evidence suggests that trade liberalization can, in many cases, reduce poverty, particularly if the right complementary policies are put in place (Hertel and Winters, 2005; OECD, 2012b).

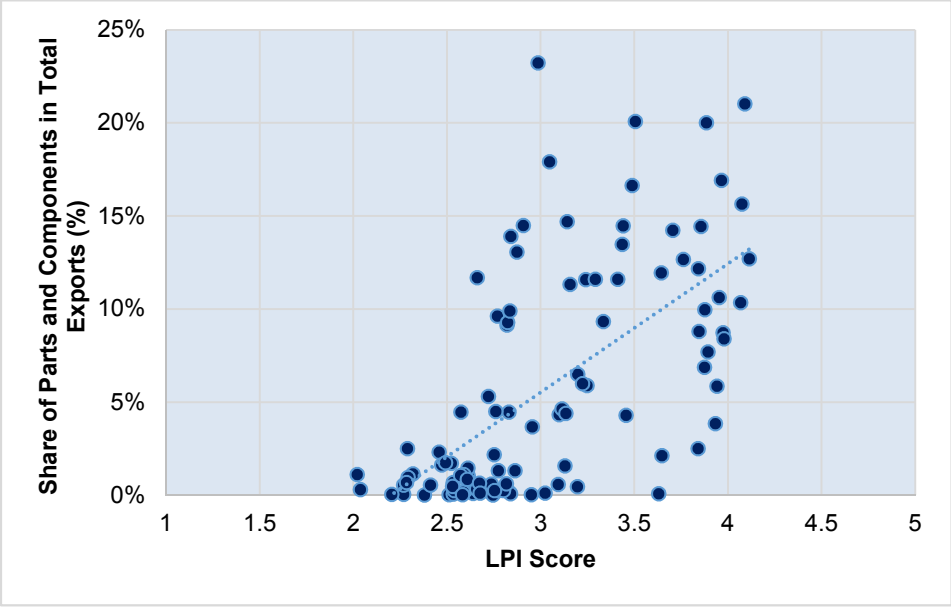
On the assumption that increased trade due to broad-based liberalization can, under the right circumstances, promote economic and social development through increased productivity and decreased poverty, then the transport and logistics sector has a crucial role to play in this process. Transport and logistics service providers are deeply involved in the mechanics of international trade transactions. It is difficult for a manufacturer to export at a competitive price or import at a competitive cost if the transport and logistics sector is dysfunctional. High prices, poor service, and a lack of certainty in transport and logistics translate into the effective isolation of a country from world markets. Transport and logistics—understood as air and maritime connectivity, and logistics performance—together seem to contribute as much to the costs of international trade as geographical distance (Arvis *et al*., 2013). Similarly, OECD (2011b) finds that a one day decrease in time spent at sea could increase trade by about 4.5%.

Of course, transport and logistics performance matters more for some parts of the trading economy than others. Participation in global value chains (GVCs) in manufacturing is one part of the economy that depends fundamentally on transport and logistics for its success. Goods moving through GVCs typically cross multiple borders during the production process of the final product. Parts and components can be assembled in various different countries, before being brought together in a different country for final assembly. Rather than manage inventory, many lead companies in GVCs now build redundancies into their supply chains, which means that the same component for the same final good can be sourced from different locations. This approach is a way of managing the risk that comes with relying on a single component producer who might experience production problems due to outside causes, thus holding up the entire process. The end result is a complex network of producers and assemblers, all performing related functions, before the final product is shipped to the consumer, again in a different country.

Transport and logistics performance is also key for ensuring effective participation in agrifood value chains. Transport and logistics costs may be less in the case of agrifood products, which are part of simpler supply chains than manufactures, but they have a greater proportional impact on the price of most agricultural products because of their low value-to-weight ratio. Furthermore, perishable products suffer particularly from delays, one of the most significant factors leading to post-harvest losses. Recent OECD research has found that a 10% improvement in transport and trade-related infrastructure quality can increase developing countries' agricultural exports by 30% (OECD 2013).

The bottom line from a commercial point of view is that this kind of business model is simply impractical without strong transport and logistics performance. GVCs need to manage cost and risk at all points in the production process. This means that transport costs have to be kept down, times have to be kept low, and uncertainty has to be minimized. "New generation" trade facilitation programs, such as APEC's Supply Chain Connectivity Initiative, directly recognize the importance of these three objectives. Similarly, recent research confirms that logistics performance matters more for trade within GVCs than for other types of trade (Saslavsky and Shepherd, 2012). Using the proportion of parts and components in total exports as a proxy for manufacturing GVC participation, Figure 1 confirms that countries with stronger logistics performance tend to specialize in GVC-related exports. The importance of this type of trade for development is reflected in the fact that almost half of partner country respondents to an OECD/WTO survey on AfT identified value chains as among their new AfT priorities.

Figure 1 Cross-country correlation between LPI scores and proportion of parts and components in total exports (Logistics Performance Index, ranging from 1-5 percent)



Source: Arvis *et al*. (2010).

In addition, transport and logistics services are themselves GVCs in many respects. Lead firms—usually multinationals—work with a variety of local and international firms to provide a final service to the consumer. Improving performance therefore means not just working on individual sources of delay, cost, or uncertainty, but taking a GVC-wide

view of performance. Since transport and logistics are services GVCs, rather than the more common manufacturing GVCs, it is important to consider the role that barriers to trade in services can play in holding back performance. Since many services can only be traded efficiently by establishment of the exporting company in the importing country (GATS Mode III), restrictions on foreign direct investment (FDI), such as foreign equity limits, also need to be part of the discussion. Indeed, respondents to the OECD/WTO partner country survey nearly always identify FDI (98%) and local private investment (96%) as "most important" or "important" sources of financing for their firms to connect to regional, South-South, and global markets. As a point of comparison, only 71% similarly identify official development assistance, and 85% cite local public investment. From the donor perspective, however, the order is reversed: 92% of respondents to the OECD/WTO donor questionnaire indicate that official development assistance is a "most important" or "important" source of financing, while 79% cite FDI and 61% cite local public investment.

The industrialization process is, of course, dynamic rather than static. As a result, countries do not want to enter a GVC at one point and remain there for a long period. Rather, the objective is to "move up the value chain" towards higher value added (higher productivity) activities (*e.g.*, Baldwin, 2011). China, for example, is well known as an assembly point for many consumer electronics, which is a labor-intensive, relatively low value-added activity. However, the country is increasingly moving into other parts of the value chain, including manufacturing of important components, and even, in some cases, design or research and development. Although such changes inevitably take place at different paces in different countries, they provide the opportunity for sustained productivity growth based on a GVC model, and can thus support important industrialization and development objectives.

Again, the transport and logistics sector is key to efforts to move up the value chain. As the manufacturing process become more complex at higher layers of a GVC, so it becomes even more important to be able to move both inputs and outputs across borders rapidly, at low cost, and with as little risk as possible. At the top of a GVC—the position of the "lead firm"—it is necessary to coordinate the activities of firms at all points throughout the chain, and manage the movement of goods and services from the various producers to the end consumer. Such operations are only possible in an environment where the transport and logistics sector exhibits high performance.

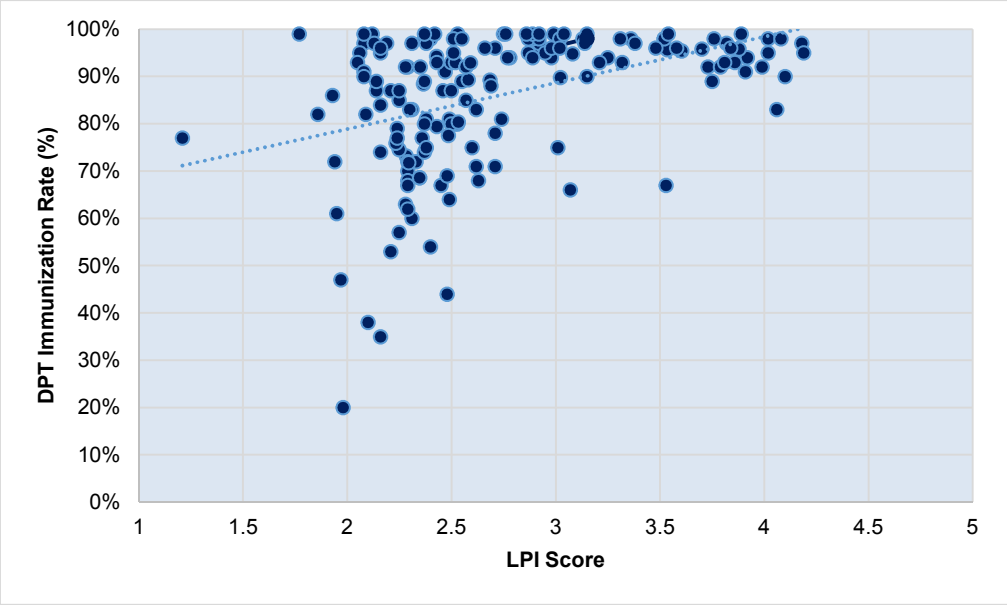
Just as transport and logistics performance is more important for some sectors of the economy (*e.g.*, manufacturing GVCs) than for others, so too is it more important for some countries than for others. Countries that are geographically isolated—including landlocked countries and small island developing states—depend all the more strongly on efficient transport and logistics operations to develop linkages with world markets. Indeed, geographically disadvantaged economies can do much to reduce their relative isolation by focusing on policies designed to improve performance in key services sectors like transport and logistics (Borchert *et al*., 2012).

Direct impacts on development outcomes

Although the indirect impacts of transport and logistics on development are more familiar to policymakers, there are also a number of direct impacts that deserve greater attention. The first is that an efficient transport and logistics sector is in fact key to the achievement of important social development goals, such as the distribution of vaccines. Many vaccines have to be moved quickly, under strict temperature controls, in order to

retain their efficacy. In a country where transport and logistics performance is poor, it is therefore difficult to conduct effective vaccination programs outside major population centers, where distances traveled are short. Preliminary econometric evidence indeed suggests that better logistics performance is linked to higher rates of vaccination, even after controlling for other factors, including the level of national income, the proportion of national income spent on health, and a common measure of government effectiveness (Pasadilla and Shepherd, 2011). Figure 2 reproduces the same basic correlation, although without controlling for other factors. The same study finds, moreover, that the link between logistics performance and vaccination rates is stronger in poorer countries than in richer ones. These findings are one example of a direct way in which the transport and logistics sector can contribute to important human development outcomes.

Figure 2 Cross-country correlation between LPI scores and diphtheria, pertussis, and tetanus (DPT) immunization rates (Logistics Performance Index, ranging from 1-5 percent of the population)



Source: Pasadilla and Shepherd (2011).

Similarly, greater efficiency in transport and logistics means that other socially important goods, such as basic foodstuffs, can be moved within countries more quickly and at lower cost. Consumers benefit by gaining access to lower cost goods. Improvements in transport and logistics can also help producers, including agricultural smallholders, by bringing them closer to local and regional markets. If distribution markets work effectively, lower transport costs mean that a higher proportion of the consumer price can be returned to the producer, thereby increasing incomes among some of the poorest members of society, improving affordability of food, and helping address problems of global hunger (OECD 2012b). Indeed, better functioning transport and logistics markets can make it possible for farmers to access entirely new markets, either in different regions, or, potentially, internationally. Recent research by Porto *et al*. (2011), for example, shows that the income of smallholders in a number of African countries could potentially be increased by improving infrastructure.

Box 1 Logistics and the global food crisis

One way that an efficient transport and logistics sector can directly improve development outcomes is by reducing consumer prices for essential goods, such as basic foodstuffs. In countries with poor internal connectivity, where transport and logistics services are under-developed, and where supply chain governance is poor, the direct and indirect costs of moving food from the farm gate to the consumer are higher than they need be. This effect is inevitably passed on the form of higher prices. In many countries, transport and logistics costs can be as high as 20%-60% of the price the final consumer pays. Indeed, in some circumstances, the blow can be double: a lack of competition in transport and logistics can not only increase prices and decrease availability for consumers, but it can also result in lower farm gate prices received by farmers, many of whom are themselves poor.

Transport and logistics services also matter for food distribution more dynamically, in the sense that they affect a country's ability to respond to price shocks. Lower transport costs can lower the domestic prices of imported goods and ensure that a greater share of the price of exported goods accrues to the producer. The effect on price volatility is more ambiguous: although efficient transport and logistics services can increase world price transmission to domestic markets, they can also help affected countries respond to food price peaks. By improving the accessibility of imported grains, on which many developing countries rely heavily, and limiting the very high product losses (up to 5% in the Middle East and North Africa according to a World Bank/FAO assessment) linked to extremely lengthy transit times, improvements in transport and logistics can do much to mitigate the effects of high world food prices.

Source: Arvis *et al*. (2012); OECD (2012b).

A third way in which efficient transport and logistics sectors contributes directly to development outcomes is as a source of employment. Jobs growth is vital in the developing country context, where unemployment rates can be high, and important segments of the population can be entirely excluded from the formal labor market. Transport and logistics operations tend to be relatively more labor intensive in developing countries than in developed ones, due to differences in production technology. Recent research shows that as low-income countries grow their economies towards middle-income status, the size of the transport and logistics sector—as measured by its contribution to GDP—tends to increase (Shepherd, 2011).[2] One possible reason is that there is increased development of specialized transport and logistics firms, which leads to greater (low cost) outsourcing opportunities for manufacturers that previously had to conduct such activities in-house (and at high cost). The implication of these findings is that for the poorest developing countries, transport and logistics can—as part of a broad-based approach to job creation—provide employment opportunities for a significant number of people. Like vaccine distribution, access to the labor market is important from the points of view of both economic and social development.

A fourth set of direct linkages between transport and logistics on the one hand and development outcomes on the other are in the area of governance and anti-corruption. Transport and logistics operators are unfortunately in a perfect position to be made subject to a "hold up" problem in the face of (potentially) corrupt police, customs agents, or other officials. By their very nature, operators need to confront binding constraints

[2] The relationship becomes inverted at around USD 10,000 in PPP terms. After that point, an increase in per capita income is associated with a smaller transport and logistics sector, probably because productivity (technology) effects dominate the outsourcing effect referred to in the main text.

such as access to crucial facilities (roads and ports), or the completion of necessary processes (customs formalities and other border checks). Poor governance along the supply chain means that, in some cases, the only way to deal with binding constraints is by making unofficial payments. Indeed, payments of "speed money" are common in some developing countries (*e.g.*, Olken and Barron, 2009). Shepherd (2009) shows that less efficient official processes tend to foster a greater prevalence of speed money payments, as operators are required to use unofficial channels to expedite their business. The OECD/WTO private sector survey confirms that governance issues, including unofficial payments, are a serious issue in the development of transport and logistics value chains (see Subsection 3, Governance below).

2. Measuring delays and their impacts: The toolkit

This section examines the data currently available for policymakers to assess the prevalence, seriousness, and sources of trade delays in their countries. Full details of individual indicators are available in the Annex A. Indicators can be divided into two broad groups: single country sources, *i.e.* those which cannot easily be compared across countries; and cross-country sources, which are designed and implemented in a standardized way and can more convincingly be compared from one country to another. OECD (2012) similarly uses cross-country data as a starting point to analyze the impacts of aid for trade on particular intermediate and final outcomes of policy interest.

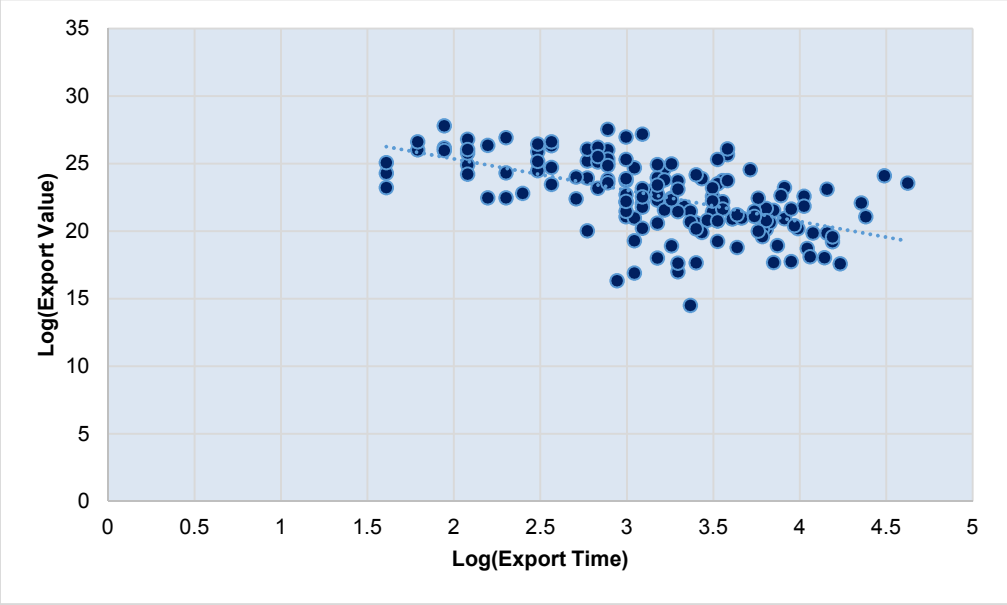
There exists an extensive toolkit for policymakers to use in assessing the prevalence and sources of supply chain impediments that increase direct and indirect costs for supply chain participants in their countries, and which can inhibit the growth of GVCs by making countries less competitive internationally. Of course, all of the cross-country indicators are necessarily somewhat coarse-grained, as they sacrifice specificity in order to retain standardization. They are not the end of an analytical process, but rather the start. Ideally, the reform process should begin with a first level diagnostics exercise in which broad indicators are consulted to give an idea of where the most serious problems are. The second step is then to undertake detailed, country-specific work to uncover the causes of those problems and develop possible remedies to improve time, cost, and predictability of supply chain transactions. The final step is to implement the proposed solutions on the ground, monitor progress, and make any changes necessary to ensure maximum possible results.

At this point, an obvious question arises: what do we know about the trade impacts of supply chain impediments? Recent academic research provides useful clues as to the economic effects that delays can have. Hummels (2001) is one of the first papers to examine the impact of time on trade flows. Using data for US imports, he finds that reducing international shipping times by one day is associated with an increase in trade of 0.8%. The same reduction also increases the probability that the US will source imports from a country by 1%-1.5%. To show the importance of delays caused by international transport, Hummels (2001) estimates that the increasing use of faster transport methods over recent decades—which reduces trade times—boosted trade by an amount equivalent to a tariff reduction from 32% to 9% over the 1950-1998 period.

One limitation of the Hummels (2001) study is that it only considers international transport times. It does not consider other factors that contribute to trade times, such as internal transit, document preparation, and customs and border formalities. Djankov *et al*. (2010) use Doing Business data on export times—discussed in detail in the Annex A—to examine the impact of those factors on trade. Their results are similar to those of Hummels (2001) in terms of quantitative magnitude: a one day reduction in pre-shipment delays is associated with a trade increase of about 1%. (Figure 3 illustrates this negative correlation.) In effect, countries with long export times are isolating themselves from world markets: Djankov *et al*. (2010) estimate that an additional day's delay in an average country is equivalent to moving it away from its trading partners by about 70km. The implication is that trade delays are particularly important for countries that already suffer from geographic disadvantages, such as being landlocked, or being small island

developing states: they can reduce the effects of geographical isolation by improving their delay performance prior to shipment, including by improving border processes. Interestingly, Djankov *et al*. (2010) find that pre-shipment delays matter more for some products that for others: specifically, time sensitive products—including some manufactured goods and perishable agricultural products—benefit more from improved performance than others.

Figure 3 Cross-country correlation between 'doing business' export times and the total value of exports to the rest of the world in 2005 (in logarithms)



Source: WITS-Comtrade for exports; Doing Business for export times.

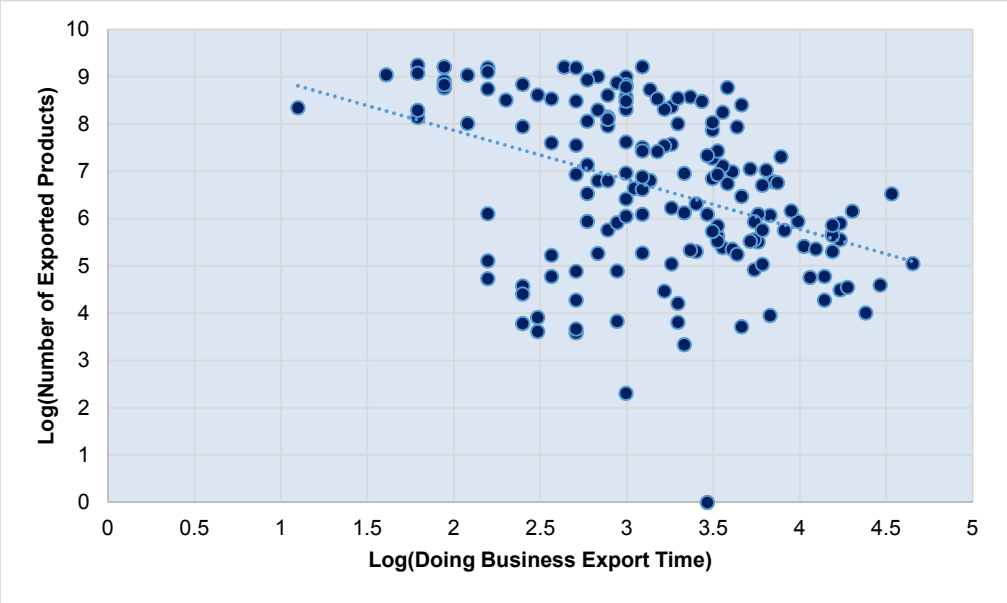
Recent work by the OECD (OECD, 2013c) goes in the same direction as this emerging body of evidence. Using data for 133 countries, they find that trade facilitation performance (in the sense of streamlining border procedures) accounts for around 14% of the observed variance in bilateral trade costs. The analysis also shows that trade facilitation measures not only increase imports but also boost exports, in particular through better access to inputs for production and greater participation in global and regional value chains. Border process improvements through trade facilitation affect trade costs, which in turn affect the pattern of bilateral trade flows. Arvis *et al*. (2013) also provide econometric evidence that goes in the same direction for a set of 178 countries.

Martincus *et al*. (2013) focus specifically on the case of customs, but use firm-level export data from Uruguay, rather than cross-country data as in all the other papers. They find that customs delays on their own—without considering other aspects of transport, logistics, and trade facilitation—can be responsible for significant trade reductions. Concretely, an extra day spent in customs translates into a 2.8% decline in the growth rate of exports.

It is thus well-established that export delays—from a variety of sources—can have serious trade-inhibiting effects. However, their trade impacts are also felt in other ways that are particularly important for developing countries. For example, Dennis and

Shepherd (2011) show that pre-shipment delays are associated with a lower degree of export diversification in developing countries, as evidenced by the downward sloping line of best fit in Figure 4. Export diversification is a serious issue for many developing countries that tend to concentrate their exports on a few well-established products, and which therefore see it as an important development aim to develop broader export bundles. The mechanism in this case is that higher trade costs—to which delays contribute—mean that only the most productive firms can export, and since they make a limited range of products, the country's export bundle becomes correspondingly concentrated. Shepherd (2010) shows that a similar mechanism is at work in the area of geographical diversification of developing country exports. Exporting to a range of markets is an important way of dealing with the risk of a foreign economic slowdown, with a consequent drop-off in demand for exports. Trade costs—including those that are related to delays—again mean that only some markets can be profitably accessed, with a corresponding contraction in the range of countries used as export destinations. Finally, OECD research shows that complex and non-transparent border procedures and regulations, as well as weak law enforcement at the border, are significant factors encouraging informal cross-border trade, with negative economic and developmental consequences for concerned countries (OECD 2008).

Figure 4 Cross-country correlation between 'doing business' export times and number of CN 8-digit product lines exported to the EU in 2005 (in logarithms)



Source: Dennis and Shepherd (2011).

3. Emerging trends: Where and why is progress being made?

The previous sections have highlighted the importance of transport and logistics services for development and participation in GVCs, as well as the tools available to measure delays and impediments that inhibit development of the transport and logistics value chain itself. In this section, we examine recent data on performance, using responses from an OECD/WTO private sector survey on value chains that highlight the constraints currently identified by firms as the most important, the factors that most influence sourcing decisions in their value chain, and the most typical difficulties faced in providing transport and logistics services in developing countries. In transport and logistics, the survey involved 96 respondents from a variety of developing and developed countries. Although it is therefore a small sample, and results need to be treated with caution, it provides a useful indication of private sector sentiment in the transport and logistics value chain.

In addition, we look at recent trends contained in data from the OECD Trade Facilitation Indicators, and the World Bank's LPI and Doing Business projects. The first dataset gives us information on general trade facilitation performance, the second dataset presents areas that the private sector considers to have improved between surveys (2009-2012), while the last source allows us to track changes in red tape burdens affecting transport and logistics transactions that facilitate international trade.

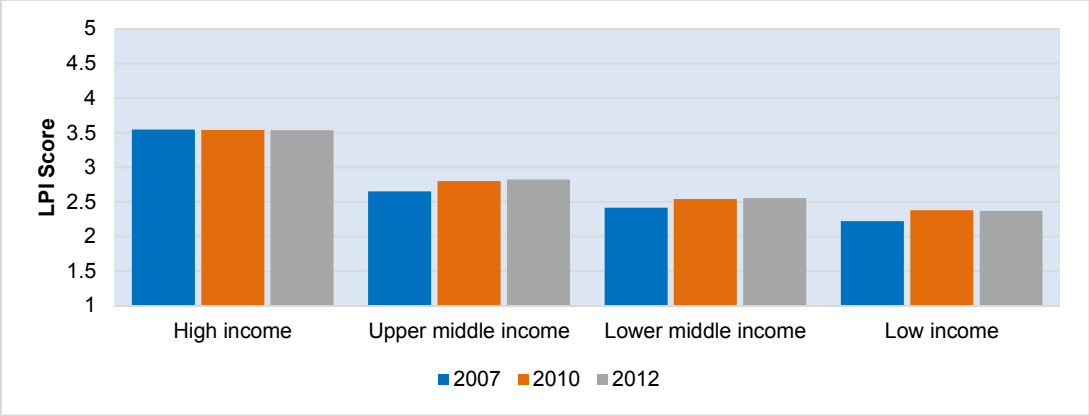
Overall performance

There is no question in the OECD/WTO survey dealing with overall transport and logistics performance, so we turn to the World Bank data as a starting point. As discussed in the Annex A, the International LPI provides an overall measure of transport and logistics performance in up to 155 countries around the globe. Since the methodology is basically unchanged between reports, a comparison of scores in 2007, 2010, and 2012 is therefore one way of identifying country groups and regions that have seen significant progress over time, as well as those where additional challenges remain.

We first break out the data by income group, taking simple averages (Figure 5). For ease of presentation, we consider OECD and non-OECD high income countries as a single group. For the developing countries—which we consider to be all but the high income countries—there is clear improvement in all cases between 2007 and 2010. In the two middle income groups, there is also a small improvement between 2010 and 2012, but the difference in average scores is very small. Low income countries, by contrast, exhibit a small lowering of their average score between 2010 and 2012, but the difference is again very small. Overall, these results are indicative of substantial improvements at least in the early years of the sample, with a possible slowing down of that progress towards the end. One important point of comparison is, of course, with the high income group, where performance is relatively steady over time. One of the most notable points emerging from Figure 5 is not so much the change in performance of the developing countries, but the continued large gap between the high income countries and the other groups in terms of overall logistics performance. This "logistics gap" (Arvis *et al*., 2012)

suggests that expansion of the transport and logistics GVC in developing countries, including to support integration into other GVCs, still faces very significant obstacles.

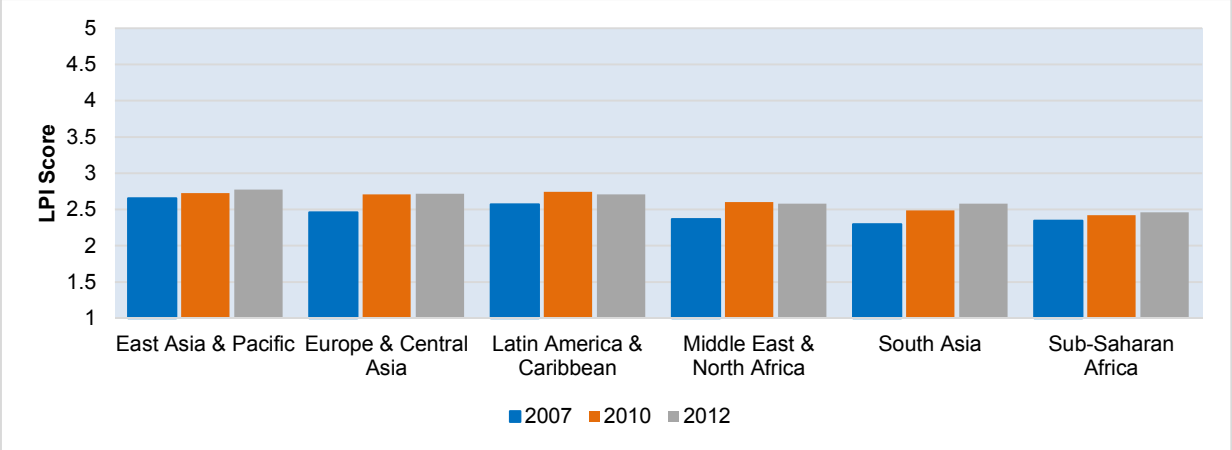
Figure 5 LPI scores by income group
(Logistics Performance Index ranging from 1-5, 2007-2012)



Source: LPI database.

The second way in which we can divide up the data is by region, again taking simple averages. These groupings exclude high income countries, and therefore are limited—in our definition—to developing countries only. Results are in Figure 6. East Asia and the Pacific consistently has the highest average LPI score of any developing region. Importantly, all developing regions exhibit evidence of performance improvements between 2007 and 2012, although in some cases there is slight backsliding in the latter part of the sample. Calculating improvement rates between 2007 and 2012 identifies two groups of countries. The first group—South Asia, Europe and Central Asia, and the Middle East and North Africa—exhibit fast rates of improvement, between 8% and 12% over the five year sample period. The second group—Latin America and the Caribbean, Sub-Saharan Africa, and East Asia and the Pacific—has experienced slower growth in their LPI scores, of between 4% and 5% over the same period.

Figure 6 LPI scores by region
(Logistics Performance Index ranging from 1-5, 2007-2012)



Source: LPI database.

Findings from the regional breakdown suggest two policy conclusions. The first is that there is an important stock of developing country examples where logistics performance is relatively strong compared to the rest of the group. It is no coincidence that it is East Asia and the Pacific—the area where manufacturing GVCs are best developed—that has the highest average LPI scores. There is thus considerable South-South knowledge sharing that can take place in the area of transport and logistics, and the potential for improvement in other regions is significant. Second, the data show that some developing regions are experiencing rapid improvements in overall performance. In some cases, such as South Asia, that improvement is taking place from a low baseline. However, the rate of change demonstrates that some developing countries are succeeding in developing and implementing reforms that are very positively received by private sector operators on the ground. These reforms can be expected to boost development of the transport and logistics GVC in those regions, and by extension, make the business environment more favorable for manufacturing GVCs. Again, there is significant potential for South-South exchanges to disseminate these successful examples of reform.

Box 2 The LPI and logistics and transport reforms in Indonesia

One function of a globally visible index like the LPI is to raise national awareness of transport and logistics issues, and provide momentum for on-the-ground reforms. Indonesia provides an interesting example of this process. Shortly after publication of the 2007 LPI report, government officials launched a wide-reaching public-private dialogue on transport and logistics issues in the country. This process led to the preparation of an action plan focusing on trade costs in its major ports, and the particular challenges faced by a country made up of over 10,000 islands. The World Bank became involved in 2008, working with the government to develop strategies to improve operations at the country's largest port.

Of course, the LPI on its own cannot provide the detailed information policymakers need to design detailed and complex reforms. Rather, it highlights broad issues that can then be investigated further using other complementary tools, and it can then also serve a monitoring function as a broad indicator of progress. In the Indonesian case, the government took a number of steps to improve port performance, such as offering 24-hour service throughout the week. Although a number of issues still remain to be resolved, these initial reforms are perhaps starting to bear fruit: the country's LPI rank increased from 75th to 59th between the 2010 and 2012 reports.

Source: Arvis *et al*. (2012).

Of course, the comparison of overall LPI scores can only give us a general indication of the degree to which progress is taking place on the ground. More useful for policymakers is a consideration of individual areas in which performance improvements have taken place, and those in which progress has been slower. The Domestic LPI contains such information, highlighting particular areas where 2012 survey respondents indicated the degree of improvement since 2009 (the time of the previous survey). As in Arvis *et al*. (2012), we present the data by indicating the percentage of respondents indicating that a particular area is "improved" or "much improved" relative to the benchmark. (For data on time and cost, see Subsection 3 on red tape, where we make extensive use of the Doing Business data on these points.) In the specific area of customs and other border procedures the OECD Trade Facilitation Indicators (TFIs) offer the most

detailed overview of performance by various countries and regions, highlighting the economic and trade impact of specific trade facilitation measures (OECD 2013c).

Customs and other border procedures

The OECD/WTO private sector survey confirms the importance of customs and border procedures, both as business constraints, and as factors in GVC sourcing and investment decisions (Table 2). In terms of operational difficulties, customs documentation requirements are the factor most commonly identified by survey respondents. Border waiting times—which are closely related to the performance of customs and other border agencies—are identified by respondents less frequently, but are still within the top handful of operational difficulties identified by business. This same pattern is reflected in the data on sourcing and investment decisions of GVCs: customs and other border procedures are the most commonly identified factor, over six percentage points ahead of the next ranked issue.

These perceptions are confirmed by the findings of the TFIs, which show that the harmonization and simplification of documentation requirements account for the greatest proportion of the observed variation in trade flows and trade costs, in particular for low income and lower middle income countries (3% and 2.7% respectively). The streamlining of border procedures, which has the most direct impact on waiting times, appears as the second most significant source of variance for trade flows and trade costs (2.2% for lower middle income countries, and 2.8% for upper middle income countries; OECD 2013c).

The response is even more overwhelming in the last category of the private sector survey, namely the typical difficulties faced in conducting transport and logistics operations in developing countries: customs and other border delays and procedures are identified by almost one and a half times as many respondents as the next ranked factor. Taking these results together with those from the LPI and the TFIs suggests that, particularly in developing countries, customs and border procedures need to be significantly improved to increase the performance of the transport and logistics sector, and better enable it to integrate into GVCs.

Table 2 Customs and other border procedure factors identified by the private sector

Factor	Percent of Respondents
Operational difficulties:	
Customs documentation requirements	42%
Border waiting times	34%
GVC sourcing and investment decisions:	
Customs and other border procedures	53%
Typical difficulties in developing countries:	
Customs and other border delays and procedures	70%

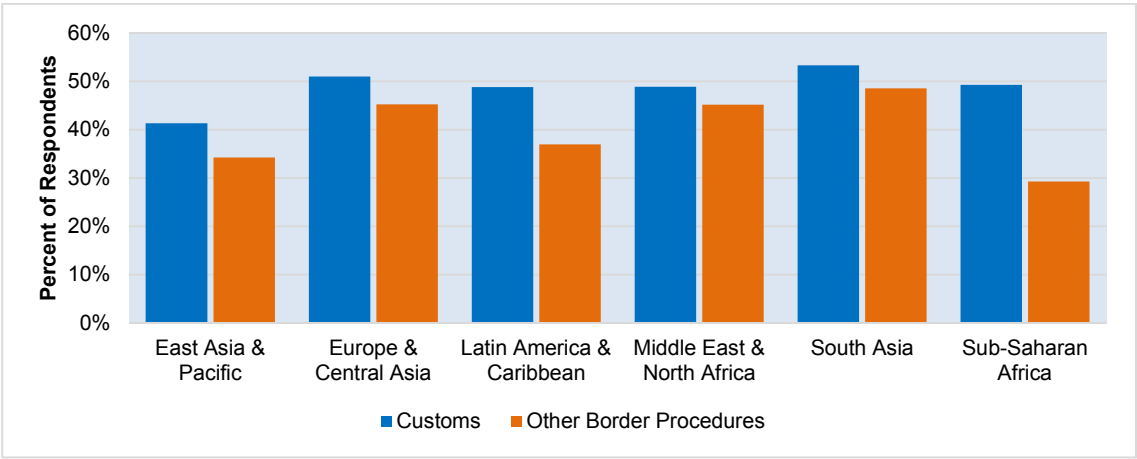
Source: OECD/WTO.

In addition to the information from the OECD/WTO private sector survey and the TFIs, the LPI questionnaire asks two separate questions, one dealing with customs and another dealing with other border procedures. In this and the following subsections, we break out the data by developing region, using simple averages. This classification excludes high income countries from all calculations.

The LPI data show that, in all regions, improvements in customs are much more significant than improvements in other border procedures (Figure 7). Indeed, Arvis *et al.* (2012) use results from the LPI survey to show that the private sector's level of satisfaction is generally higher with customs than with other agencies involved in the border clearance process. In part, this might reflect the process of convergence in customs procedures that has been taking place around the globe, fostered by instruments such as the Revised Kyoto Convention and the capacity building and technical assistance efforts of the WCO. The World Bank, regional development banks, and bilateral donors have also played an active role in helping developing countries improve customs capacity, and, in some cases, undertake important reforms such as streamlining procedures and introducing automation (OECD, Forthcoming). By contrast, assistance efforts tend to be more dispersed for other border agencies, such as those dealing with health requirements and sanitary and phyto-sanitary measures (SPS). From a transport and logistics point of view, however, it is the full process of border clearance that matters: delays or uncertainty that intervene at any point have the potential to hold back development of the industry, and pose problems for GVCs in other sectors, like manufacturing (OECD 2013d). Health and SPS issues are a particular problem for emerging agrifood GVCs, which can be important for some lower income developing countries without an established manufacturing base but with comparative advantage in some non-traditional agricultural sectors, such as horticultural goods or fresh flowers (OECD 2013a).

The second point to note from Figure 7 is that within the developing country group, improvements are more homogeneous in customs than in other border procedures. In the latter case, there is a significant gap between South Asia—where improvements are relatively prevalent—and Sub-Saharan Africa, where less than 30% of survey respondents report that the situation has significantly improved in the last three years.

Figure 7 LPI survey respondents (2012) indicating that customs and other border procedures that have 'improved' or been 'much improved' in their country relative to 2009, by region



Source: LPI database.

Box 3 World Customs Organization-led customs reform

In partnership with bilateral donors and multilateral organizations—such as UNCTAD, which developed the Automated System for Customs Data (ASYCUDA)—the World Customs Organization (WCO) is a leader in providing capacity building and technical assistance to customs agencies in a variety of developing countries. Upgrading performance in the context of 21st century customs is a complex operation, involving a number of different dimensions. On the one hand, WCO's development of a standardized methodology for Time Release Studies (TRS—see Annex A), and its ability to engage with individual countries to implement TRS on the ground, provides a powerful diagnostic tool. In addition, specific programs develop capacity in customs agencies in a variety of areas, such as management and leadership development, enforcement, and development of coordinated border management.

An example of the WCO's approach is in East and Southern Africa, under a project financed by the Finnish government. The overall objective of the project is to have customs administrations in the region which is efficiently managed, have good governance and modern working methods, and provide smooth trade facilitation and strict law enforcement. To be implemented over the 2011-2014 period, the project aims at the following outputs, in addition to specific objectives in Kenya and Namibia:

- Customs' leadership and management is committed to continuous improvement and modernization of as well as further capacity building in their administration, and has improved skills in strategic planning, in change management, and in the management of human and financial resources.
- Customs administrations have the necessary hardware and software, as well as related knowledge and skills, to implement simplified and improved customs procedures with modern customs operational techniques (National Customs Enforcement Network; intelligence and risk management; information technology, including interconnectivity; post-clearance audit; and effective anti-smuggling).
- Customs administrations and other border agencies are committed to good cooperation and coordinated border management practices and customs agencies follow simplified and improved customs procedures (Single Window; One Stop Border Post; and the WCO Data Model).
- Increased and better cooperation and coordination of policy and procedures among and between the regional customs services.

Source: Based on material provided by the WCO.

Transport and ICT infrastructure

According to the OECD/WTO private sector survey data (Table 3), infrastructure remains a serious constraint in many developing countries, a finding which is in line with Arvis *et al*. (2012) and OECD (2013a). In terms of national supply-side constraints that affect the ability to enter, establish, or move up transport and logistics value chains, transport infrastructure is cited by nearly half of all respondents, which is more than any other factor. Similarly, in the partner country and donor surveys, inadequate domestic infrastructure is the most commonly cited obstacle to greater participation of national firms in GVCs. OECD (2011c) finds that it is more the availability rather than the quality of transport infrastructure that constrains the trade performance of developing countries. By contrast, ICT infrastructure is listed by only 13% of private sector respondents, which places it among the five least cited factors. In the category of operational difficulties, inadequate trade and transport infrastructure is the third most commonly recognized problem among private sector survey respondents. By contrast, inadequate ICT

infrastructure comes equal last in terms of the prevalence of private sector survey responses indicating that it poses an operational difficulty.

For the remaining questions in the OECD/WTO private sector survey, ICT and transport infrastructure are not dealt with separately. However, trade and transport infrastructure clearly plays a major role in the sourcing and investment decisions of transport and logistics GVCs: it is the third most commonly cited factor. Similarly, when listing difficulties encountered in doing business in the transport and logistics sector in developing countries, inadequate infrastructure is the second most commonly cited factor. These survey responses reinforce the argument made above, that particularly in low income countries, the constraints posed by inadequate basic infrastructure—ports, airports, roads, and rail—are serious barriers to participating in transport and logistics GVCs as well as moving up within them, and therefore also hold back integration into other types of GVCs.

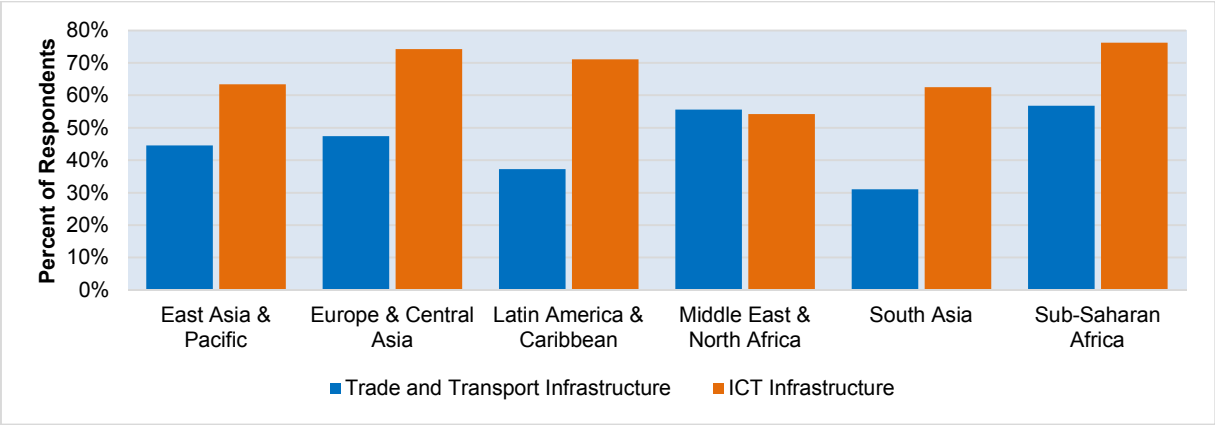
Table 3 Transport and ICT infrastructure factors identified by the private sector

Factor	Percent of Respondents
National supply-side constraints:	
Inadequate airport, rail, road or maritime infrastructure capacity or links	49%
National ICT infrastructure	13%
Operational difficulties:	
Inadequate airport, rail, road or maritime infrastructure capacity or links	39%
Inadequate national ICT infrastructure	7%
GVC sourcing and investment decisions:	
Quality of infrastructure	47%
Typical difficulties in developing countries:	
Inadequate airport, rail, road or maritime infrastructure links	47%

Source: OECD/WTO.

Figure 8 shows LPI results on the prevalence of improvements in transport and ICT infrastructure, breaking the data out by region. Across all regions, there is widespread agreement among respondents that ICT infrastructure improved between 2009 and 2012. Opinions are less homogeneous for trade and transport infrastructure: Sub-Saharan Africa and the Middle East and North Africa report improvements relatively frequently, which is encouraging, but the data are weaker for South Asia. However, the most notable feature of the figure is that for most regions, improvements in ICT infrastructure are more prevalent than improvements in transport infrastructure. Although the spread of ICTs is to be welcomed, as it can considerably reduce the time and cost associated with transport and logistics operations, it is important for some developing countries that they continue to improve basic infrastructure such as ports, airports, and roads as well. This point is particularly true for South Asia, which generally scores poorly in infrastructure assessments by the private sector. Indeed, Arvis *et al*. (2012) identify improvements in trade and transport infrastructure as a more pressing issue for countries with poor logistics performance than improvements in ICTs.

Figure 8 LPI survey respondents (2012) indicating that transport and ICT infrastructure has 'improved' or been 'much improved' in their country relative to 2009, by region



Source: LPI database.

Private services and service providers

Improving the performance of the transport and logistics sector is not just a public sector agenda. Private sector development is also key. The OECD/WTO private sector survey asks three questions that are relevant to a consideration of private sector dynamics in the sector (Table 4). Among the national supply-side constraints that might affect a company's ability to enter, establish, or move up a transport and logistics value chain are three that are related to private sector performance: 24% of respondents indicate that restrictive access practices for core infrastructure represents such a constraint; the same is true for 23% of respondents in the case of market power of existing companies; and 10% of respondents state that transport service monopolies represent a national supply-side constraint. Monopolies are an important issue because they can prevent the benefits of positive policy changes—such as red tape reductions—being passed on fully to consumers and firms. Less than competitive markets, even if not full monopolies, can pose serious difficulties when it comes to implementing change on the ground.

The first two factors identified in the OECD/WTO private sector survey can be considered to be at moderate levels of prevalence compared with other factors, and the third is relatively uncommonly cited. Together, these data demonstrate that private sector development is, in certain circumstances, an important factor in the ability of firms to enter and move up transport and logistics value chains. Of course, the significance of the three listed factors is likely to vary greatly from country to country, so the fact that the survey is based on a small sample means that results should be interpreted cautiously.

Table 4 Factors listed as national supply-side constraints by the private sector in entering, establishing, or moving up GVCs

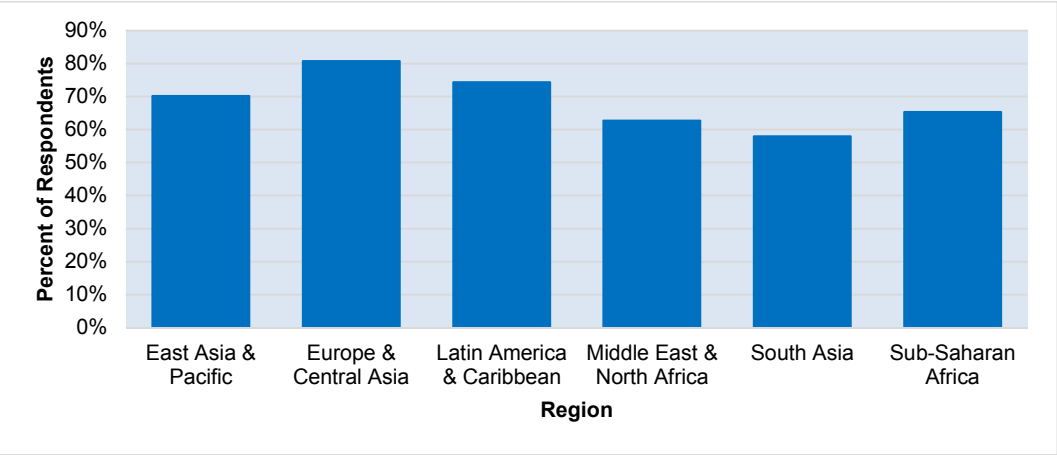
Factor	Percent of Respondents
National supply-side constraints:	
Restrictive practices governing access to airport, rail, road, or maritime infrastructure	24%
Market power of existing companies	23%
Transport service monopolies	10%

Source: OECD/WTO.

The Domestic LPI takes a different approach from the OECD/WTO private sector survey. It provides data on the prevalence of improvements in the quality of private logistics service providers. These data are subject to caution, because the survey respondents are themselves private logistics service providers, which means that their responses may well not be objective indicators of the reality on the ground. Nonetheless, the data are useful for their indicative value.

Figure 9 presents results by region. There is strong evidence of improvement across all regions, although it is less prevalent in South Asia than elsewhere. These data therefore tend to suggest that the aspects of the transport and logistics sector related to private sector development and capacity building may be benefitting from increased policy attention in a variety of countries. Aid programs aimed at building productive capacity and improving the business environment may also be bearing fruit, although a more detailed analysis would be required before this question could be answered definitively. It is encouraging to see robust evidence of improvement in Sub-Saharan Africa, which is an important partner region.

Figure 9 LPI survey respondents (2012) indicating that the quality of private logistics services is 'improved' or 'much improved' in their country relative to 2009, by region



Source: LPI database.

Box 4 Facilitating cross-border trucking services

One of the priorities of the International Road Transport Union (IRU) is the promotion of trade and road transport facilitation. A number of United Nations instruments play a key role in this area, but one is particularly important: the Customs Convention on the International Transport of Goods under Cover of TIR Carnets (TIR Convention). The agreement provides a key mechanism for ensuring the efficient passage of goods by road, and is thus particularly important for landlocked countries that rely heavily on road transport and transit arrangements through third countries.

In general terms, the TIR Convention establishes the only global customs transit regime allowing goods to be moved from the place of loading to the destination in secured load compartments approved for transport under customs seals. Goods moved under cover of TIR Carnets are exempted from payment of import or export taxes and duties during their transport from the loading place until the destination, through multiple border crossings. This is thanks to the international financial guarantee provided to all participating customs authorities by the international chain of guarantee.

The TIR Convention currently counts 68 Contracting Parties, and is effectively implemented in 57 countries. It allows 3.2 million transports per year, by 40,000 authorized transport companies through the use of a single customs transit document, the TIR Carnet. The carnet represents both the customs transit declaration and the evidence of the international financial guarantee provided through it. To facilitate harmonized implementation of the TIR system, the IRU, in partnership with the WCO, has developed a TIR Distance Learning Package, which is available free of charge for customs officers in a variety of international languages.

Source: Based on material provided by the IRU.

Logistics regulation and the business environment

Regulation of the transport and logistics sector, and the quality of the business environment more generally, can be crucial factors in the development and expansion of GVCs. The OECD/WTO private sector survey contains a range of detailed questions covering these areas (Table 5). In terms of national supply-side constraints that inhibit a firm's ability to enter or move up a transport and logistics GVC, the most commonly cited factor is a lack of transparency in the regulatory environment, followed by the general business environment. That these factors are considerably more often cited than more detailed regulatory issues highlights the problems that uncertainty poses for GVCs: adapting a business model to a particular regulatory stance, even a restrictive one, is often much simpler than dealing with the risk created by regulatory uncertainty. This point is borne out by the ranking of operational difficulties faced by transport and logistics operators: the main regulatory problem is again a lack of transparency, which leads to uncertainty, rather than issues such as licensing requirements or transit rules.

Among the factors influencing GVC sourcing and investment decisions, the general business environment is cited by nearly 40% of respondents as being important, which places it among the leading issues confronted by GVCs in this area. Interestingly, when the focus moves to the operational difficulties typically faced in developing countries, regulatory issues such as visa rules and licensing requirements receive greater prominence than in the other questions. However, the general business environment and the possibility of a lack of regulatory transparency are not included in the list of possible responses for this survey question, so it would be inappropriate to conclude that these issues are necessarily overshadowed by others in the developing country context. Indeed, regulatory transparency and the general business environment are typically areas that require extensive upgrading in many developing countries. This finding is confirmed by the results of the TFIs analysis, which show that transparency and the availability of trade information are essential determinants of the level of trade flows to and from developing countries (OECD 2013c). Unless transport and logistics GVCs can limit the uncertainty that poor performance in these areas brings with it, they may decide not to enter a particular market at all, or to serve it only peripherally.

Table 5 Logistics regulation and the business environment factors identified by the private sector

Factor	Percent of Respondents
National supply-side constraints:	
Business environment	31%
Lack of transparency in regulatory environment	40%
National vehicle standards	15%
Subsidies given to some service providers	7%
Vehicle emissions standards	3%
Operational difficulties:	
Domestic service licensing requirements	19%
Double taxation of commercial vehicles	8%
Lack of mutual recognition of national vehicle standards	7%
Restrictions on FDI	8%
Restrictions on commercial presence/joint-ventures	8%
Restrictions on professional service providers	10%
Service pricing restrictions	10%
Transit rules	16%
Lack of transparency in regulatory environment	37%
GVC sourcing and investment decisions:	
Business environment	39%
Typical difficulties in developing countries:	
Domestic service licensing requirements	27%
Double taxation of commercial vehicles	0%
Lack of mutual recognition of national vehicle standards	13%
Service pricing restrictions	10%
Transit rules	13%
Visa regimes	20%

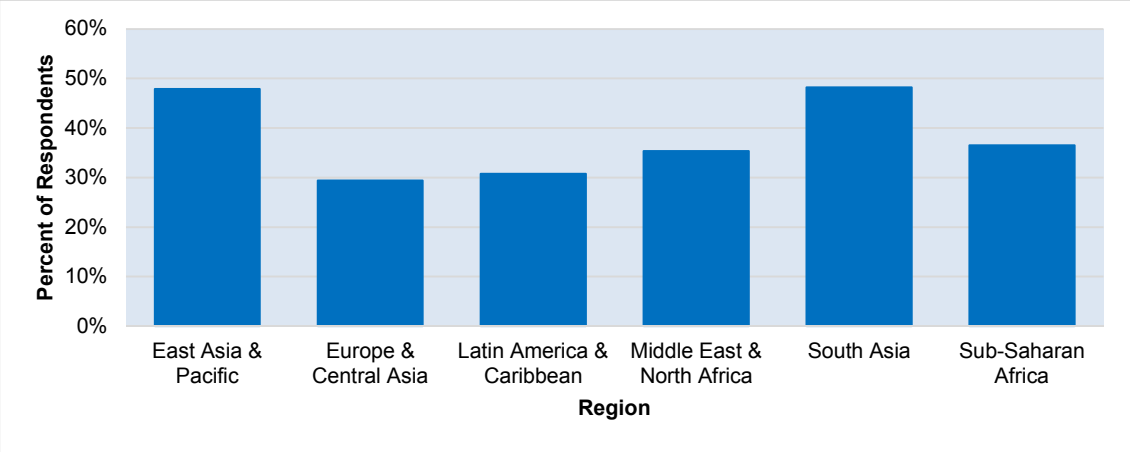
Source: OECD/WTO.

LPI data (Figure 10) show the prevalence of improvements in logistics regulation around the world. The contrast with Figure 9 on the quality of private logistics services is striking: the prevalence of private sector improvements is significantly greater in all regions than is the case for regulation. This result is an interesting one, because typically it is difficult for strong private sector development to take place in the absence of a supportive regulatory platform. One potential reason for the difference might be that crucial regulatory improvements—such as the relaxation of foreign equity limits—have encouraged the increased participation of national service providers in GVCs, which in turn has led to increased quality of service provision even though much remains to be done to improve the regulatory environment in some countries. A second factor to take into account is that regulatory change typically happens at a much slower pace than private sector development, particularly when GVCs are involved in service upgrading and standardization across countries.

Logistics regulation appears to be improving more rapidly in Asia than elsewhere. The result for South Asia is likely due to national, rather than regional, initiatives. However, improvements in East Asia and the Pacific might be due in part to joint initiatives. ASEAN, for example, has added logistics as an additional priority sector for early liberalization under the ASEAN Economic Community Blueprint. One result of this decision has been the gradual relaxation of foreign equity limits, albeit with differences in implementation on the ground across countries (USITC, 2010; Hollweg and Wong, 2009). Nonetheless, the main conclusion to draw from Figure 10 is that the regulatory environment facing logistics operators is not improving as rapidly as the quality of those operators themselves, and if not already a barrier to further upgrading, it is likely to

become such in the near future. Regulatory reform in the transport and logistics sector could therefore be an important way of encouraging the growth of GVCs in this area.

Figure 10 LPI survey respondents (2012) indicating that logistics regulation is 'improved' or 'much improved' in their country relative to 2009, by region



Source: LPI database.

Governance

In the transport and logistics context, governance mainly refers to corrupt practices that interfere with supply chain operations. Table 6 presents information from the OECD/WTO private sector survey. Four areas include questions related to supply chain governance. 29% of respondents indicate that corrupt practices represent a constraint that affects their ability to enter or move up a transport and logistics value chain. This number represents a moderately high number of responses, which suggests—in line with the LPI results (below)—that supply chain governance continues to be a serious issue in many countries. Moreover, these responses highlight that it is not just supply chain performance that is affected by informal practices, but the ability of firms to participate in transport and logistics GVCs. Similar numbers of respondents—between 30% and 40%—identify informal practices as either an operational difficulty they face in their own country, or a typical difficulty encountered in developing countries. In both cases, the response rate is relatively high compared with other possible factors.

Table 6 Governance factors identified by the private sector

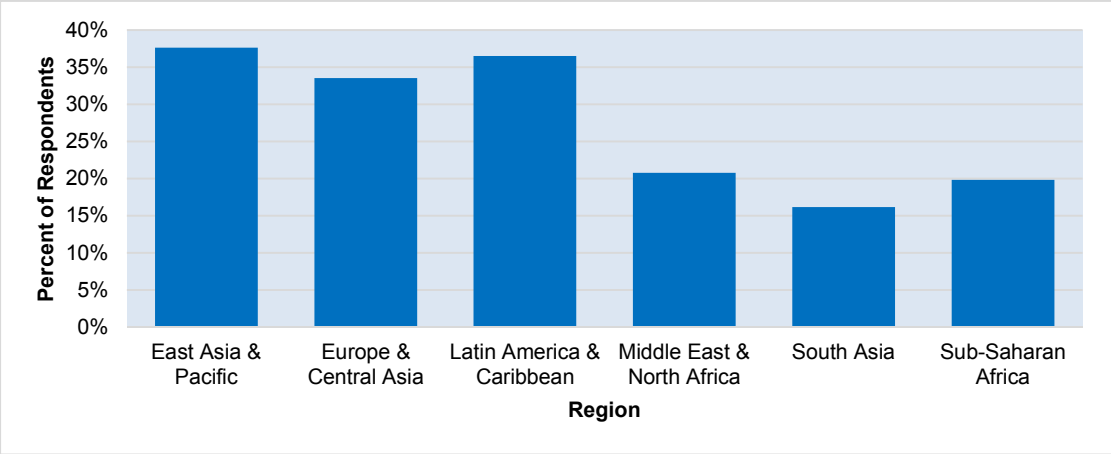
Governance factors	Percent of Respondents
National supply-side constraints: Informal controls and corrupt practices	29%
Operational difficulties: Informal or corrupt practices	37%
Typical difficulties in developing countries: Informal practices and payment requests	33%

Source: OECD/WTO.

Figure 11 shows the prevalence of governance improvements affecting the transport and logistics value chain, based on data from the Domestic LPI. The most striking feature

of the graph is that governance—understood as a lack of solicitation of informal payments in connection with logistics activities—has improved the most in those regions where it was already relatively strong. Governance problems, such as the payment of "speed money", are most commonly encountered in lower income developing countries, and are notorious in South Asia and Sub-Saharan Africa. It is therefore of great concern that less than one in five survey respondents in those regions consider that the governance situation is improving. Part of the reason for this problem might be that long official times for customs and border procedures give operators more incentive to engage in payments of speed money; where times are lower, transport and logistics related corruption tends to be less prevalent (Shepherd, 2009). In addition to improved policing, one way in which lower income developing countries could improve governance in this area is thus to improve customs and border procedures so that they are faster and more reliable.

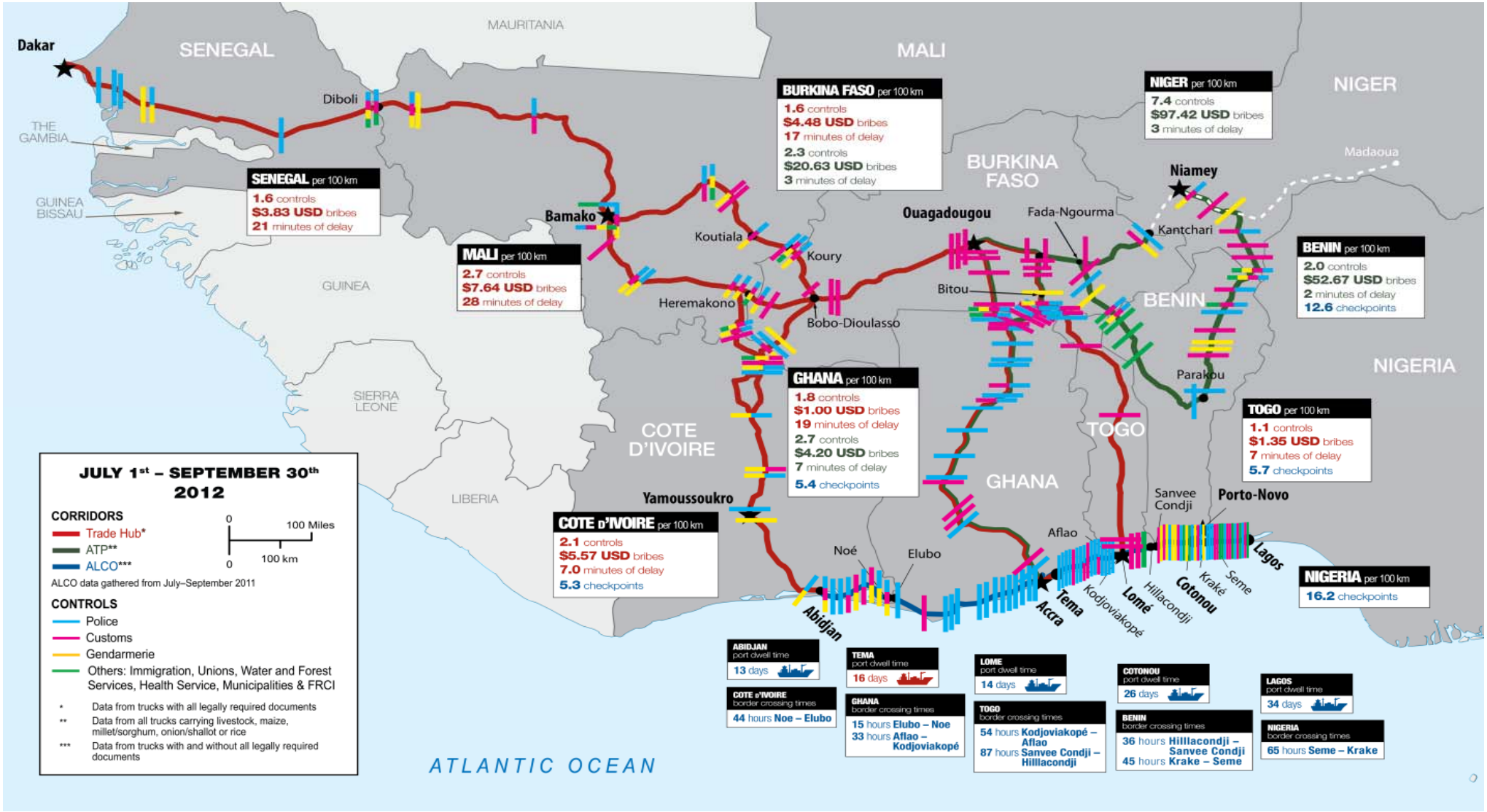
Figure 11 LPI survey respondents (2012) indicating that solicitation of informal payments in connection with logistics activities is 'improved' or 'much improved' in their country relative to 2009, by region



Source: LPI database.

It is important to highlight that in some developing countries and regions, there are many opportunities for supply chain governance problems to arise. Roadblocks and other checks are frequently encountered. Different officials—customs, police, and other transport-related agencies—can often have their own stops, with accompanying demands for unofficial payments. Figure 12 shows the prevalence of such checks in West Africa, to take one example.

Figure 12 Checkpoints, delays, and unofficial payments in West African countries



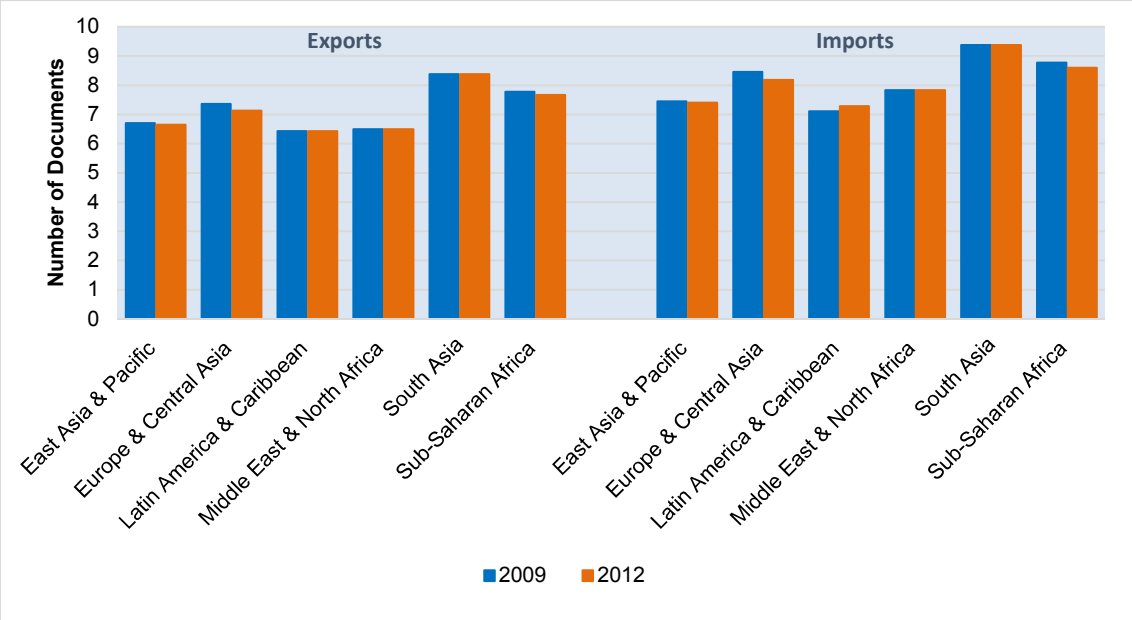
Source: www.borderlesswa.com/resources/21st-usaid-uemoa-road-governance-map.

Red tape

Previous subsections have suggested that customs and border procedures present a significant barrier to value chain development in a range of countries, both directly—by affecting time, cost, and reliability—and indirectly—by giving agents an incentive to engage in informal practices. This subsection looks at red tape barriers more closely, using Doing Business data on the number of documents required for export and import transactions, and the cost associated with those transactions. For comparability, we choose the same time period as for the LPI trend questions, namely 2009-2012.

Figure 13 shows the number of documents required for export and import transactions, a common measure of red tape barriers affecting trade-related transport and logistics operations. In both cases, there has been very little change over the sample period. After developing Europe and Central Asia, the largest proportional reductions in export and import documents have been in Sub-Saharan Africa. However, the numbers involved are small: 2% for imports and 1% for exports. So although this is an encouraging development, it does not suggest that there have been major, successful reforms of customs and border processes at the regional level. Of course, aggregate results might obscure more positive news at the country level, where there is indeed evidence of reform in a number of locations.

Figure 13 Number of documents required for export and import, 2009-2012, by region

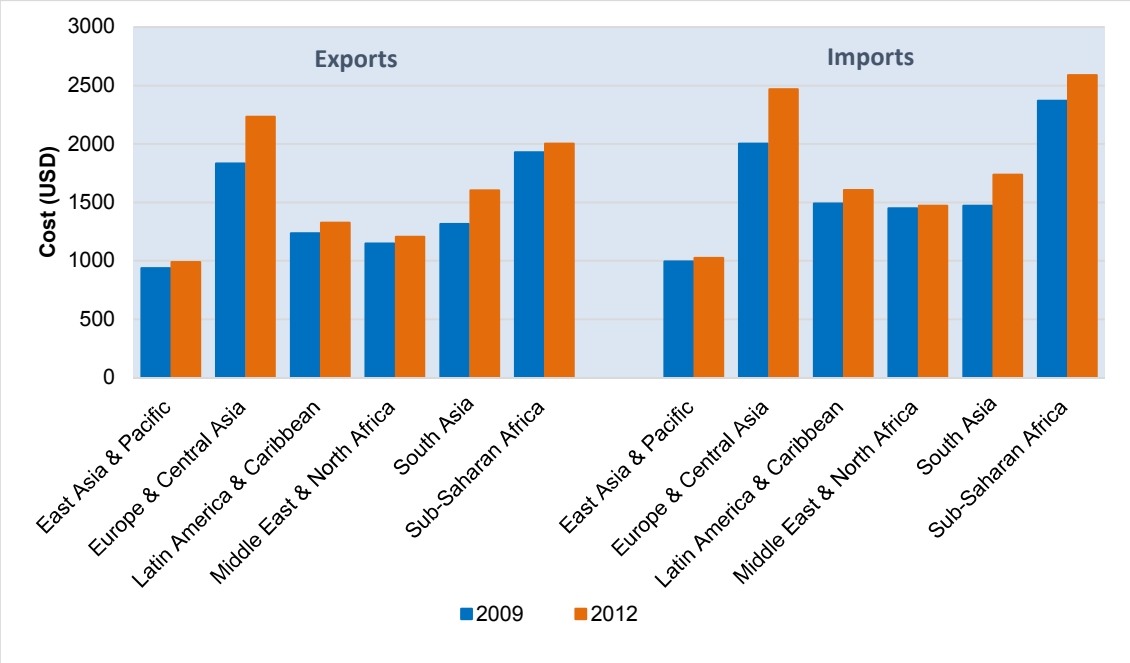


Source: Doing Business database.

Corresponding information for cost is in Figure 14. The data show that import and export costs have increased in all regions between 2009 and 2012. In part, this dynamic reflects the fact that red tape barriers have not been substantially reduced, as shown by the previous figure. It is important to be cautious in interpreting cost data, however, since they are not an unambiguous indicator of performance, and they depend on many other factors, such as inflation and the general price level. The reason that cost is not an unambiguous indicator of performance is that many technological improvements that are

welcomed by the private sector—such as automation—might increase the type of costs captured by Doing Business, for example through the imposition of user fees. However, the resulting improvements in time and reliability may mean that overall (direct and indirect) costs are in fact reduced for operators. The effects of such a technological improvement are not accounted for in the Doing Business data except through the direct effect of charges like user fees. Having said this, it is nonetheless notable that the best performing region—East Asia and the Pacific—has kept cost increases to a minimal level over the sample period. Substantial increases, such as those in developing Europe and Central Asia, are potentially a matter for concern.

Figure 14 Cost to export and import, 2009-2012, by region



Source: Doing Business database.

Box 5 Successful red tape reforms in the doing business database

The World Bank's Doing Business project now catalogues instances of reform that have led to decreases in the time, documentation, or cost of exporting and importing. Angola, for example, has undertaken two successful reforms. In 2010, it implemented a customs improvement program that streamlined procedures, and reduced trade time and cost. It followed up in 2011 by investing in port infrastructure and administration, which also reduced export and import time. Although Doing Business primarily captures red tape barriers—over half the time required to export or import is typically accounted for by document preparation—its measures also pick up complementary reforms that decrease dwell times and inland transit times.

Senegal introduced successful reforms in three years: 2009, 2010, and 2012. In the first wave, it introduced a single window, meaning that traders can submit all required documentation to a single point, which then distributes them to the appropriate agencies. In other border processing improvements, Senegal also introduced an electronic data interchange—an example of the increasing use of ICTs referred to in the main text—extended customs' operating hours, and moved to a risk-based inspection system. In addition, it also implemented improvements in port and road infrastructure, as well as reductions in the number of checkpoints. In 2010 and 2012, the country built on this strong basis of reform by improving facilities at the container terminal, and

extending the use of electronic forms. As an additional step, it introduced greater competition in transport markets. All of these reforms together resulted in improvements in trade documentation, time, and cost. For example, export time was reduced from 14 days to 11 between 2009 and 2013.

Source: www.DoingBusiness.org.

Summary

From an overall perspective, the "friendliness" of the transport and logistics environment improved between 2007 and 2012. This finding is true across all developing regions. Logistics performance tends to be strongly inversely correlated with per capita income, so richer, more developed countries tend to do better on average. However, even within the developing country group, there are significant performance differences: East Asia and the Pacific is the leading region, but Sub-Saharan Africa is lagging. The overall rate of improvement in logistics performance is fastest in non-high income Europe and Central Asia, and in South Asia. Progress is at a more moderate rate in other regions.

From a policy perspective, it is also important to break down overall performance, and to look at individual factors in transport and logistics performance that are improving rapidly, and to identify those areas where improvements are less prevalent. The stand out area in terms of progress is ICT infrastructure: the private sector in all regions and income groups strongly indicates that many improvements have taken place in this area over recent years. Indeed, the rate of improvement of ICTs appears to be much faster than that of other types of infrastructure. This development probably reflects the investment of national resources, as well as technical assistance and capacity building, in areas such as customs automation. In addition, there has been a strong spread of ICTs within the private sector—spurred in part by participation in GVCs—that has helped upgrade firm performance. However, the result of the difference in attention given to ICT infrastructure as opposed to traditional trade and transport related infrastructure—roads, rail links, ports, and airports—is that in many developing countries, physical infrastructure is in fact a more important business constraint than access to modern technology, at least in the main international gateways. Going forward, there is now an argument for refocusing attention on traditional "hard" infrastructure, not only at international gateways, but also improvements designed to improve internal connectivity of countries. For example, Copenhagen Economics (2013) find that the economic benefits of port upgrading in Brazil are not properly passed on to the rest of the country without accompanying improvements to internal infrastructure, such as roads and intermodal transport links that connect ports with the rest of the country.

Of course, focusing on hard infrastructure development does not stop at building facilities. It also implies regulatory reform to ensure that firms have non-discriminatory access to core infrastructure, and that services are provided on a basis that is as competitive as possible. The data suggest that the quality of private logistics services is improving at a significantly faster rate than logistics regulation, and this lag needs to be addressed to ensure the continued growth and development of GVCs in the sector.

Just as in infrastructure, there is a similar contrast between improvements in customs, and improvements in other border procedures: in most regions, the former are much more prevalent than the latter. Again, this dynamic reflects the success of standardization, technical assistance, and capacity building efforts that have been implemented for customs. However, from a supply chain perspective, it is important that all aspects of the

border clearance process, not just customs, work in a way that is rapid, cost effective, and reliable. The evidence strongly suggests that in many countries, it is important to work on border agencies such as health, quarantine, and SPS authorities, in addition to continuing the good work that has been done with customs. Although these agencies are less important for manufacturing GVCs, and the transport and logistics services they use, they are crucial for emerging agrifood GVCs in areas such as horticultural goods or cut flowers. Agrifood GVCs are of particular interest to some developing countries with a comparative advantage in agriculture, and there are precedents for their having significantly positive development effects, as in the case of Kenya or some countries in South America.

Box 6 Shipping containers and quarantine pests

Managing SPS risks is an important issue for producers and consumers alike in agrifood GVCs. Developing countries have to show that their products will be free from quarantine pests, in addition to being free of products that cause risks for human health, in order to access major markets like the US and the EU. In practice, this requirement can mean lengthy and costly procedures prior to export. During the trading process itself, special certifications are often required, and documentary problems, or a failure to comply with the importing country's rules, can delay goods at the border, or even see them rejected from the importing market entirely.

An additional dimension to the problem that is particularly relevant from a transport and logistics point of view is shipping containers. In light of their frequent movements around the globe, containers can potentially act as a vector for the entry of quarantine pests into countries where they are prohibited or controlled. Transport operators, in addition to exporters, need to pay increasing attention to this issue, particularly in light of the move towards "green logistics" that is currently taking place in the industry.

Since 2008, experts from around the world—including the private sector—have worked together through the International Plant Protection Convention (IPPC) to develop a standard on Minimizing Pest Movement by Sea Containers. Although not yet adopted, the IPPC's work fed into a recent update of the Code of Practice for Packing of Cargo Transport Units, under the aegis of the International Maritime Organization, and the UN Economic Commission for Europe. The IPPC's work was crucial in ensuring that the Code dealt with phytosanitary requirements for cleaning shipping containers. When the IPPC standard is adopted, it is expected that the scope for introducing new quarantine pests through shipping containers will be minimized in a way that is consistent with both good SPS practice, and good business practice.

Source: www.IPPC.int.

Improving border procedures, as well as reducing red tape barriers, can also be an important step towards reducing governance problems that directly affect transport and logistics GVCs, such as the need to pay "speed money" in some countries. Unofficial payments tend to increase costs in an unpredictable way, thereby affecting both the operating efficiency and reliability of supply chains. Perhaps surprisingly, the types of red tape barriers that make such payments more likely have not been significantly reduced in recent years in any region. Although there are encouraging individual instances of reform, there is much that developing countries can do to reduce documentary requirements and time taken to complete export and import transactions. In a sense, some ways of reducing border crossing times and increasing their certainty appear to be relatively straightforward reforms: decreasing the number of documents or agencies, for example, can be done administratively. However, the politics of such reforms are very challenging, which perhaps explains why they are not as widespread as expected. The most common difficulty is that there is strong bureaucratic resistance, due both to inertia and the

likelihood of lost revenue for individual civil servants. Unlike with infrastructure, where finance is a significant constraint for most developing countries, the problem with red tape barriers lies much more in the area of ensuring strong, policy-level commitment to drive reform.

4. Ensuring alignment and maximizing impact of aid for trade

The previous section examined emerging trends the transport and logistics sector, focusing on areas of more or less rapid improvement in developing countries. As noted in Sections 1-2, improvements in transport and logistics performance do not only aid development of GVCs in that sector, but also support their deepening in other sectors, such as manufacturing and agrifood. The potential development implications of upgrading this sector—both direct and indirect—are therefore significant.

In this section, we turn to the question of the role that AfT programs can play in supporting development and reform of the transport and logistics sector. As a starting point, we use data from the OECD/WTO survey to help identify the types of actions that are viewed as most effective by the private sector, and to highlight the beneficiary priorities that ultimately drive the targeting of Aid of Trade programs. We then analyze OECD data on aid flows to give an idea of the current distribution of donor resources across the various areas that can help promote development of the transport and logistics sector. Finally, we present some case study examples focusing on concrete programs implemented by the organizations and partnerships that are active in this area.

Beneficiary priorities

Although the OECD/WTO private sector survey is based on a small sample, it has a number of data points that provide useful information on the ways in which AfT programs can be refined and better targeted going forward. The first important finding is that only 25% of respondents indicate that they have benefitted from support to help address the issues they face in entering, establishing, or moving up the transport and logistics value chain. Of course, national programs are more common than development initiatives in this area. However, this relatively low figure might also, in part, reflect a lack of awareness of the many initiatives in place. Alternatively, it could indicate that some programs are concentrated on a relatively small number of firms, or perhaps on sectors other than transport and logistics. In tourism, for instance, over twice the percentage of respondents indicate having received assistance.

Table 7 sets out the types of support identified by survey respondents as potentially the most effective. Interestingly, the most commonly-cited one is investment in trade and transport-related infrastructure. As noted above, ICT infrastructure is now relatively well developed in a wide range of countries—at least in the main population centers and international gateways—and so the focus is shifting back to the traditional need to improve roads, rail links, ports, and airports. Over half of all respondents' list investments in physical infrastructure as potentially among the most useful types of support, but the same are only true of around 20% in the case of communications infrastructure.

A large number of respondents believe that support through trade policy can potentially help them position themselves in transport and logistics GVCs. The two factors most commonly referred to are better trade facilitation (52%), and improved market access abroad (44%). Although both factors are clearly important to the private sector, it is significant that trade facilitation is cited by more respondents than market access. Although there is scope for countries to agree to reforms and standards as a

group—either multilaterally, at the WTO, or regionally, as in APEC—the most common approach to trade facilitation is unilateral. Improving border procedures often does not require the cooperation of other countries, and is beneficial to the reforming country regardless of what others do. The private sector is therefore strongly suggesting that governments should continue with the types of trade facilitation reforms examined in the previous section, at the same time as working for improved market access abroad through multilateral or, as a second best, regional agreements.

Three responses relating to the general business climate suggest that this factor is also very important for the private sector. 40% of respondents identify access to finance as a potentially effective area of support,[3] 37% cite improvements to the business climate more generally, and 29% include public-private dialogue with national authorities. The key to understanding the prevalence of these responses is that firms can only move up the transport and logistics value chain if they are able to unlock the resources needed to invest in physical and human capital. Well-functioning financial markets—including an appropriate degree of international openness—are crucial for efficiently turning savings into investment. The business environment—including regulatory transparency—affects firms' level of certainty as to the future conditions under which their investments will need to be profitable. As for supply chain management, where uncertainty creates high levels of indirect cost, it can also be a factor that holds firms back from investing. AfT programs that target private sector capacity—both in transport and logistics, and in crucial backbone sectors like finance—as well as those that seek to improve the business environment and transparency more generally can therefore be expected to have strong positive impacts on value chains in this sector.

Table 7 Type of aid-for-trade support listed by the private sector as being the 'most effective' in helping them enter, establish, or move up transport and logistics value chains

Type of Support	Percent of Respondents
Investment in infrastructure (road, rail, port, and airport capacity)	55%
Incentives for investment (domestic and foreign)	53%
Trade facilitation measures to streamline customs bureaucracy and border delays	52%
Better market access	44%
Better access to finance	40%
Support to improve the business environment	37%
Public-private dialogue with national authorities	29%
Internationally-recognized standards and certification capacity	27%
Labor force training schemes	26%
Investment in communications infrastructure	19%
Appropriate competition policy	19%
Establishment of export processing zones/special economic zones	18%
Establishment and maintenance of animal or pest-disease free zones	2%

Source: OECD/WTO.

As Table 7 shows, other types of support are less frequently cited by survey respondents. Interestingly, the establishment of export processing zones is one of the least

[3] This finding is in line with the partner country survey, in which limited access to trade finance is the second most commonly cited factor inhibiting the ability of national firms to participate in GVCs.

frequently cited factors, although investment incentives are very frequently cited. Caution is needed in interpreting the responses on investment incentives, however. To be both efficient and effective from an economic point of view, investment incentives need to correct a market failure, perhaps due to difficulty accessing financial services (see above) or due to a lack of information about future business conditions. However, they have to be very carefully designed to ensure that they promote new investments at the margin, rather than simply reward investments that would have been undertaken in any case. Although there is evidence that investment promotion schemes can be effective in promoting quality upgrading of exports in developing countries (Harding and Javorcik, 2012), design difficulties and the potential for capture make such schemes risky in environments without well-developed institutions. They can also lead to significant cross-sectoral distortions from an economy-wide standpoint, and should therefore be introduced only when supported by rigorous analysis.

In terms of the broad categorization of AfT flows used by the OECD's CRS, the above results—although based on a small sample—are suggestive of some emerging priorities as seen by the private sector in beneficiary countries. A very important priority should clearly be assistance in the area of trade-related infrastructure, such as rail and road links, ports, and airports. Development of ICT infrastructure should at this point be treated as a less pressing issue, given that considerable progress has already been made. It is important to note that infrastructure-related AfT needs to take account not just of construction costs, but also maintenance costs, which can be relatively high in many developing countries due to their climate and geography. Donor support needs to be available for both types of expenditure.

Another important priority should be building productive capacity, with a particular focus on supporting the development of the financial sector—including through an appropriate level of international openness—and improving the business climate. By contrast with the "hard" investments required for infrastructure work, this priority is more about "soft" factors such as regulatory reform and governance. Technical assistance and capacity building activities can both be useful in this area, as a way of helping the private sector get the support it needs to enter and move up transport and logistics value chains.

Box 7 WTO agreement on trade facilitation

WTO Members are negotiating a multilateral Agreement on Trade Facilitation. The negotiation aims to clarify and improve relevant aspects of Articles V, VIII and X of the GATT 1994; enhance customs co-operation; and enhance the provision of technical assistance and support for capacity building to developing countries, especially the Least-Developed Countries. The three GATT articles cover Freedom of Transit, Fees and Formalities connected with Importation and Exportation, and Publication and Administration of Trade Regulations. The draft text of the new agreement on Trade Facilitation has two main pillars. Section 1 contains policy and procedural reforms that Members will implement, and Section 2 includes flexibilities for developing countries and Least-Developed Countries, along with provisions to enhance technical assistance and support for capacity building to underpin the implementation of their reform programs. Developed countries will be expected to implement all the provisions upon entry into force of the Agreement; developing countries will be provided with flexibility to decide on their own implementation schedule.

Source: WTO Secretariat.

Finally, technical assistance for trade policy and regulations should also be a priority area, focusing resources primarily on those areas in which developing countries can act unilaterally, in a way that reinforces the multilateral system. One such area should be trade facilitation. Although this term is used in a relatively narrow sense in the Doha Round negotiations—it deals primarily with streamlining customs bureaucracy and border delays—there is a strong case for treating it more broadly in the context of AfT. The experience in APEC can perhaps serve as a useful model. APEC's two Trade Facilitation Action Plans had the overall objective of reducing trade transaction costs. Those plans have now been superseded by the Supply Chain Connectivity Framework, which aims to reduce the time, cost, and uncertainty associated with supply chain transactions. We have argued above that all three factors are important determinants of transport and logistics performance, as well as of the ability of firms to move up GVCs in this sector. Aid-for-trade facilitation should therefore encompass not just customs reform—where considerable success has already been enjoyed—but also improvements to the full range of agencies and regulations involved in the border clearance process.

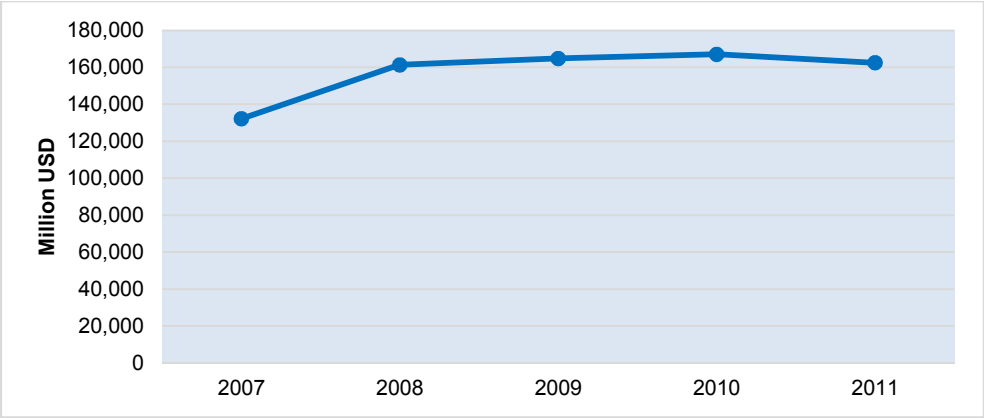
Aid for transport and logistics

The OECD's Creditor Reporting System (CRS) does not identify aid for all projects related to transport and logistics or GVCs as a separate category, so it is impossible to know exactly how much is devoted to this area relative to others.[4] As noted in the previous section, transport and logistics covers a wide area, and in fact overlaps with many other areas of policy interest. Some factors identified as important by transport and logistics firms for their operations or ability to participate in GVCs, such as hard infrastructure projects, including ports, airports, roads, and rail links, are clearly of primary interest to the transport and logistics sector. However other important factors, such as access to finance, depend on policies and aid practices in quite different areas. It is therefore necessary to take a broad-based approach in assessing the nature and extent of AfT activities that affect the transport and logistics sector.

Figure 15 shows the pattern in overall disbursements of aid in four categories that are of high relevance to the transport and logistics sector: transport and storage (which is largely infrastructure spending); communications (which reflects ICT infrastructure spending); finance; and trade facilitation (in the narrow sense of improving border procedures). The figures include multilateral as well as bilateral lending. After an increase between 2007 and 2008, the overall level of aid has remained steady in these categories over recent years. (Information for 2012 is unavailable as of writing.) Data are in current prices, so it is likely that there has been a small decline in real terms. According to the OECD/WTO donor country survey, budget cuts may have been responsible for part of the drop (33% of respondents), but a more likely explanation is a streamlining (*i.e.*, reduction in the number) of the countries that receive assistance (100% of respondents).

[4] In principle, individual project data could be examined to provide an answer to this question. However, the analysis here relies on the publicly available CRS data, and a more detailed examination is beyond the scope of this paper.

Figure 15 Aid disbursements related to the transport and logistics' sector (USD million, current prices, 2007-2011)



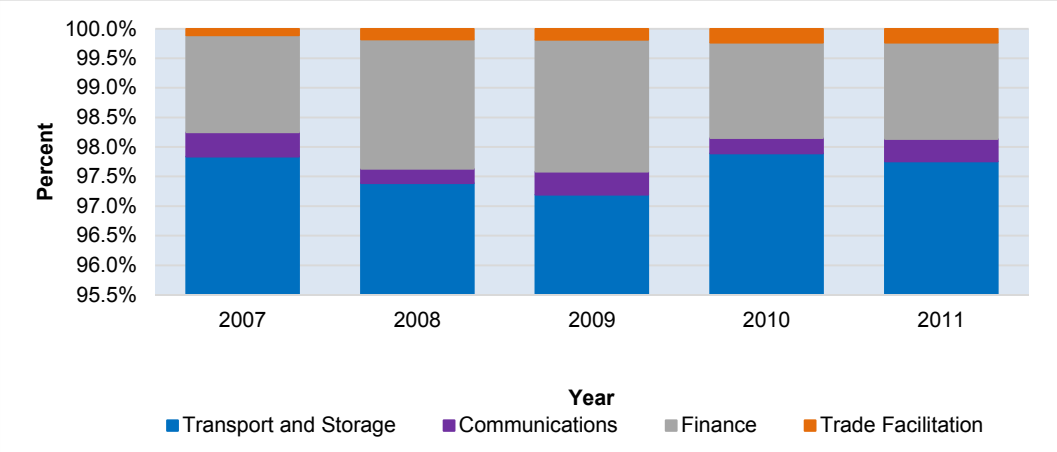
Source: OECD CRS.
Note: For definitions of aid categories see main text. Amounts refer to disbursements.

In light of a pattern of relative overall stability of aid flows in this area, Figure 16 shows that there is also a relatively similar breakdown among the four categories from year to year: the overwhelming majority of aid, well over 90%, goes to transport and storage. This finding means that transport infrastructure projects account for by far the bulk of all aid disbursements relevant to transport and logistics. Communications projects—which are again mostly infrastructure spending—account for a much smaller proportion of total spending. This distribution lines up well with the observation that ICT infrastructure tends to perform much better than basic transport infrastructure in many developing countries—or at least in their main international gateways—and indeed has been improving rapidly, thanks in part to considerable private investment in this area. There is thus less need, relatively speaking, to invest donor funds in communications projects as compared to basic transport infrastructure.

Interestingly, financial sector aid is the second largest category, although it is still much smaller than hard infrastructure spending. OECD's CRS indicates that this category involves four main types of aid: financial policy administration and management; monetary institutions; formal sector financial intermediaries; informal or semi-formal financial intermediaries; and education and training in banking and financial services. All four types of aid can in principle improve access to finance for a range of businesses, including those in the transport and logistics sector.

The smallest of the four categories is trade facilitation, as narrowly defined to include essentially the streamlining of border processes. Although trade facilitation reforms are generally less costly than large infrastructure investments—and indeed, by increasing border traffic they tend to create revenue in many cases (*e.g.*, OECD, 2009)—this approach needs to be reconciled with the importance given to customs and border procedures by private sector respondents in the OECD/WTO survey discussed in Section 3. Border processes were commonly cited as an operational problem, particularly in developing countries, and as a factor that inhibits firms from entering or moving up transport and logistics GVCs.

Figure 16 Aid disbursements for transport and logistics by category (percentage, 2007-2011)



Source: OECD CRS.
Note: For definitions of aid categories see main text. Amounts refer to disbursements.

Although interesting case studies are available, econometric studies on the effectiveness of AfT expenditures related particularly to transport and logistics are in their infancy. The only peer-reviewed study is Helble *et al*. (2012).[5] The authors focus on "Aid-for-trade Facilitation", but with trade facilitation understood in the broad sense of reducing trade transaction costs, not the narrow one of streamlining border procedures. Their data capture most of the areas identified above as potentially important, but also include some other factors—such as broad trade policy assistance—that are less related to transport and logistics. Helble (2012) find that although aid-for-trade facilitation has a relatively small impact in relative terms—using their strongest result, a doubling of aid would increase recipients' exports by a little under 2%—the dollar numbers are much larger because aid flows are relatively small compared with countries' total exports. Although there are significant methodological issues surrounding the analytical approach that Helble *et al*. (2012) take, their results clearly indicate that aid-for-trade facilitation—which overlaps to a large extent with aid for the transport and logistics sector—can significantly benefit recipient countries, including by increasing their exports of other goods. As noted throughout this paper, efficient transport and logistics services are a vital input into many other value chains, and this result reflects that dynamic.

Another way of assessing the impact of AfT programs is through impact evaluations conducted by donors. OECD (2011) provides a meta-analysis of projects in the transport and storage sector, which have generally been found to produce positive outcomes including, in some cases, on trade variables and broader economic indicators. OECD (Forthcoming) provides an overview of projects in selected countries in which ex ante evaluations project major economic gains. In one case (Costa Rica), the reform strategy has been vindicated by increased participation in a number of important GVCs.

The OECD/WTO donor survey also deals with the issue of evaluation. It asks respondents to indicate whether AfT support and/or work on value chains have had particular development impacts. Results are in Table 8. They suggest that economic

[5] Cali and Te Velde (2008) also use econometric methods to examine the impacts of AfT, but their results are difficult to interpret.

outcomes have been more prevalent in some areas than in others, but in general terms, AfT has been effective in promoting the kinds of economic and social development outcomes referred to in Section 1.

Table 8 Donors identifying the listed effects as impacts of their aid-for-trade and/or value chain support

Development Impact	Percent of Respondents
Improved understanding of trade	67%
More focus on trade in the national development plan	40%
Labor skills development	67%
Private sector investment	80%
Increased exports	73%
Increased trade	80%
Export diversification	53%
Increased economic growth	40%
Employment	73%
Poverty alleviation	67%
Women's economic empowerment	67%

Source: OECD/WTO.

Partners, programs, and projects

AfT programs involve bilateral and multilateral donors, along with a range of private sector actors as both donors and partner countries. This section provides some case study examples of successful AfT partnerships in the transport and logistics sector, that have helped improve performance and bring about significant economic gains for the countries concerned. Typically, aid activities do not deal with just one area, such as hard infrastructure, but also address accompanying issues of importance, such as soft infrastructure, including trade facilitation. Although the categorization presented in the previous section seems somewhat rigid, donors and partner countries are necessarily much more flexible in practice. This approach reflects the fact that the transport and logistics sector has a number of different dimensions, but they all tend to be interlinked in sometimes complex ways.

Box 8 Roads and trade facilitation for the Europe-Caucasus-Asia corridor

Landlocked countries in Central Asia suffer from high levels of trade costs, and are characterized by relatively low levels of logistics performance (Arvis *et al*., 2012; Arvis *et al*., 2013). In addition to domestic transport and logistics difficulties, they also depend on performance in neighboring countries when transit is involved. Although protocols have been designed at an international level to ease the process of transit (see Box 4), travel times are often long, and border waiting times can be extreme in some cases. Supply chain governance can also be a serious issue in some of these countries.

Collaboration among a group of donors and a set of beneficiary countries has tried to loosen these constraints. As an example, the Asian Development Bank and the European Bank for Reconstruction and Development financed the improvement of an important road link between the capitals of Kazakhstan and Kyrgyzstan. The two beneficiary governments worked together to improve customs procedures at the border, including through the installation of new equipment and capacity building for staff. Line ministries in the two beneficiary countries were responsible for implementing the road upgrading and other improvements, with the two donor organizations proving financing.

Another regional initiative worked in parallel to deal more closely with soft infrastructure issues, such as

customs. The Intergovernmental Commission for the Transport Corridor Europe-Caucasus-Asia (TRACECA) brings together 12 countries that are important for the transit of goods by land between the various sub-regions.[6] It is funded by the European Union. In the case of the Kazakhstan-Kyrgyzstan road link, TRACECA financed additional customs reforms, building on those already undertaken by the two governments as part of the soft infrastructure component of the original project.

This case study is a good example of multiple agencies and governments working together to deal with an important problem in the transport and logistics sector, namely the relative isolation of landlocked countries. The combination of road upgrading and customs modernization and reform produced significant economic benefits. In terms of development of the sector, traffic volumes rose by 25%. There were also important flow-on effects to the rest of the economy: for example, Kyrgyzstan's exports rose by 160%. This example therefore shows the importance of a collaborative approach, as well as the need to address multiple issues in order to have maximum effect.

Source: OECD (Forthcoming); *www.TRACECA-org.org*.

Box 9 Regional transport corridors in Africa

The African Development Bank (AfDB) has placed the delivery of Infrastructure as a key pillar in its Medium Term Strategy (2008-2012), and this is anticipated to continue in the Long Term Strategy (2013-2022). This overall framework will contribute to the improvement of an enabling environment for private sector development, for example by boosting investment in infrastructure development, and the development of micro, small and medium-size enterprises connected to regional and global value chains.

The African continent suffers from inadequate physical linkages among rising capital cities on the one hand, and between production areas and ports—which enable international linkages—on the other. The existence of lengthy cross-border procedures and barriers also presents a major challenge. The result is low levels of inter-regional trade, and limited mobility of labor and capital.

AfDB interventions through its Transport & ICT Department (OITC) have been focused primarily on the delivery of physical infrastructure. However, through the years the Bank has gradually widened its intervention scope vertically and horizontally. AfDB targets, in so far as possible, a corridor approach to financing transport infrastructure. The aim is to connect production areas to export/import terminals, provide for railway and road infrastructure, improve border-crossings, and upgrade port facilities. In parallel, AfDB has begun to slowly increase its interventions in the areas of transport facilitation and logistics. This step will enable the AfDB to bring more functionality to these corridors as key backbones in the value chain. Once this has been put in place, other departments will come in, through country-level coordination tools, to provide assistance to other aspects of the chain, including energy provision, private sector development, and agriculture programs.

The AfDB's operations have predominantly been in the provision of road infrastructure, in line with the development pace of the continent. These operations are spread out across Africa, with a notable concentration in the Eastern, Western, and Southern regions. Most of these projects are regional corridors spanning more than one country, in most cases enabling countries (both coastal and landlocked) to connect their agricultural or industrial production areas to export/import terminals. In many of these operations a transport and trade facilitation component has come to feature more prominently, coupled with provisions for One Stop Border Posts (OSBP).

Source: Based on material provided by the African Development Bank.

[6] A number of other regional initiatives are also active in this area, such as the United Nations Special Program for the Economies of Central Asia (SPECA), and the Asian Development Bank's Central Asia Regional Economic Cooperation (CAREC).

Hard infrastructure is often the focal point of AfT efforts involving transport and logistics. However, soft infrastructure, including trade facilitation and customs cooperation, can play more than a secondary role in improving performance. The following case study highlights that assistance with border procedures can lead to substantial decreases in border waiting times, which are an important driver of costs in some international supply chains.

Box 10 Simplification of border procedures in Africa

The African North-South Corridor program is also an AfT effort involving multiple donors, beneficiaries, and projects. The aspect of the program that is of particular interest for this case study is upgrading of an important border crossing at Chirundu, which links Zambia and Zimbabwe.

The core reform at Chirundu was the implementation of a one-stop border post. This approach makes it possible for drivers to deal with all border formalities in one location, thus lowering time, reducing uncertainty, and improving supply chain performance. On the beneficiary side, the COMESA Secretariat has played an important coordinating role in the project. A range of donors have been involved, including the Japanese and UK governments, and the World Bank.

Economic and development benefits of the project have been substantial. Most importantly from a transport and logistics standpoint, clearance times for commercial trucks have been reduced from an average of five days to less than 24 hours. A fast lane has also been introduced, which allows clearance of certain vehicles in less than five hours. Such improvements can have major effects on supply chain costs, times, and reliability, all of which are key determinants of overall performance. Moreover, lower official waiting times have reduced the prevalence of "speed money" payments and improved supply chain governance. The importance of these effects is evidenced by the calls to "scale up" this kind of project to include other border crossings as well.

Source*:* OECD (Forthcoming); *www.ICAfrica.org.*

The previous examples might mistakenly give the impression that AfT is a public sector agenda. In fact, it is an area where the private sector, and public-private partnerships,[7] can work effectively to bring about important economic and social outcomes. Although public funding is often required to support basic infrastructure development, it is usually the case that the private sector is more efficient at operating and using the infrastructure after it is built, provided that appropriate regulation is in effect. Moreover, large transport and logistics companies—such as lead firms in GVCs—can be important vectors for technological progress in developing countries, as they distribute best practice globally and build capacity with private sector operators in-country. It is therefore important for donors to consult more extensively with the private sector in the development of AfT programs: currently, only 63% of respondents to the OECD/WTO donor survey indicate that such consultations are undertaken, although all respondents include the private sector at the implementation stage.

It is important to stress the constructive role that lead firms in GVCs can play as agents in the private sector development process. The OECD/WTO private sector survey shows that two-thirds of lead firm respondents consider development-related activities to be part of their core business strategy. This figure is double the number of respondents

[7] All respondents to the OECD/WTO donor survey indicate that they use public private partnerships for AfT projects in the transport sector.

indicating the next most common reason, namely that it is part of their corporate social responsibility agenda. Interestingly, the same proportion of lead firms (two-thirds) indicate that they are involved with (national) government initiatives, but only 44% are involved with development agency projects or programs. 44% of respondents also indicate that they are involved with their own company-led projects. The following box shows the major impact that the private sector can have on the transport and logistics sector in a developing country.

Box 11 Private sector development in Brazil

Growing trade in Brazil has put pressure on existing transport infrastructure, particularly maritime ports. Container port traffic has more than tripled in the last decade. The largest and most important port is the Port of Santos. Two private sector companies, APM Terminals and Terminal Investment Limited, have together invested over USD 1 billion in a new container terminal at the Port of Santos. It is expected to increase capacity by up to 40% and productivity by up to 10%. In terms of direct effects on the transport and logistics sector, it is expected that this expansion will reduce maritime transport costs by up to 8% and increase trade potential by USD billion – USD 8 billion in value terms.

Maritime transport in Brazil also faces a technical challenge in terms of the types of vessel that can be accommodated due to the fact that many Brazilian ports are located at rivers rather than at the sea. In 2011, the private shipping line Maersk Line started operating 16 new SAMMAX[8] vessels on services between South America and Europe. These vessels are designed to be able to deal better with shallow waters, and can thus call at most Brazilian ports. However, their cargo capacity exceeds that of the smaller vessels that were being used previously due to draft restrictions. Capacity and productivity have both increased as a result of this change in shipping technology driven by private sector development. For example, it is estimated that the move to SAMMAX vessels increased productivity at the Port of Santos by 7% and trade potential by over USD 1 billion.

Source: Copenhagen Economics (2013).

As examples of ways in which AfT is delivered in the transport and logistics sector, these case studies have highlighted three important points. The first is that, as indicated in the other parts of this section, physical infrastructure remains a serious constraint in much of the developing world. The right "recipe" for unblocking that constraint depends on the particular nature of the problem, and the extent to which a range of donors and beneficiaries—including the private sector—can work together to solve it. The second point to highlight is that coordination among donors is crucial. The Central Asian example in particular shows that efforts by different groups and initiatives can be highly complementary, but for maximum impact they need to be carefully coordinated so that they are mutually reinforcing. The third conclusion, which follows in particular from the Brazil case study, is that the private sector has an important role to play in the AfT agenda. This point is just as true in transport and logistics as in other sectors. On the one hand, private investment can provide much needed funds for infrastructure construction and maintenance. The private sector can generally also operate infrastructure more efficiently than the public sector, provided that appropriate regulation is in place. Finally, technology upgrading and innovation tend most often to come from private sector activities. Participation in GVCs is an important way for technology diffusion to take place in developing countries, including in the transport and logistics sector.

[8] South American MAXimum.

Although this section has focused on transport and logistics, it is important to keep in mind that it is both a GVC in its own right, and a cluster of important backbone services for the development of other GVCs. As such, it is also useful to consider the types of AfT that donors are concentrating on in their efforts to promote GVCs. Table 9 presents results from the OECD/WTO donor survey, indicating the ways in which survey respondents' programs seek to promote value chain development. It is very encouraging that supporting private sector development is the most commonly cited approach, followed by the business environment, infrastructure, and supply-side constraints. These factors line up relatively well with beneficiary priorities, and with the areas in which the performance review in Section 3 highlighted the need for improvement in developing countries. However, in the same survey, only 52% of respondents indicate that they have direct experience of value chain development in the transportation sector, which indicates that there is far more for donors to do in this area.

Table 9 Donors identifying the type of support as a way in which their aid-for-trade strategy seeks to promote the development of value chains

Type of Support	Percent of Respondents
Creating a conducive trade policy regime	75%
Creating a conducive domestic enabling environment	83%
Addressing infrastructure bottlenecks	79%
Supporting private sector development activities	92%
Addressing supply-side constraints	79%
Direct support for value chain development	67%

Source: OECD/WTO.

5. Conclusions

This paper has reviewed the role of the transport and logistics sector in helping developing countries connect to GVCs in other sectors, in addition to the growing role that transport and logistics plays as a GVC in its own right. GVCs potentially have major impacts on economic and social development, through both direct and indirect channels. In the case of transport and logistics, improvements in value chain performance make it easier to move important goods such as basic foodstuffs or vaccines to areas outside main population centers, thus spreading the benefits of development, helping improve access, and keeping consumer prices down. In addition, the transport and logistics sector is important as in input into the growth of GVCs in other sectors, including manufacturing and agrifood. Indeed, it is difficult for modern GVCs to exist at all in those sectors without efficient transport and logistics to back them up. Goods such as intermediate inputs have to be moved frequently across borders with as much speed and reliability, and at as little cost, as possible. Perishable agricultural products also need to be moved quickly from the producer to the distributor in the importing country. Upgrading transport and logistics, including through deepening involvement in transport and logistics GVCs, is thus a key factor in developing countries' ability to connect to value chains and global markets.

Sections 2 and 3 have shown that a variety of national and cross-national data are available on the time taken to complete particular supply chain operations, which is a crucial aspect of determining total costs (both direct and indirect). Countries that can make these processes work faster, more reliably, and at lower overall cost will tend to be more successful in entering and moving up transport and logistics GVCs, as well as GVCs in other sectors. In terms of emerging trends, there have been a number of positive developments in recent years. The first is that ICT infrastructure is now relatively well diffused in all developing regions, at least in the main population centers and international gateways. This diffusion—aided in large part by private-sector driven technology upgrading—has helped improve performance of international supply chains, even though the equally important issue of improving domestic connectivity remains to be addressed in many countries. Given the success that has been enjoyed in this area, it is appropriate for ICT infrastructure to be a secondary priority in terms of AfT designed to assist the transport and logistics sector.

By contrast, physical infrastructure such as roads, rail links, ports, and air ports remain in serious need of upgrading and maintenance in many developing countries. The rate of improvement in these areas appears to be noticeably slower than for ICT infrastructure. In light of the significant need in this area, it is appropriate that AfT affecting transport and infrastructure should deal with physical infrastructure as a first priority.

It is also important for appropriate emphasis to be placed on the soft infrastructure improvements that need to accompany investments in physical infrastructure if they are to be as productive as possible. Soft infrastructure in this case includes customs and border procedures—and notably customs cooperation—as well as rules and regulations affecting the transport and logistics sector, red tape, and private sector development. Indeed, beneficiaries are increasingly identifying these areas—along with access to finance—as

key for entering and moving up transport and logistics GVCs. There are many examples of donors and beneficiaries working collaboratively—the private sector together with the public sector—to build multi-dimensional projects that address these various areas. These experiences should be scaled up and replicated in other areas to the extent possible.

Governance also needs to be addressed as part of the agenda facing countries that want to improve their firms' positions in GVCs. By extension, it also needs to be part of the AfT agenda in transport and logistics. Case studies as well as cross-country econometric evidence confirm that it is not just improved policing and training for border officials that improve governance (although both factors clearly help). An important determinant of officials' ability to demand "speed money" from operators is the time taken by official procedures. Reducing red tape barriers and improving border processes therefore has an important spinoff effect: it improves governance by reducing the incentive to make irregular payments, with corresponding economic and social benefits.

In terms of the AfT agenda as it applies to the transport and logistics sector—and thus to the "hardware" that helps firms enter and move up GVCs in other sectors—the key is in learning from successful experiences, of which there are a number from different parts of the world. One important lesson is coherence: donors need to work together, and beneficiaries in many cases need to collaborate among themselves, because transport and logistics projects are by their nature cross-border initiatives. The second main lesson is that the private sector should not be neglected in the process, but rather should be fully involved. Developing infrastructure can often involve significant budgetary resources that can be extremely difficult to mobilize in developing countries, and which can present an issue for some donors in a context of strained government budgets at home. The private sector can therefore be an important source of investment, and regulatory techniques such as franchising—having firms compete for a "natural" monopoly right, to be exercised under appropriate regulation—can help ease the strain on public resources. In addition, the private sector can be leveraged as a development tool in its own right. In transport and logistics, GVCs have often acted as vectors of technological upgrading in developing countries, as they disseminate best practice and improve performance. The involvement of public and private sector actors is thus key for ensuring success of the AfT agenda in transport and logistics as a way of helping firms enter and move up GVCs in that sector and in others that depend on it.

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Annex A

Indicators of delay - An overview

Single country sources

Border waiting times

Some countries maintain data on wait times for commercial vehicles at individual border crossings. Among developed countries, the USA and Canada have particularly detailed information available. Some developing countries also maintain such data, although coverage tends to be patchy and limited to crossings of particular interest for development projects, where ex ante and ex post observations are taken.

An example of the project-driven approach to tracking delays—not just at borders but more broadly through the land supply chain—is the Borderless West Africa initiative (*www.borderlesswa.com*). UEMOA (2012) provides a detailed breakdown of checkpoints, bribes, and delays faced by road transport operators in fourteen important corridors in the West African region. Data have been measured quarterly starting in 2009, and are publicly reported. By dealing with issues like checkpoints and unofficial payments, as well as pure border delays, this approach provides a good example of the ways in which specific development projects can drive greater awareness of supply chain issues at a policy level.

Because of the national specificities involved in operating individual border crossings, these data tend to be highly specific and not easily comparable across countries. There is therefore no single international source that compiles all available information. The International Road Transport Union houses a Border Waiting Times Observatory (*www.iru.org/bwt-app*), but it only covers certain countries in Europe and Asia.

From the point of view of individual projects, it is often important to measure not just congestion-related wait times, and those that are due to red tape and inefficient border processes, but also those that arise due to regulatory differences between countries. In some neighboring countries in Africa, for instance, load limits and certification requirements are different, and cargo has to be unloaded and reloaded at border crossings. These operations often add significant time and cost to the overall delay experienced by operators.

Time release studies[9]

Matsuda (2012) describes the methodology behind the World Customs Organization's Time Release Studies (TRS). The TRS is a unique tool and method for measuring the actual performance of customs activities as they directly relate to trade facilitation at the border. The TRS thereby measures relevant aspects of the effectiveness of operational procedures that are carried out by customs and other regulatory actors in the standard

[9] This section is based on material provided by the World Customs Organization.

processing of imports, exports, and in transit movements. It seeks to accurately measure these elements of trade flows so that related decisions to improve such performance can be properly conceived and carried out. The main purpose of the TRS is, therefore, to determine where delays exist in the process of releasing goods (types of delays, reasons for the delays, etc.) and, finally, to propose solutions.

This tool was developed in 1994 and updated in 2011. It provides World Customs Organization (WCO) members with a methodology divided into three phases: preparation of the study, collection and analysis of data, and drafting and validation of the study report. The study results assist customs administrations in identifying the constraints affecting the release of goods, in considering corrective actions, in identifying areas requiring simplification of procedures, as well as in establishing client charters and customs standards.

Box A.1 TRS-led reform in a landlocked developing country

The Uganda Revenue Authority adopted a customs modernization plan for 2006-2009, focusing on four main areas: business process reform; improved communication; having a professional workforce; and developing an improved working environment. A TRS, conducted in 2008, was a crucial part of the overall reform process. A special TRS Task Force was created, which brought together various government agencies, as well as the private sector, through associations of traders and freight forwarders. The WCO's support was crucial in providing both the TRS methodology and expertise to help implement it on the ground.

Benefits from the TRS as an impetus to reform of customs and border procedures included:

- Uganda Customs was given a baseline measure for the time taken to clear shipments.
- The TRS helped stakeholders identify areas to improve in customs and border procedures, and these findings drove process re-engineering of the relevant procedures.
- Specific initiatives were put in place to deal with the problems brought to light by the TRS. In addition to process re-engineering, other examples include: introduction of joint border management at selected posts; initiation of an accreditation process; and selective introduction of 24-hour operations to provide better customer service.

Source: *www.oecd.org/aidfortrade/47799918.pdf.*

The TRS is normally for internal use, and due to the specificity of national procedures, results are not easily comparable from one country to another. Customs administrations do not have to involve the WCO at all in national/regional TRS exercises. However, a substantial number of countries have either already received or will benefit from WCO technical assistance on the TRS. Possible outcomes include: restructuring within the customs administration, drafting or modifying customs legislation, simplifying and automating customs procedures, reallocating resources, resolving matters with other agencies involved in the clearance of goods, or providing a basis for Single Window/Coordinated Border Management solutions.

Cross-country sources

Doing business data

The Trading across Borders component of the World Bank's Doing Business database contains information on export and import times. The data reported are based on a hypothetical transaction involving a standardized cargo of goods transported by sea; however, the trade times do not include ocean transit, but are limited to pre-shipment times. Export and import times include the time necessary for: obtaining all necessary documents; inland transit (from the seller's location to the port) and handling; customs clearance and inspections; and port and terminal handling. To obtain these data, the World Bank administers a survey to freight forwarders and trade facilitators. Initially, the sample involved 345 professionals with at least two per country, and conference calls were used as a follow-up device. In some cases, the data were cross-checked with customs and port authorities (Djankov *et al*., 2010).

Since the Doing Business data are based on one, hypothetical transaction, and focus on official times, they tend to represent an upper bound on the actual export and import times faced by traders. The World Bank's LPI takes a different but complementary approach to measurement, which we discuss in the next sub-section. In terms of the sources of delay in the Doing Business data, it is possible to break down the information for each country into the parts due to each of the measured components (see above). Taking Thailand as a representative example of a developing country heavily involved in GVCs, the Doing Business data for 2012 record a total export time of 14 days. Of those 14 days, over half (eight days) is accounted for by document preparation. This result is quite typical, and emphasizes the importance of red tape barriers in calculating the Doing Business trade times. The other components account for respectively one day (customs clearance and technical control), three days (port and terminal handling), and two days (inland transit and handling). The contrast with a country like the Central African Republic, which is landlocked and not heavily involved in GVCs is striking: total export time is 54 days, which breaks down into almost even proportions of inland transportation and handling (24 days)[10] and document preparation (23 days), with the remaining procedures taking much less time (four days for customs clearance and technical control, and three days for ports and terminal handling).

Logistics performance index

The World Bank's LPI project takes a fundamentally different approach from the other tools discussed so far. It has two components: the International LPI and the Domestic LPI. Both components are now available for three years (2007, 2010, and 2012) and new indicators will be released in early 2014. Together, the various aspects of the LPI project aim to provide the most comprehensive cross-country data currently available on multi-dimensional logistics performance. In this subsection, we focus on the parts of the LPI that deal with delays and their sources.

The International LPI is a perception index based on survey responses from over 1,000 logistics professionals located in 150+ countries around the world. They provide

[10] Transportation times tend to be very long for landlocked countries because Doing Business counts not just the time required to reach the national border, but the full time needed for goods to arrive in the nearest port, including transit across one or more third countries, with all the additional controls and distance that implies.

index scores for up to eight countries they trade with, ranging from one (low performance) to five (high performance). The index scores cover six core areas of logistics performance: the efficiency of the clearance process; the quality of trade and transport infrastructure; the ease of arranging competitively-priced shipments; the competence and quality of logistics services; the ability to track and trace consignments; and the timeliness of delivery. The final index is a weighted average of these six scores.

In addition to the one to five score provided by the International LPI's timeliness index, the Domestic LPI—in which the same survey respondents evaluate performance in their own countries—also has useful information about trade times and delays. First, it contains quantitative data on import and export lead times, distinguishing between land supply chains and maritime/air supply chains. Export lead times measure the time taken to move goods from the seller's factory to the port of loading, or equivalent location. Import lead times similarly measure the time taken to move goods from the arrival terminal or equivalent location through border customs clearance in the importing country. In both cases, respondents are asked to estimate both median and best (top 10%) lead times, using, in all cases, data on actual shipments. The LPI time data therefore differ from the Doing Business data in that they capture different processes and are based on actual shipments, rather than estimated times based on the expected time to complete official procedures. The Doing Business data can therefore be seen primarily as indicators of the red tape burdens associated with exporting and importing, whereas the LPI data try to capture commercial realities on the ground. The two approaches are strongly complementary.

In addition to the quantitative data on import and export lead times, the Domestic LPI also contains information on the prevalence and extent of various sources of delay. First, there is a question asking respondents to estimate the average time taken between submission of an accepted customs declaration and notification of clearance through customs, both with and without physical inspection. Second, respondents are also asked how often they experience major delays due to: compulsory warehousing/transloading; pre-shipment inspection; and maritime transshipment. They answer on a scale ranging from "nearly always" to "hardly ever".

Composite indices

In addition to data sources like Doing Business and the LPI, there are also two other indices that are commonly used to assess the performance of the trading environment: the World Economic Forum's (WEF) Global Enabling Trade Index (ETI), and the DHL Global Connectedness Index (GCI), as well as a set of indicators specifically related to border processes, the OECD Trade Facilitation Indicators (TFI). These three indices are dealt with separately because they are essentially data aggregators rather than original data on the state of transport and logistics.

The ETI (WEF, 2012) uses a variety of sources, primarily the WEF's own executive opinion survey, Doing Business, and the LPI, to produce an overall composite index and a number of more specific sub-indices summarizing the friendliness of the trading environment in 132 economies. Each index is a weighted average of data drawn from other sources. It is therefore informative about various aspects of the trading environment—including transport and logistics—and is sometimes used as a performance indicator by governments, in combination with other data. However, it does not provide hard data on the sources and extent of delays, or their impacts.

The DHL index takes a broadly similar approach, focusing on summarizing the extent of globalization around the world. It brings together data from sources such as the United Nations, the World Bank, the IMF, the OECD, and the WTO. Apart from its intrinsic value as an indicator of the extent to which globalization is affecting different economies, the GCI also makes abundantly clear the importance of free and open global markets to companies directly involved in transport and logistics, like DHL itself. According to the company's CEO in his preface to the 2012 report: "Global connectedness is part of the fabric of our organization" (DHL, 2012).

The TFI set is composed of sixteen trade facilitation indicators covering the full spectrum of border procedures under negotiation at the WTO, in order to estimate the impact of these procedures on trade volumes and trade costs in 133 countries across income levels, geographical regions and development stages. Values for indicators are drawn from publicly available data and subsequently fact-checked with concerned governments. Their objective is to provide a basis for governments to prioritize trade facilitation actions and mobilize technical assistance and capacity-building efforts for developing countries in a more targeted way (OECD 2013c).

WORLD TRADE ORGANIZATION

OECD

AID FOR TRADE AND VALUE CHAINS IN TRANSPORT AND LOGISTICS

The study highlights that in some cases, transport and logistics accounts for 20-60% of the cost of a final good. Though there have been improvements across regions in recent years. Major constraints include transport infrastructure, customs and border procedures and regulations, red tape and governance issues. The report indicates that, although aid-for-trade flows to infrastructure are still substantial, support declined in 2011. Furthermore, there is a need to increase coordination and collaboration between donors, partners and the private sector.

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Annex A. Indicators of delay - An overview