The Development Dimension

Succeeding with Trade Reforms

THE ROLE OF AID FOR TRADE



OECD

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BETTER POLICIES FOR BETTER LIVES

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Foreword

History has shown the important force that international trade can be for economic growth and poverty reduction. Trade can therefore be a major tool in countries' efforts to reach their development goals. However, particularly in the case of the least developed countries, harnessing the power of trade remains challenging.

Although access to OECD and other markets could be further improved, successive rounds of multilateral trade liberalisation, regional free trade agreements and various preferential arrangements have made significant progress in providing developing countries with better trading opportunities. Nonetheless, where there are capacity constraints or trade-related infrastructure is lacking, it can be difficult for these countries to turn trade opportunities into trade flows. Moreover, some domestic constraints often choke the impact of trade expansion on economic growth and poverty. The Aid for Trade Initiative was launched to address these problems. It has succeeded in raising awareness among partners and donor countries concerning the positive role trade can play in promoting economic development. Furthermore, increased resources (both concessional and non-concessional) are being devoted to address binding constraints on trade and to make trade more pro-poor.

Since the advent of this Initiative, the OECD has actively contributed to the global aid-for-trade debate. The Development Assistance Committee (DAC) and the Trade Committee (TC) have worked jointly to provide analytical input to the World Trade Organization (WTO) Task Force on Aid for Trade. OECD outputs have helped to shape the Geneva debate on how to operationalise aid for trade. Joint DAC-TC work on aid for trade builds on the comparative advantages of the two policy communities. It has allowed the OECD to develop a very constructive collaboration with the WTO on aid for trade.

The focus of this joint work is on implementing the Aid for Trade Initiative, in order to enable partner countries to use trade effectively to promote economic growth and achieve their poverty reduction objectives.

Succeeding with Trade Reforms: The Role of Aid for Trade is an outcome of this joint work and builds on the conclusions of the book *Trade for Growth and Poverty Reduction: How Aid for Trade Can Help*. It highlights the potential of aid for trade to boost economic growth and reduce poverty, while discussing the various reasons why it may not be realised. In so doing, this book draws lessons for the design of aid-for-trade projects and programmes and for increasing their effectiveness. Building on this analysis, the book also quantifies the binding constraints to trade in developing countries and the importance of complementary and compatible policies (such as education, governance, business environment and macroeconomic stability) to maximise the impact of trade reforms on trade and economic growth.

Such quantification is needed to guide the design and sequencing of reforms and of aid-for-trade policies. One of the major findings is that the benefits of trade openness derive from imports as well as exports. As main constraints to trade in developing countries, the report particularly discusses the reliability and availability of electricity, transportation and access to credit.

Finally, two case studies (Azerbaijan and Uganda) illustrate the trade constraints identified by the econometric work and the importance of some variables not captured quantitatively because of data limitations.



Erik Solheim
Chair of the Development Assistance Committee



Fernando de Mateo
Chair of the Trade Committee

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Executive summary

Trade can be a powerful engine for economic growth, poverty reduction, and development. However, the growth potential of trade may not always be realised in practice. In some cases trade reforms proved unsustainable and in other cases they did not have a meaningful impact on economic growth. This book discusses various reasons for these outcomes in order to draw lessons for the design of aid for trade and to increase its effectiveness. It describes the "compatible policies" that will make trade reform sustainable and the "complementary policies" that will increase its growth impact. It thus argues that successful aid for trade must tackle a broad range of difficult issues,

In this light, effectiveness in aid for trade requires proper sequencing and policy coherence. Once a country has identified the most binding constraints to its trade expansion, it should implement reform designed to tackle these specific constraints making sure that the reform is *(i)* sustainable and *(ii)* supported by complementary reforms that will increase its impact on economic growth. As much as possible, proper sequencing and policy coherence should be reflected in the design of aid for trade. This cannot be achieved without adequate donor co-ordination and alignment on country priorities.

This book looks at four main questions relevant to the discussion of implementation and effectiveness of aid for trade.

- How severe are the various possible constraints to trade expansion?
- How different are the constraints to imports from the constraints to exports?
- What impact would addressing these constraints have on trade and on economic growth?
- To what extent would the answer to the three previous questions differ for landlocked countries, small and vulnerable economies, and commodity exporters?

An econometric analysis, supplemented by case studies, is needed to answer these questions. In the present study, such an analysis has been undertaken for as many partner countries as possible. The results can be used as a benchmark against which groupings of countries with particular characteristics can be assessed, showing that the constraints differ considerably according to country characteristics.

Several conclusions emerge from the ***benchmark results***. In line with economic literature, both imports and exports contribute to economic growth, but the constraints to exports differ from those applicable to imports. This finding has many policy implications, the most important being that trade reform (and aid for trade) should focus not only on export promotion but also on the role of imports. Despite recent trade liberalisation, a cut in import tariffs can still boost export and import performance, although the impact is small compared to other constraints. In particular, electricity supply appears to be the main constraint to trade expansion. The constraint is less

related to availability than to reliability. In contrast, transportation problems constrain trade performance more through the availability of infrastructure than through its quality. Access to credit is also a significant barrier to trade, but more for imports than for exports. The results of the econometric analysis confirm the importance of complementary and compatible policies (education, governance, business environment, and macroeconomic stability) for trade expansion and economic growth as these policies affect trade performance through, among others, investment, labour productivity and labour participation.

As to how the binding constraints faced by groupings of countries with particular characteristics differ from the general results, the analysis finds that:

For **landlocked countries**, geographical constraints are not the only reason for their relatively low trade performance. Better domestic policies could make an important contribution to trade expansion. Better macroeconomic policies would have the largest impact on landlocked countries' trade performance. In this context, the priority should be more on exchange rate policy than fiscal policy. In addition, policies fostering investment and improving the availability of electricity would also have a sizable trade impact. Finally, improving domestic transportation infrastructure alone would not particularly enhance trade performance unless accompanied by reforms that reduce the time to trade, as by improving infrastructure in transit countries, reducing transport costs associated with longer inland transportation than encountered in coastal countries, and addressing regulatory issues of the transport sector, including when crossing borders. The experience of Uganda with trade reforms illustrates these points. Notably, it shows that reforms focusing on the customs tariff had a disappointing impact on trade performance while reforms aimed at reducing the time to trade were successful. In contrast, access to credit and current customs tariffs are seen not to be significant barriers to trade expansion.

*For **small and vulnerable economies** (SVEs), transportation infrastructure is the main constraint to trade.* Increasing both the density and quality of roads would have a large impact on trade and on economic growth. In contrast, the main complaint of exporters from SVEs concerns shortcomings in the electricity infrastructure, even though our econometric analysis shows these actually have relatively minor effects. Telecommunications infrastructure also contributes to trade performance and economic growth in these countries but its impact is much smaller. Among domestic policies, estimations show that improving access to credit and, to a lesser extent, strengthening property rights, would have the largest pay-off.

*For **commodity exporters**, governance is a priority.* Improving policies related to governance (notably better fiscal spending, investment, and prevention of overvaluation of the real effective exchange rate) would have the largest impact on trade performance. Moreover, compared to the other country groupings, the impact of a tariff reform on trade performance would be larger, although it remains limited. Similarly infrastructure is less of a constraint to trade than in other country groupings and affects only exports. As with the other groupings, the main constraint related to infrastructure is the supply of electricity. The case of Azerbaijan illustrates the challenges faced by commodity exporters. Economic diversification and increased competitiveness are needed to achieve its objective to become an upper-middle income economy but the needs are numerous and cannot be tackled all at once. The combination of trade reforms and macroeconomic stability would allow the country to improve its trade performance especially if accompanied by improvement in governance and in access to finance.

Introduction

In order to show that aid for trade has had an impact and to improve its effectiveness, the OECD has expanded its monitoring activities and supplemented them with work on evaluation and on the binding constraints to trade expansion. This report focuses on the latter work stream, which aims to identify the most binding constraints to trade expansion in order to prioritise reforms and to guide the sequencing and the design of aid-for-trade projects and programmes.

The Aid for Trade Initiative has been successful in mobilising resources and in raising awareness of the positive role trade can play in development (OECD/WTO, 2009 and 2011).

However, after more than six years since the inception of the Aid for Trade Initiative at the WTO Ministerial in Hong Kong in December 2005 and at a time when aid budgets are under pressure because of the fiscal problems faced by most donors, it is important to demonstrate that the substantial amount of aid mobilised has been well spent and had an impact, and to find ways to improve further the quality and effectiveness of aid for trade.[1]

To do so, the OECD has based its work on three pillars: (1) expanding monitoring, (2) learning from evaluations of the impact and ways to improve the effectiveness of aid for trade, and (3) identifying the most binding constraints to trade in partner countries in order to better sequence and design aid for trade. [2]

The first pillar : Strengthening and expanding the monitoring

The monitoring of aid-for-trade flows has historically been the core contribution of the OECD to the Aid for Trade Initiative. This contribution is most visible in the form of the joint OECD/WTO *Aid for Trade at a Glance* reports issued on the occasion of each Global Review of Aid for Trade (OECD/WTO, 2007, 2009, 2011a).

The third Global Review of Aid for Trade, hosted in July 2011 by the WTO, focused on showing the results of Aid for Trade Initiative.[3] This could not be achieved solely by measuring resource mobilisation. Therefore, the OECD supplemented its traditional monitoring of the flows, based on its Creditor Reporting System, with self assessments by donors and partner countries as well as with case stories (OECD/WTO, 2011a, 2011b).

The second pillar : Evaluation

The work on evaluation focuses on:

i) Assessing how impact evaluation can (and cannot) be adapted to aid for trade;

ii) Identifying with a meta-evaluation what past evaluations of aid-for-trade projects and programmes reveal about trade outcomes and impacts; and

iii) Setting targets and using performance indicators to get improved results.

The results of this work stream were summarised in *Strengthening Accountability in Aid for Trade* (OECD, 2011b).

The third pillar : Identifying the binding constraints to trade

The work on the binding constraints to trade expansion also aims at finding ways to improve the quality and effectiveness of aid for trade but from a different angle. It draws on lessons from the trade and growth literature and from past experience with trade reforms so as to identify the most binding constraints to trade expansion with a view to guiding the sequencing and the design of aid-for-trade support.

A vast empirical trade literature suggests that the most common objectives of aid for trade (increasing trade, diversifying exports, maximising the linkages with the domestic economy, and increasing adjustment capacity), if achieved, will boost growth and reduce poverty. This was one of the key messages of *Trade for Growth and Poverty Reduction: How Aid for Trade can Help* (Hallaert and Hayashikawa, 2011). A second key message was that developing countries' trade–related needs are numerous and that available diagnostic tools are well suited to identifying the needs but not to prioritising and sequencing the reforms. As political capital for reforms and financial resources to support them are scarce and have to be spent over time, not all needs can be addressed immediately and simultaneously. Therefore, prioritising and sequencing the reforms and aid-for-trade support is crucial for the effectiveness of aid for trade.

This report, which summarises the finding of two more recent reports (Hallaert, 2010 and Hallaert *et al., 2*011), develops these messages. Chapter 1 below shows that if the most common objectives of aid for trade have the potential to boost economic growth, this growth potential may not always be realised. While most trade reforms have had a positive impact, some have proved unsustainable and some have not had a meaningful impact on growth. The various reasons for these outcomes are discussed in order to draw lessons for the design of aid-for-trade projects and programmes and to increase their effectiveness. It is argued that the scope of activity of aid for trade is broad enough to support the compatible policies (mostly related to the macroeconomic environment) that will make the reform sustainable and the complementary policies (such as building economic infrastructure and capacities) that will increase the growth impact of reforms. Supporting compatible and complementary policies is about policy coherence and adequate sequencing. In order to reach its objective, aid for trade should not only focus on helping developing countries to turn trade opportunities into trade but also tackle the binding constraints that choke the impact of trade on economic growth. Aid for trade has the means to do so but this requires proper sequencing and policy coherence. As much as possible, proper sequencing and policy coherence should be

reflected in the design of aid-for-trade projects and programmes. This cannot be achieved without adequate donor co-ordination and alignment on country priorities.

Chapter 2 moves to quantification. As the trade-related needs of developing countries are numerous, ranking the most binding constraints to trade expansion and the importance of compatible and complementary policies is needed to guide the design as well as the sequencing of reforms and aid-for-trade projects and programmes. The constraints to trade expansion are largely country specific but countries which share important characteristics may face similar constraints. An econometric analysis is undertaken for as many partner countries as possible to produce an "unrestricted" sample that can be used as a benchmark against which groupings of countries with particular characteristics (landlocked countries, small and vulnerable economies, and commodity exporters) can be assessed. This analysis provides important policy implications that need to be backed by evidence but the reader can choose to skip the technical part of this chapter (most of which is in Annex A).

Chapter 3 illustrates with two case studies (Azerbaijan and Uganda) some of the finding of the previous chapters. They show that, as emphasized in Chapter 1, the success of trade reform depends of adequate sequencing and complementary policies and exemplify the mechanisms highlighted by some of the econometric findings discussed in Chapter 2 and the importance of several variables not captured because of data limitations. The case of Uganda illustrates some of the econometric findings on the constraints faced by landlocked countries, notably the importance of reducing the time to trade. By comparing the trade reforms of the 1990s with the reforms of the 2000s, it also shows that adequately identifying the most binding constraints and sequencing reforms is paramount for the success of trade reforms. The case of Azerbaijan illustrates the challenges faced by commodity exporters. In particular, it shows the importance of macroeconomic stability and of complementary policies in areas such as governance and access to credit.

Notes

1 This is important for all types of aid not just aid for trade. The 2005 Paris Declaration on Aid Effectiveness put the results agenda at the centre of efforts to improve aid effectiveness. This emphasis has been strengthened in the 2011 Busan Partnership for Effective Development Co-operation which stresses the importance of "improving the quality and effectiveness of development co-operation" and to move "from effective aid to co-operation for effective development."

2 Conclusions of the work streams under these two latter pillars were discussed at the Expert Workshop on Aid for Trade Implementation (OECD, 2011a).

3 *www.wto.org/english/tratop_e/devel_e/a4t_e/global_review11_e.htm*.

References

Busan Partnership for Effective Development Cooperation (2011), *http://www.dev-practitioners.eu/fileadmin/Redaktion/Documents/Post-Busan_03_2012/Busan_FINAL_EN.pdf?PHPSESSID=676429f1ff11085f8399f01af656fbbc*

Hallaert, J., R. Cavazos Cepeda and G. Kang (2011), "Estimating the Constraints to Trade of Developing Countries", OECD Trade Policy Working Papers, No. 116, OECD Publishing.

Hallaert, J. and M. Hayashikawa (2011), *Trade for Growth and Poverty Reduction: How Aid for Trade Can Help*, The Development Dimension, OECD Publishing.

Hallaert, J. (2010), "Increasing the Impact of Trade Expansion on Growth: Lessons from Trade Reforms for the Design of Aid for Trade", OECD Trade Policy Working Papers, No. 100, OECD Publishing. doi: 10.1787/5kmbphgwkl46-en.

OECD (Organisation for Economic Co-operation and Development (2011a), OECD Expert Workshop on Aid for Trade Implementation, OECD Publishing, Paris, *http://www.oecd.org/dac/aidfortrade/expertsworkshoponaidfortradeimplementation28-29march2011.htm*

OECD (2011b), *Strengthening Accountability in Aid for Trade*, The Development Dimension, p.112, OECD Publishing, doi: 10.1787/9789264123212-en.

OECD/WTO (World Trade Organization) (2007), *Aid for Trade at a Glance 2007*, OECD and WTO, Paris and Geneva, doi:10.1787/9789264043220-en.

OECD/WTO (2009), *Aid for Trade at a Glance 2009: Maintaining Momentum*, OECD and World Trade Organization, Paris and Geneva, doi:10.1787/9789264069022-en.

OECD/WTO (2011a), *Aid for Trade at a Glance 2011: Showing Results*, OECD and World Trade Organization, Paris and Geneva, doi: 10.1787/9789264117471-en.

OECD/WTO (2011b), *Aid for Trade 2011: Results emerging from the case stories*, OECD and World Trade Organization, Paris and Geneva, 65 p., *http://www.oecd.org/aidfortrade/publications.htm*

Paris Declaration on Aid Effectiveness (2005), *http://www.oecd.org/development/aideffectiveness/34428351.pdf*

Third Global Review of Aid for Trade : Showing Results, *www.wto.org/english/tratop_e/devel_e/a4t_e/global_review11_e.htm*

Chapter 1

Trade reform experience and lessons for designing aid for trade

While most trade reforms had a positive impact, some trade reforms proved unsustainable and others did not have a meaningful impact on growth. This chapter discusses the various reasons for these outcomes in order to draw lessons for the design of aid-for-trade projects and programmes and to increase their effectiveness. It argues that aid for trade should not only focus on helping developing countries to turn trade opportunities into trade but also tackle the binding constraints that choke the impact of trade on economic growth. Moreover, it argues that aid for trade can effectively support the compatible policies that make reforms sustainable and the complementary policies that increase the role of trade as an engine of growth.

Trade openness can — and I stress CAN — contribute to economic well-being and political harmony in important ways, but only if other conditions are met. What are these conditions? Firstly, we need sound macroeconomic policy, and not a doctrine that sees trade policy as a quick fix for over-arching economic fundamentals. Second, trading opportunities created by openness are worth little, and perhaps even unwelcome, if price signals do not reach their destination because this is made impossible by a lack of physical infrastructure and functioning markets. These elements are part of a basic development agenda, one in which the international community certainly has a role. This is why I have placed so much emphasis on the Aid-for-Trade Initiative.

WTO Director-General Pascal Lamy (2010)

Introduction

Despite the potential of trade for economic growth, poverty reduction, and development, experience with trade reform differs significantly across countries. This chapter elaborates on this experience and reviews the lessons from the empirical literature on trade reforms and growth. The purpose is to provide an overview of the various linkages that need to be considered in the design of aid for trade in order to make it as efficient and effective as possible and to maximise its impact.

More precisely, this chapter first documents that trade reforms[1] in developing countries are sometimes reversed or do not deliver the expected impact on economic growth. Then it investigates the underlying reasons for these setbacks and draws lessons for the sequencing and design of aid-for-trade projects and programmes. In particular it argues that aid for trade can effectively support the compatible policies that make reforms sustainable and the complementary policies that increase the role of trade as an engine for growth.

Two problems with trade reforms that impact on aid for trade

A vast empirical literature shows that on average trade expansion does lead to higher economic growth. This finding justifies using trade as a tool for development and vindicates the Aid for Trade Initiative (Hallaert and Hayashikawa, 2011). However, the same literature shows that there is no guarantee. In some cases, developing countries' experience with trade reform has been disappointing because trade reform did not deliver the expected economic growth and poverty reduction.

Whatever the underlying reasons, disappointment with trade reform is an issue for the Aid for Trade Initiative mostly because it makes new reforms more difficult to implement and reduces the incentive for developing countries to consider trade as an important part of their development strategy. Moreover, if trade does not lead to growth, the effectiveness of aid for trade is undermined.

Problem 1 : The growth response to trade can be weak

On average, trade fosters growth. However, the economic growth response to trade expansion and trade reform varies significantly across countries. Wacziarg and Welch (2003) found that, although increased policy openness has *on average* a positive impact on growth in developing countries, "there is a vast amount of heterogeneity across countries in the extent to which growth rose after trade reforms. […] Roughly half of the countries experienced zero or even negative changes in growth post liberalisation."

Looking at the growth performance before and after the trade reform illustrates the heterogeneity of the growth response to trade reform.[2] Greenaway *et al.* (1997) measure the growth impact of trade reform implemented by 32 countries during the period 1986-91 and found that the *average* change in growth after liberalisation was +1.4%. However, the heterogeneity is sizable with the impact ranging from -9.3% to 10.2% and 14 countries experienced a decline in their economic growth (Table 1.1).

Table 1.1 Change in average growth rates post trade reform[1]

1986-91 in percent[1]

Mali	10.18	Indonesia	-0.06
Philippines	10.04	South Korea	-0.09
Chile	8.55	Thailand	-0.14
Uganda	8.07	Sri Lanka	-1.01
Malaysia	7.40	Pakistan	-1.60
Tanzania	4.95	Ghana	-1.82
Nigeria	3.64	Kenya	-2.33
Malawi	3.41	Cameroon	-2.92
Costa Rica	3.34	India	-2.97
Argentina	3.20	South Africa	-3.70
Colombia	3.14	Peru	-4.35
Venezuela	2.26	China	-5.31
Senegal	2.26	Brazil	-7.76
Madagascar	1.95	Zaire	-9.32
Côte d'Ivoire	1.84		
Vietnam	1.77		
Bangladesh	0.39		

Source: Greenaway *et al*. (1997)

[1] Difference between the average GDP growth for the three years prior to liberalisation and the three years after liberalisation.

Heterogeneity can be measured across income groups (being the most marked in lower-middle income countries). These findings echo the econometric results of other studies. Wang *et al.* (2004) showed that for a larger sample (79 countries) over a longer period (1970-98) the poorer a country, the larger the growth impact of trade expansion. Dufrénot *et al.* (2009) found that the growth impact of trade openness is bigger on developing countries with low economic growth than on developing countries that already have higher economic growth. Many other studies stressed the importance of other dimensions that are not measured in Table 1.1 such as the legal, institutional, and economic environment (Bolaky and Freund, 2004; Chang *et al.*, 2005; and Thomas and Nash, 1991).

Aksoy and Salinas (2006) undertook a similar exercise for 39 developing countries during a longer period (1970-2004) but with two important differences. First, they

measured the impact of the GDP *per* capita. Second they controlled for many factors that can bias the results presented in Table 1.2, namely they excluded (*i*) reforms that were reversed; (*ii*) economies in transition from socialism; (*iii*) economies affected by external or internal conflict; and (*iv*) macroeconomic crisis years that often triggered the trade reform.

Table 1.2 Change in average GDP per capita growth rates post trade reform

1970-2004, in percent[1]

Jamaica	7.53	Kenya	-0.86
Dominican Republic	4.53	Turkey	-1.09
Chile	4.23	Philippines	-1.86
Madagascar	4.15	Cameroon	-2.13
Ghana	3.84	Morocco	-2.81
Thailand	3.72	Pakistan	-2.91
Niger	3.51	Mexico	-3.35
Zambia	3.35	Paraguay	-4.00
Uruguay	3.24		
India	2.69		
Bangladesh	2.60		
Argentina	2.50		
Mauritania	2.24		
South Korea	2.07		
Côte d'Ivoire	1.91		
Nepal	1.28		
Malaysia	1.16		
Panama	1.16		
Honduras	1.06		
Mali	1.01		
Tunisia	0.90		
Brazil	0.78		
Costa Rica	0.73		
Senegal	0.71		
Central African Rep.	0.59		
Benin	0.59		
South Africa	0.58		
Jordan	0.49		
Malawi	0.19		
Ecuador	0.18	Average	1.14
Bolivia	0.05	Standard deviation	2.41

[1] Average growth pre-liberalisation is measured for the years [T-12, T-5] preceding the liberalisation, while the post liberalisation average period is measured for the years [T+2, T+9]. T represents the year of the trade reform.

Source: Aksoy and Salinas (2006).

From the analysis of Aksoy and Salinas, the conclusion remains unchanged: *on average*, trade reform is associated with higher growth but with heterogeneity in the growth response. On average, the GDP per capita growth rate was higher by about 1.1 percentage points after the reform. Although slightly less than in the Greenway study, this is quite impressive taking into account that in many cases the macroeconomic policy was clearly more expansionary in the years before the reform than after.[3] Albeit more limited than in the Greenway study, heterogeneity remains striking: one-fifth of the countries saw their economic growth performance deteriorate following the trade reform. Moreover, the difference in the growth response across income levels is barely

noticeable, suggesting that the differences highlighted by Greenaway *et al.* (1997) may be due to the exogenous factors that Aksoy and Salinas (2006) controlled for.

Similarly, Sachs and Warner (1995) in a study of 37 countries that opened up their trade regimes after 1975 estimated that the trade reform resulted in higher growth (measured by real GDP per capita growth) both in the short and long run. Again, the results showed substantial heterogeneity across countries. Interestingly, this study showed that the impact of the change in trade policy on GDP runs both ways: moving toward a more restrictive trade regime was clearly associated with lower growth on average, with substantial heterogeneity. Economic performance deteriorated for four-fifths of the 15 countries that adopted a more restrictive trade regime, although it improved for one-fifth.

Problem 2 : Trade reforms can be reversed

In addition, past experience shows that trade reforms are sometimes reversed. This section describes the main mechanisms leading to the policy reversal.

"Macroeconomic instability is perhaps the greatest enemy of trade reform" (Rodrik, 1989). Many case studies have shown that, in a context of macroeconomic instability, trade reforms tend to be reversed. The World Bank Independent Evaluation Group (2006) review of the World Bank projects supporting trade and the case studies of Michaely *et al.* (1991) conclude that poor macroeconomic policies were more commonly associated with reversals in trade reform than any other factor. In countries where the adverse macroeconomic environment did not result in policy reversal, trade reforms did not deliver the expected outcome. Macroeconomic instability is one of the many reasons (and often an important reason) for the weak economic growth response to trade liberalisation discussed in the previous section. This was a conclusion of Wacziarg's and Welch's (2003) seminal article on the impact of trade liberalisation on economic growth.

In addition, trade reform can exacerbate macroeconomic imbalances. In such a case, it is more likely to be reversed. For example, if revenue from taxes on international trade accounts for a large share of government revenue, trade reform may prove fiscally unsustainable. Box 1.1 illustrates this point with Madagascar's experience with a temporary tariff-exemption scheme. Similarly, rapid and comprehensive trade liberalisation can be followed by an import surge and sharp deterioration in the current account (van Wijnbergen, 1992), resulting in a balance of payments crisis.

Box 1.1 Trade reforms in a fragile macroeconomic environment: The case of Madagascar

In 2003, the macroeconomic environment of Madagascar was fragile. The fiscal deficit was at 4.8% of GDP and would have reached 9.3% without external grants. Moreover, at 10% of GDP, the country had one of the lowest tax-to-GDP ratios in the world. Madagascar's performance stood well below the sub-Saharan Africa average of 18% (Keen and Mansour, 2009). Finally, taxes on international trade accounted for over half of government tax revenue. The external position was also very weak. Despite debt relief under the Heavily Indebted Poor Countries Initiative, official grants of almost 4% of GDP, and the IMF balance of payments support, import coverage was low and falling rapidly: gross official reserves covered 4.1 months of imports in 2002 but only 2.7 months of imports in 2003 (IMF, 2005a and 2007).

Nonetheless, and without any meaningful accompanying reform to offset the fiscal revenue loss, the Malagasy authorities embarked in August 2003 on a temporary two-year tax and tariff exemption of imports of capital goods in order to boost investment. Firms and households hoarded imports while the scheme, which was announced as temporary, was in place. Imports of equipment jumped by 60% triggering a sharp deterioration in external accounts. The current account deficit ballooned from 5% of GDP in 2003 to 9% in 2004 and 11% in 2005. The fiscal deficit increased from 9.3% (excluding grants) in 2003 to 13.1% in 2004 (IMF, 2005b and 2006a). Unsustainable, the cuts were partially rescinded in August 2004 and the scheme was terminated, as planned, in September 2005.

The balance-of-payments problem is particularly acute if trade reform is launched while the exchange rate is overvalued. Shatz and Tarr (2002) showed that this has been frequently the case, including in trade reforms of the 1980s and 1990s. If a currency is overvalued, trade liberalisation triggers a rise in imports while the export response is weak because overvaluation damages competitiveness. Excess demand for foreign exchange emerges, resulting in balance-of-payments tensions. In addition, domestic activity usually declines because the contraction in import-competing sectors is not offset by an expansion of the export sector. Unemployment rises. Governments then have to either adjust the exchange rate or reverse the trade reform.[4] The credibility of trade reform is affected if the reform is not accompanied by a meaningful depreciation, since it is likely to be perceived as unsustainable because of the resulting impact on the external balance. This will in turn affect the behaviour of economic actors and increase the risk of policy reversal (Rodrik, 1989, Falvey and Kim, 1992).

Although literature shows that a meaningful depreciation increases the chances of having sustainable trade reform, depreciation also increases inflationary pressures. This illustrates the importance of policy coherence (monetary policy should be consistent with the trade reform) and highlights the need for appropriate sequencing (macroeconomic stabilisation is often a prerequisite to trade liberalisation). Nonetheless, sequencing does not necessarily mean that all elements of the trade reform must be postponed until macroeconomic stabilisation is achieved as some parts of a stabilisation programme can contribute to the trade reform. For example, in many cases fiscal consolidation is needed to reduce the fiscal and balance-of-payments deficits as well as to tame inflation (especially, but not only, if the fiscal deficit is financed by the central bank). As discussed below, such a consolidation can be achieved with a tax reform that can rebalance the tax system from taxation of imports towards domestic taxes.

A second, and important, macroeconomic problem that trade reform can exacerbate is fiscal. Ebrill *et al.* (1999) as well as the World Bank Independent Evaluation Group (2006) documented cases where trade liberalisation was reversed because of a lack of accompanying fiscal revenue reform. Although declining, taxes on international trade still account, in many developing countries, for a very large share of fiscal revenues. For

example, Keen and Mansour (2009) estimated that, in sub-Saharan Africa, trade taxes accounted on average for about 25% of total tax revenue in the first half of the 2000s (down from 40% in 1980) but exceeds 50% in some countries. As a result, fears of fiscal revenue consequences affect developing countries' willingness to undertake trade reform unilaterally, multilaterally (as in the Doha Development Round), or in the context of a preferential agreement (as in the Economic Partnership Agreements between the European Union and the African, Caribbean, and Pacific countries; see Hallaert, 2010). Although, as discussed in detail below, the fiscal impact of trade reform can be mitigated, trade reform that is not properly designed or is not accompanied by proper tax reform can have severe consequences and be unsustainable (Baunsgaard and Keen, 2005; Hallaert, 2004; Khattry, and Rao, 2002).

A third cause of policy reversal is the adjustment costs. Structural changes and reallocation of resources toward more efficient uses are at the heart of the gains from trade and are crucial for sustained economic growth and development. Therefore, using trade as an engine for growth and development implies structural changes. However, structural changes are accompanied by adjustment costs that can be economically, socially, and politically unsustainable. In such cases, trade reform may be reversed. In this context, it should be kept in mind that if policies and institutions affect the growth impact of trade openness, openness to trade also affects policies and institutions. Berg and Krueger (2003) argued that trade may expose weaknesses in some other areas or enhance the benefits of other reforms, which in turn lead to better export performance and increased productivity.[5] They also stressed that trade liberalisation may alter the political reform dynamic by influencing institutions and creating constituencies for further reforms. This is a key aspect for the design and the sequencing of trade reform (and thus for aid-for-trade projects and programmes as discussed below), which is developed in Dewatripont and Roland (1995), Krueger (2005), and Rodrik (1989).

In conclusion, the macroeconomic environment should be considered in the design and the sequencing of trade reforms. Lessons from past experience are clear:

i) Macroeconomic stability is crucial for trade reform sustainability; in some cases it is a prerequisite;

ii) Particular attention should be paid to the exchange rate; and

iii) The role of smoothing adjustment costs should not be underestimated. Implications for the design of aid for trade are also clear.

In an unstable macroeconomic environment, aid for trade should focus (*i*) on compatible policies (see below) that can reinforce the stabilisation process (such as trade-related capacity building)[6] as macroeconomic instability is probably a binding constraint to trade expansion and (*ii*) on elements that are not affected by the macroeconomic environment (such as infrastructure work and building capacities) but that are of importance in sustaining activities and trade during the turmoil but also once macro-stabilisation is achieved. Finally, experience vindicates having increasing developing countries' adjustment capacities as an important objective of aid for trade (Hallaert and Hayashikawa, 2011).

Why do some countries encounter these problems?

The empirical literature provides an array of reasons why some trade reforms fail. For the sake of clarity, these reasons can be classified into three categories. First, the trade reform suffered from weaknesses in its design and implementation. Second, the structure of the economy and relevant policies affected the trade and economic growth response to the trade reform. Third, the trade reform was not credible.

The first flaw in the **design and implementation of trade reform** is to tackle the wrong problem. Milner (1998) analysed why the investment and non-traditional exports response to trade reform was "modestly positive at best" in many African countries in the 1990s. He argued that trade reforms did not target the main source of anti-export bias. Reforms focused on trade policy while the main binding constraints to trade expansion were "natural barriers", notably high transportation costs related to inefficient transport infrastructure. As a result, trade reforms had little impact on trade and did not foster growth.

Reforms in Uganda and Malawi provide two illustrations. In Uganda, the average implicit taxation of exports was estimated at 77% in 1994. 13% was explained by customs tariffs while transportation costs represented an implicit tax of 64% (Milner *et al.*, 2000). In other words, it was more urgent to tackle transportation costs than customs tariffs. Therefore it is not surprising, as described in the chapter 3, that the reform of the 1990s targeting the tariff regime had a disappointing impact while the broader reforms of the 2000s were a success. Similarly, in Malawi, non-traditional exports could have increased by 24% if at the start of the reform period in 1987 transportation cost problems had been eliminated (much more if other transaction costs were also addressed) compared to a more limited increase of 15% that the elimination of import tariffs would trigger (Milner and Zgovu, 2003).

In short, in some countries, trade reform did not stimulate trade and economic growth because it did not tackle the most binding constraints to trade. This highlights the need, emphasised in Hallaert and Hayashikawa (2011), to identify properly the most binding constraints to trade and to appropriately sequence reform.

Another flaw in design and implementation is when trade reforms are limited or partial (Milner and Morissey, 1999; Morissey and Filatotchev, 2000). The cases of Uganda and Malawi illustrate the importance of complementary policies (discussed in detail below and quantified in the next chapter) as reform of the trade regime was worth undertaking but could only bring large benefit if accompanied by policies reducing transportation costs or other significant transaction costs. Moreover, "misguided or overly timid reforms can undermine the reform process and make it difficult to muster support for future reform programmes" (Krueger, 2005).

The second factor explaining cases of weak growth responses to trade reform is **differences in the structure of economies and in the role of non-trade policies**. This strand of literature argues that trade openness may not foster growth in the absence of an appropriate economic, social, and political environment.

One such difference arises in transportation infrastructure. The cases of Malawi and Uganda can be generalised as shown by the econometric evidence provided in the next chapter. Thomas and Nash (1991) surveyed 32 countries' experience with trade reform during 1985-93 and concluded that, in some countries, the disappointing impact on output can be explained by insufficient attention paid to the infrastructural needs of

exporters. More recent evidence, in relation to aid-for-trade projects, can be found in the presentations made at the *OECD Workshop on Aid for Trade Implementation* (OECD, 2011a).

Other structural differences appear with respect to human capital and absorptive capacities. Trade and foreign direct investment (FDI) are two different "transmission channels" through which openness affects economic growth. Balasubramanyam *et al.* (1996) showed that these two channels interact: FDI has a positive impact on trade and growth in countries whose trade regime is designed principally for export-promotion rather than for the domestic market (as through import substitution). However, openness of trade and investment may produce weaker growth effects in developing countries than in rich countries because, as pointed out by Wang *et al.* (2004), low-income countries are disadvantaged by lower levels of human capital and technology absorptive capacities. This highlights the role of education policies in facilitating the impact of trade on growth.

Yet another area where differences affect the growth response to trade reform is the regulatory and institutional environment. Dufrénot *et al.* (2009) emphasised the role of "reforms putting a stronger focus on other macroeconomic and social policies including productivity-boosting reforms, spending on social programmes, improving the investment climate, and the strengthening of institutions." In an analysis of 79 countries over the period 1980-96, they showed that the positive impact of trade on growth was larger when such reforms complemented trade reform. Thomas and Nash (1991) argued that domestic regulatory and public sector policies also influence the supply response by determining whether incentives actually change and by affecting the mobility of factors of production in response to changes in incentives. Moreover, they stressed that some policies have impeded rapid adjustment to a changed incentive structure and inhibited the supply response. More recently, Chang *et al.* (2005) found that the positive impact of trade on growth is larger if it is accompanied by increased education, infrastructure, and deeper financial markets, as well as institutional and regulatory reforms. Bolaky and Freund (2004) showed that the increase in trade does not positively affect growth in heavily regulated economies but once the effect of domestic regulation is controlled, the impact of trade on growth is stronger than what has been found in other studies.

This brief survey of literature clearly shows the influence of non-trade policies and institutions – and thus of "complementary policies" – in determining the impact of both trade and FDI on growth.[7] The relative importance of such policies is measured in the next chapter and the implications for the design of aid-for-trade projects and programmes are discussed in the next two sections.

The third explanation for the weak growth response to trade reform is **credibility**. Even if trade reform is appropriately designed, implemented, and supported by other policies, it can become unsustainable because of a lack of credibility. This can be the case, for example, if the trade reform follows unsuccessful reforms. "Opportunities for reform are infrequent and if critical efforts go wrong, reforms get discredited. Once that happens, it can be difficult to get another chance to introduce reform. And successive reform failures make each subsequent effort that much more difficult – and more costly" (Krueger, 2005).[8]

Whatever the reasons, if economic agents perceive trade reform as not credible and as likely to be reversed, they will not adjust rapidly and the ultimate adjustment cost of the reform may increase (Falvey and Kim, 1992). In such a case, the risk of failure is sizable. Box 1.1 illustrates how the pressure on the current account increases if an

import tariff cut is perceived or is designed as temporary. Moreover, when a reform is not credible, investors often postpone their investment or prefer to send their money abroad.

This adds capital account pressures to current account pressures.[9] In such cases, the capacity of reform to foster an export response is much affected.[10]

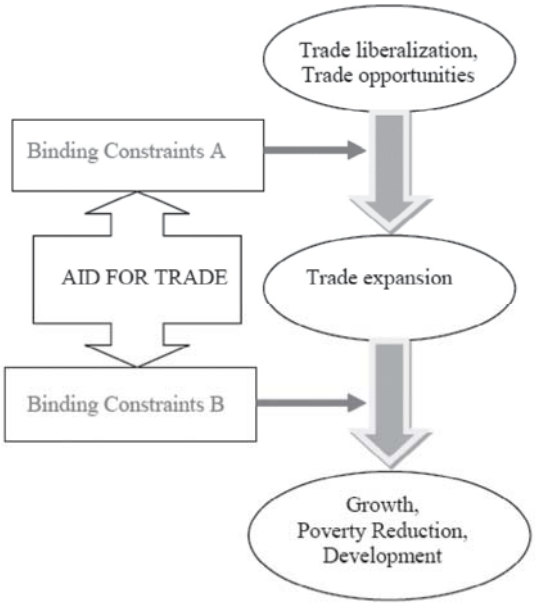
Collier (1993) summarises the issue: "the concept of policy credibility […] is central in the recent literature on the theory of trade liberalisation. […] Credibility […] approaches being a necessary condition for sustainability. Although the sufficient conditions for credibility are unknowable, two necessary conditions are clear: the liberalisation must be compatible and it must be time-consistent."

How aid for trade can help

Past experience shows that trade reform is (almost) never implemented in isolation but is part of a broader package. As a result, the interaction of trade reform with other reforms is a fact of life. The issue is, then, to design the rightly sequenced package of reforms in order to make the trade reform sustainable and to maximise its impact on economic growth.

This approach is consistent with the rationale underpinning the Aid for Trade Initiative. The Initiative calls for mainstreaming trade in development strategy. Development strategy is obviously a concept that requires many policy reforms properly designed and sequenced, *i.e.* that requires policy coherence between trade reform and other reforms. As a result, aid for trade covers many areas (WTO, 2006) allowing it to address not only the binding constraints affecting the trade response to trade reform but also the binding constraints choking the impact of trade on economic growth (Figure 1.1).

Figure 1.1 The impact of aid for trade on trade, investment and growth



Source: Hallaert & Hayashikawa (2011)

As a result, in collaboration with recipient countries, donors should be mindful of, and if possible support, compatible policies that will make the trade reform sustainable as well as complementary policies that will increase its economic growth impact. By doing so, aid for trade will be more effective. This affects the design of aid-for-trade projects and programmes but also their sequencing. The rest of this chapter elaborates this crucial point.

Avoiding policy reversal: The role of compatible policies

This section discusses the reasons why preventing policy reversal is an important matter for the effectiveness of aid for trade. It also describes the compatible policies that can reduce the risk of policy reversal and the implications for the design of aid-for-trade support.

Why policy reversal matters for aid for trade

Avoiding policy reversal helps aid for trade reach its objectives. Therefore, supporting compatible policies to make trade reform sustainable is arguably part of aid for trade and should be, as much as possible, considered in the design of aid-for-trade projects and programmes. The *raison d'être* of compatible policies meets one objective of aid for trade: "help facilitate, implement, and adjust to trade reform and liberalisation" (WTO, 2006).

Moreover, avoiding policy reversal will increase aid-for-trade effectiveness. Some aid-for-trade projects, such as capacity building and training, aim at supporting policy reforms. Others depend crucially on the implementation of reforms *e.g.* an export promotion campaign may only make sense if supported by tariff reform reducing anti-export bias and eliminating explicit or *de facto* export prohibitions. As a result, if the required reform is not implemented or is reversed, the rationale of some aid-for-trade projects or programmes may disappear (or be substantially reduced) and their effectiveness undermined. Thus, making sure that a reform is sustainable is an obvious way to preserve the effectiveness of aid for trade.

The dynamic dimensions of a policy reversal should be emphasised. A policy reversal usually affects the credibility of policy-makers, making subsequent reforms more difficult as well as more costly (Krueger, 2005). Another dynamic aspect is the fact that gradual reforms and sequencing are at the core of aid for trade. This is a reality rather than a choice: trade-related needs are numerous but both political capital and financial resources (including aid-for-trade resources) are limited and only available over time. Thus, trade reform is by nature a process that develops over time and requires countries to prioritise the measures taken. A policy failure may derail this process, breaking the chain of reforms.

Flanking policies to smooth the adjustment costs of trade reform warrant special consideration because the adjustment cost is a major source of policy reversal and increasing a country's adjustment capacity is an important objective of aid for trade (Hallaert and Hayashikawa, 2011). Flanking policies are important because gains from trade and adjustment costs become visible at different times: usually the costs of trade reform are felt much before the gains – let alone the fact that the costs are usually concentrated on a small number of people and firms and thus are acutely perceived while the gains are diffused over a large number of people and may not even be noticed. In this context, it is noteworthy that aid for trade can help a country address the

adjustment cost directly but also indirectly. Although it is not its purpose, properly designed aid for trade, aligned on a country's priorities, can also improve the credibility of trade reform. If a reform is perceived as credible, it results in lower adjustment costs. Indeed credible reform reduces uncertainty and helps adjustment at a socially desirable speed (Falvey and Kim, 1992).

What are compatible policies?

"Compatible policies" are policies aiming at ensuring the sustainability of the trade reform. Making trade reform sustainable is a question of policy coherence and of proper sequencing. Experience shows that trade reform can only be successful and sustained if the macroeconomic environment and policies are compatible with the trade reform. Compatible policies should come first in the sequencing of trade reform (Rodrik, 1989, Thomas and Nash, 1991, and World Bank Independent Evaluation Group, 2006).

Compatible policies should strive to maintain fiscal revenue for two reasons. First, this can help avoid reversal of trade reform. Second this is a matter of policy coherence: preserving fiscal revenue (*i*) is essential for the ability of a country to achieve another aid-for-trade objective: smoothing the adjustment cost of opening up trade; and (*ii*) is required to finance the development needs of recipient countries. Aid for trade ultimately aims at helping developing countries achieve their development goals and thus should not undermine those countries' capacity to finance them. In sum, effectiveness considerations require that trade reform, supported by aid for trade and aiming at reaching development goals, is designed in a way that it does not undermine fiscal revenue.

Preserving fiscal revenue in the context of trade reform is often challenging. Trade taxes remain a major source of tax revenue for many, often fiscally stretched, governments. On average, in sub-Saharan Africa, trade taxes account for one-third of non-resource tax revenue; and in some countries they account for more than half the tax revenue (Hallaert, 2004; Keen and Mansour, 2008). The risk is thus substantial that trade reform results in large fiscal revenue losses. Developing countries often argue that trade reform (multilateral, unilateral, or regional), without some financial compensation, is not feasible because of its fiscal implications.[11] This concern cannot be ignored by the Aid for Trade Initiative, which aims at facilitating, implementing and adjusting to trade reform and liberalisation (WTO, 2006).

Not all trade reforms have a negative impact on fiscal revenue. Some reforms can even increase revenue. Removing prohibitions, reducing tariff rates that are higher than the revenue-maximising rate, tariffying quotas, and rationalising the tariff structure combined with the streamlining of exemptions for example can be revenue neutral or revenue enhancing. Moreover, it is noteworthy that the fiscal losses from a tariff cut can be overestimated because part of the direct loss from a tariff cut will be offset by an increase in imports. Additional imports will be taxed at the border (if the cut does not bring the tariff rate down to zero) but also internally with the sales tax or the Value Added Tax (VAT) (Ebrill *et al.*, 1999; Hallaert, 2004). Similarly, the reduction or the elimination of an export tax, besides its impact on exports, can lead to an increase in production and profits, which are taxed, leading to some revenue increases that partly offset the direct fiscal loss.

However, in many countries, revenue neutral or revenue enhancing trade reforms have already been implemented and further reforms are likely to have adverse

consequences for fiscal revenue. In such cases, it will be necessary to move to "second generation" reforms, *e.g.* rebalancing the tax system from trade taxes to domestic taxes.

Rebalancing the tax system away from trade taxes and toward domestic taxes can improve efficiency and reduce distortions[12] Moreover, offsetting the revenue losses from trade reform with domestic revenue helps meet the challenge of globalisation, while preserving resources to meet development needs. Finally, revenue from domestic taxes has the advantage of being less volatile than trade taxes or other flows such as aid or remittances and FDI (Bulír and Hamann, 2007). Thus it helps to provide more visibility and to pay for the maintenance cost of projects financed by aid, including infrastructure projects financed by aid for trade (Gupta and Tareq, 2008).

In addition, this strategy helps safeguard consistency between the various forms of aid, notably aid for trade and budget support. Donors should make sure that revenue losses stemming from trade reform supported by aid for trade are offset by other forms of revenue; otherwise they will undermine the capacity of recipient countries to finance development needs – a capacity that budget aid and debt relief try to shore up.[13] Moreover, for sustainable development financing, it is important that donors live up to their commitments but also that countries generate resources internally.[14]

Rebalancing the tax system does not necessarily mean increasing the domestic tax rates. Tax rates are already so high in some countries that they may have a negative impact on the growth rate. Gupta and Tareq (2008) argue that rebalancing could seek a broadening of the tax base, a rationalisation of tax incentives and exemptions, and a strengthening of the tax administration. This requires technical assistance and capacity building that aid for trade can, and does, provide. However, expanding the tax base can be difficult in countries where the informal sector and the agricultural sector (which are difficult to tax) are large.

Unfortunately, past experience with tax rebalancing in developing countries calls for caution. It is possible to design "simple and practical strategies" that will help realise the trade gains from trade reform and the efficiency gains from tax rebalancing without affecting government revenue (Keen and Ligthart, 1999). However, in practice, the rebalancing of taxation has only been partially successful in low- and middle-income countries. Using a panel of 125 counties during 1975-2000, Baunsgaard and Keen (2005) calculated that countries that rely the most heavily on trade taxes have not been able to recover from other sources the revenues they have lost from trade liberalisation. On average, low-income countries have "recovered, at best, no more than about 30 cents of each lost dollar" and for middle-income countries the recovery is in the range of 45 to 65 cents.[15] As a result, the decline in the ratio of trade tax to GDP in low-income countries was accompanied by a decline in the ratio of total tax revenue to GDP. However, this disappointing average performance masks the fact that a few low-income countries were able to fully recover the revenue losses stemming from trade liberalisation.

Policies essential to **preserving external sustainability and export competitiveness** are another set of compatible policies. As already mentioned, overvaluation can make trade reform unsustainable. The empirical trade and growth literature emphasises another dimension in the interaction between trade reform and exchange rates: many successful trade reforms were accompanied by a devaluation (Box 1.2 provides an illustration). As a result, there is strong consensus in the literature on trade reform design that **appropriate exchange rate management is a crucial complementary policy**. The World Bank Independent Evaluation Group (2006) argues,

in a review of 45 countries that benefited from World Bank trade support during the period 1987-2004, that the real exchange rate is "perhaps the single most important variable" in the design of reform.[16]

Appropriate exchange rate management was identified as a key feature of successful trade reform by the NBER project conducted by Krueger (1978) and Bhagwati (1978). This seminal project analysed the experience of 11 countries and contributed to the wave of trade reforms undertaken by developing countries that started in the 1980s.[17] It provided evidence that countries following an export promotion strategy exhibited better growth performance than countries following an import substitution strategy. The classification was based on the ratio of the exchange rate effectively paid by importers to the exchange rate effectively faced by exporters. A ratio greater than one showed an anti-export bias and the country was classified as following an import substitution strategy. Trade liberalisation is then defined as any policy that reduces the anti-export bias (Edwards, 1993). Such a definition considers that a country can liberalise its trade regime while keeping high tariffs to protect or stimulate domestic production.

Box 1.2 The role of exchange rate policy in the success and failure of Chile's trade reforms

Chile undertook several trade reforms after the Second World War: during 1956-57, 1959-61, 1965-70, 1974-81, and 1985-88. The first three attempts at liberalizing trade failed and the reforms were reversed. Only the reforms of the 1970s and 1980s were successful and sustained, bringing significant economic gains.

Exchange rate policy played a key role in explaining the fate of these reform attempts. Edwards (1993) argued that the failed attempts between 1950 and 1970 were in part explained by highly overvalued real exchange rate. Michaely *et al.* (1991) noted the sharp increase in the unemployment rate during the 1974-81 reform (from 4.8% the year before this period to 22.5% the first year after the reform) but ascribed this change not to the trade reform *per se* but rather to exchange rate overshooting.

The successful trade reforms of the 1970s–80s, in contrast, were supported by an exchange rate policy striving to avoid overvaluation. Starting in 1974 the trade regime was simplified. Quantitative restrictions were eliminated. Import tariffs, which averaged 105% in 1973 and were highly dispersed, were cut. A uniform 10% tariff on all goods except automobiles was introduced in 1979. This trade reform was accompanied by a strongly depreciated real exchange rate until 1979 when a fixed exchange rate was introduced to fight against inflation.

During the 1982-83 debt crisis, real GDP collapsed and a partial policy reversal took place. The rate of the uniform tariff was increased to 35% and the government allowed an overvaluation of the real exchange rate.

However, the setback was only temporary. The uniform tariff was gradually cut back as soon as 1984 to reach 11% in 1991. Again, in order to help export competitiveness and contribute to the objective of the trade reform to promote non-traditional exports, overvaluation was avoided through steady devaluations. The real effective exchange rate depreciated and, in 1988, was roughly half its 1980 value (Dean *et al.,* 1994; Dornbusch and Edwards, 1994; Shatz and Tarr, 2000).

Exports became the engine of Chilean economic growth. Between 1986 and 1991, Chile's growth reached 4.2% per year. This was the best performance in Latin America (Edwards, 1993; Gutiérez de Piñeres and Ferrantino, 1997; Shatz and Tarr, 2000).

A key finding was that real exchange rate depreciation is a key element of trade reform leading to a reduction in the anti-export bias.[18] Michaely *et al.* (1991) analysed 36 liberalisation episodes in 19 countries during the period 1950-82 and reached the same conclusion, in particular that real exchange rate devaluation is *(i)* crucial to sustainability and *(ii)* a feature of successful trade reform.

Edwards (1989), in an analysis of the impact of 39 devaluations of at least 15% in developing countries during the period 1962-82, concluded that nominal depreciation

led to the required real depreciation in only 25 of the 39 cases he reviewed. This shows again the importance of policy coherence: if the nominal devaluation is accompanied by expansive monetary or fiscal policies, the impact of the nominal devaluation can be more than offset by the inflationary pressure triggered. In other terms, as discussed before, trade reform needs to be supported by a compatible fiscal policy but also by an appropriate exchange rate policy, which in turn reinforces the importance of compatible fiscal policy.

In all 20 cases where real depreciation accompanied measures to dismantle trade, capital, and exchange controls, exports increased significantly and the external position of the countries improved significantly. This shows that, if supported by an appropriate set of compatible policies, trade reform may improve rather than deteriorate external accounts, and thus reduce the risk of policy reversal.

Moreover, echoing the discussion on the importance of compatible fiscal stability for sustainable reform, Michaely *et al.* (1991) showed that successful reformers were fiscally prudent. Based on this finding, the authors recommended undertaking trade reform gradually and in a stable political environment starting with the elimination of quantitative restrictions and a substantial devaluation before cutting tariffs. It is noteworthy that this sequencing is consistent with the fiscal recommendation made above: implement fiscally neutral trade reform (dismantling quantitative restrictions) before cutting tariffs.

In sum, past experience with trade reforms in developing countries shows that they need to be supported by appropriate fiscal policy. In addition, to be successful, trade reform should avoid currency overvaluation and often needs to be accompanied by real depreciation. These conclusions again highlight the importance of compatible fiscal policy: a nominal depreciation may not translate into real depreciation if fiscal and monetary policies are creating inflationary pressures (*i.e.* are too expansive).

Another dimension of appropriate exchange rate management during trade reform is preventing the occurrence of "Dutch disease". Put simply, Dutch disease is the consequence of a large increase in foreign inflows (*e.g.* due to the discovery of natural resources or the scaling up of aid), which triggers an exchange rate appreciation. This appreciation damages the competitiveness of the export sector.[19]

Dutch disease is a problem potentially undermining the effectiveness of all forms of aid, but is particularly worrisome for aid for trade. Damaging the competitiveness of the partner countries' exports is obviously the opposite of what aid for trade tries to achieve. The potential for Dutch disease cannot be ignored when aid for trade is growing fast and contributing to a broader scaling up of aid (OECD/WTO, 2011a).

There is evidence that aid can cause Dutch disease. Rajan and Subramanian (2005, 2007, and 2009) found that, through its impact on the real exchange rate management and on governance, aid is associated with a reduced share of manufacturing in total GDP, a lower share of labour-intensive and tradable industries in the manufacturing sector, reduced profitability of investment and more limited export growth. It is important to stress that they did not dismiss the direct positive impact of aid on economic growth. Rather they argued that this positive impact can be offset by some "side effect." This calls for adequate design in aid programmes in order to maximise the positive impact while minimising the negative side effects. As indicated below, aid for trade is well placed to avoid the Dutch disease effect of aid.

Compatible policy lessons for the design of aid for trade

An appropriate environment (notably avoiding fiscal and balance-of-payments tensions as well as exchange rate overvaluation) is essential to make trade reform sustainable. How can aid for trade, by its coverage and sequencing, support compatible policies?

Aid for trade can help address the fiscal problems that often impose a trade reform reversal. Various aid-for-trade projects such as capacity building in designing trade reform, capacity building in order to strengthen the customs and tax administrations, and technical assistance in rebalancing the fiscal regime from trade taxes to domestic taxes can have a positive impact on fiscal revenue, on welfare, and on the economic environment. These projects should thus be considered early in the sequencing of reforms. However, the compelling nature of such sequencing can be lessened if budget transfers are provided to offset the immediate fiscal losses from trade reform until other reforms are implemented to raise more domestic revenue. Budget support is not part of multilateral trade negotiations but it is sometimes considered in regional agreements (Hallaert, 2010; Walkenhorst, 2006). Although budget support can facilitate trade reforms and make them sustainable, it may not be successful in these goals because the need for temporary budget support may become permanent (*e.g.* if reforms are unsuccessful at raising domestic revenue) or reforms are not implemented (*e.g.* temporary budget aid reduces the incentives to implement additional reforms). This would lead to more aid dependence and vulnerability to changes in aid flows.

A concrete example is the support provided through aid for trade to Burundi in its major reforms to improve revenue collection from both tariffs and non-tariff domestic sources (OECD/WTO, 2011b). Another example is the Economic Partnership Agreements (EPAs) between the EU and the ACP countries. In its 2007 Aid-for-Trade Strategy, the EU has committed itself to "contribute to the absorption of net fiscal impact resulting from tariff liberalisation in the context of EPAs in full complementarity with fiscal reforms" (Council of the European Union, 2007). In the EPA concluded with the Caribbean countries of the Cariforum, it was agreed that one of the priorities of development co-operation would be "the provision of assistance for capacity and institution building for fiscal reform in order to strengthen tax administration and improve the collection of tax revenues with a view to shifting dependence from tariffs and other duties and charges to other forms of indirect taxation" (Official Journal of the European Union, 2008).[20]

Balance-of-payments problems are another source of policy reversal. In this regard, real exchange rate management is paramount. The recommendation to accompany trade reform with exchange rate depreciation has sometimes been controversial. One reason was the belief that exports (in particular agricultural exports) respond little to the change in prices that the depreciation triggers. Edwards (1993) showed that empirical evidence does not support this belief. Nonetheless, aid for trade should ease these concerns as its *raison d'être* is to tackle supply-side constraints that limit the responsiveness of exports to trade opportunities.

Promoting an early response of the export sector to trade reform is an important way to increase the likelihood that trade reform will be sustained. An early export response provides an advantage in the realms of macroeconomic and social policy: it reduces the balance of payments, employment, and fiscal problems arising from the fact that trade reform tends to have an immediate impact on imports and on production and

employment in the import-competing sector, while its impact on activities and employment in the export sector generally lags. Similarly, a rapid export response helps smooth the adjustment cost of the reform. Moreover, an early export response provides a political advantage. As people see quickly the benefit of the reform, support for it increases, which facilitates implementation of subsequent reforms.[21]

Aid for trade has an important role to play in this context as export promotion is one of its core objectives. Brenton and von Uexkull (2009) analysed aid supported export development programmes and concluded that (*i*) exports have on many occasions increased significantly under export development programs; (*ii*) such programmes have the biggest impact when provided to industries with initially high exports. The authors interpreted this result by the fact that the constraints facing the growth of existing exports are easier to identify and to alleviate than the constraints to new exports. Cali and te Velde (2009) also showed that aid to productive capacity delivered during the period 1985-2006 had a positive and significant impact on exports, but concluded that the effects appear to be driven by an allocation skewed towards already well performing sectors.

Aid for trade can also foster the export response to trade reform by supporting export promotion agencies. Lederman *et al.* (2009) showed that after being sharply criticised in the 1990s, export promotion agencies have been revamped and "preeminent development economists now recommend the creation of adequately funded [export promotion agencies] in Africa." Their econometric analysis provides additional support to the conclusion of Brenton and von Uexkull (2009): export promotion agencies have more impact on exports when they focus on established exporters.

Given the need to ensure not only an export response to trade reform but also an *early* export response, it should be stressed that aid for trade appears to have a rapid impact. Brenton and von Uexkull (2009) econometric work suggests that the export promotion programmes have a strong and significant impact in the first five years (year 0 to 4 of the programme). The econometric work conducted by Cali and te Velde (2009) suggests that this conclusion is also valid for infrastructure projects. They estimate that most of the impact of infrastructure projects on trade appears with only one year lag. Evaluation of the trade impact of aid for trade is in its infancy (OECD, 2011b). However, if the preliminary quantitative estimates of Brenton and von Uexkull (2009) and Cali and te Velde (2009) are confirmed and proved robust, this would vindicate a focus of aid for trade on export promotion for its own merits but also in complement to other trade reforms.

As already emphasised, it is crucial to avoid the potential Dutch disease effect of the scaling up of aid for trade in order to achieve export expansion. At the risk of oversimplifying, Dutch disease can be seen as a sequence of two events. First, the inflow of aid leads to an appreciation of the exchange rate. Second, the appreciation of the exchange rate results in a loss of competitiveness of the exports sector. Aid for trade has a role to play in both of these phases.

First, the design and sequencing of aid for trade can prevent aid inflows from resulting in an appreciation of the real exchange rate. Aid inflows should be commensurate with the country's absorptive capacity. Therefore, they should be phased in and their amount should avoid triggering macroeconomic imbalances. This requires close co-ordination between donors as well as alignment of aid-for-trade support with the sequencing of reforms designed by recipient countries. If this does not prove possible and the inflow of aid is scaled up rapidly and beyond the absorptive capacity of

the country, macroeconomic policies could phase in the absorption into the economy by delaying the spending of aid. Ethiopia provides an illustration. During 2001-03, budget support to Ethiopia increased by 6% of GDP. In an initial phase, only a small proportion of this aid was immediately spent and most of the aid was used to replenish foreign exchange reserves. This prudent fiscal and monetary management avoided the Dutch disease (Berg *et al.*, 2004).

Another option is to favour aid-for-trade projects with large import content when the absorptive capacity is low or when warranted by external conditions (for example when the currency is already appreciating because of improvement of the terms of trade, large FDI inflows or a large increase in other inflows of aid with low import content such as budget support). Indeed, aid-for-trade projects with very high import content will only have a limited impact on the exchange rate because the impact of aid inflows is largely offset by outflows linked to the implementation of the project. The experience of Ethiopia shows that in such a case even a very large scaling up of aid will not trigger the Dutch disease: the large amount of aid received by the country was spent mainly on infrastructure projects with high import content (IMF, 2006b).

Choi's (2005) theoretical analysis of the impact of infrastructure aid on a small developing country abundant in labour suggests another possible mix for aid-for-trade projects: when a country's absorptive capacity is low, in order to minimise a possible Dutch disease effect, aid for trade could favour labour-saving infrastructure projects. Indeed, Choi showed that labour-saving infrastructure aid causes an expansion of the export sector (assumed to be labour intensive), while capital-saving infrastructure aid results in a Dutch disease effect in the export sector.

Second, the design and sequencing of aid for trade can also mitigate the impact of currency appreciation on the competitiveness of the export sector. The real appreciation of the currency means that the country's export price increases on international markets: this is an important source of the loss of competitiveness. Aid-for-trade projects can help offset this by reducing production and export costs.[22]

The trade facilitation component of aid for trade appears powerful in this regard. A vast literature has documented the large return of investment in trade facilitation on the cost of exports and on export volume. Cali and te Velde (2009) focused on the role of aid for trade. Using a sample of 90 partner countries, they estimated that an increase of USD 1 million in the trade facilitation component of aid for trade (measured by the CRS code 33120) reduced export cost by 2.5 to 6% at the mean.[23]

Another way for aid for trade to avoid Dutch disease is to foster productive capacities. The basic idea is that the extent to which aid flows are associated with the problem of real exchange rate appreciation depends largely on the relative impact on demand and supply. The supply response, depending on the effects of aid on productivity across sectors, largely determines the depth and duration of adverse shock (Bevan, 2005). Therefore, if aid for trade can boost the productivity of private firms through its productive capacity (or other) projects, it will help exporters withstand the potential Dutch disease effect of additional aid. Nonetheless, practitioners should be aware that productivity gains of such activities may occur with a lag. This has again implications for the sequencing of trade reform and aid-for-trade flows. To our knowledge, no assessment of the impact of aid for trade on the productivity of the private sector has yet been produced. An exception may be the work of Cali and te Velde (2009) who were unable to find a significant impact on exports of aid for trade to productive capacity during 1995-2007. However, they stressed that this result may be

driven by a methodological shortcoming: the effect of productive capacity projects has an impact at the firm or the sectoral level and considering its impact on the whole of exports may be misleading.

Finally, in light of the discussion on the importance of dealing with the fiscal implications of trade reform and of coherence between various forms of aid, it is useful to mention a more indirect way to mitigate possible Dutch disease: rebalancing the tax system. Gupta and Tareq (2008) argued that tax rebalancing helps fighting the impact of Dutch disease because raising domestic resources offset the impact of scaling up of aid by lowering the amount of budget aid needed to finance current spending.

In conclusion, this section showed the importance of accompanying trade reform with compatible macroeconomic policies in order to prevent policy reversal that would reduce the effectiveness and the impact of aid for trade. It highlighted that aid for trade has the means to promote the right compatible environment and that donor co-ordination and proper sequencing of reforms is crucial. Trade reform should first target the most binding constraints to trade expansion (Hallaert and Hayashikawa, 2011) so that it has the "biggest bang for the reform buck" but this reform should not be implemented in isolation. Rather it should be supported by appropriate macroeconomic policies and accompanied by other reforms (that aid for trade can support) to ensure an early response of exports and mitigate the potential Dutch disease effect of aid. Not all aid-for-trade projects and programmes have the same gestation period (*i.e.* the time needed to affect export performance differs across projects and programmes). These differences should be considered in the sequencing of reforms.

The answers to the surveys sent to both donors and partner countries to prepare the Third Global Review of Aid for Trade, show that stakeholders acknowledge that complementary policies are crucial for achieving the longer-term objectives of the Aid for Trade Initiative. In particular, fiscal policy is perceived by partner countries as the most important flanking policies. Although respondents could not identify precisely in the questionnaire which aspect of fiscal policy they felt were most important, their comments suggest that tax revenues were the critical issue. Gabon and The Gambia highlight the importance of tax reforms conducive to the development of small- and medium-sized enterprises. Guatemala and Saint Vincent and the Grenadines stress the need to increase domestic tax sources (such as VAT and income taxes) and to ensure their collection. Partner countries view monetary and exchange rate policies, as relatively less important to the success of aid for trade than fiscal policies (OECD/WTO, 2011a).

Maximising the growth response to trade: the role of complementary policies

The previous section showed that the effectiveness of aid for trade depends critically on compatible policies and on the environment supporting trade reform. Beyond ensuring the sustainability of trade reforms, this section describes the importance for aid-for-trade effectiveness to support complementary policies that increase the impact of trade on economic growth.

Why complementary policies matter for aid for trade

Complementary policies increase the impact of trade expansion on economic growth and poverty reduction. Hallaert and Hayashikawa (2011) argued that the most common objectives of aid-for-trade projects and programmes, namely addressing the binding

constraints limiting developing countries' capacity to turn trade opportunities into trade (constraints A in Figure 1.1), have the potential to boost growth. However, it also cautioned that this may not be enough to reach the objectives of aid for trade because some other binding constraints can choke the impact of trade on economic growth (constraints B in Figure 1.1).

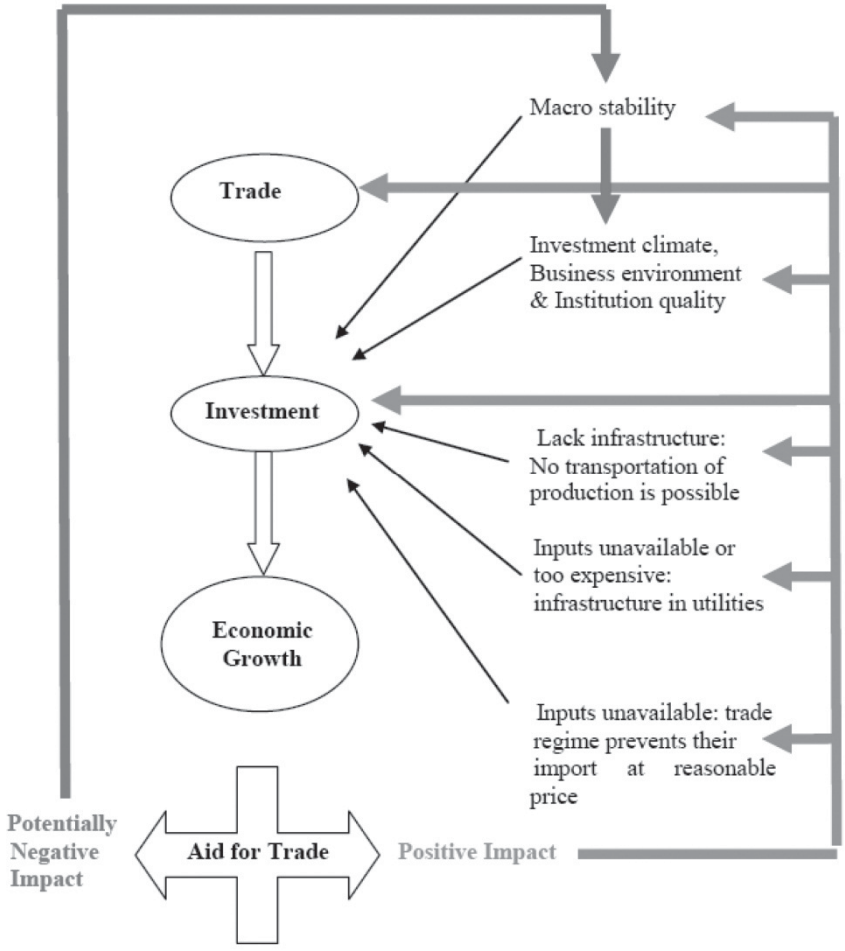
Aid for trade can, and should, tackle these constraints B. This is the very purpose of complementary policies. Supporting these policies will help aid for trade to be as effective as possible. As emphasised by the Task Force on Aid for Trade, "Effective Aid for Trade will enhance growth prospects and reduce poverty in developing countries, as well as complement multilateral trade reforms and distribute the global benefits more equitably across and within developing countries" (WTO, 2006).

Trade does not affect growth directly but through a myriad of transmission channels.[24] It is beyond the scope of this chapter to discuss these channels but it is worth repeating that the magnitude of the economic growth response to trade reform will depend on the way the reform is transmitted as well as on the complementary policies implemented.

The literature on trade and growth has emphasised productivity and investment as key transmission channels. For illustrative purposes, Figure 1.2 focuses on investment. [25] Aid for trade through its direct impact on trade and on investment (*e.g.* infrastructure projects) can boost economic growth. Though important, this direct impact needs to be supplemented by private sector investment. Private sector investment will be stimulated by the new opportunities offered by trade reform but the magnitude of the response will depend on many other policies and institutions that shape the business and investment climate. Therefore, the effectiveness of aid for trade will be increased substantially if, in addition to its direct impact on growth through trade and investment, aid for trade supports reforms (complementary policies) that increase the capacity of investment to transmit the impact of trade on growth.

This highlights the importance of involving the private sector in national development strategies as well as in the design, implementation, and evaluation of aid for trade. This was stressed in the recommendations of Task Force on Aid for Trade (WTO, 2006). The *Busan Partnership for Effective Development Cooperation* (2011) recognised the key role of the private sector in development and donors committed to "enable the participation of the private sector in the design and implementation of development policies and strategies to foster sustainable growth and poverty reduction."

Figure 1.2 How aid for trade affects the impact of trade on growth through investment



What are the complementary policies?

Assessing the role of the complementary policies in the trade-growth nexus has been challenging. To some extent the difficulty comes from the fact that most trade reforms are part of a broader package. As a result, trade reforms are interrelated with other reforms. Development in econometric techniques has only recently allowed identifying the role of complementary policies in the empirical analysis of the link between trade and growth. This strand of literature provides valuable insights for the design of aid for trade.

Trade reforms usually provide opportunities that stimulate both domestic and foreign investments. In a study of 79 countries during the period 1970-98, Wang *et al.* (2004) found that an increase in openness (measured by the share of total trade in GDP) is associated with higher economic growth. Looking at the impact by income group, they found that the poorer a country is the larger is the impact of trade expansion on economic growth. Moreover, the impact of trade on growth is not limited to exports: the increase in the imports-to-GDP ratio is also a source of growth. These findings are in line with many other studies[26] but this work is of particular interest because it also

investigates the mechanisms that explain the differences in growth response across countries.

Wang *et al.* (2004) found that the increase in imports-to-GDP ratio has a positive and significant impact for low- and middle-income countries but is not significant for high-income countries.[27] This is consistent with the conclusion of other empirical findings that imports are a source of transfer of technology.[28] Transfer of technology is obviously more important as a source of growth for poor countries than rich countries. Imports are also a source of growth for other reasons, such as their impact on productivity through increased competition (this affects notably the import substitution sector) and the reduction they bring to the cost of inputs and thus to the production cost of domestic producers (including exporters). The authors then show that a country's technical absorptive capacities are crucial in its ability to use trade and FDI as engines for growth.[29] They provide evidence that, while high and middle-income countries are able to use both trade and FDI (measured by inward FDI stock/GDP) as an engine for growth, low-income countries are able to only use trade as an engine for growth. According to Wang *et al.* (2004), low-income countries' low technical absorptive capacity prevents them from taking advantage of the transfer of technologies that an inward FDI represents.

These results highlight the role of a few complementary policies in maximising the impact of trade and FDI on growth. Improving technical absorptive capacities should be a priority. As technical absorptive capacity is closely linked to human capital, the results underline the importance of education policy. This conclusion is consistent with the results presented in the next chapter and with the findings of other cross-country studies such as Chang *et al.* (2005) who found that the positive impact of trade on growth is larger if it is accompanied by increased education but also infrastructure, deeper financial systems, and institutional as well as regulatory reforms.

Technical absorptive capacities, inflows of FDI, and private sector investment also depend on the regulatory regime. This is highlighted by Chang *et al.* (2005) but also by Bolaky and Freund (2004) who showed that, in heavily-regulated economies, the increase in trade is not positively associated with growth but once the effect of domestic regulation is controlled for, the impact of trade on growth is stronger than what has been found in other studies. This clearly suggests that regulatory reform can increase the impact of trade on growth.

Many regulations may choke the impact of trade on growth. The competitive pressure of imports, which is an important source of productivity gains and thus of growth, can be choked by many policies including import prohibition, state trading, or monopolies. The investment channel is also affected by the regulatory regime (Figure 1.2). Another source of growth is the reallocation of resources (capital and labour) triggered by trade. This reallocation may be hampered by regulations as different as labour laws or restriction in closing business. The investment channel may also be choked by financial regulations. Foreign investors may be willing to invest in a country in order to benefit from new opportunities opened by trade reforms. However, they may be discouraged or prohibited from doing so by regulations related to capital controls (inward as well as outward flows), land regulation, restrictive business environment practices, etc.

Similarly, the capacity of the private sector to invest in order to benefit from new opportunities may be constrained by many regulations. For example, financial regulations can prevent some industries from financing the investment needed to

respond to opportunities arising from increased trade. The World Bank Doing Business indicators show that access to credit is a major constraint reported by entrepreneurs in many developing countries. Directed credit may leave insufficient resources for the sectors that are not listed as priority. Financial regulations can prevent the expansion of trade (for example by limiting the financial sector's ability of providing working capital and intermediated trade finance to some exporters).

Institutional issues or imperfections in the legal system can also limit the capacity of countries to exploit the opportunities of trade. For example, insufficient contract enforcement (leading to a large share of non-performing loans, which in turn limits banks' capacities to extend new loans), may lead banks to require substantial collateral that small- and medium-size enterprises cannot provide. Access to credit then becomes not only a binding constraints to trade but also chokes the impact of trade on economic growth. In this context, it is worth highlighting that an important objective of aid for trade is maximising the linkage of trade with the domestic economy (Hallaert and Hayashikawa, 2011), which in turn requires investment in the non-tradable sector including small- and medium-size enterprises. The role of institutions and of the legal system on economic growth has recently stimulated a large amount of academic work. Therefore, it is not surprising that they have also been identified as crucial in the link between trade and economic growth.

Lessons for the design of aid for trade

The broad definition of aid for trade provides the means to support many, if not all, complementary policies. The rationale is clearly stated in the recommendations of the Task Force on Aid for Trade (WTO, 2006): "the scope of Aid for Trade should be defined in a way that is […] broad enough to reflect the diverse trade needs identified by countries." Moreover, the Task Force clearly states that "investment promotion", a key transmission channel of trade on economic growth, is part of aid for trade. Investment is indeed crucial in helping developing countries to build their supply-side capacities and investment promotion potentially covers a large range of complementary policies shaping the business environment.

Some complementary policies are explicitly part of aid for trade. Building infrastructure is a well-known and obvious example. Since the inception of the Initiative, more than half of aid-for-trade commitments has been dedicated to economic infrastructures. Support to the banking and financial sector is another one (OECD/WTO, 2011a). Trade finance, an issue that attracted much attention during the great trade collapse of 2008-09, is explicitly part of aid for trade (WTO, 2006). Pascal Lamy, the head of the WTO, welcomed the World Bank decision to increase the ceiling of the International Finance Corporation's trade finance as "Aid for Trade in action" (Lamy, 2008).[30] However, consistent with the view that banking and financial services are a major element of building productive capacity, the scope of aid for trade in this area goes much beyond the realm of trade finance. Aid-for-trade support for the banking and financial sectors increased substantially in the current crisis accounting for 11% of aid-for-trade commitments in 2009 and 14% of disbursements (OECD/WTO, 2011a).

Other important complementary policies are not or only partially part of aid for trade. This is the case of education and research policies. The work of Wang *et al.* (2004) showed that technical absorptive capacities determine the ability of developing countries to use trade and FDI as engines for growth. Technical absorptive capacity is linked to human capital and thus to education policies. Aid for trade has no direct role in

education but some "capacity building" activities or some activities to support the private sector involve training and contribute to increasing human capital in partner countries.

Regulations and institutions are another example. They affect most, if not all, transmission channels linking trade to economic growth. Aid for trade does only deal with some institutional and regulatory issues. For example labour law and law related to the closure of businesses (which are important to allow one source of gain from trade: the reallocation of resources to more productive sectors and investment) are not part of the aid-for-trade activities. However, "trade policy and regulation" is part of aid for trade. In 2008 and 2009, over 3% of total aid for trade went to this type of projects (OECD/WTO, 2011a). However, aid-for-trade support to institutional and regulatory reform is not limited to the trade policy and regulations. Institutional and regulatory projects supported by aid for trade also are often captured as building economic capacities. For example, part of the building capacity activities is to support "legal and regulatory reform aimed at improving business and investment climate", "private sector institution capacity building and advice." Aid for trade to agriculture includes support to "agriculture policy and administrative management", etc.

The answers to the surveys sent to partner countries to prepare the Third Global Review of Aid for Trade, show that the respondent countries view the regulatory environment as the complementary policy most important to the success of aid for trade, followed by governance and, to a much lesser extent, labour market policies (OECD/WTO, 2011a).

This section has shown that aid for trade has a role to play, and indeed is active, in many areas considered to be complementary policies. The issue is thus, once again, the sequencing of the reforms and the identification of the most binding constraints to trade expansion. On the one hand, complementary policies will increase the effectiveness of aid for trade and the growth impact of trade reforms. Therefore, in the design of their aid-for-trade projects, donors should be mindful of, and if possible support, complementary policies. This will increase the effectiveness of their aid-for-trade projects and programmes. On the other hand, too many reforms increase the risk of policy reversal.

Therefore, for both donors and partner country authorities, there is often a clear trade-off between an optimal package of reforms and a politically and financially doable package of reforms. Once the most binding constraints to trade expansion are identified it is important to determine the most relevant complementary policies that will accompany and enhance the impact of the measure taken to address it. This will ensure the "biggest bang for the reform buck" but also a quick response of exports, which is important to build support for the reforms.

Identifying the most binding constraints to trade expansion and the appropriate complementary policies is thus crucial but difficult as the potential bottlenecks and complementary policies are numerous. The next chapter provides a quantification of various constraints in order to rank them based on their relative severity.

Notes

1 "Trade reform" is defined as encompassing all reforms and measures that affect the tradable sector. This approach is consistent with the recommendations of the Task Force on Aid for Trade (WTO, 2006): "the scope of Aid for Trade should be defined in a way that is […] broad enough to reflect the diverse trade needs identified by countries."

2 This is a crude way of illustrating the heterogeneity in the growth response to trade reform because *(i)* it is often difficult to identify exactly when a reform took place, *(ii)* there are delays in the adjustment to the reform so that the growth response can vary across countries and take longer than what is captured, *(iii)* trade reforms vary in their depth and scope, and *(iv)* both the magnitude and the type of liberalisation differ across countries.

3 If the years of macroeconomic crisis are not excluded, the impact of the trade reform on the growth rates increases from 1.1 to 1.6 percentage points.

4 See also Edwards (1993), Krueger (1997; 1998), Panagariya (2004), Wacziarg and Welch (2003), and World Bank Independent Evaluation Group (2006) as well as Box 1.2.

5 An example is corruption. Trade reform provides incentives to fight corruption and thus can affect growth (See Ades and Di Tella, 1999 and Wei, 2000). Other examples can be found in Rodrik *et al.* (2002) who argued that institutions explain more real income per capita than openness but also found that openness partly explains the quality of institutions and so has a positive indirect effect on incomes.

6 Trade-related capacity building aims at creating, *inter alia*, an "enabling environment for increasing the volume and value added of exports, diversifying export products and markets, and increasing foreign investment to generate jobs and trade" (World Bank Independent Evaluation Group, 2006).

7 Rodrik (1998) argued that the results of his analysis of the weak growth response to trade expansion in 31 sub-Saharan African countries during 1964-94 can be interpreted as showing the need of complementary policies (broader reform package) for trade to have an impact on growth.

8 This is what happened in India in 1966 (Krueger, 2005) and in Uganda in the 1990s (Collier, 1997).

9 In more formal terms, the reform then triggers an increase in consumption and thus a drop in saving. The current account, which reflects a country's saving and investment gap, deteriorates significantly. This current account deficit is unlikely to be financed by inflows of capitals if the policy lacks credibility. On the contrary, lack of credibility can trigger a capital flight. The reform then affects negatively the gross reserves.

10 For more details see Collier (1993), Dewatripont and Roland (1995), Rodrik (1989), and van Wijnbergen (1992).

11 See Baunsgaard and Keen (2005), Elborgh-Woytek *et al.* (2006), Hallaert (2010), Kowalski (2005), and Walkenhorst (2006).

12 Because they have a narrow base and distort both consumption and production decisions, trade taxes are an inefficient and distortive way of raising revenue.

[13] It is possible that the revenue losses stemming in African Caribbean and Pacific countries from the reduction of customs tariff on EU imports agreed under the Economic Partnership Agreements are (partly) offset by increased budget support from the EU (Hallaert, 2010).

[14] A growing share of many developing countries' fiscal spending is financed by aid. For example, the current spending financed by aid increased from 16% in Ghana in 1997-99 to 36% in 2004-06, from 22% to 40% in Tanzania and from 60% to 70% in Uganda (Gupta and Tareq, 2008).

[15] Additional evidence on partial loss recovery can be found in Khattry and Rao (2002).

[16] See among many others Bhagwati (1978), Collier and Gunning (1992), Krueger (1978), Michaely *et al.* (1991), Rodrik (1989), the World Bank Independent Evaluation Group (2006).

[17] The experience of 32 developing countries that liberalised their trade regime in the second half of the 1980s and early 1990s was studied by Dean *et al.* (1994).

[18] The real exchange rate is the nominal exchange rate adjusted by the difference in inflation rate in the two countries. It is an indicator of a country's competitiveness.

[19] For a detailed survey of the various forms of Dutch disease and of the factors contributing to it, see Corden (1984).

[20] For details on the fiscal consequences of the EPAs in sub-Saharan Africa, see Hallaert (2010).

[21] In addition, if the early response helps build support for the reform, the reform process gains credibility, which increases the incentive to adjust at a socially optimal speed. As already discussed, this will smooth the adjustment.

[22] Improving the competitiveness of developing countries exports is an objective of aid for trade even in the absence of a risk of Dutch disease.

[23] There are large variations of the return across region. For example, the impact is five times larger for sub-Saharan Africa. Helbe *et al.* (2009) provide another estimate of the return of aid for trade facilitation projects.

[24] For an introductory survey of the various transmission channels, see Berg and Krueger (2005).

[25] For more details on the impact of trade on productivity see Berg and Krueger (2003), Edwards (1998), Hallaert (2006), Tybout (1992, 2000), and Winters (2004). Suggesting potential synergies, investment is also highlighted as the main transmission channel between aid and growth since the pioneering work of Chenery and Strout (1966). Gomanee *et al.* (2002) showed empirically the importance of this transmission channel in sub-Saharan Africa during the period 1970-97.

[26] See Hallaert and Hayashikawa (2011) for a review of the literature on exports and growth and Chapter 2 for a review of the literature on imports and growth.

[27] Chapter 2 considers other country groupings and shows that the role of imports on growth is positive in all of them.

[28] See Hallaert (2006) for a survey and Hallaert and Hayashikawa (2009) for the importance of this mechanism in the context of aid for trade.

[29] FDI can be seen as one of the "investment" channels through which trade can stimulate economic growth.

30 Long before the crisis, many countries had been lobbying at the WTO to find ways to increase the availability of trade finance for developing countries (Auboin, 2007). In this context, the Aid for Trade Initiative was perceived as providing leverage. The political economy of increasing trade finance is analysed by Hallaert (2011).

References

Ades, A. and R. Di Tella (1999), "Rents, Competition, and Corruption", *The American Economic Review*, vol. 89(84).

Aksoy, A. and G. Salinas (2006), *Growth Before and After Trade Liberalization*, World Bank, Washington, D.C., Policy Research Working Paper 4062.

Auboin, M. (2007), *Boosting trade finance in developing countries: What link with the WTO?* WTO, Geneva, Staff Working paper ERSD-2007-04.

Balasubramanyam, V. N., M. Salisu and D. Sapsford (1996), "Foreign direct Investment and Growth in EP and IS Countries", *The Economic Journal*, vol. 106(434).

Baunsgaard, T. and M. Keen (2005), *Tax Revenue and (or?) Trade Liberalization*, International Monetary Fund, Washington, D.C., Working Paper 05/112.

Berg, A., S. Aiyar, M. Hussain, S. Roache, T. Mirzoev and A. Mahone (2007), *The Macroeconomics of Scaling Up Aid – Lessons from Recent Experience*. International Monetary Fund, Washington, D.C., Occasional Paper 253.

Berg, A. and A. Krueger (2003), *Trade, Growth, and Poverty: A Selective Survey*, International Monetary Fund, Washington, D.C., Working Paper WP/03/30.

Bevan, D. (2005), "An Analytical Overview of Aid Absorption: Recognizing and Avoiding Macroeconomic Hazards", paper presented at the "Seminar on Foreign Aid and Macroeconomic Management", in Maputo, Mozambique, *http://www.imf.org/external/np/seminars/eng/2005/famm/pdf/bevan.pdf*.

Bhagwati, J. (1978), *Foreign Trade Regimes and Economic Development, volume XI: Anatomy and Consequences of Exchange Control Regimes*, Cambridge, Massachusetts: Ballinger for the NBER.

Bolaky, B. and C. Freund (2004), *Trade, Regulations, and Growth*, World Bank, Washington, D.C., Policy Research Working Paper 3255.

Brenton, P. and E. von Uexkull (2009), "Product specific technical assistance for exports – has it been effective?" *The Journal of International Trade & Economic Development*, vol. 18(2).

Bulír, A. and A. J. Hamann (2007), "Volatility of Development Aid: An Update", *IMF Staff Papers*, vol. 54(4).

Busan Partnership for Effective Development Cooperation (2011)

Cali M. and D. W. te Velde (2009), *Does aid for trade really improve trade performance? http://ssrn.com/abstract=1430492*

Chang, R., L. Kaltani, and N. Loayza (2005), *Openness can be good for growth: The role of policy complementarities*, NBER, Cambridge, Massachusetts, Working Paper 11787.

Collier, P. (1993), "Higgledy-Piggledy Liberalization", *The World Economy*, vol. 16(4).

Collier, P. (1997), "Ugandan trade policy liberalisation in an environment of limited credibility", in: S. Arndt and C.R. Milner (eds.), *Global Trade Policy 1997*, a special issue of *The World Economy*, London: Blackwells.

Collier, P. and J.W. Gunning (1992), "Aid and Exchange Rate Adjustment in African Trade Liberalisations", *The Economic Journal*, vol. 102(413).

Corden, W. M. (1984), "Booming Sector and Dutch Disease Economics: Survey and Consolidation", *Oxford Economic Papers*, New Series, vol. 36(3).

Council of the European Union (2007), EU Strategy on Aid for Trade: Enhancing EU support for trade-related needs in developing countries, Brussels, *http://register.consilium.europa.eu/pdf/en/07/st14/st14470.en07.pdf*

Chenery, H. B. and A. M. Strout (1966), "Foreign Assistance and Economic Development", *The American Economic Review*, vol. 56(4).

Choi, E. K. (2005), *Infrastructure Aid, Deindustrialization, and Welfare*, International Monetary Fund, Washington, D.C., Working Paper WP/05/150.

Dean, J., S. Desai, and J. Riedel (1994), *Trade Policy Reform in Developing Countries since 1985: A Review of Experience*, World Bank, Washington, D.C., Discussion Paper WDP 267.

Dewatripont, M. and G. Roland (1995), "The Design of Reform Packages under Uncertainty", *The American Economic Review*, vol. 85(5).

Dornbusch, R. and S. Edwards (1994), "Exchange Rate Policy and Trade Strategy", in Bosworth, Dornbusch, and Labán, *The Chilean Economy: Policy Lessons and Challenges*, Washington, D.C.: Brookings Institution Press.

Dufrénot, G., V. Mignon, and C. Tsangarides (2009), *The trade-growth nexus in the developing countries: A quantile regression approach*, CEPII, Paris, Document de travail 2009-04.

Ebrill, L., J. Stotsky, and R. Gropp (1999), *Revenue Implications of Trade Liberalization*, International Monetary Fund, Washington, D.C., Occasional Paper 180.

Edwards, S. (1989), *Real exchange rates, devaluation and adjustment: Exchange rate policy in developing countries*. Cambridge, MA: MIT Press.

Edwards, S. (1993), "Openness, Trade Liberalization, and Growth in Developing Countries", *Journal of Economic Literature*, Vol. 31(3).

Edwards, S. (1998), "Openness, Productivity and Growth: What Do We Really Know?" *The Economic Journal*, vol. 108(447).

Elborgh-Woytek, K., J. J. Hallaert, H. P. Lankes, A. Sadikov and D. Smith (2006), *Fiscal Implications of Multilateral Tariff Cuts*, International Monetary Fund, Washington D.C., Working Paper WP/06/203.

Falvey, R. and C. D. Kim (1992), "Timing and Sequencing Issues in Trade Liberalisation", *The Economic Journal*, vol. 102(413).

Gomanee, K., S. Girma and O. Morrissey (2002), *Aid and Growth in Sub-Saharan Africa: Accounting for Transmission Mechanisms*. University of Nottingham, CREDIT Research Paper 02/05.

Greenaway, D., W. Morgan, and P. Wright (1997), "Trade Liberalization and Growth in Developing Countries: Some New Evidence", *World Development*, vol. 25(11).

Gupta, S. and S. Tareq (2008), "Mobilizing Revenue", *Finance and Development*, vol. 45(3).

Gutiérrez de Piñeres, S. A. and M. Ferrantino (1997), "Export diversification and structural dynamics in the growth process: The case of Chile", *Journal of Development Economics*, vol. 52(2).

Hallaert J. J. (2004), "Implications of Trade Liberalization on Government Revenue", *An OECD Tool Kit for Trade Policy Makers III-Trade in the Service of Growth*, OECD, Paris.

Hallaert, J. J. (2006), "A History of Empirical Literature on the Relationship between Trade and Growth", *Mondes en Développement*, No. 135, 2006/3.

Hallaert J.J. (2010), "Economic Partnership Agreements: Tariff cuts, Revenue Losses, and Trade Diversion in sub-Saharan Africa", *Journal of World Trade*, vol. 44(1).

Hallaert, J.J. (2011), "Why Boosting the Availability of Trade Finance Became a Priority During the 2008-09 Crisis?" Chapter 14 in J.P. Chauffour and M. Malouche *Trade Finance During the Great Trade Collapse,* World Bank, Washington, D.C.

Hallaert, J.J. and M. Hayashikawa (2011), *Trade for Growth and Poverty Reduction: How Aid for Trade can Help,* OECD, Paris, The Development Dimension.

Helble, M., C. Mann and J. Wilson (2009), "*Aid for Trade Facilitation*", Washington, D.C.: World Bank, Policy Research Working Paper 5064.

IMF (International Monetary Fund) (2005a), *Republic of Madagascar: Sixth Review under the Three-Year Arrangement under the Poverty Reduction and Growth Facility—Staff Report*, International Monetary Fund, Washington, D.C., Country Report No. 05/156.

IMF (International Monetary Fund) (2005b), *Republic of Madagascar: 2005 article IV Consultation*, International Monetary Fund, Washington, D.C., Country Report 05/350.

IMF (International Monetary Fund) (2006a), *Republic of Madagascar: Request for a Three-Year Arrangement Under the Poverty Reduction and Growth Facility and Activation of the Trade Integration Mechanism*, International Monetary Fund, Washington, D.C., Country Report 06/306.

IMF (International Monetary Fund) (2006b), *The Federal Democratic Republic of Ethiopia: Selected Issues and Statistical Appendix*, Washington, D.C.: International Monetary Fund, Country Report 06/122.

IMF (International Monetary Fund) (2007), *Republic of Madagascar: Selected Issues*, International Monetary Fund, Washington, D.C., Country Report 07/239.

Keen, M. and J. E. Ligthart (1999), *Coordinating Tariff Reduction and Domestic Tax Reform*, International Monetary Fund, Washington, D.C., Working Paper WP/99/93.

Keen, M. and M. Mansour (2009), *Revenue mobilization in Sub-Saharan Africa: Key challenges from globalization*, International Monetary Fund, Washington D.C., Working Paper WP/09/157.

Khattry, B. and J. M. Rao, (2002), "Fiscal Faux Pas? An Analysis of the Revenue Implications of Trade Liberalization", *World Development*, vol. 30(8).

Kowalski, P. (2005), *Impact of Changes in Tariffs on Developing Countries' Government Revenue*, OECD, Paris, Trade Policy Working Paper, No. 18.

Krueger, A. (1978), *Foreign Trade Regimes and Economic Development, volume X: Liberalization Attempts and Consequences*, Cambridge, Massachusetts: Ballinger for the NBER.

Krueger, A. (1997), "Trade Policy and Economic Development: How We Learn", *The American Economic Review*, Vol. 87(1).

Krueger, A. (1998), "Why Trade Liberalisation Is Good For Growth", *The Economic Journal*, vol. 108(450).

Krueger, A. (2005), "De Tocqueville's 'Dangerous Moment': The Importance of Getting Reforms Right", *The World Economy*, vol. 28(6).

Lamy, P. (2010), Address at the conference *"Trade and Inclusive Globalization",* Paris School of Economics.

Lederman, D., M. Olarreaga and L. Payton (2009), *Export Promotion Agencies Revisited*, World Bank, Washington, D.C., Policy Research Working Paper 5125.

Michaely, M., D. Papageorgiou, and A. Choksi, eds. (1991), *Liberalizing Foreign Trade, volume 7. Lessons of Experience in the Developing World*, Oxford and Cambridge: Basil Blackwell.

Milner, C. (1998), "Trade Regime Bias and the Response to Trade Liberalisation in Sub-saharan Africa", *Kyklos*, vol. 51(2).

Milner, C. and O. Morrissey (1999), "Measuring Trade Liberalisation in Africa", in M. McGillivray and O. Morrissey (eds.), *Evaluating Economic Liberalisation*, London: Macmillan.

Milner, C., O. Morrissey and N. Rudaheranwa (2000), "Policy and Non-Policy Barriers to Trade and Implicit Taxation of Exports in Uganda", *Journal of Development Studies*, vol. 37(2).

Milner, C. and E. Zgovu (2003), *Export Response to Trade Liberalisation in the Presence of High Trade Costs: Evidence for a Landlocked African Economy*, University of Nottingham, CREDIT Research Paper 03/04.

Morrissey, O. and I. Filatotchev (2000), "Globalisation and Trade: The Implications for Exports from Marginalised Economies", *Journal of Development Studies*, vol. 37(2).

OECD (2011a), "OECD Expert Workshop on Aid for Trade Implementation", 28-29 March, Paris, h*ttp://www.oecd.org/dac/aidfortrade/expertsworkshoponaidfortradeimplementation28-29march2011.htm*

OECD (2011b), *Strengthening Accountability in Aid for Trade,* The Development Dimension, OECD, Paris, doi: 10.1787/9789264123212-en.

OECD/WTO (World Trade Organization) (2011a), *Aid for Trade at a Glance 2011: Showing Results,* OECD and World Trade Organization, Paris and Geneva, doi: 10.1787/9789264117471-en.

OECD/WTO (World Trade Organization) (2011b). *Aid for Trade 2011: Results emerging from the case stories*, OECD and World Trade Organization, Paris and Geneva, p.65 *http://www.oecd.org/aidfortrade/48294363.pdf*

Official Journal of the European Union (2008), *Economic Partnership Agreement between the CARIFORUM States, of the one part, and the European Community and its Member States, of the other part*, L 289/I/4, 30 October;
http://trade.ec.europa.eu/doclib/docs/2008/february/tradoc_137971.pdf.

Panagariya, A. (2004), "Miracles and Debacles: In Defence of Trade Openness", *The World Economy*, Vol. 27(8).

Rajan, R. and A. Subramanian (2005), *What undermines Aid's impact on Growth?* NBER, Working Paper 11657, Cambridge, MA,.

Rajan, R. and A. Subramanian (2007), "Does aid affect Governance?" *The American Economic Review*, Paper and Proceedings, vol. 97(2).

Rajan, R. and A. Subramanian (2009), *Aid, Dutch Disease, and Manufacturing Growth*, Center for Global Development, Washington, D.C., Working Paper 96.

Rodrik, D. (1989), "Credibility of Trade Reform – a Policy Maker's Guide", *The World Economy*, vol. 12(1).

Rodrik, D. (1998), *Trade Policy and Economic Performance in Sub-Saharan Africa*, NBER, Cambridge, Massachusetts, Working Paper 6562.

Rodrik, D., A. Subramanian, and F. Trebbi (2002), *Institutions Rule: The Primacy of Institutions Over Geography and Integration in Economic Development*, CEPR, London, Discussion Paper 3643.

Sachs, J. and A. Warner (1995), "Economic Reform and the Process of Global Integration", *Brookings Papers on Economic Activity*, vol. 1995(1).

Shatz, H. and D. Tarr (2000), *Exchange Rate Overvaluation and Trade Protection: Lessons from Experience.* World Bank, Washington, D.C., Policy Research Working Paper 2289.

Thomas, V. and J. Nash (1991), "Reform of Trade Policy – Recent Evidence from Theory and Practice", *The World Bank Research Observer*, vol. 6(1).

Tybout, J. (1992), "Researching the trade/productivity link: New directions", *The World Bank Economic Review*, vol. 6(2).

Tybout, J. (2000), "Manufacturing Firms in Developing Countries: How Well Do They Do, and Why?" *Journal of Economic Literature*, vol. 38(1).

van Wijnbergen, S. (1992), "Trade Reform, Policy Uncertainty, and the Current Account: A Non-Expected-Utility Approach", *The American Economic Review*, vol. 82(3).

Wacziarg, R. and K. Welch (2003), *Trade Liberalization and Growth: New Evidence*, NBER, Cambridge, Massachusetts, Working Paper 10152.

Walkenhorst, P. (2006), "Compensating Lost Revenue in Regional Trade Agreements", in Newfarmer (ed.) *Trade, Doha, and Development – A Window into the Issues*, World Bank, Washington D.C.

Wang, C., X. Lin and Y. Wei (2004), "Impact of Openness on Growth in Different Country Groups", *The World Economy*, vol. 27(4).

Wei, S. J. (2000), *Natural Openness and Good Government*, NBER, Cambridge, Massachusetts, Working Paper 7765.

Winters, A. (2004), "Trade Liberalization and Economic Performance: An Overview", *The Economic Journal*, vol. 114(493).

World Bank Independent Evaluation Group (2006), *Assessing World Bank Support for Trade, 1987-2004: An IEG Evaluation*, World Bank, Washington, D.C.

WTO (World Trade Organization) (2006), *Recommendations of the Task Force on Aid for Trade*, Geneva: WTO, WT/AFT/1, *www.wto.org/english/tratop_e/devel_e/a4t_e/implementing_par57_e.htm*.

Chapter 2

Estimating the constraints to trade of developing countries

This chapter quantifies the severity of binding constraints to trade in developing countries. It also quantifies the importance of the complementary policies that will maximise the impact of trade reforms on trade and economic growth. As trade-related needs of developing countries are numerous, such quantification is needed to guide the sequencing of reforms and aid-for-trade support. An econometric analysis is undertaken for as many partner countries as possible to produce a benchmark against which special country groupings can be assessed. The econometric work relies on experimentation to identify and rank (based on their relative severity) the most binding constraints for each country grouping (landlocked countries, small and vulnerable economies, and commodity exporters).

Identification of bottlenecks and barriers is critical, and understanding of how they affect potential traders is an area where Aid for Trade can make a large contribution.

Prof. Anne O. Krueger (2011)

Introduction

Appropriate sequencing is crucial for the success of trade reforms and to guide aid-for-trade resource allocations. However, it is often difficult to identify which needs should be tackled first (*i.e.* what are the main constraints on trade) because trade-related needs are not only numerous, but also multi-faceted and country-specific.

Therefore, this chapter tries to measure the severity of many potential constraints to trade and the role of complementary policies identified by the trade literature and reviewed in the previous chapter.

The core of consideration is a cross-country econometric analysis. The primary objective is to identify the most binding constraints to trade performance. This has two implications for the econometric work.

- First, we do not test a theoretical model. We instead rely on experimentation to provide the best approximation to account for the majority of the data and to identify the most binding constraints. Therefore, the specifications differ across country groupings. In order to take into account an important factor highlighted during the Second Global Review on Aid for Trade, namely that binding constraints differ across countries (Lamy, 2009), the analysis is indeed disaggregated for some smaller country groups (landlocked economies, small and vulnerable economies, or commodity exporters). The reason is that for countries in similar circumstances, similar constraints exist and these constraints are likely to be different than those faced by countries with other characteristics.

- Second, more than the absolute numerical estimates, it is the relative severity of the various constraints that is of interest.

The chapter is organised as follows. First, we present the empirical strategy and discuss data issues. Then we analyse the results for the general country sample. This work will serve as a benchmark in the subsequent discussion of the results for the groupings of countries with particular characteristics.

Estimating the impact of the binding constraints: Methodology and data

Econometric strategy

The econometric strategy is described in details in Annex A. Consistent with the argument that aid for trade should target binding constraints – both those that prevent partner countries from turning trade opportunities into trade flows as well as those that choke the impact of trade flows on economic growth (Figure 1.2 in Chapter 1) – the econometric work proceeds in two steps. First, the impact of the various binding constraints is used to explain partner countries' trade. The predicted values of trade are

then used to see the impact of these binding constraints on economic growth. The explanatory variables are in logarithms. As a result the estimated coefficients provide elasticities.

Three measures of trade are considered: imports as a share of GDP, exports as a share of GDP, and openness (exports plus imports as a share of GDP). Thus, the analysis is not limited to openness. The estimates for openness provide the *net* effect of binding constraints on trade expansion. This is crucial, but to draw meaningful policy implications, it is important to see the impact of the various constraints on both exports and imports. Indeed, the severity of a given binding constraints may be different on exports and imports. Moreover, both imports and exports are sources of economic growth, but as they affect growth through different channels identifying the impact of the various binding constraints on both exports and imports is crucial.

It is important to note that, consistent with the mandate of the Aid for Trade Initiative, only supply-side constraints are considered in the present analysis. As a result, market access conditions are considered asymmetrically. They are considered on the import side (the import tariff variable) because they are under the control of the developing countries' government and constitute a potential supply-side constraint to trade, but they are not considered on the export-side because, although relevant for export performance, they do not constitute something governments of partner countries can affect.

For all the country groupings, many econometric specifications were tested to identify the most binding constraints. As the size of the samples is small compared to the long list of potential constraints, it is impossible to simultaneously test all variables effectively. Therefore, the results report only the most binding constraints and the specifications tend to be different across country groupings. The results for the unrestricted sample, in addition to providing a more complete specification than would be possible for a more limited subsample, provide a benchmark against which to analyse and compare the subsamples' specificities, *i.e.* to see how the binding constraints in a given sub-sample differ from "the average." Many econometric specifications that included alternative variables were also tested as robustness checks.

The methodology used allows us to answer a few questions that were highlighted in Chapter 1 and that are important for the effectiveness of aid for trade:

How severe are the various impediments to trade expansion? The methodology used allows us to rank the relative severity of the various constraints to trade. It helps to identify the most binding constraints and prioritise and sequence the reform and aid-for-trade support. This is a prerequisite to improve the effectiveness of aid for trade. It is important to note that not all the possible constraints to trade described in Chapter 1 could be estimated, so the ranking is limited to the variables that could be quantified.

What is the impact of tackling the binding constraints on trade and on economic growth? The method used allows estimation of the total impact of the binding constraints on economic growth and a breakdown between impact through trade (indirect impact) and impact through other channels (direct impact).

What are the specific constraints faced by countries having in common some key characteristics? An analysis of country groups sharing important characteristics shows that binding constraints differ across countries and do not have the same severity. Therefore, priorities and sequence with reforms and of aid-for-trade actions should differ across countries.

What is the impact of trade (imports and exports) on growth? This chapter offers another opportunity to draw the attention of the aid-for-trade community to the contribution imports can play to achieve the objectives of using trade as an engine for growth, poverty reduction, and development. In addition to the already mentioned methodological reasons for breaking down the *net* impact on trade of various constraints into effects on imports and exports, there are also additional reasons related to the political economy of trade reform and the political economy of the Aid for Trade Initiative. The Hong Kong Declaration (WTO, 2005a) stated that the objective of the Aid for Trade Initiative is to "expand trade." However, the Task Force on Aid for Trade focused on increasing exports. "Aid for Trade is about assisting developing countries to increase exports of goods and services, to integrate into the multilateral trading system, and to benefit from liberalised trade and increased market access" (WTO, 2006). The political economy of trade reform and trade negotiations tends to overlook an avenue that the trade literature highlights as crucial in the trade and growth nexus: imports.

The role of exports is well recognised as a source of growth and sometimes reflects the persistence of mercantilist views of trade. Interestingly, although trade economists long ago moved away from this approach, initial cross-country regressions trying to establish empirically the impact of trade on economic growth had export growth as a key explanatory variable. The idea was that exports generated positive externalities on the rest of the economy and thus affected economic growth. However, the results were plagued by econometric and conceptual problems. Export growth is an imperfect and noisy proxy for trade policy and is largely endogenous. This led to difficulties in identifying causation: cross-country studies tried to measure the impact of trade on growth but potentially overestimated it because they captured both the impact of trade on growth and the impact of growth on trade. Moreover, studies such as Levine and Renelt (1992) found that imports and total trade could equally explain growth, suggesting that total trade rather than just exports are the appropriate explanatory variable. Therefore, the literature has moved to new measures of trade and trade policies, such as trade shares, that are used in this report (Hallaert, 2006).

The crucial contribution of imports to economic growth is at best marginal in public debate, policy-making decisions, and in the design of aid projects and programmes, including those related to aid for trade. As Krugman (1993) explains: "Even more fundamentally, we should be able to teach students that imports, not exports, are the purpose of trade. That is, what a country gains from trade is the ability to import things it wants. Exports are not an objective in and of themselves: the need to export is a burden that a country must bear because its import suppliers are crass enough to demand payment." This has important implications for aid for trade which tends to overlook the role of imports (OECD, 2011). Besides the change in focus from trade expansion at the Hong Kong Ministerial to the focus on increase in imports of the Task Force on Aid for Trade, evaluations of aid-for-trade projects ignore the role of imports. In a meta-evaluation of aid-for-trade projects conducted for the OECD, Delpeuch *et al.* (2011) conclude "Evaluations of Aid for Trade operations do not say much about trade. The terms trade and exports are not among the most frequently mentioned, and the WTO or regional trade agreements are largely ignored by the evaluators. Even more importantly from an economic point of view, the word imports is even almost completely ignored."

Theory suggests that imports can foster growth through many channels including its pro-competitive impact, reallocation of resources towards more efficient uses, improvements in domestic manufacturing by lowering the cost of inputs and of capital goods, but also by allowing access to foreign technologies embedded in inputs. Most of

these gains from trade are dynamic, *i.e.* imports increase productivity, which is a key determinant of economic growth and in per capita income.

Until recently, the empirical literature relied on macroeconomic cross-country regressions (Hallaert, 2006). However, these regressions were unable to identify the channels through which trade impacts productivity and trade. Coe *et al.* (1997) showed that openness to imports of capital goods (assumed to incorporate trading partners' stock of knowledge) enhances total factor productivity growth. In a study of over 100 countries during the period 1970-97, Yanikkaya (2003) found support for the hypothesis that trade promotes growth through technology transfers: the more a country (especially for developing countries) trades with the United States (one of the most highly innovative countries), the more likely it is to grow faster. Wang *et al.* (2004), in a study of 79 countries during the period 1970-98, also found that the increase in the imports-to-GDP ratio is a source of growth and provide evidence of the role of transfers of technologies.

Recently, detailed firm- and plant-level data have become available and the empirical literature has moved to a microeconomic approach, allowing testing and measuring the various channels through which trade affects growth (something that cross-country regressions at the macroeconomic level could not do). Because of data constraints, this literature focuses mostly on OECD countries and large emerging countries and leads to three interesting conclusions.

First, imports have a positive impact on productivity because they increase competition and thus lead to an improved allocation of resources and better management practices. Tybout and Westbrook (1995) in the case of Mexico, Aw *et al.* (2000) in the case of Chinese Taipei, Pavcnik (2002) in the case of Chile, Muendler (2004) in the case of Brazil, Amity and Konings (2007) in the case of Indonesia, and Topalova and Khandelwal (2011) in the case of India provide suggestive evidence backing the importance of this channel.

Second, this strand of literature has provided more robust and clearer evidence that, because foreign technology is embedded in imported goods, imports are a major source of technology. It looks at the impact on productivity from increased imports following trade liberalisation distinguishing the impact on productivity of imported intermediate inputs and capital goods from the impact of imported final goods. For Indonesia during 1991-2001, Amity and Konings (2007) not only find that cutting tariffs on final goods increases productivity by its competitive effect but also that a reduction in tariffs on inputs has a larger impact on productivity via learning, variety, and quality effect. A ten percentage point cut in input tariffs leads to a productivity gain of 12% for firms that import their inputs. This is at least twice as high as productivity gains from reducing tariffs on final goods. For India during 1989-1996, Topalova and Khandelwal (2011) find an even larger impact. They estimate that the competition effect of a ten percentage fall in tariffs on final goods led to a 0.3% increase in productivity compared to a much larger increase of productivity of 4.8% for a similar cut in input tariffs due not only to cheaper access to inputs but also access to new inputs. Harrison *et al.* (2011) reach the same conclusion for a longer period (1985-2004): the reduction in tariffs on inputs is associated with an increase in aggregate productivity of 21.8% which is more than the impact of the cut in final good tariffs (3.2%) or Foreign Direct Investment (FDI) liberalisation (2.2%). Indeed, Goldberg *et al.* (2008) show that trade liberalisation and market reforms led to a surge in imported inputs, with more than two-thirds of the intermediate import growth occurring in new varieties: the 130% increase in imports

between 1987 and 2000 was more driven by imports of intermediate inputs (227%) than by imports of final goods (90%). Moreover, showing that trade liberalisation affects productivity not only from lower costs of inputs but also from access to new inputs: new intermediate inputs accounted for 66% of total intermediate import growth. They provide evidence that Indian firms increased access to new inputs can explain the explosion in new products manufactured by Indian firms: industries that experienced the largest declines in input tariffs contributed relatively more to the introduction of new products by domestic firms. The impact of imports on economic growth through productivity is large: it explains 7.8% of the 25% growth in manufacturing.

By undertaking a multi-country analysis at firm level, Stone and Shepherd (2011) show that these findings are not country-specific or dependent on a specific liberalisation event but are of broad applicability. They also find that imports that serve as intermediate inputs have a significant and positive impact on firm total factor productivity and also show that imports of capital goods have the same impact although more limited. "Assuming constant returns, a firm that imports 100% of its inputs is around 30% more productive than a firm that uses domestic inputs only; and a firm that uses imported capital goods is around 20% more productive than one that uses domestically sourced capital goods only." Importantly for aid for trade, they also find that the links between imported intermediates and productivity gains and innovation are stronger in non-OECD countries.

Third, the impact of imports on economic growth through productivity and innovation is not limited to the technology embedded into imports but also comes from competition with cheaper imports. Bloom *et al.* (2011) find that competition from Chinese imports explains 11.8% of total factor productivity growth, in 12 European countries over the period 2000-2007 and 15.2% over the period 2004-2007. About two-thirds of the impact is due to intra-firm productivity growth and one-third from reallocation from less productive firms to more productive firms. Moreover, the authors show that Chinese competition is associated with increases of various measures of innovation (patents, use of information technologies, and Research and Development).

This literature also stresses that the impact of imports on growth is magnified by complementary policies. Topalova and Khandelwal (2011) observe complementarities between trade liberalisation and additional market reforms (measured by delicensing and liberalisation of FDI): the efficiency gains from trade reforms were largest in industries that also experienced the most deregulation and the biggest progress in FDI liberalisation. Stone and Shepherd (2011) show that access to skilled labour and access to finance are particularly important to allow firms to *generate* productivity gains from intermediate goods imports while access to finance and macroeconomic stability are important for the impact of imported capital goods. In addition, for the reasons described in the previous chapter, it will be important to include variables proxying the regulatory environment in the econometric specifications tested in this report

Data : Description and limitations

In order to test the impact of as many constraints as possible, a database for the 153 recipients of Official Development Assistance (ODA) has been compiled. This database includes 426 variables relevant to the analysis and covers the period 1981-2009. However, not all observations for all variables are available for all countries and for the complete period.[1] The list of relevant variables was established taking into consideration the potential binding constraints highlighted by the empirical literature and described by

Hallaert and Hayashikawa (2011); and the compatible and complementary policies described in Chapter 1.

Despite considerable effort to develop the database, data availability remained a constraint that often proved significant for the econometric work, notably for the sub-samples. Some variables were only available for a small number of countries. For example, while efforts were made to gather data for the 153 partner countries and territories, observations for the explained variables (imports, exports, and GDP)[2] were only available for 102 partner countries. To address this problem some alternative proxies were used and the econometric specification was modified. For example, while it would have been relevant to use applied customs tariffs in the estimation, data availability leads to a dramatic drop in the country coverage and number of observations. As a result, the most favoured nation (MFN) tariffs were used instead and applied tariffs were used to test for robustness of the results. Moreover, some variables such as the key variables on time to import and export, customs procedures, cost of shipping listed in the World Bank's *Doing Business* could not be used despite their wide country coverage because they are limited to a short period of time.[3]

In total, 65 countries for the period 1981-2009 could be analysed. These countries are listed in Annex A (A.3. List of countries) and account for 57% of the aid for trade disbursed during 2005-2008 and 55% of 2008 commitments.[4]

Benchmark results

Core results for the general "unrestricted" sample are presented in Table 2.1. They will be used as a benchmark against which the results for the sub-samples will be assessed. For this reason, as many binding constraints as possible are included. This means data requirements are large and could only be met by 36 countries.

It is important to include GDP in both the trade and the economic growth equations (Annex A). In the trade equation, the impact of the size of the economy on openness needs to be considered to reflect the fact that larger countries tend to trade *relatively* less. In the economic growth equation, initial GDP is needed to capture the catch up effect highlighted by the macroeconomic literature on growth. Consistent with these views, in the results presented in Table 2.1, lagged GDP is negative and highly statistically significant.

Several observations may be made on the basis of this work. First, as expected, both imports and exports appear to be a source of growth. Although these results should be seen with caution for the reasons explained in the previous section, they provide useful insight. The impact of trade on growth is larger for imports than for exports. This may be due to the significant impact of imports on productivity and thus on growth. Alternatively, this is because the fit of the import regression is better than the one on exports because imports depend mostly on supply-side constraints while exports depend on supply-side constraints as well as market access (and market access is not captured in the regressions).

Second, as discussed in the next section, binding constraints to trade appear to be different for exports and for imports. On the one hand, air transport, labour force, labour productivity, and the rule of law are significant factors that affect exports but not imports. On the other hand, lagged investment, access to domestic credit (or the depth of the financial sector), and mismanagement of the real effective exchange rate appear to significantly affect imports but not exports. Other constraints affect both imports and

exports: availability of roads, reliability of electricity, fiscal policy, and import tariffs. As a result, the ranking of the binding constraints differs if we look at openness, exports or imports.

Third, the benchmark results provide support for the claim that needs are country specific. Results (2) in Table 2.1 include binary dummies capturing various country groupings. Results suggest that landlocked countries differ the most from the average partner country. Being landlocked is a significant geographical barrier to openness to trade. The openness ratio of landlocked countries is 6 percentage points lower than for other partner countries. The gap is larger for exports (8 percentage points) than for imports (5 percentage points). This is consistent with findings of other studies. Grigoriou (2007), on the basis of a gravity model, found that, *ceteris paribus,* a landlocked country imports 22% less and exports 34% less than a coastal economy. In contrast, results show that being an island is not a significant disadvantage. Being a small and vulnerable economy (SVE) or a commodity exporter tends to have a limited impact which is not significant except for commodity exporters' imports.[5] As a country can belong to several groupings (for example, Uganda is both a landlocked and an SVE; Paraguay is a landlocked country, an SVE, and a commodity exporter), results (1) in Table 2.1 include only those groupings (*i.e.* landlocked and island) for which there is no overlap. This specification confirms the results that a landlocked country faces significant and large impediments to trade integration and that this geographical situation affects both imports and exports, while being an island is not a significant advantage or disadvantage. The findings for country groupings are discussed in more detail below

Table 2.1 Benchmark results

	Results (1)			Results (2)		
	Openness	Exports	Imports	Openness	Exports	Imports
Loggdp1	-0.287***	-0.413***	-0.192**	-0.277***	-0.401***	-0.183**
	(0.091)	(0.106)	(0.081)	(0.085)	(0.100)	(0.077)
l_air_trans_carr_dep	0.101***	0.195***	0.039	0.119***	0.203***	0.067*
	(0.0398)	(0.057)	(0.034)	(0.043)	(0.060)	(0.0367)
l_roadkm2	0.097***	0.082**	0.111***	0.074**	0.064	0.083***
	(0.028)	(0.041)	(0.024)	(0.030)	(0.039)	(0.027)
l_electric_power_losses_p_out	-0.185***	-0.240**	-0.170***	-0.214***	-0.288***	-0.174***
	(0.067)	(0.098)	(0.055)	(0.064)	(0.095)	(0.055)
l_dom_credit	0.176**	0.004	0.290***	0.171*	0.011	0.271***
	(0.087)	(0.117)	(0.073)	(0.091)	(0.121)	(0.076)
Simple_average3_mfn	-0.013**	-0.014**	-0.011**	-0.012*	-0.013*	-0.010*
	(0.006)	(0.007)	(0.005)	(0.006)	(0.007)	(0.005)
l_gfcf1	0.423*	0.218	0.507**	0.480*	0.257	0.582**
	(0.254)	(0.294)	(0.228)	(0.273)	(0.313)	(0.242)
l_property_rights	0.229	0.496**	0.159	0.127	0.458**	-0.015
	(0.167)	(0.219)	(0.149)	(0.156)	(0.202)	(0.139)
l_l_force	0.138**	0.263***	0.055	0.154**	0.290***	0.057
	(0.067)	(0.086)	(0.059)	(0.077)	(0.092)	(0.070)
l_productivitity_per_worker	0.122*	0.309***	-0.027	0.110	0.287***	-0.026
	(0.074)	(0.094)	(0.066)	(0.068)	(0.087)	(0.063)
l_reer	-0.678*	-0.696	-0.572*	-0.557*	-0.580	-0.450
	(0.367)	(0.440)	(0.332)	(0.319)	(0.395)	(0.284)
l_government_spending	-1.570***	-1.840***	-1.404***	-1.737***	-2.016***	-1.553***
	(0.510)	(0.571)	(0.479)	(0.608)	(0.682)	(0.562)
Landlocked	-0.501***	-0.709***	-0.359***	-0.633***	-0.852***	-0.470**
	(0.126)	(0.179)	(0.113)	(0.196)	(0.247)	(0.183)
Island	0.005	0.019	-0.033	-0.004	0.033	-0.053
	(0.137)	(0.163)	(0.129)	(0.137)	(0.161)	(0.132)
SVE				0.264	0.246	0.274
				(0.185)	(0.218)	(0.166)
Commodity exporters				-0.069	0.040	-0.193***
				(0.089)	(0.130)	(0.073)
Constant	-2.972	-3.994	-4.095	-3.438	-4.582	-4.393
	(3.778)	(4.230)	(3.493)	(3.427)	(3.861)	(3.157)
Observations	175	176	176	175	176	176
R-squared	0.454	0.411	0.503	0.462	0.416	0.520
Trade variable in growth estimate	0.081	0.054	0.102	0.111	0.074	0.107
	(0.089)	(0.061)	(0.127)	(0.080)	(0.058)	(0.077)

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

[1] Explanation can be found in Annex A

The most binding constraints to trade

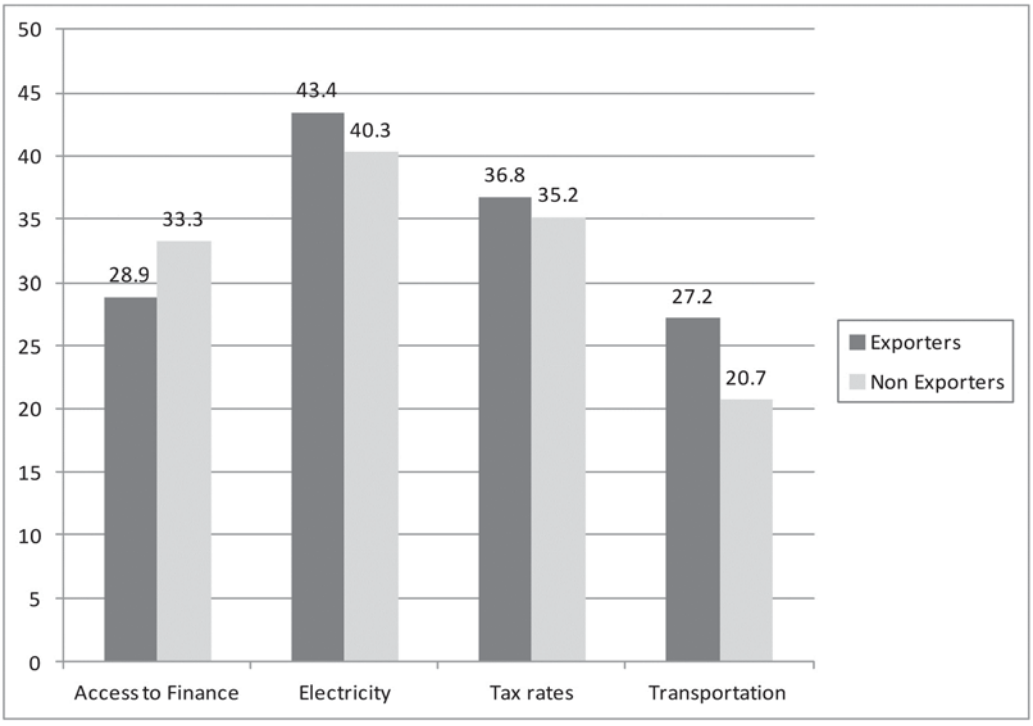
Trade policy measured by import tariffs has a statistically significant impact but its magnitude is small. Results provide additional empirical support to the Lerner symmetry theorem (Lerner, 1936) which states that an import tariff acts as a tax on a country's export sector. The results show that a 10% cut in MFN import tariffs has the same, positive and significant impact on imports and exports ratios: over 0.1 percentage point. The MFN tariff is used because the presumably more accurate applied tariff was available only for a limited period and for only 30 countries. The results are thus more fragile and are presented in Annex B (Table B.1). The impact of import tariffs remains significant on both imports and exports and is slightly larger at about 0.15. Moreover, using the applied tariff result is a better fit and the impact of trade on growth appears to be twice as large as in the core results (and even three times larger for imports). The impact of a tariff cut on trade flows pales in comparison to other supply-side constraints. This result is consistent with the large body of research that concludes that the impact of trade facilitation and other measures to reduce supply-side constraints is much larger than removing trade policy restrictions.

Infrastructure problems are a significant constraint to trade. Agboghoroma *et al.* (2009) could not establish econometrically an impact of four infrastructure variables (telecommunications, roads, railways, and power generating capacity) on economic growth through trade, but caution is needed because they only measured the quantity of infrastructure and not its quality or usage. In this chapter, we go into greater depth. First, we analyse both quantity and quality of road and electricity infrastructure and find that the quantity of transport infrastructure (rail and road) has a significant impact as does the quality of electricity supply. However, we reach the same conclusion for telecommunications. We could not find a trade impact of the various variables that capture quantity of the telecommunications infrastructure (fixed, mobile, and internet connection). Second, as the impact of trade on growth is positive, these types of infrastructure have an impact on growth through trade.

Electricity is a more significant binding constraint than road or air infrastructure. The impact of electricity is large and statistically significant at the 99% confidence level: improving the reliability of electricity by 10% increases openness by almost 2 percentage points. The impact is larger on exports (2.4 percentage points) than on imports (1.7 percentage point). This large effect supports the claim of firms in developing countries that electricity is the main problem not only for business in general but also exports. According to the *Enterprise Surveys* (World Bank, 2010),[6] firms in 29% of partner countries rank electricity problems as their main business problem and in 68% of the partner countries, electricity is listed in the top three constraints. This problem is the main business constraint for both exporters and importers, and that it is slightly larger for exporters than non-exporters (Figure 2.1).

Figure 2.1 Survey results of main business constraints in developing countries

(% of firms mentioning the topic as a constraint)



Source: Author's calculations based on World Bank (2010).

Table B.2 in Annex B suggests that the availability of electricity, proxied by consumption per capita of electricity, is less a constraint to trade than its reliability. Indeed, producers can address the lack of electricity by using generators and it is actually pretty common. Hoekman (2011) reports that, in Nigeria, over 90% of firms with more than 20 employees have generators. The use of generators has a cost: the marginal cost of electricity produced by generators is about two and half times higher than electricity from the grid, and the capital cost of a generator is about 20% of the total cost of machinery and equipment. This shows that lack of electricity can dramatically affect production costs and thus reduce exports competitiveness and, thus, trade performance. But the cost of unreliable electricity can be even greater. Unreliable electricity not only requires the purchase of generators but can damage machineries and equipment used in production due to fluctuation in power intensities. Additional evidence of the crucial role electricity plays in trade performance is provided in Box 2.1 and in various case stories submitted for the Third Global Review of Aid for Trade. In Zanzibar, Tanzania, access to electricity made it feasible for the private sector to invest in a new hotel leading to tourist exports earnings. Similarly China's technical assistance to Lao PDR helped developed new trade links with China. Aid for trade in support to electricity is also documented for El Salvador.[7]

Box 2.1 Electricity as a constraint to Djibouti's trade and development

The case of Djibouti shows how the availability, reliability, and cost of electricity affect private sector development and trade performance.

Availability: In Djibouti, electricity is not provided in sufficient quantities to satisfy the needs of companies and individuals. Shortages slow down the development of economic activities, the growth of the private sector, and international trade by removing the incentives for creation of new firms, the development of new exportable goods and services, and the arrival of foreign companies. In addition, limits to electricity availability hamper poverty reduction through a broader access to electricity. In 2009, 55% of the population had access to electricity and its bill could represent up to 25% of a household's average income.

Reliability: In addition, electricity supply is unreliable. During the summer of 2009, capacity limits resulted in more than ten power outages per day in several districts of the capital, where 2/3 of the national population is concentrated. Frequent outages means that private firms need to use generators. Besides outages, electricity supply is unreliable because of fluctuations of power intensity that can damage the equipment and production. This translates into important revenue losses and high costs of equipment rehabilitation or repurchase.

Cost: Electricity is so expensive that it is considered one of the explanatory factors of the small size of the private sector, which contributes only to 22% of the GDP (AfDB, 2007). Domestic electricity prices were, after those of Chad, the highest in Africa (IMF, 2007). This affects firms' profitability and competitiveness and limits the development of the private sector. For example, the electricity cost accounts for 25% of the price of a hotel, limiting the development of tourism despite the country's potential and its need for such labour-intensive export.

Source: Foch (2011).

Transportation problems also constitute a significant constraint. However, according to the *Enterprise Surveys*, transportation is a much less significant business problem than electricity. Table 2.1 shows that increasing the quantity of air or road infrastructure by 10% increases openness by roughly 1 percentage point. However, while the impact of air infrastructure appears limited to exports, road infrastructure affects both exports and imports. The quantity of road infrastructure has a more significant impact on trade than does the quality of infrastructure proxied by the share of paved roads (Table B.3, Annex B). In addition to its impact on economic growth through trade, transport infrastructure has also an impact through the non-tradable sector. A 10% increase in air (or in road transport) infrastructure increases the economic growth rate by 0.2% of which about half is due to the impact through trade (0.08%). The impact of a 10% improvement in transport infrastructure on economic growth through trade is eight times larger than is the impact of a 10% cut in import tariffs, but about half the impact of a 10% improvement in electricity reliability.

Access to credit is also a significant barrier to trade. It follows closely electricity reliability as the main binding constraint to trade expansion in developing countries. A 10% increase in electricity reliability increases economic growth by 1.9% while a 10% increase in credit-to-GDP ratio boosts economic growth through its trade impact by 1.8%.[8] This is due to the large and significant (at the 99% confidence level) impact of access to credit on imports. In sharp contrast, the impact on exports is close to zero and statistically insignificant. This result is consistent with the finding of many surveys in developing countries. In the World Bank's *Enterprise Surveys,* it is reported as a major constraint to business, which affects more non-exporters than exporters (Figure 2.1). It is also consistent with the experience of trade finance providers such as the European Bank for Reconstruction and Development (EBRD) in emerging Europe and Central Asia. In 2009, the EBRD conducted a comprehensive survey of its partner bank in its ten-year old Trade Finance Programme. These partner banks acknowledged a

significantly stronger impact of the Trade Finance Programme on import business than on export business (EBRD, 2011).[9] This result is noteworthy because most of the empirical literature focuses on the impact of financial conditions on exports rather than on imports.

What are the avenues by which access to credit (or the depth of the financial sector) affects trade performance? First, such access is an important determinant of investment and is thus needed to seize the opportunities obtained from trade and trade reforms (see Chapter 1). Second, access to credit may be needed to get the working capital and the trade finance needed to trade internationally. Third, access to credit may be needed to help poor households move out of subsistence production: this shift requires both infrastructure and access to credit that allow poor rural farmers to reach the market (Balat *et al.*, 2009; Hoekman, 2011).

Access to credit is also paramount to enabling countries to realise the gains from trade and increase the impact of trade on economic growth. Limited access to credit can affect growth directly, but also through trade if a credit constraint prevents the investment needed to take advantage of trade opportunities. Access to credit also is important to allow countries to realise the productivity gains from imports of intermediate inputs and capital goods (Stone and Shepherd, 2011).

This may explain why the results point to a very large impact of access to credit on openness that is fully explained by its impact on imports. A 10% increase in local credit in a partner country *increases* the openness ratio by 1.8 percentage points because of its impact on the ratio imports-to-GDP of 2.8 percentage points. The impact on exports is virtually nil and not significant.

Finally, in developing countries, access to credit is often rationed due to legal and regulatory problems: in many countries, contracts are only weakly enforceable, which leads to requests for very large collaterals. For example, in the first half of the early 2000s, the weakness of Nepal's judicial system resulted in the weak enforcement of contracts and widespread wilful defaults. This, combined with politically-motivated lending by the two state-owned or controlled banks, triggered a large build up of non-performing loans that brought the banking system close to insolvency (IMF, 2006 and 2010).

The importance of complementary and compatible policies

Econometric results support the view that governance is an important determinant of trade performance. The legal and regulatory environment and the enforcement of laws are proxied by the variable "property rights." This complementary policy is particularly important and statistically significant for exports. The result for imports is more limited, although in some specifications (Table B.3, Annex B) its impact is statistically significant and large.

Complementary policies are not limited to governance issues. Policies that increase labour productivity will contribute dramatically to trade expansion. Productivity has been chosen as an explanatory variable because the literature emphasises its role in trade performance but also because it is an important avenue through which trade boosts economic growth. A 10% increase in labour productivity increases the exports-to-GDP ratio by 3 percentage points. The impact on imports is close to zero (and is not statistically significant). This result is generally robust to the alternative specifications presented in Annex B.[10] The impact of labour productivity on economic growth is large:

a 10% increase in labour productivity is estimated to result in a higher economic growth rate of over 0.65%. Trade contributes to 0.10% while the non-trade impact is estimated at 0.55%.

Education and training are important policies that can affect labour productivity. As aid for trade has a role to play in this area (see Chapter 1), we test the impact of education proxied by secondary school enrolment. Using this variable instead of productivity increases the number of countries considered from 36 to 47. The impact on all trade variables is about half the size of the labour productivity but is not statistically significant. This provides support for the assumption that education is an important source of labour productivity though, as expected, not the only one. The education variable has also been added to the core results of the sub-sample, but as it is never significant it is not discussed further.

These findings support the importance of complementary policies to increase the impact of trade on economic growth. They also highlight the importance of compatible policies. Compatible policies are mostly related to a macroeconomic environment conducive to sustainable trade reforms and trade expansion, and to the realisation of dynamic gains stemming from the import of capital goods. These macroeconomic policies are captured by the real effective exchange rate, whose role in the success of trade reform is known to be extremely important, and by government spending, as fiscal problems are often sources of policy reversal (see Chapter 1). Results suggest that an overvaluation of the real effective exchange rate is detrimental to trade expansion and that the magnitude is very large: a 10% appreciation of the real effective exchange rate is associated with a reduction of the openness ratio by almost 7% of GDP. The impact of government spending is even larger, as an increase in spending is associated with an extremely large negative impact on trade. That government spending has a negative impact on growth result is a common finding in the growth literature.

Our results suggest that the negative impact of government spending on economic growth may be explained in large part by the impact of government spending on growth through trade. This may be surprising given prior findings that more open countries tend to have bigger governments (Rodrik, 1998), and although it is beyond the scope of this book to discuss the complex relationship between trade and government size, a few points are worth being clarified. While Rodrik uses only government consumption, we use total spending.[11] Moreover, Rodrik's finding comes from the fact that he links government size to *previous* decade openness while we look at the contemporary link between government size and openness. This is a crucial difference and indeed when Rodrik tries to explain openness with the size of government, like us, he finds a negative relationship (in the case of Rodrik, the coefficient is not significant). Besides technical differences, interpretation can be different. Rodrik explains his finding by the fact that government tries to mitigate the negative consequences of increased volatility associated with openness. However, this government function is often very limited in the countries we focus on and, in any case, certainly more limited than in OECD countries. This appears to be an important factor because when Rodrik splits his sample in two income groups, the fit for the poorest countries drops dramatically. It is also plausible that in the sample of countries we focus on, large government spending reflects fiscal unbalances (if the spending is not matched by revenues) or reflects more interventionist policies, including in trade matters, and more regulations.

The *Enterprise Surveys* suggest that firms perceive taxation rate as a major business constraint (Figure 2.1). We use government tax revenue as a share of GDP as an

alternative fiscal variable because no synthetic indicator consistent across countries for a relatively long time period is available and because we are mainly interested in capturing the macroeconomic environment. Results, presented in Annex B (Table B.4), are fragile due to data limitations: the number of observations collapses by about 57%. Keeping in mind the fragility of the results, government tax revenue becomes positive and highly significant for all three explained trade variables although its impact is much smaller than for spending. This suggests that government capacity to face the volatility implied by openness to international trade and to secure the financing of its development needs is largely determined by the amount of non-aid revenue it is able to secure. Moreover, as emphasised in Chapter 1, revenue from domestic taxes is less volatile than trade taxes or other flows such as aid or remittances and FDI. Thus, domestic taxes are more predictable and necessary to pay for the maintenance cost of projects financed by aid, including infrastructure projects financed by aid for trade.

Investment is particularly sensitive to compatible and complementary policies. Among other things, investment depends on factors such as the legal and regulatory environment and the access to credit. As it is a long term decision, it also depends on the macroeconomic environment and the protection of property rights. Moreover, investment is an important avenue through which trade affects economic growth but also an important area where aid for trade can have an impact. Results show that the impact of investment is very large (a 10% increase in investment is associated by an increase in the openness ration of more than 4% of GDP), but significant only for imports (and openness). The impact on imports may be due to the fact that investment requires imported inputs in the following years. These results support the argument that imports of capital goods boost economic growth through their impact on total factor productivity and this impact is larger when the macroeconomic environment is favourable and access to credit is relatively easier (Stone and Shepherd, 2011).

Interestingly, if the investment affects imports, the quantity and quality of labour (proxied by the size of the labour force and labour productivity) are statistically highly significant for exports (and openness). A 10% increase of labour productivity increases exports as a share of GDP by more than 3 percentage points. As for investment, complementary policies are crucial. Policies affecting the labour market and education policies have a very large impact on export performance and trade expansion. This is consistent with other cross-country work such as Chang *et al.* (2009) or Bolaky and Freund (2008) discussed in the previous chapter.

In sum, results show the complexity and interaction of the binding constraints' impact on trade. The most binding constraints to exports differ from the most binding constraints to imports. Nonetheless, experimentation shows that despite recent trade liberalisation, a cut in tariffs can still boost export and import performance. The negative impact of customs tariff on trade expansion appears limited compared to the impact of electricity issues (reliability more than availability), but also transportation constraints (in this case it seems that availability is more a problem than quality) and access to credit. Moreover, the results confirm the importance of complementary and compatible policies (such as education, governance, the business environment, and macroeconomic stability are very important) for trade expansion and economic growth as they affect factors that have a large trade effect on trade performance such as investment, labour productivity, and labour participation.

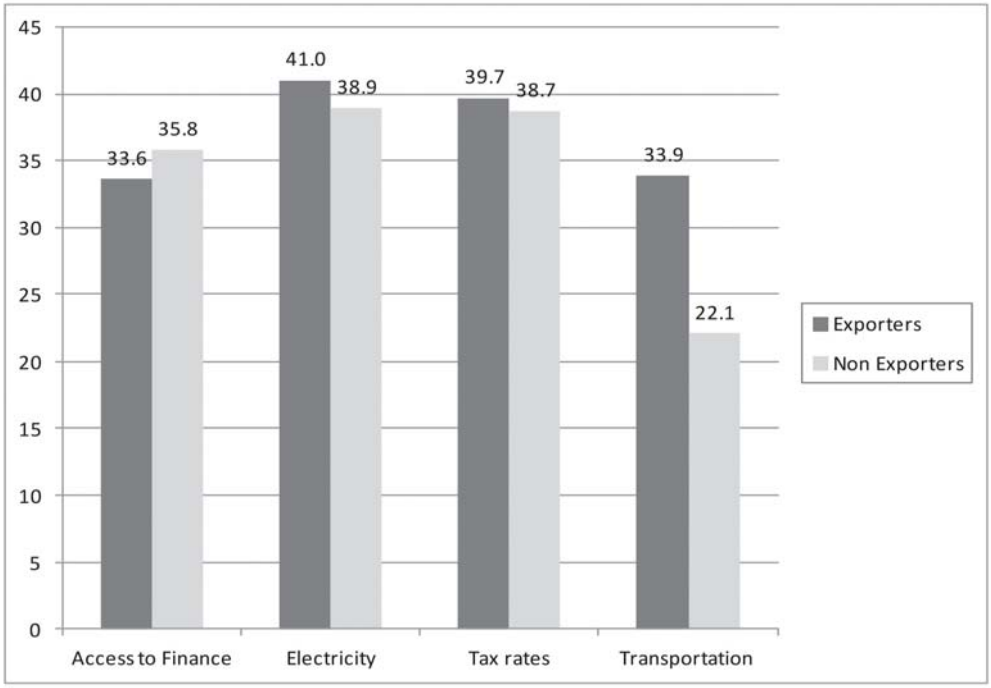
Results for landlocked countries

Table 2.2 shows that landlocked countries face special constraints that reduce their trade integration significantly. According to these results, being landlocked reduces a typical country's openness ratio by 5 percentage points. The impact is particularly important on exports, which are lower by 7 percentage points compared to average ODA eligible countries. This section will try to identify how the binding constraints faced by landlocked countries are specific.

There are 44 landlocked countries in the world, of which 33 are ODA eligible. This limited number poses a serious constraint for the econometric work as there are only a few observations. This problem is compounded by the fact that data availability is a serious problem for many landlocked countries (notably African landlocked countries) and that data for many landlocked countries are only available since the early 1990s as several countries became independent only recently (*e.g.* the central Asian countries) or after a partition (*e.g.* Ethiopia).[12] The immediate implication is that the regression model for landlocked countries is much more streamlined than for the unrestricted sample. Despite the simplified specification of the model tested, data availability limits the sample to 11 countries (Annex A). Therefore, the case studies focus on two landlocked countries: Uganda and Azerbaijan.

Figure 2.2 Survey results of business constraints in landlocked countries

(% of firms mentioning the topic as a constraint)



Source: Authors' calculations based on World Bank (2010)

According to the *Enterprise Surveys*, the ranking of the main binding constraints to exporters in the landlocked countries is similar to those of the unrestricted sample. Electricity is the main problem followed by tax rates, access to finance, then

transportation (Figures 2.1 and 2.2). However, with the exception of electricity, these problems appear more severe as more firms complain about them. Another difference is transportation: while both exporters and non-exporters complain more about transportation constraints than in the unrestricted sample, this affects exporters much more. This suggests that the transportation issue (in terms of cost and time) is more severe in landlocked countries because of domestic infrastructure and because of the infrastructure in the transit country. Except for tax rates (due to data availability), the econometric work will focus on verifying if these constraints indeed explain the lower degree of openness of landlocked countries.

For landlocked countries, as for other developing countries, both imports and exports contribute to economic growth (Table 2.2). While caution is required in interpreting the impact of trade variables on economic growth, this impact is slightly larger in landlocked countries than in the general sample of countries. An increase by 10 percentage points in the openness ratio results in an increase of the growth rate of 1.6% compared to 0.8%-1.1% for the unrestricted sample. This result holds for both exports (1.7% compared to 0.5%-0.7%) and imports (1.8% compared to 1.1%).

Poor policies are partly responsible for the weak trade performance of landlocked countries

The weak trade performance of landlocked countries is due in part to poor domestic policies. Restrictive trade policy (measured by import tariffs) seems to have a larger impact on landlocked countries than on average.[13] The impact on openness and imports into these countries is larger than for the unrestricted sample, and the estimated coefficient is statistically significant. Reducing import tariffs by 10% would increase the openness ratio and the import ratio by almost 0.2 percentage point. A reduction of 10% of the customs tariff would increase the export ratio by 0.1%, slightly less than for the unrestricted sample. However, this result is not statistically significant. The trade impact of tariffs remains low and, as illustrated in the case of Uganda (see Chapter 3), tariffs are not the most binding constraint to trade expansion and lowering their levels will have a limited impact if it is undertaken in isolation *i.e.* without other supporting reforms.

Another symptom of the impact of poor policies on trade performance pertains to an inadequate macroeconomic environment. Results show that the impact of exchange rate mismanagement is more significant and much larger than for the unrestricted sample and affects the three trade ratios considered. A 10% appreciation of the real effective exchange rate would lead to a drop of almost 1 percentage point of all three ratios. This result is robust to changes in the specifications (Annex B).

What about the impact of fiscal policies? Data problems and the limited size of the sample prevented us to run meaningful regressions using the government spending data used in the unrestricted sample. Although estimations are fragile due to the low number of observations, the first column in Table B.5 in Annex B presents this variable in a different specification. The impact of the real effective exchange rate is broadly unchanged, while government spending has a negative and significant impact on trade performance. In contrast to the estimations for the unrestricted sample, government spending has a much smaller impact on trade performance than exchange rate policies. Moreover, the impact of government spending is about eight times smaller than for the unrestricted sample for openness and exports, and five and half times smaller for imports.

Alternative fiscal variables, namely "gov_spending_imf" and "gov_revenue_imf" (defined in Annex A) have been tested to limit the loss of observations for more robust estimates. Results presented in Table B.6 in Annex B confirm that the negative impact of government spending on trade is more limited than the impact of the real effective exchange rate's level (the estimated coefficient of real effective exchange rate are robust to the change in specifications). Moreover, the two fiscal variables have a small and statistically insignificant impact.

Data limitations prevented us from having a close look at all complementary policies. It was impossible to run regressions using the productivity and size of the labour force. Property rights appear to have a small and positive impact (but not statistically significant). However, these findings (not shown) are fragile due to the low number of observations.

Table 2.2 Results for landlocked countries

	Openness	Exports	Imports
Loggdp1	0.012	-0.013	0.028
	(0.024)	(0.026)	(0.031)
l_roadkm2	0.092***	0.070*	0.152***
	(0.028)	(0.038)	(0.035)
l_roadpaved	-0.181***	-0.191***	-0.251***
	(0.043)	(0.050)	(0.048)
l_air_trans_carr_dep	-0.047	-0.191	-0.251***
	(0.055)	(0.059)	(0.048)
l_electric_cons_percap	0.180***	0.397***	0.058
	(0.027)	(0.031)	(0.039)
l_dom_credit	-0.040	-0.054	-0.026
	(0.041)	(0.049)	(0.048)
Simple_average3_mfn	-0.016***	-0.011	-0.018**
	(0.005)	(0.008)	(0.008)
l_gfcf1	0.461***	0.306***	0.533***
	(0.071)	(0.085)	(0.111)
l_reer	-0.922***	-0.860***	-0.843***
	(0.131)	(0.214)	(0.231)
Constant	-10.77***	-12.43***	-10.66***
	(0.764)	(1.005)	(1.089)
Observations	66	67	66
R-squared	0.922	0.949	0.780
Trade variable in growth estimate	0.163	0.173	0.179
	(0.189)	(0.193)	(0.217)

It was possible to look at the impact of access to credit. Results (Table 2.2 and Table B.6) suggest that access to credit is not a significant constraint to trade expansion in

landlocked countries. As inland transportation problems and costs are often perceived as a major constraint to trade in landlocked country, it is interesting to note that Raballand and Macchi (2008) find evidence that access to credit does not seem to prevent the adequate supply of trucks in African landlocked countries (there is actually an oversupply in most countries). However, the results point to the importance of access to credit on economic growth: if access to credit does not have impact on growth through trade, the direct impact of access to credit is large and significant with an estimated coefficient of 0.13.

Investment is sensitive to the macroeconomic environment, access to credit, governance issues, and the business environment. Estimations show that policies conducive to higher investment would have a sizable (and statistically significant at the 99% confidence level) impact on trade performance. A 10% increase in the investment rate results in an increase in the openness ratio of almost 5 percentage points. As for the unrestricted sample, this impact is larger for imports than for exports.

In sum, results show that better domestic policies would make an important contribution to landlocked countries' trade performance. Restrictive trade policies (measured by the customs tariff) seem to have slightly more impact on trade performance of landlocked countries than in other countries. Better macroeconomic policies would also contribute to better economic performance. In this context, the focus should be more on exchange rate policy than on fiscal policy. Policies fostering investment will also have an impact. This impact is large and slightly smaller compared to the unrestricted sample. Turning to policies that appear to have no impact on trade performance, in contrast to the results for the unrestricted sample and results from the *Enterprise Surveys*, access to credit does not appear to explain the poor trade performance of landlocked countries. Although the results are fragile there is evidence that this is also the case for fiscal policy.

Infrastructure alone is not sufficient : The importance of complementary policies

Exporters in landlocked countries rank electricity as their main business constraint (Figure 2.2), although it is perceived as less a severe constraint than in other countries: 41% of firms in landlocked countries report electricity as a constraint compared to 49% in SVEs and 46% in commodity exporters.

In contrast with the results for the unrestricted sample, availability of electricity is more a constraint than its reliability. Because of data problems, the estimation for the impact of the reliability of electricity is based on a very small number of observations and the results are fragile (Table A.5, Annex A). Reliability of electricity is a statistically significant problem only for imports. In contrast, availability of electricity is a large and statistically significant constraint to trade, particularly for exporters. Tables 2.2 and B.5 (Annex B) show that a 10% increase in the availability of electricity would result in an increase of the openness ratio by 2 percentage points and the exports-to-GDP ratio by 4 percentage points (these estimates are significant at the 99% confidence level), but of less than 1 percentage point of the imports-to-GDP ratio.

Transportation problems are reported to be a more severe constraint in landlocked countries than in any of the other country groups (Figures 2.1 to 2.3 and 2.9). However, "transportation problems" is a term which can define many different issues.

First, transportation can be a problem because of relatively high *transport costs* arising from the long distance to a seaport. Landlocked countries typically face longer inland transportation than other countries. This is an important consideration given that overland distances are more onerous than sea distances because of the higher cost per mile. However, one should note the large variability in the overland distance to the sea faced by landlocked countries. For example, central Asian countries are far more remote from the sea than other landlocked countries (Grigoriou, 2007). Nevertheless, Limão and Venables (2001) have shown that landlocked situations increase transport costs by more than what can be explained by the additional distance alone. Indeed, they emphasised that distance explains only 10% of changes in transport costs.

Second, transport can be problematic as a result of *poor infrastructure.* According to Limão and Venables (2001) poor road infrastructure represents 40% of the transport costs predicted for coastal countries and 60% for landlocked countries. In addition, port infrastructure and efficiency, and the transportation infrastructure in a transit country can pose difficulties (Hummels, 2001; Grigoriou, 2007; Raballand and Macchi, 2008; Raballand *et al.,* 2008; Djankov *et al.*, 2010 and OECD, 2011). A key factor for trade is the road corridor linking the main economic centre of a landlocked country to the seaport. The impact of the road corridor, an important component of aid for trade (OECD/WTO, 2009), is not captured by the variable used here.

Third, transportation problems can refer to costs associated with the *time needed to trade* and the uncertainty related to it. This implies both a hedging and a depreciation cost in addition to a barrier to export diversification (since a landlocked country normally cannot engage in the production of time sensitive goods or of components for internationally fragmented manufacture (Hummels, 2001; Grigoriou, 2007; Raballand and Macchi, 2008; Raballand *et al.,* 2008). The findings of Freund and Rocha (2010) provide a useful quantification of the time cost of trade, estimating the impact of time on exports of 44 sub-Saharan African countries using a gravity model. The authors show that it is incorrect to assume that a one day delay affects exports the same way no matter when it occurs. More specifically, they distinguish three sources of delays: inland transit, documentation, and ports and customs delays. They find that the negative impact on trade from transit delays is nearly four times larger than delays due to documentation or to ports and customs. Reducing by one day the inland travel time leads to a 7% increase in exports for all countries, but to a 9% increase in exports for African landlocked countries. They explain this finding by the fact that in addition to delay costs, there is a cost associated with the uncertainty of the delay. They conclude that the "problem for inland transit lies in the quality and security of the roads, border delays and the efficiency of security checkpoints, the age of the truck fleet and competition in trucking. These are factors that are more closely linked with institutions than geography." This highlights the potential of trade facilitation programmes.

Fourth, and related to the time cost of being landlocked and the findings of Freund and Rocha, is the problem of time spent at *official and unofficial roadblocks* (including border crossings) *as well as unofficial payments*. These costs can be very large, as shown in Grigoriou (2007) and Raballand *et al.* (2008).

Finally, even if infrastructure is of good quality in both the landlocked country and the transit country and transport is free of roadblocks and unofficial payments, transportation may remain a problem because of inadequate logistics, inefficient regulations or uncompetitive practices. For example, in a study on the impact of road corridors in Africa, Raballand and Macchi (2008) show that road construction and

improvements, often financed by foreign aid, helped to reduce inland transportation time faced by traders in landlocked countries and contributed to reducing transport costs. However, administrative time remains a problem and, because of lack of competition and regulation to protect trucking operators in landlocked countries, the reduction in transport costs was not passed on to customers. In other terms, infrastructure investment reduced the transport cost but did not result in a significant change in transport prices, which is the trade cost faced by importers and exporters in landlocked countries. Moreover, logistics services are crucial and can be problematic in many countries. Hoekman and Wilson (2010) summarise the issue as follows: "While improved infrastructure is clearly a priority in many countries, investment in infrastructure must be accompanied by measures that reduce trade costs and by appropriate regulation—for instance, policies that promote competition in transport services and improvements in border management. The quality of public and private services can be an important determinant of the size of the payoffs to improvements in hard infrastructure. In addition, the efficiency, variety and costs of services inputs are critical for the competitiveness of firms and farmers because they represent an important share of the total costs of production."

Due to data limitations, econometric work cannot analyse the relevance and relative importance of the many explanations of why landlocked countries trade much less than is explained by distance to the sea and why transportation is a major problem for them.[14] This issue would warrant a study of its own.[15]

In this chapter, we focus on the impact and role of transportation infrastructure, which is found to be a significant constraint to trade in the unrestricted sample and to have an important impact on economic growth. For landlocked countries, it is necessary to realise that transportation infrastructure covers both domestic infrastructure that the landlocked country's government can change, as well as infrastructure in transit countries and at ports, which the landlocked country government cannot change. For this reason, but also because we try to identify the supply-side constraints that government can address, we will focus on the *domestic* infrastructure, keeping in mind that the literature has shown that transit infrastructure has a major impact on landlocked countries' trade. This is illustrated in the Uganda case study presented in the next chapter.

Table 2.2 suggests that *domestic* transportation **infrastructure is not a** significant constraint to landlocked countries' trade, be it imports or exports. As mentioned above, this conclusion was also reached by Agboghoroma *et al.* (2009) for all types of countries. But, as this result contrasts with the findings for the unrestricted sample and has strong policy implications, including for the design of aid-for-trade projects and programmes, the robustness of these results has been checked with the use of as many variables as possible. These alternative estimations are presented in Annex B and show that this conclusion is robust to alternative transportation variables and specifications.

First, we focus on alternative road variables (Table B.7, Annex B). Considering road quality (percentage of roads that are paved) instead of road quantity (density of the road network), increases the number of observations and shows a bigger impact of trade on economic growth. The insight on the importance of domestic policies remains valid. However, quality of roads appears to have not only a minimal but also a negative impact on trade. Considering simultaneously the two road variables does not affect the conclusion about the importance of domestic policies but shows the robustness of the results presented in Table 2.2. The impact of road quantity on trade increases

dramatically and becomes highly significant on all three trade variables. However, the impact of road quality remains negative (and significant) offsetting the impact of road quantity. Alternative specifications such as adding electricity variables and fiscal variables (Tables B.5 and B.6) provide additional evidence of the robustness of the conclusion to different specifications: results do not show any significant impact of *domestic* road infrastructure on landlocked countries performances whatever the variable considered or the specification.

Second we look at the impact of alternative modes of transportation. Looking beyond the domestic road infrastructure, what is the impact on trade and growth of other transportation infrastructures such as air and rail? Air-shipment could be a means for landlocked countries to bypass inland and shipment problems, to trade more quickly and thus to diversify exports into some perishable and time sensitive exports. However, air transportation is rarely used to trade in most developing countries and there is scant evidence of the role this mode of transportation has played in boosting landlocked countries' trade. One of the few examples is the rapid increase in the 2000s of (airlifted) cut flowers exported by Uganda and Ethiopia. Uganda's exports of flowers were such a success in the late 1990s and early 2000s that they prompted Ethiopia to enter the market. Flower exports, which were only the 54th largest export product of Ethiopia in 2001, became the 4th largest in 2008. Uganda's exports of cut flowers collapsed after 2003 because of the combined effect of a sharp increase in the oil price and thus in transport costs and because of emerging competition of high quality flowers from Ethiopia. Ethiopia's exports were not affected by the oil price shock because of their high quality and thus higher commercial value, but also because of government subsidies and foreign aid support (Easterly and Reshef, 2010). Table 2.2 suggests that air transport infrastructure does not represent a significant constraint to trade. Considering air transport as the only transportation variable leads to a big increase in the number of observations (Table 2.3) and provides greater confidence in this finding.

Rail appears to be a better alternative transport mode than air for landlocked countries, at least for Central Asia. Grigoriou (2007) as well as Raballand *et al.* (2005) have shown that railroads are crucial for Central Asia's trade, although the rail density is particularly small for the region. Indeed, approximately 90% of total freight transport in Central Asian countries during 2000 was by rail. Table 2.3 suggests that rail infrastructure has a positive and highly significant impact on openness only through its impact on imports. Considering, in addition to the rail infrastructure, road quantity or road quality (not shown) leads to an offsetting effect. The combined impact of road and rail infrastructure is close to zero, providing additional evidence that domestic transportation infrastructure does not explain the trade performance of landlocked countries.

Table 2.3 Results for landlocked countries (rail and air variables)

	Air infrastructure			Rail infrastructure		
	Openness	Exports	Imports	Openness	Exports	Imports
Loggdp1	-0.039**	-0.024	-0.054**	-0.039**	-0.037*	-0.059***
	(0.019)	(0.023)	(0.023)	(0.017)	(0.019)	(0.021)
l_air_trans_carr_dep	-0.013	0.033	-0.064			
	(0.034)	(0.046)	(0.045)			
l_railkm2				0.075***	-0.050**	0.181***
				(0.026)	(0.025)	(0.033)
l_electric_cons_percap	0.219***	0.364***	0.134***	0.155***	0.434***	-0.020
	(0.020)	(0.028)	(0.024)	(0.024)	(0.027)	(0.034)
l_dom_credit	-0.039	-0.085**	-0.000	-0.129***	-0.124***	-0.180***
	(0.029)	(0.041)	(0.035)	(0.035)	(0.039)	(0.048)
Simple_average3_mfn	-0.009**	-0.013*	-0.006	-0.014**	-0.006	-0.016**
	(0.004)	(0.008)	(0.005)	(0.005)	(0.009)	(0.007)
l_gfcf1	0.331***	0.222**	0.367***	0.676***	0.496***	0.885***
	(0.055)	(0.087)	(0.078)	(0.082)	(0.092)	(0.112)
l_reer	-0.650***	-0.711***	-0.571***	-0.588***	-0.607***	-0.552***
	(0.145)	(0.196)	(0.134)	(0.116)	(0.195)	(0.131)
Constant	-12.55***	-14.40***	-12.39***	-12.86***	-15.80***	-11.90***
	(0.839)	(1.108)	(0.896)	(0.723)	(0.872)	(0.890)
Observations	153	154	154	59	60	59
R-squared	0.835	0.841	0.632	0.933	0.966	0.830
Trade variable in growth estimate	1.176	1.077	1.341	0.755	0.725	0.804
	(0.936)	(0.903)	(1.059)	(0.469)	(0.481)	(0.510)

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Results for small and vulnerable economies (SVEs)

The sub-sample for SVEs is heterogeneous in the sense that it is represented mainly by a group of landlocked countries and island nations. This also implies that there is some overlap among the countries that are included in the landlocked and SVE groupings. No official definition of SVEs exists. At the Hong Kong Ministerial, 28 WTO members defined themselves as SVEs (WTO, 2005b). They are heterogeneous in terms of world market share or population. This section establishes objective criteria to define SVEs which should cover the signatories of the Hong Kong Communiqué. Following the logic exposed in Corrales-Leal *et al.* (2007), we defined SVEs as countries whose share in global market does not exceed 0.12% and whose population does not exceed 15 million.[16] According to these criteria 61 ODA eligible countries are

defined as SVEs. Data availability allowed for an econometric simulation for 36 of these countries (Annex A).

The specific trade-related issues faced by SVEs

Core results presented in Table 2.1 show that SVEs tend to have larger openness ratios by about 2.5% of GDP compared to other countries. This is because of their small size, which limits the diversification of production and requires imports resulting, other things being equal, in a larger import-to-GDP ratio. As imports need to be paid for, these results in a larger than average export-to-GDP ratio.

What are the specific trade-related needs of SVEs? According to the signatories of the Hong Kong Communiqué, SVEs have many trade-related needs in common "such as minimal share of total world trade; physical isolation, geographical dispersal and distance from the main markets; high transport and transit costs; small, fragmented and highly imperfect markets; minimal or no export product diversification; dependency upon very few export markets and lack of adequate market access opportunities; high degree of vulnerability; low competitiveness; considerable difficulties to attract foreign investment; and susceptibility to natural disasters" (WTO, 2005b). Calì and te Velde (2009) argue that domestic market size is limited due to the small population. As a result, most of the firms in SVEs cannot benefit from economies of scale and face problems in innovation. The small size problem is compounded by the fact that most SVEs are remote from the main markets. Most SVEs have a poor investment climate, weak institutions, and lack skilled labour or adequate human capital, which also limit access to external capital and constrain industrial development.

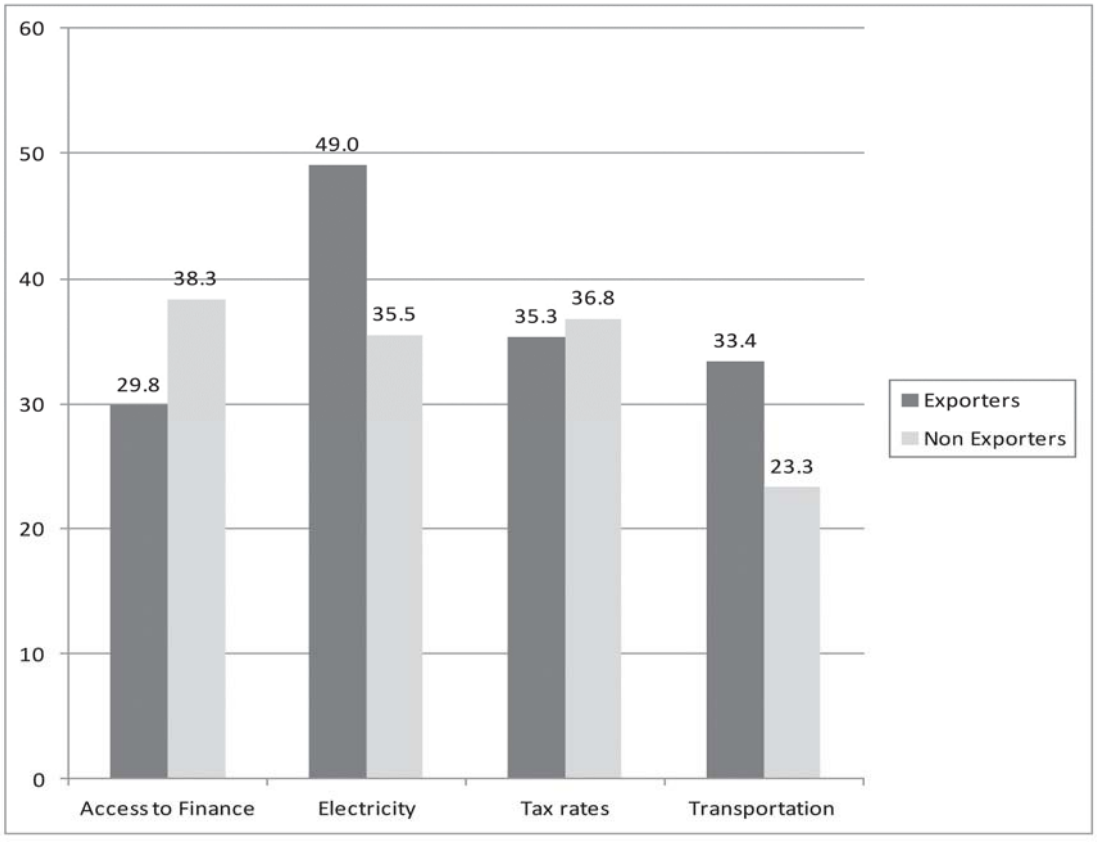
The competitiveness of SVEs in world markets is thus affected by high unit production costs for firms in these countries. In addition, the condition of many small states that are remote and landlocked or insular means that transportation and time costs are high. As a result, SVEs typically have a strong export concentration because they tend to be excluded from the trade of time-sensitive goods and from a major source of growth in international trade: the production of internationally fragmented product parts.

There is a link between the challenges of being small and being vulnerable. As indicated in Hallaert and Hayashikawa (2011), there is strong empirical evidence that export concentration has a negative impact on economic growth. On the export side, this is due to the fact that it is more difficult to face the volatility of international markets when the export basket is limited. On the import side, because small economies depend more on trade than larger economies and do not have the domestic capacity for import substitution, it is difficult to absorb the fluctuations in international prices.

Turning to the exporters' perception of the main business constraints (Figure 2.3), as for other country groupings, electricity is the most severe problem reported by exporters of SVEs. The severity of the electricity problem in SVEs appears to be larger than for any other group: 49% of exporters mention it as the main constraint compared to 41% for landlocked countries or 46% for commodity exporters. Transportation problems appear more severe than average and only smaller than in landlocked countries, while access to credit appears to be less of a constraint on exporters' activities than average (but more severe on non exporters).

Figure 2.3 Survey results of business constraints in small and vulnerable economies

(% of firms mentioning the topic as a constraint)



Source: Author's calculations based on World Bank (2010)

Trade : A necessity and an engine of growth for SVEs

SVEs are open to trade by necessity. Their small size limits their production capacity and domestic market while exports can be a way to extend the market size and to benefit from economies of scale. Core results presented in Table 2.4 show that the consequences of being small and often remote from the main market have a severe impact on trade performance.

- Export concentration reduces considerably SVEs' openness. This coefficient is highly statistically significant. Calì and te Velde (2009) calculate that for most economies in the Pacific and Caribbean regions, the combined share of the two most important commodities/services is over 50% in total exports of goods and services. Measured by the Herfindhal index calculated at HS-4 digits level, SVEs' export concentration during 2000-2007 reached on average 0.176 which is much higher than the concentration index for all non-SVEs (0.145) or LDCs (0.127). [17]

- The small size of the labour force is another major, and statistically significant, constraint. A 10% increase in the labour force increases the openness ratio by at least 3% of GDP. Alternative specifications show an impact that can be as high as 5% of GDP. Productivity per worker, when added to the model, cut by half the

number of observations. Results are thus more fragile, but suggest that the impact of increased productivity though positive is small and statistically not significant.

This does not imply that trade cannot be a source of growth. On the contrary, estimates show that increasing by 10% the SVEs' openness ratio increases their economic growth rate by 0.6% to 1.1% and is often significant at the 90%-95% confidence level (Table 2.4 and Annex B). This impact, which is robust to various specifications,[18] is similar to the one reported for the unrestricted sample.

Infrastructure is a key determinant of SVEs trade performance

Transport infrastructure. It is widely assumed that transport infrastructure is crucial to address the geographical remoteness of many SVEs, which are a source of high transportation costs and the long time needed to trade, which lead to high export concentration. Estimations confirm the crucial importance of transport infrastructure for trade performance. A 10% increase in paved roads increases openness by 3% to 5% of GDP. This result, which is highly significant, is very large (4 to 5 times larger than for the unrestricted sample) and appears to be larger for imports than for exports, although it still remains substantial for the latter. Table B.8 in Annex B shows that the trade impact of road infrastructure is not limited to the quality but depends also to a lesser extent on its quantity. A 10% increase in road density increases openness by about 2% of GDP. This impact is statistically significant and again appears larger on imports than on exports, and is twice as large as for the unrestricted sample. In contrast, air transport infrastructure does not appear to have an impact (not shown). The impact of roads on growth is substantial: a 10% increase in the quality of roads is estimated to increase the economic growth rate by almost 0.4%, of which 30% is due to the impact through trade.

Electricity. Table 2.4 shows that the impact of the availability of electricity is only significant for exports and is much smaller than the impact of road infrastructure. Table B.9 suggests that the problem is, as for the unrestricted sample, associated with reliability. The impact is very large (almost equal to the impact of road quality) and significant, affecting mostly exports. An illustration of the impact of electricity is provided in Box 2.1.

Telecommunication infrastructure. While the telecommunications infrastructure does not appear to explain trade performance in the unrestricted sample, it contributes to SVEs trade performance. This may be because telecommunications help overcome problems of geographical remoteness. Table B.10 (Annex B) shows that expanding the number of fixed telephone lines per 100 inhabitants increases the trade openness ratio by 0.2% because of its large impact of 0.4% on the export ratio. The impact is statistically significant. Other telecommunications variables, such as the number of cell phone subscribers per 100 inhabitants or the total number of phones (fixed and mobile) per 100 inhabitants, have been tested but their impact is not statistically significant. This is perhaps because the development and diffusion of mobile telephones occurred late in the period under consideration. However, the overall impact of the telecommunications infrastructure remains limited not only on imports but also on economic growth: a 10% increase in the telecommunications infrastructure is estimated to increase economic growth rate by 0.03%, of which about half is through trade.

Domestic policies : Diversification and access to credit in SVEs

A supportive macroeconomic environment is essential for the sustainability of trade reform (see Chapter 1). While the impact of mismanagement of the exchange rate has a significant negative impact on export performance of countries in the unrestricted sample and of landlocked countries, its impact appears more limited in the case of SVEs and is not statistically significant. The impact of government spending remains significant at the 99% level of confidence and its magnitude is larger than for the unrestricted sample. This may reflect the impact of taxation which is reported by exporters as a major constraint to their activities (Figure 2.3).

While cutting tariffs in landlocked countries (and for the unrestricted sample) has a small but statistically significant impact on both exports and imports, it has virtually no impact for SVEs. This result is robust when considering applied tariff rather than MFN tariffs and is not explained by the fact that the tariff rate is very low or lower than in other countries (over the period 1981-2009, the simple average tariff for the SVEs was 16.5% compared to 15.5% for the landlocked and 21.5% for the unrestricted sample).

Core results highlight that focusing on complementary policies will have the biggest impact. The main binding constraint is export concentration. All policies (including aid for trade) that help to build productive capacities are likely to have a large impact. Hallaert and Hayashikawa (2011) show that making export diversification one of the main objectives of aid for trade is economically grounded as literature provides evidence that export diversification helps limit volatility, which has a negative impact on economic growth.

Table 2.4 Results for small and vulnerable economies

	(1)			(2)		
	Openness	**Exports**	**Imports**	**Openness**	**Exports**	**Imports**
Loggdp1	-0.135*	-0.120	-0.166***	-0.163	-0.209	-0.145
	(0.071)	(0.095)	(0.062)	(0.117)	(0.160)	(0.105)
l_roadpaved	0.328***	0.219	0.383***	0.495***	0.422**	0.538***
	(0.121)	(0.147)	(0.110)	(0.162)	(0.031)	(0.151)
l_electric_cons_percap				0.082	0.175*	0.016
				(0.075)	(0.095)	(0.077)
l_dom_credit	0.309**	0.304*	0.313***	0.360**	0.366*	0.343**
	(0.127)	(0.157)	(0.111)	(0.155)	(0.202)	(0.132)
Simple_average3_mfn	0.003	0.003	0.005	-0.003	-0.001	-0.004
	(0.010)	(0.013)	(0.009)	(0.025)	(0.029)	(0.022)
l_gfcf1	0.390*	0.466*	0.379**	0.157	0.067	0.215
	(0.202)	(0.259)	(0.179)	(0.311)	(0.365)	(0.294)
l_property_rights	0.127	0.531**	-0.0673	0.129	0.589***	-0.0485
	(0.162)	(0.210)	(0.149)	(0.168)	(0.224)	(0.159)
l_l_force	0.301**	0.412**	0.255**	0.341*	0.600**	0.232
	(0.138)	(0.166)	(0.124)	(0.185)	(0.237)	(0.170)
l_reer	-0.420	-0.475	-0.241	-0.910	-0.864	-0.784
	(0.437)	(0.568)	(0.385)	(0.566)	(0.716)	(0.512)

l_government_spending	-2.108***	-2.313***	-1.926***	-2.264***	-2.448**	-2.145***
	(0.662)	(0.744)	(0.607)	(0.803)	(0.964)	(0.727)
l_herfindhal	-0.654**	-0.615*	-0.738***	-1.107***	-0.839*	-1.328***
	(0.266)	(0.313)	(0.278)	(0.403)	(0.498)	(0.465)
Constant	-9.345***	-12.460***	-9.691***	-7.676**	-12.160**	-7.679**
	(3.104)	(4.107)	(2.650)	(3.815)	(5.274)	(3.382)
Observations	174	177	175	123	123	124
R-squared	0.323	0.259	0.371	0.396	0.326	0.441
Trade variable in growth estimate	0.099**	0.119	0.091**	0.060*	0.068*	0.058**
	(0.0477)	(0.072)	(0.038)	(0.061)	(0.072)	(0.061)

Access to credit is, after export concentration and transport infrastructure, the third largest constraint to trade performance. Its impact is large and larger than in the unrestricted sample. A 10% increase in credit to the private sector would increase all trade ratios by 3% to 4% of GDP. In contrast with the findings for the unrestricted sample, the impact of deepening the financial sector increases exports and imports ratios. Finally, the trade impact of improving property rights is similar in magnitude to the unrestricted sample. Improving property rights is particularly important for export performance and could help diversify exports, although, as mentioned above, measures aimed at increasing labour productivity appear to have a limited and not statistically significant impact.

Results for commodity exporters

We define commodity exporters as countries for which raw materials (definition in Annex A) account for more than 45% of goods exported. According to this criterion, 74 countries are commodity exporters (76 if Afghanistan and Iraq are taken into account). For 19 countries, data were available to run the core regressions presented in Table 2.5. The sample is not limited to oil or mineral exporters, but includes countries whose exports are mainly agricultural products. Not surprisingly, 40% of the country sample is also SVEs.

Core results for the unrestricted sample suggest that commodity exporters are less open than other developing countries because of a statistically significant (at the 99% confidence level) smaller ratio imports-to-GDP. This provides a rationale for looking at the specific constraints to trade in this type of countries. The specific constraints that commodity exporters face are recognised by the international community. The Hong Kong Ministerial Declaration states: "We recognise the dependence of several developing and least-developed countries on the export of commodities and the problems they face because of the adverse impact of the long-term decline and sharp fluctuation in the prices of these commodities" (WTO, 2005a).

The World Bank's *Enterprise Surveys* suggest that the main constraints faced by exporters are broadly similar than those expressed for all developing countries both in their ranking and in their magnitude (Figures 2.1 and 2.4). As for other groups, electricity is the main complaint from both exporters and non-exporters (Annex C) with 46% of exporters mentioning it as a constraint. Access to finance comes third in the list of constraints mentioned by exporters, but second for non-exporters. This explains why,

for all firms, access to credit comes second (before the tax rates) on the list of constraints to business. Transportation, which is never mentioned in any commodity exporter as the main constraint, is reported as a constraint for 27.5% of the exporters surveyed.

As expected results show that commodity exporters have a strong export concentration (Table 2.5). This basically captures the specificities of resource-rich countries. While export concentration was expected to have a negative sign for SVEs reflecting the impact of their small size and limited productive base, it is expected to be positive for commodity exporters. Indeed commodity production, notably extractive activities, are often meant to be exported resulting in larger openness ratios. This impact is large and not offset by the fact that through various mechanisms, including the Dutch disease (see Chapter 1), a sharp increase in exports of commodity tends to discourage the development of other tradable goods. Our results report that for commodity exporters the estimated coefficient for export concentration is positive, large, and significant (at the 99% confidence level) for exports but, as expected, close to zero and statistically not significant for imports. This result is robust to all alternative specifications (Annex B). This variable is, therefore, more a control variable than a policy variable in the sense that export diversification would reduce the dependence to a small number of products.[19]

As for all other country groupings, trade is a source of economic growth both through the impact of exports and imports. The impact of trade on economic growth appears to be however smaller in magnitude than for other country groupings. In all specifications (Table 2.5 and Annex B), a 10% increase of the openness ratio is associated with an increase in the economic growth rate below 1%. The relatively low impact of trade on commodity exporters' economic growth is in line with the literature. That countries with great natural resource wealth tend to grow more slowly (the "natural resource curse") is an empirical finding documented by Sachs and Warner (1995, 2001). Collier and Goderis (2007) investigate the short- and the long-term impact of volatility of commodity prices on economic growth and income.[20] Focusing on the period 1970-2004, they document that the natural resources curse is confined to non-agricultural commodities. In particular they find that an increase in commodity prices adds considerably to the economic growth rate in the short term but that this impact is not sustained. After two decades, the typical non-agricultural commodity exporter is producing less than it would have done in the absence of an increase in commodity price. In short, one problem of commodity exporters is that their high export concentration makes them more vulnerable to world commodity prices. This volatility affects economic growth negatively and changes the terms of trade (with a possible Dutch disease effect, see below), which in turn tend to reinforce export concentration.

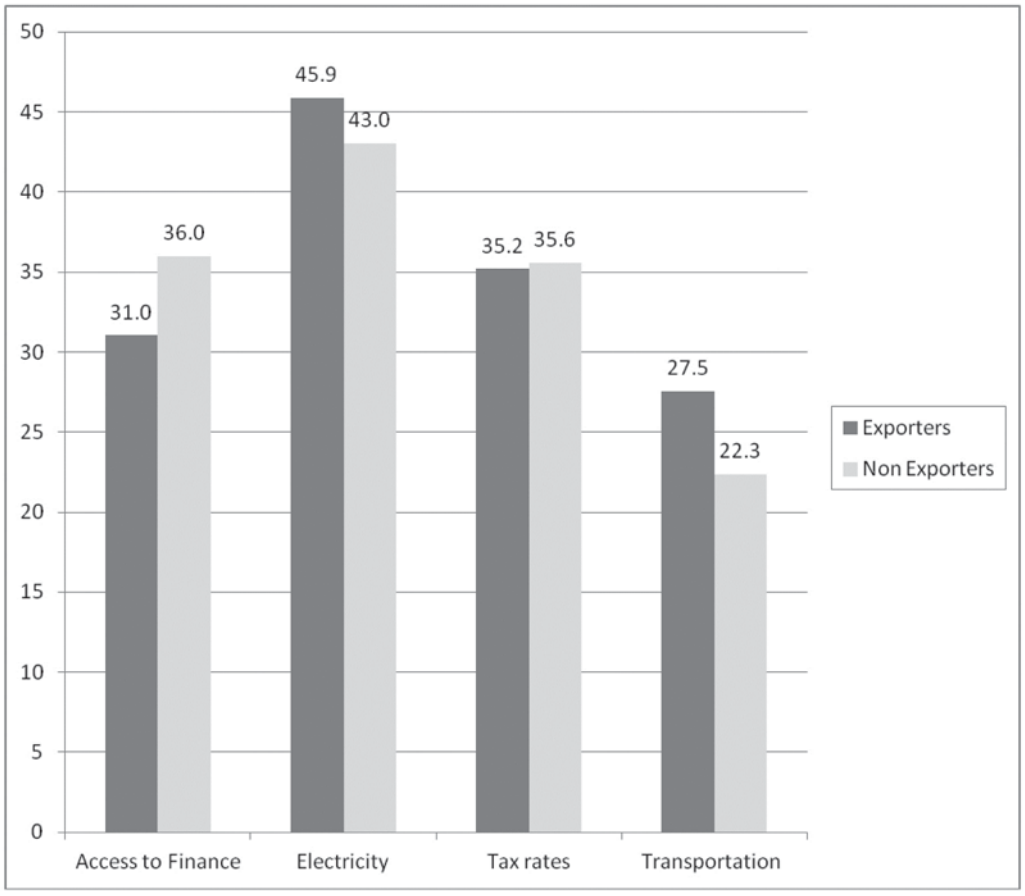
Table 2.5 Results for commodity exporters

	Openness	Exports	Imports
loggdp1	-0.128***	-0.116***	-0.144***
	(0.020)	(0.029)	(0.024)
l_road_paved	-0.044	-0.141***	0.018
	(0.027)	(0.038)	(0.032)
l_electric_cons_percap	0.162***	0.405***	0.004
	(0.032)	(0.047)	(0.035)
l_dom_credit	-0.086**	-0.353***	0.036
	(0.041)	(0.075)	(0.040)
Simple_average3_mfn	-0.025***	-0.023***	-0.023***
	(0.004)	(0.006)	(0.005)
l_gfcf1	0.278***	0.112	0.446***
	(0.067)	(0.111)	(0.073)
l_reer	-0.657***	-0.861***	-0.474***
	(0.162)	(0.299)	(0.175)
l_government_spending	0.001	0.357***	-0.252**
	(0.104)	(0.123)	(0.122)
l_herfindahl	0.590***	1.201***	0.003
	(0.087)	(0.103)	(0.096)
L_teldensity	0.002	-0.006	0.027
	(0.027)	(0.030)	(0.030)
Constant	-8.671***	-9.271***	-9.854***
	(0.762)	(1.467)	(0.785)
Observations	99	100	100
R-squared	0.830	0.843	0.789
Trade variable in growth estimate	0.044	0.035	0.065
	(0.093)	(0.071)	(0.132)

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Figure 2.4 Survey results of business constraints faced by commodity exporters

(% of firms mentioning the topic as a constraint)



Source: Author's calculations based on World Bank (2010)

The trade regime : A significant constraint to both export and import performance for commodity exporters

The tariff regime for commodity exporters is a more severe constraint to trade than for other country groupings. In all specifications, the impact of the MFN import tariff is highly significant at the 99% confidence level and is negative for both imports and exports. A 10% cut in tariffs would increase the export-to-GDP ratio by 0.2-0.6 percentage point and the import-to-GDP ratio by 0.2-0.3 percentage point. This result is robust not only to alternative specifications but to other measures of tariffs. Using applied tariff, all coefficients remain highly significant and a 10% cut would increase the export-to-GDP ratio by 0.4 percentage point and the import-to-GDP ratio by 0.5 percentage point (Table B.11, Annex B).

Infrastructure problem are limited to electricity and constrain only exports

For commodity exporters, electricity problems are due to availability rather than to reliability. This contrasts with the finding for the unrestricted sample and SVEs, but is similar with the results for landlocked countries. A 10% increase in electricity

consumption is associated with an increase of 4 percentage points of the export-to-GDP ratio and of 1.6 percentage points of the openness ratio. This impact is significant at the 99% confidence level. There is no impact on imports (Table 2.5). In contrast, reliability has a much smaller impact that is never statistically significant (Table B.12, Annex B).

Telecommunications infrastructure is statistically insignificant for openness. However, it has a significant impact on economic growth, but this impact is direct and not through trade. A 10% increase in telecommunication equipment is expected to increase the growth rate by over 0.4%, with the impact through trade, although positive, negligible at 0.02%. The estimate is similar if only fixed lines are considered. It is noteworthy that when telecommunication infrastructure is ignored, the results of all coefficients prove remarkably robust but the estimated impact of trade on economic growth decreases significantly (Table B.12). This confirms that the impact of telecommunications on economic growth is direct and not through trade.

Transport infrastructure does not appear to be a constraint to commodity exporters' trade performance: both the impact of the quality and the quantity of roads are usually not statistically significant and are not robust to alternative specifications.

The importance of complementary policies: Promoting investment and improving governance in commodity exporters

Poor governance and the Dutch disease are often put forward as an explanation of the natural resource curse. Collier and Goderis (2007) argue that excess public and private consumption are, along with insufficient investment, the mechanism through which poor governance dissipates the opportunities provided by natural resource revenue. Similarly, Page (2008) argues that "government, through improvement in the investment climate and public expenditures, can mitigate the worst consequence of the Dutch disease." He also argues that successful diversification away from dependence on natural resources was the result of public policies that mitigated the impact of the Dutch disease. In this context, our econometric work provides an interesting perspective.

All policies that seek to boost investment will have a positive impact on trade openness and development. Investment is central to long-term growth and to development in all countries, but is particularly important for resource-rich countries as extraction depletes assets and investment is needed to maintain increased consumption that revenue from natural resource triggered. Moreover, investment that reduces the cost of production and of trading will help mitigate the impact of the Dutch disease.

The picture that emerges from econometric results for commodity exporters is similar to the unrestricted sample but contrasts with the results for landlocked countries and SVEs. While an increase in investment has a statistically significant impact on both exports and imports for landlocked and SVEs, in the case of commodity exporters the impact is only significant for imports. A 10% increase in investment-to-GDP ratio is associated with an increase of 5 to 6% of the imports-to-GDP ratio.

An explanation may be the impact of Dutch disease. A 10% appreciation of the real effective exchange rate is associated with a drop of the openness ratio of almost 7% due to a drop in exports of almost 9%. This strong and significant impact is to be compared with the smaller impact in magnitude of the real effective exchange rate (and statistically insignificant for exports) for the unrestricted sample and to statistically insignificant results for SVEs. However, the impact of the exchange rate on exports is in the upper band of the estimates for the landlocked countries (6% to 9% according to Tables 2.2 and 2.3). Caution is needed in the comparison because the impact of the real

appreciation of the currency, if driven by resource projects (either their large external financing or export receipts), is likely to be more severe for the non-extractive exports.

An important component of investment may be public investment aiming at mitigating the impact of the Dutch disease: by reducing the cost of production and of trading, such investment would offset the impact of the real effective exchange rate appreciation. Our findings may be interpreted as supporting this line of thought as fiscal spending has, for commodity exporters, the usual negative and significant impact on imports, but its impact on exports is generally positive and significant. The result could also be interpreted as a sign of reverse causality: resources from exports of commodities boost the export-to-GDP ratio and provide government with resources to spend. This interpretation is consistent with the fact that resource-rich countries have usually a higher level of public spending than other countries. More work is needed to investigate which interpretation is correct. In particular, further research on this subject need to be related to the governance issue because government spending will improve trade performance only if it reflects productive investment rather than patronage.

Property rights are our usual measure of the way governance affects trade performance and of the business environment that is crucial for investment. For commodity exporters this variable, when added to the core results (not shown), is statistically significant and negative for imports and openness but positive and insignificant for exports. This finding contrasts with the estimate for the unrestricted sample where property rights are always positive for all dependent trade variables, with an impact which is larger on exports. A 10% increase in the property rights variable is associated with an *increase* of 2.3%-2.5% of GDP of the openness ratio for the unrestricted sample but with a *reduction* of 1.2% of GDP in the commodity exporter group. The impact of such an improvement of property rights on economic growth rate is -0.19% for commodity exporters. This *a priori* counterintuitive result is similar to the one of Collier and Hoeffler (2009) and Asiedu and Lien (2011). Collier and Hoeffler (2009) find that democracy (another measure of governance) worsens economic performance in resource-rich countries. They explain this result by the fact that, with large resource revenue, governments do not need to tax and so avoid provoking their citizens into scrutiny. This explanation, although plausible, is at odds with the fact that exporters and non-exporters mention in the same proportion than in other country groupings tax rates as a constraint to their activity. However, findings related to government spending confirm this interpretation. Asiedu and Lien (2011) find that democracy facilitates FDI in countries where the share of natural resources in total exports is low, but has a negative effect on FDI in countries where exports are dominated by natural resources.

Thus, our findings support the literature explaining the natural resource curse. The literature initially emphasised the economic impact of the Dutch disease and more recently focused on the political economy of resource rents. Our results point to the fact that both the impact of overvaluation of the real effective exchange rate and governance play a central role in explaining trade performance of commodity exporters and through trade their economic growth.

Turning to other policies that may promote investment and improve trade performance, it appears that the productivity per worker has a large and highly significant impact on economic growth (a 10% increase in labour productivity is expected to raise the economic growth rate by 1.2-1.3%) and that this impact is direct while the impact through trade is statistically insignificant. Estimates for access to credit

have the wrong sign, which may be due to the fact that many export oriented extractive projects are externally financed. As a result, the econometric result is not necessarily contradictory with the fact that exporters mention access to credit as a constraint to their business: the problem of access to credit may be severe for non commodity exporters, but does not appear in the econometric result if exports are dominated by commodity exporters that are externally financed.

Notes

1 The list of recipients is available in OECD/WTO (2009). For the sake of brevity, Annex A only describes the variables that are mentioned in the report.

2 Explained variables are expressed in percent of GDP.

3 The Doing Business database starts in 2004 (*data.worldbank.org/data-catalog/doing-business-database*).

4 The number of countries refers to core results. The shares are calculated using flows in constant U.S. dollars and exclude from the total Afghanistan and Iraq. Afghanistan and Iraq are large recipients of Aid for Trade but are excluded because they could bias the results. The rationale of aid provided to these two countries is largely affected by the security situation and reconstruction needs they face. If taken into account in the total amount of aid disbursed and committed, the country coverage in this study accounts for 49% of disbursements and 48% of commitments.

5 While it is easy to identify a landlocked country or an island, there is no official definition of small and vulnerable economies or commodity exporters. The definition of these groups is provided in their respective sections.

6 This survey covers more than 120,000 firms in 125 countries of which 103 countries are eligible to receive Aid for Trade. Annex C provides descriptive statistics.

7 Case stories are available at *www.aid4trade.org* and an analysed in OECD/WTO (2011a).

8 To proxy access to credit we use the amount of credit extended by banks and other financial institutions to the private sector as a share of GDP. This variable captures the depth of the local domestic system. It is appropriate for the purpose of our analysis as aid-for-trade support to the banking and financial sector includes trade finance but also capacity building and support for regulatory regime. However, the variable does not capture the non intermediated credit which can be large in some countries and for trade finance (Hallaert, 2011).

9 See also the case story submitted by the Asian Development Bank (ADB, 2011).

10 Total factor productivity is, with investment, one of the main avenues through which trade affects growth. The variable used in this book is labour productivity (not total factor productivity) in order to capture the impact of complementary policies and limit endogeneity problems.

11 Moreover, the two studies focus on different periods and a different country samples.

12 To check if the results were not capturing the transition process, a dummy has been tested. Is impact is marginal and most of the time not significant.

13 See Annex B for the robustness of the various results.

14 The World Bank's *Doing Business* database quantifies many relevant constraints such as the time needed to trade, customs procedures, time, and cost, as well as shipping cost and time, etc. However, these indicators are only available since 2004, a period too short for the econometric work.

15 The issue was discussed extensively at the OECD *Experts Workshop on Aid for Trade Implementation.* See proceedings and presentations at *http://www.oecd.org/dac/aft/expertsworkshoponaidfortradeimplementation28-29march2011.htm*.

16 Putting the population threshold at 10 million would exclude three signatories of the Hong Kong Communiqué namely, Cuba, Guatemala, and Sri Lanka. It has thus been decided to increase the threshold to 15 million to cover all signatories but Sri Lanka, whose population is close to 20 million.

17 Thus simulations need to consider an indicator of volatility. An export concentration index has been preferred over terms of trade because it is a more relevant measure of external risk for aid for trade and policy makers (reducing export concentration is an objective of the initiative while terms of trade are not). Moreover, the two indicators tend to be highly correlated (Rodrik, 1998).

18 This result is robust to alternative transport variables (road as shown in or air transport, not shown), to alternative tariff rates (applied instead of MFN, not shown), and to the introduction of telecommunications infrastructure. The only exception is the change in electricity variable (Annex B).

19 Controlling for the volatility in world commodity prices does not change the conclusion of this section.

20 Volatility of income in countries exporting exhaustible resources has been historically 2–3 times higher than in other economies (Bems and de Carvalho Filho, 2011). Hallaert and Hayashikawa (2011) survey evidence linking negatively volatility in income to economic growth.

References

ADB (Asian Development Bank) (2011), *Trade Finance Program (TFP) - Building Partnerships for Trade*, Aid for Trade Case Story.

AfDB (African Development Bank) (2007), *Djibouti, document de stratégie par pays axée sur les résultats 2007–2010*, African Development Bank / African Development Fund, Tunis

Agboghoroma, A., *et al.* (2009), *Aid for Trade: making trade effective for development — Case studies from Kenya, Tanzania and Uganda*. PricewaterhouseCoopers and Hamburg Institute of International Economics, Hamburg.

Amity, M. and J. Konings (2007), "Trade Liberalization, Intermediate Inputs, and Productivity: Evidence from Indonesia", *The American Economic Review*, vol. 97(5).

Asiedu E. and D. Lien (2001) "Democracy, foreign direct investment and natural resources", *Journal of International Economics*, vol. 84(1).

Aw, B.W., S. Chung, and M. Roberts (2000), "Productivity and turnover in the Export Market: Micro-level Evidence from the Republic of Korea and Taiwan (China)", *The World Bank Economic Review*, vol. 14(1).

Balat, J., I. Brambilla, and G. Porto (2009), "Realizing the gains from trade: Export crops, marketing costs, and poverty", *Journal of International Economics*, vol. 78(1).

Bems R. and de Carvalho Filho, I. (2011), "The current account and precautionary savings for exporters of exhaustible resources", *Journal of International Economics*, vol. 84(1).

Bloom, N., M. Draca, and J. Van Reenen (2011), *Trade-Induced Technical Change? The Impact of Chinese Imports on Innovation, IT and Productivity*, NBER, Cambridge, MA, Working Paper 16717.

Bolaky, B. and C. Freund (2008), "Trade, Regulations, and Income", *Journal of Development Economics*, vol. 87(2).

Calì, M. and D.W. te Velde (2009), *Aid for Trade in Small and Vulnerable Economies*, Commonwealth Trade Hot Topics 59.

Coe, D.T., E. Helpman, and A.W. Hoffmaister (1997), "North-South R&D Spillovers", *The Economic Journal*, vol. 107(440).

Corrales-Leal, W., F. Baritto, and S. Mohan (2007), *Special and Differential Treatment for Small and Vulnerable Countries Based on the Situational Approach*, International Center for Trade and Sustainable Development, Geneva, Issue Paper 2.

Chang, R., L. Kaltani, and N. Loayza (2009), "Openness can be Good for Growth: The Role of Policy Complementarities", *Journal of Development Economics*, vol. 90(1).

Collier, P. and A. Hoeffler (2009), "Testing the Neocon Agenda: Democracy in Resource-rich Societies", *European Economic Review*, vol. 53(3).

Collier, P. and B. Goderis (2007), "Prospects for Commodity Exporters: Hunky Dory or Humpty Dumpty?" *World Economics*, vol. 8(2).

Delpeuch, C., *et al.* (2011), *Aid for Trade: A Meta-evaluation*, OECD, Paris.

Djankov, S., C. Freund, and C.S. Pham (2010), "Trading on Time", *The Review of Economics and Statistics*, vol. 92(1).

Easterly, W. and A. Reshef (2010), *African Export Successes: Surprises, Stylized Facts, and Explanations*, NBER, Cambridge, MA: Working Paper 16597.

EBRD (European Bank for Reconstruction and Development) (2011), *EBRD Trade Facilitation Programme: Results of the Survey of Participating Banks*, Aid for Trade Case Story.

Foch, A. (2011). *La privatisation d'Électricité de Djibouti : un échec stratégique ?* unpublished.

Freund, C. and N. Rocha (2010), *What Constrains Africa's Exports?* World Bank, Washington, D.C., Policy Research Working Paper 5184.

Goldberg, P., *et al.* (2008), *Imported Intermediate Inputs and Domestic Product Growth: Evidence from India*, NBER, Cambridge, MA, Working Paper 14416

Grigoriou, C. (2007), *Landlockedness, Infrastructure and Trade: New Estimates for Central Asian Countries*. World Bank, Washington, D.C., Policy research Working Paper 4335.

Hallaert, J.J. (2006), "A History of Empirical Literature on the Relationship between Trade and Growth", *Mondes en Développement*, No. 135, 2006/3, 63-77.

Hallaert, J.J. (2011), "Why Boosting the Availability of Trade Finance Became a Priority During the 2008-09 Crisis?" Chapter 14 in J.P. Chauffour and M. Malouche *Trade Finance During the Great Trade Collapse,* World Bank,Washington, D.C.

Hallaert, J.J. and M. Hayashikawa (2011), *Trade for Growth and Poverty Reduction: How Aid for Trade Can Help,* OECD, Paris.

Harrison, A., L. Martin, and S. Nataraj (2011), *Learning Versus Stealing: How Important are Market-Share Reallocations to India's Productivity Growth?* NBER, Cambridge, MA, Working Paper 16733.

Hoekman, B. (2011), "Aid for Trade: Why, What, and Where Are We?" Chapter 9 in W. Martin and A. Mattoo, *Unfinished Business? The WTO's Doha Agenda,* World Bank and CEPR: Washington, D.C.

Hoekman, B. and J. Wilson (2010), *Aid for Trade: An Action Agenda Looking Forward*, Economic Premise 25, World Bank, Washington, D.C.

Hummels, D (2001). *Time as a Trade Barrier*. West Lafayette: Purdue University, unpublished, *www.krannert.purdue.edu/faculty/hummelsd/research/time3b.pdf*.

IMF (International Monetary Fund) (2006), *Nepal: 2005 Article IV Consultation—Staff Report*, International Monetary Fund, Washington, D.C., Country Report 06/44.

IMF (International Monetary Fund) (2009), *Djibouti: 2008 Article IV Consultation and Request for a Three-Year Arrangement Under the Poverty Reduction and Growth Facility—Staff Report*, International Monetary Fund, Washington, D.C., Country Report 09/216.

IMF (International Monetary Fund) (2010), *Nepal: Selected Issues*, International Monetary Fund, Washington, D.C., Country Report 10/184.

Krueger, A. (2011), "Aid for Trade", Keynote Address at the "OECD Workshop on Aid for Trade Implementation", *www.oecd.org/dataoecd/40/35/47460701.pdf*.

Krugman, P. (1993), "What Do Undergrads Need to Know About Trade", *The American Economic Review*, Papers and Proceedings, vol. 83(2).

Lamy, P. (2009), "We must keep the foot on the gas on Aid for Trade", Closing Remarks at the Second Global Review on Aid for Trade.

Lerner, A.P. (1936), "The Symmetry Between Import and Export Taxes", *Economica*, New Series, vol. 3(11).

Levine, R. and D. Renelt (1992), "A Sensitivity Analysis of Cross-Country Growth Regressions", *The American Economic Review*, vol. 82(4).

Limão, N. and A. Venables (2001), "Infrastructure, Geographical Disadvantage, Transport Costs, and Trade", *The World Bank Economic Review*, vol. 15(3).

Muendler (2004), *Trade, Technology, and Productivity: A Study of Brazilian Manufacturers, 1986-1998*, CESifo working paper 1148.

OECD (2011), OECD Expert Workshop on Aid for Trade Implementation, 28-29 March, OECD, Paris, *http://www.oecd.org/dac/aidfortrade/expertsworkshoponaidfortradeimplementation28-29march2011.htm*

OECD/WTO (World Trade Organization) (2009), *Aid for Trade at a Glance 2009: Maintaining Momentum*, OECD and World Trade Organization, Paris and Geneva, doi: 10.1787/9789264069022-en.

OECD/WTO (World Trade Organization) (2011a). *Aid for Trade 2011: Results emerging from the case stories,* OECD and World Trade Organization, Paris and Geneva.

Page, J. (2008), *Rowing Against the Current: The Diversification Challenge in Africa's Resource-Rich Economies*, Brookings, Washington, D.C., Global Economy and Development working Paper 29.

Pavcnik, N. (2002), "Trade Liberalization, Exit, and Productivity Improvements: Evidence from Chilean Plants", *Review of Economic Studies*, vol. 69(1).

Raballand, G., A. Kunth, and R. Auty (2005), "Central Asia's transport cost burden and its impact on trade", *Economic Systems,* vol. 29, 6–31.

Raballand, G. and P. Macchi (2008), *Transport Prices and Costs: The Need to Revisit Donors' Policies in Transport in Africa*, Washington, D.C.: mimeo, *http://ipl.econ.duke.edu/bread/papers/0809conf/Raballand.pdf*.

Raballand, G., J.F. Marteau, C. Kunaka, J.K. Kabanguka and O. Hartmann (2008), *Lessons of Corridor Performance Measurement*, Washington, D.C.: World Bank, Sub-Saharan Africa Transport Policy Program, Discussion paper 7.

Rodrik, D. (1998), "Why Do More Open Economies Have Bigger Governments?" *The Journal of Political Economy*, vol. 106(5)

Sachs, J. and A. Warner (1995), *Natural Resource Abundance and Economic Growth*, NBER, Cambridge, MA, Working Paper 5398.

Sachs, J. and A. Warner (2001), "The Curse of Natural Resources", *European Economic Review*, vol. 45(4-6).

Stiebale J. (2011), "Do financial Constraints Matter for Foreign Market Entry? A Firm-level Examination", *World Economy*, vol. 34(1).

Stone S. and B. Shepherd (2011), *Dynamic Gains from Trade: The Role of Intermediate Inputs and Equipment Imports*. OECD, Paris, Trade Policy Working Paper 110.

Topalova P. and A. Khandelwal (2011), "Trade Liberalization and Firm Productivity: The Case of India", *The Review of Economics and Statistics*, vol. 93(3).

Tybout, J. and M.D. Westbrook (1995), "Trade liberalization and the dimensions of efficiency change in Mexican manufacturing industries", *Journal of International Economics*, vol. 39(1-2).

Wang, C., X. Lin and Y. Wei (2004), "Impact of Openness on Growth in Different Country Groups", *The World Economy*, vol. 27(4).

World Bank (2010), *Enterprise Surveys*, *https://www.enterprisesurveys.org*, data accessed in September 2010.

World Trade Organization (2005a), *Ministerial Declaration*, Geneva: World Trade Organization,WT/MIN(05)/DE.

WTO (World Trade Organization) (2005b), *Ministerial Meeting of Small, Vulnerable Economies*, Geneva: World Trade Organization, WT/MIN(05)/22, WT/MIN(05)/22/Add.1, WT/MIN(05)/22/Add.2, and WT/MIN(05)/22/Add.3.

WTO (World Trade Organization) (2006), *Recommendations of the Task Force on Aid for Trade*, Geneva: World Trade Organization, WT/AFT/1.

Yanikkaya, H. (2003), "Trade Openness and Economic Growth: a Cross-Country Empirical Investigation", *Journal of Development Economics*, Vol. 72(1).

Chapter 3

Two case studies in Uganda and Azerbaijan

The insights of the econometric work are supplemented by two case studies: Uganda and Azerbaijan. The case studies aim at providing illustrations of the mechanisms highlighted by the econometric work and the importance of some variables that econometric work could not capture because of data limitations.

Econometric work provides important insights allowing to identify and rank the various binding constraints to trade expansion and to distinguish their impact on both imports and exports. This is crucial for effectively sequencing both trade reforms and aid-for-trade support. However, an econometric approach cannot test all potential binding constraints because of the limited size of some country groupings and because of inherent data problems. For example, the severity of some likely binding constraints such as time to trade, burden of customs procedures, and non-tariff barriers could not be quantified econometrically either because data are not available or only available for a limited time-span or for a limited number of countries. Moreover, although country groupings are designed to capture a crucial specificity, countries within each group are often very different and these other specificities are ignored.

The insight of the econometric work is thus supplemented in this chapter by two case studies that cover all the country groupings considered: Uganda (a landlocked country as well as a small and vulnerable economy) and Azerbaijan (a landlocked country as well as a commodity exporter). The strength of the case study approach lies not so much in its ability to draw generalised findings (this is the strength of the econometric work) as in its ability to gain deeper insight into the binding constraints faced by a country than can be done through cross-country econometric work.

Uganda Case Study

A landlocked, small and vulnerable economy

The experience of Uganda with trade reforms highlights three salient points. First, it is important to identify the most binding constraint to trade in order to adequately sequence the reforms and have a meaningful impact on trade and on growth. This is done by analysing the reasons for the failure of the 1990s reforms and the success of the trade reforms of the 2000s. This comparison illustrates the second point, namely the importance of the complementary policies. The trade reforms of the 1990s did not result in trade expansion and economic growth because they did not address the most binding constraints (they were limited to tariff reforms). This contrasts with the broader reforms of the 2000s, which were successful in leading to a sharp increase in trade and significant export diversification. Third, Uganda shows the importance of factors such as corridors, time costs, regulation of the transport sector, and customs procedures – factors that could not be captured by the econometric analysis of landlocked countries and could throw light on why the transport infrastructure variables did not explain trade performance.

Failure in the past : Tackling the wrong binding constraints

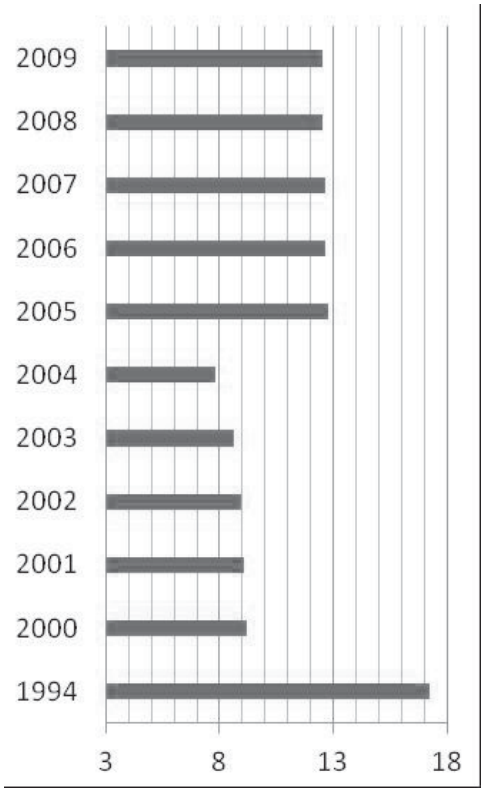
During the 1990s, Uganda substantially liberalised its trade regime, while maintaining macroeconomic stability. The tariff structure was simplified, the average import tariff dropped from 17% in 1994 to 9% in 2000 (Figure 3.1) and taxes on exports were eliminated. While these policy measures were expected to stimulate the economy, economic growth was disappointing.

Uganda's reform in the 1990s illustrates the point made in the previous chapter that some reforms fail because of flaws in their design. In this case the flaw was a mistake in identifying the most binding constraints to trade. Consistent with the econometric results, this disappointing growth impact could be attributed to the fact that the trade

regime was not the main constraint on trade. One of the biggest trade constraints was the high transport costs. Milner *et al.* (2000) estimate that the implicit taxation of exports from Uganda reached 77% in 1994; 64% was due to overland and sea transport and only 13% was associated with customs tariffs.

Figure 3.1 Uganda's applied MFN tariffs

(simple average, 1994-2009)



Source: UNCTAD-TRAINS database.

Time is another major constraint to Uganda's trade. For example, Djankov *et al.* (2010) calculate that if Uganda reduces its factory-to-ship time from 58 to 27 days, exports may potentially increase by 31%. Consistent with the literature on the impact of time delays on trade, they also find that time delays have a much bigger impact on exports of time-sensitive goods, such as perishable agricultural products.

In addition to high transport costs and time costs, unpredictability in the delays and inaccurate information hamper competitiveness in the global market. The role of uncertainty did not receive much attention but Arvis *et al.* (2007) state that "transportation costs only explain one part of the real impact of being landlocked. Delays and even more importantly low degree of reliability and predictability of services create massive disincentives to invest and higher total logistics costs", and, as a result, "are even more important in constraining their trading and thereby growth prospects."

The trade reforms of the 1990s did not result in the expected trade expansion and economic growth because Uganda did not address the most binding constraints and

focused on a less binding problem. Being a small landlocked country, the bigger constraints to trade were the costs of transport, time, and uncertainty and not the trade regime. This experience highlights the importance of identifying the most binding constraints and appropriately sequencing reforms.

Sources of the success of the recent reforms

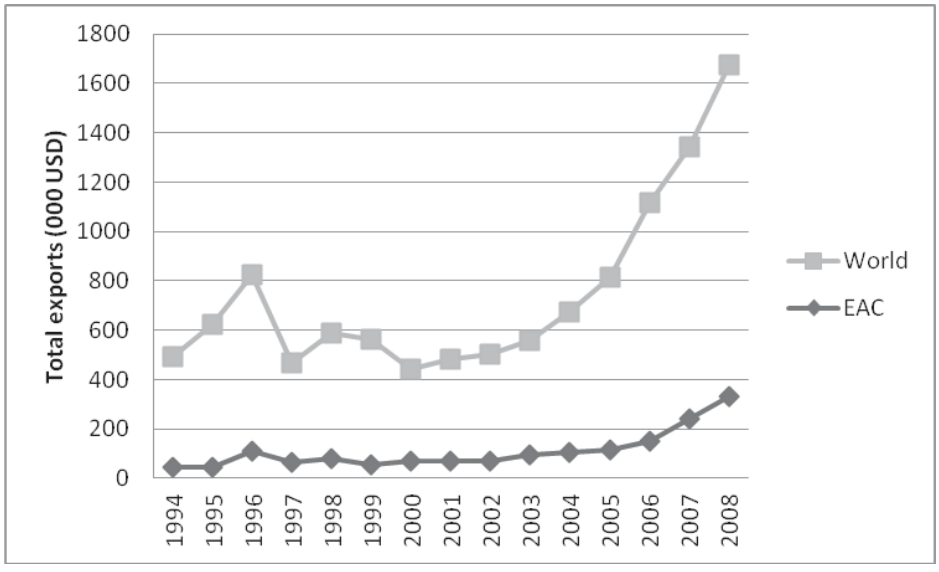
In the 2000s, Uganda launched a broader successful package of reforms that relied on trade as an engine for growth. These reforms diversified exports and reduced transport costs and time to trade.

Export diversification

Regional integration has played a pivotal role in diversifying exports and, reducing transport costs, including transit times. Uganda has actively participated in regional trade agreements notably the Common Market for Eastern and Southern Africa (COMESA) and the East Africa Community (EAC).[1] Traditionally, the European Union was the largest market for Uganda, but COMESA countries have overtaken the EU. In 2007, COMESA accounted for 37.9% of total exports and the European Union for 24.3%. The increase in exports to the EAC is reported in Figure 3.2. As a result of regional integration, Uganda has been able to improve access to sub-Saharan African markets, so that trade with these countries has substantially increased. It is noteworthy that regional integration coincided with an increase in inward foreign direct investment, which almost tripled from USD 295 million in 2004 to USD 799 million in 2009.

Figure 3.2 GDP per capita and trade openness of Uganda

(1994-2008)



Source: Author's calculations based on COMTRADE database

Product diversification is as important as geographical diversification for exports. Traditionally, coffee has been Uganda's main export. As illustrated in Table 3.1, export receipts from coffee were the largest in both 1995 and 2008. However its importance has decreased in absolute and relative terms. Not only export receipts from coffee decreased over this period but, testifying to the diversification process, export receipt

from coffee which in 1995 were 12 times larger than receipts from the second largest export commodity, were only four times larger in 2008. Non-Traditional Exports (NTE), such as flowers, fruits and vegetables, have taken over traditional exports since 2001 and the total share of export earnings from NTEs rose from 14% in 1991 to 70% in 2007. The considerable diversification of exports protected the economy from the adverse effects of volatility in international prices of coffee and cotton as well as the unstable global economic conditions and contributed to GDP growth. Figure 3.3 shows the positive correlation between GDP per capita and export concentration during the period 1999-2008.

Table 3.1 Export diversification of Uganda

(in thousands of 2008 USD)

Products	1995 Rank	2008 Rank	1995 Value	2008 Value
Coffee	1	1	$487,662	$403,138
Fish	2	2	$39,211	$107,942
Gold	3	24	$36,160	$8,439
Maize (corn)	4	29	$26,199	$6,256
Vegetables, leguminous dried, shelled	5	18	$19,426	$13,569
Hides and skin	6	81	$13,384	$1,161
Tobacco unmanufactured	7	7	$12,378	$42,470
Cotton	8	154	$11,432	$268
Oil seeds and oleaginous fruits, n.e.s.	9	15	$8,506	$15,796
Soaps	10	13	$3,970	$20,584

Source: Easterly and Reshef (2010)

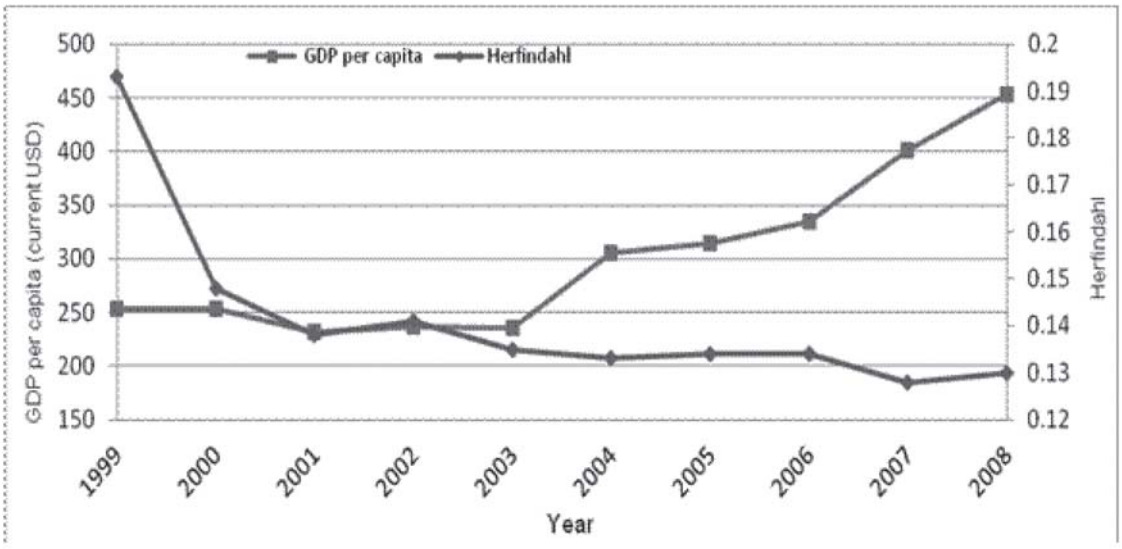
Participating in the EAC was a big step forward in addressing the constraint of high trade costs on a regional level. Although the adoption of the EAC Common External Tariff in 2005 led to an increase in tariffs for imports to Uganda (Figure 3.1), exports continued to perform well (Figure 3.2) mainly because of the increased volume of intra-regional trade and improvement of customs processes and trade logistics.

Transport and time costs

Being landlocked has a significant effect in raising transport costs and despite efforts to reduce non-tariff barriers, freight costs remained high in the early 2000s. Rudaheranwa (2006) estimates that the implicit taxation of exports that arise from land transport costs represented 25% in 2003, down from 31% in 1994, while shipping costs rose from 32% in 1994 to 37% in 2000. A possible explanation for the improvement of land transport costs may be the impact of increased regional trade and the improvement of the Northern Corridor.

Figure 3.3 Export concentration and GDP per capita of Uganda

(1999 - 2008)



Note: The Herfindhal index is calculated at the HS-4-digit level

Source: Author's calculation based on WDI and COMTRADE databases

The Northern Corridor links Burundi, the Democratic Republic of Congo, Rwanda, and Uganda to the Kenyan port of Mombasa. It is vital for Uganda as 95% of its external trade passes through the port of Mombasa. About 90% of this cargo travels by road along this corridor with the remaining 10% by rail. As of 2006, various aid-funded projects, such as the World Bank's "East Africa Trade and Transport Facilitation Project", aimed at tackling the delays plaguing the corridor. According to the World Bank (2011), these complementary policies led to a reduction in transit time at borders from three days to three hours, and in the transit time along the Mombasa-Nairobi-Kampala section of the corridor from 15 to 5 days.

Improvements in road infrastructure contributed to the reduction in the time to trade and in delays, which both have monetary costs for traders. The uncertainty that delays create for trade should not be underestimated. Unpredictability discourages trade and may lead to the loss of lucrative business. When unpredictable delays due to transit and roadblocks occur along the way, trucks often arrive at the port after the departure of the ship that was meant to carry the goods. It is important to note that the majority of Uganda's NTEs are time sensitive and perishable agricultural products making time and the conditions of delivery especially critical. This may explain why there was no alternative to air transport for the flower industry. Despite recent reforms, the main source of delays appears to be administrative procedures rather than shortcomings in the availability or quality of the road infrastructure.

The streamlining of customs procedures reduced the time needed to trade. According to the World Bank's *Doing Business* database,[2] the average number of documents to export and import a container declined from 11 to 6 and 18 to 8 respectively between 2006 and 2011. While 42 days were needed to export and 67 days to import in 2006, in 2010 the time to export dropped to 37 days and the time to import

to 34 days. These improvements led to a 29% increase in the *Logistics Performance Indicators* (LPI) sub index for customs which reflect the efficiency of the clearance process.

Other services supporting trade were also improved resulting in an overall increase of the LPI score of 13% (Table 3.2). Notably, the score for the international shipments sub-index, which represents the ease and affordability of arranging international shipments, also improved by 25%. Progress has been more limited in improving infrastructure and shortening the time spent at border crossings with transport-related infrastructure and timeliness in reaching a destination increased by only 8% and 7% respectively.

Table 3.2 Change in score for logistics performance indicators (LPI) of Uganda

(2007-2010)

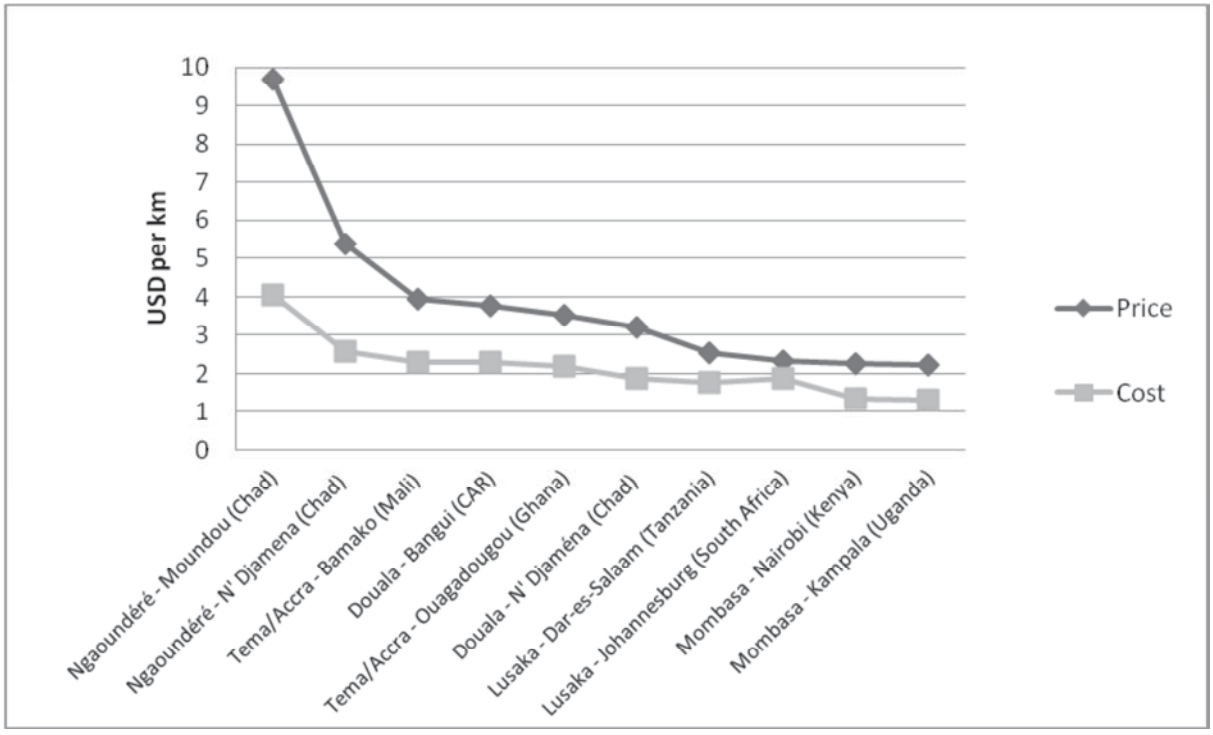
Economy	LPI	Customs	Infrastructure	International shipments	Logistics competence	Tracking & tracing	Timeliness
Uganda	13%	29%	8%	25%	2%	5%	7%
Sub-Saharan Africa	3%	-1%	-3%	6%	-2%	8%	6%
OECD Average	0%	0%	2%	-5%	0%	2%	1%

Source: Logistics Performance Index (*www.worldbank.org/lpi*).

Market regulation and competition also affect trade costs. The lack of competition in the transport sector is a source of high transport costs. It is important to differentiate between transport costs (cost to transport service providers) and transport prices (costs to traders). Rallaband *et al.* (2008) show that transport costs are not overly high in Africa but transport prices are relatively high. This is mainly due to official and unofficial market regulations and the market structure of the trucking industry. The route from Mombasa to Kampala has the lowest price and the lowest cost per kilometre among the ten African road corridors they analyse (Figure 3.4).

Figure 3.4 International transport prices and costs along Africa's road Corridors

(from gateway to destination)

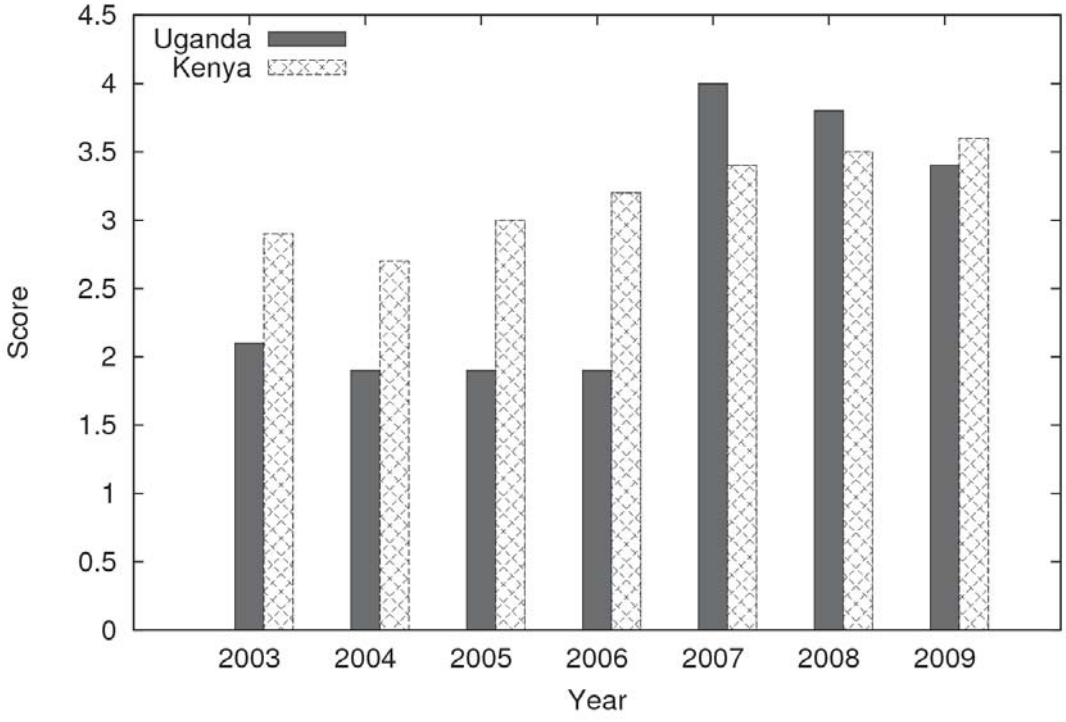


Note: Cost is the sum of the fixed and variable costs

Source: Raballand and Macchi (2008)

Finally to illustrate the importance of infrastructure in transit countries in reducing transport costs discussed in Chapter 2, the improved trade performance of Uganda is in part due to easier access to port facilities and better port efficiency in Kenya. The recent *Global Competitiveness Report 2010-2011* (World Economic Forum, 2010) assesses the ease of access to port facilities for Uganda and the quality of ports for Kenya, and found that the score has improved substantially since 2003 for both countries (Figure 3.5). This is mainly due to the creation of the EAC and the improvement of trade facilities in the port of Mombasa, which has undertaken maintenance operations, system upgrades, and streamlining port procedures. As a result, port congestion, inefficiency and processing times have been significantly reduced, thereby decreasing the level of uncertainty. According to the World Bank (2011), waiting time at the port of Mombasa has been reduced since 2006 from 19 to 13 days.

Figure 3.5 Access to and quality of port infrastructure



Note: The index for Uganda reflects the ease of access to the port while the index for Kenya captures quality of the port infrastructure. The assessment of port facilities goes from 1= extremely underdeveloped to 7= well-developed.

Source: World Economic Forum (various years).

Firms recognise that reforms improved the transportation environment in Uganda. According to the *Enterprise Surveys* reports, 23.7% of exporting firms in Uganda mentioned transportation as a major constraint in 2006, down from 36.1% in 2003.

In conclusion, customs tariffs were not the major barriers to trade in Uganda. As a result, their reduction was not enough to boost export growth in the 1990s and the increase in tariffs under the EAC customs union after 2000 did not stop trade expansion. The most binding constraints to trade were related to transportation, in particular, the time spent at border crossings and the uncertainty arising from unpredictable transport time. Regional integration (EAC) helped lower transport costs and stimulate trade relations with the member countries in its vicinity. Time costs were also lowered as a result of improved customs procedures and better access to ports reduced the time and uncertainty associated with exports and imports. This provides support to the econometric work's finding on constraints to landlocked countries trade (see Chapter 2), notably the importance of reducing time to trade.

Azerbaijan Case Study

A landlocked commodity exporter

The case study on Azerbaijan illustrates how some variables highlighted in the econometric work (*e.g.* export concentration, Dutch disease, governance) affect the trade performance and the development prospects of commodity exporters. This case study

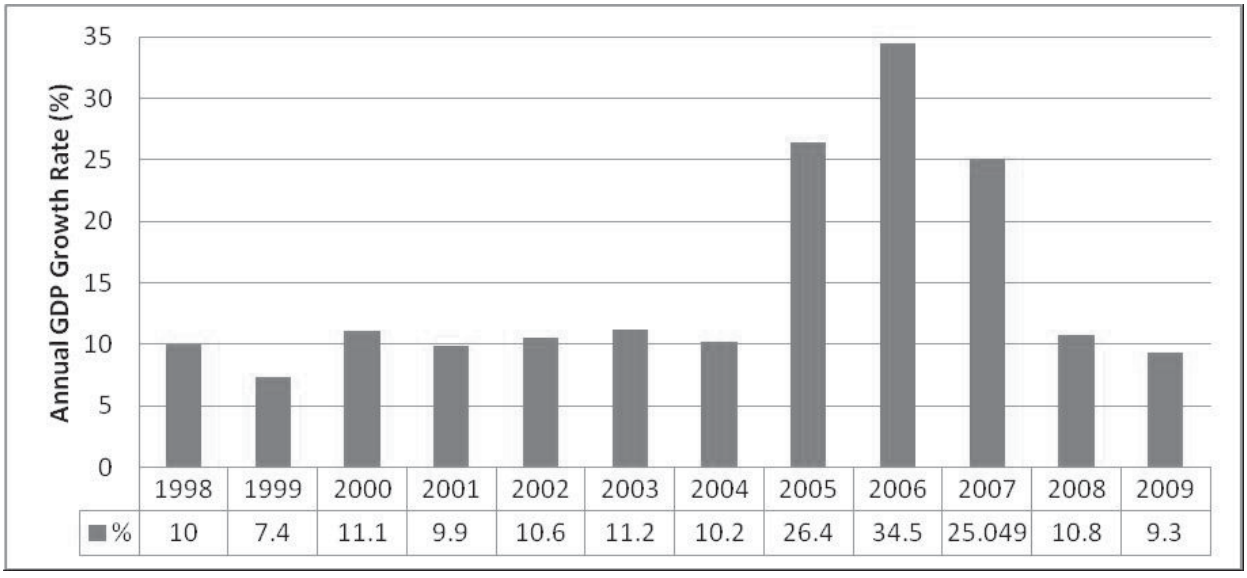
also provides another illustration of how results from cross-country analysis captured by the econometric work can differ across countries with common characteristics – in this case, being landlocked.

Azerbaijan reports that trade is an integral part of its national development plan (OECD/WTO, 2009). It envisages moving toward a diversified and globally integrated market economy (World Bank, 2009). Ensuring sustainable economic development by maintaining macroeconomic stability and the balanced development of the non-oil sector is a strategic goal for Azerbaijan's Poverty Reduction Strategy Paper (SPPRSD) for 2008-2015.

Export diversification : A necessity for sustainable development

Azerbaijan was one of the fastest growing countries in the world during the period 2005-2007 (Figure 3.6) with an average growth rate of 28.6% following massive foreign direct investment in 2003-2004. Its strong economic performance was driven almost entirely by its natural resources sector, with the oil and gas industry attracting the vast majority of foreign direct investment inflows and the engine of trade expansion and economic growth.

Figure 3.6 Economic growth of Azerbaijan (1998-2009)



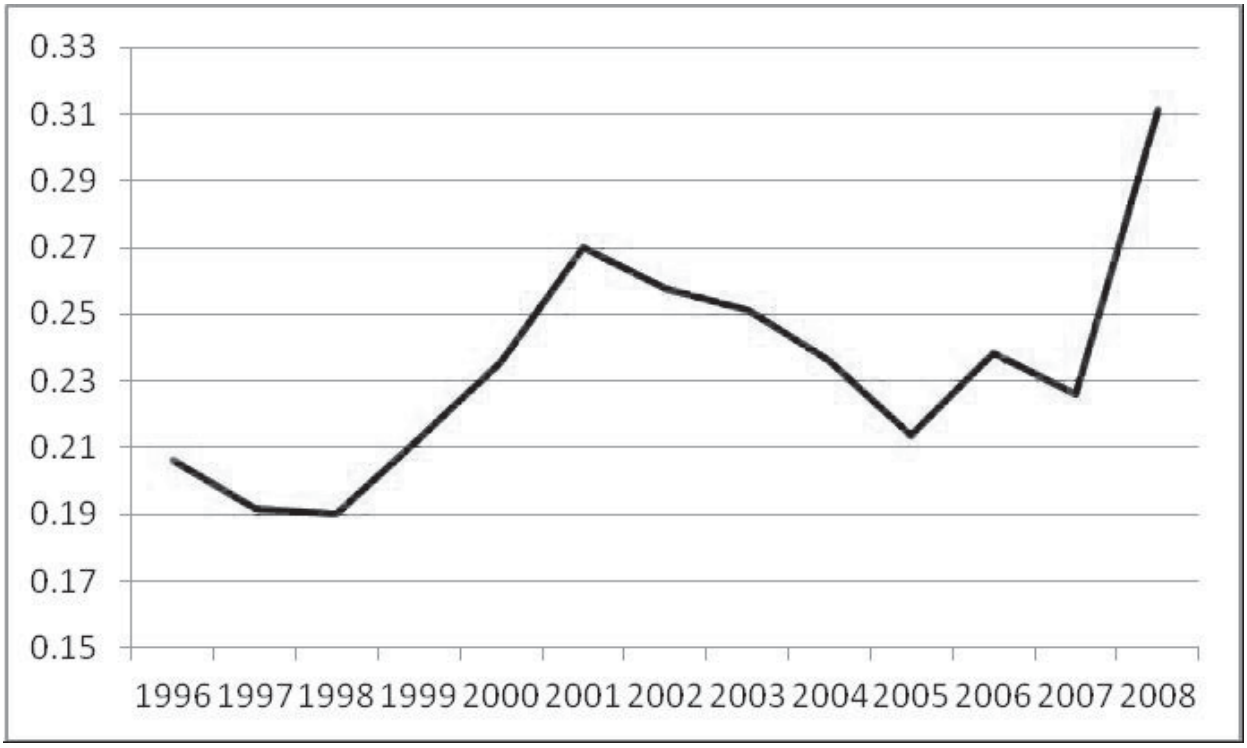
Source: World Development Indicators

As a result, Azerbaijan's export structure is highly concentrated. In 2008, oil exports represented about 95% of the value of the country's total exports (World Bank, 2009). As illustrated in Figure 3.7, Azerbaijan experienced a sharp increase in export concentration from 2006 to 2007. This concentration exposes the economy to the volatility of oil prices and makes it vulnerable to global commodity market developments and to the Dutch disease. Export concentration is a source of instability in export earnings and the drop in oil prices in 2009 illustrates the inherent vulnerability: Azerbaijan saw its growth rate decelerate sharply from 34.5% in 2006 to a single-digit growth rate of 9% in 2009. Achieving economic and export diversification is a priority for two additional reasons. First, the oil and gas industry does not create enough jobs. It is a capital-intensive that employs skilled labour, mainly engineering professionals and

technicians. While the sector accounts for 60% of GDP, it employs only l.1% of the total workforce (World Bank, 2009). The development of the non-oil economy is thus crucial for employment generation. Second, although the oil sector is and will remain a large source of export receipts, it cannot provide all resources needed to pay for the imports of an eventual upper-middle income economy. Indeed, oil reserves are expected to be depleted in about 25 to 35 years. The World Bank (2009) estimates that, in order to achieve its development objectives, Azerbaijan needs to increase its non-oil exports per capita by 50 times in ten years.

Figure 3.7 Export concentration of Azerbaijan

(Herfindhal index, 1996-2008)



Note: The Herfindhal index is calculated at the HS-4-digit level.

Source: Author's calculation based on COMTRADE database

Ways to achieve export diversification

Diversifying exports is a priority for the Azerbaijan economy. This cannot be achieved without boosting trade and FDI in the non-oil sector. This, in turn, requires an improving the business and investment environment across the board. Azerbaijan ranked 54th in *Doing Business 2011*. This is an improvement in the overall business environment compared to a ranking of 97th in *Doing Business 2008*. However, much progress needs to be made and three main challenges need to be tackled to promote investment in the non-oil sector.

First, taxation is identified as a major problem for doing business by 39% of the exporting firms surveyed (Table 3.3). The tax level and complexity of the tax system discourage non-oil private investment. According to the World Bank (2009), lower

taxation would allow offsetting the burden posed by the real exchange rate appreciation in the tradable sector and thus promote investment.

Table 3.3 Main constraints to business activities of Azerbaijan

	Major constraints for Doing Business 2009 Enterprise Surveys (% of exporting firms surveyed)
Access to financing	49.1
Tax rates	38.89
	Ranking in the 2011 Doing Business Report (out of 183)
Tax level and complexity of the tax system	103
Trading across borders (cost, time, procedures)	177
Protecting investors	20
	Global Competitiveness Report 2010-2011 (out of 139)
Higher education and training	77
Goods market efficiency	93
Financial market development	71

Source: World Economic Forum (2010).

Second, and consistent with the results of the econometric work for commodity exporters, the absence of competition and the presence of corruption are major impediments to investors and cross-border trade. While the government can play a prominent role in diversification, it should also encourage competition and progress in areas of governance. According to the World Economic Forum (2010), corruption is the greatest problem for doing business in Azerbaijan. It ranked 90 out of 139 countries in the area of property rights, an important sector for export performance and diversification. Azerbaijan ranked 134 out of 178 countries in the 2010 Transparency International Corruption Perception Index. [3]

Third, improving the financial sector is critical for enhancing the competitiveness of Azerbaijan. While econometric results show that access to credit has an ambiguous impact on trade of commodity exporters, the difficulty of accessing credit is a regional constraint highlighted during the December 2010 Ministerial meeting "Aid for Trade Roadmap for Central Asian." In Azerbaijan, according to the *Enterprise Surveys,* 49% of exporting firms perceive access to finance as a major business constraint. The World Economic Forum (2010) also indicated that access to finance was the second most problematic factor for doing business after corruption. It is a particularly severe obstacle for small and medium-size enterprises (SMEs) reducing opportunities for them to grow and diversify into other economic activities.

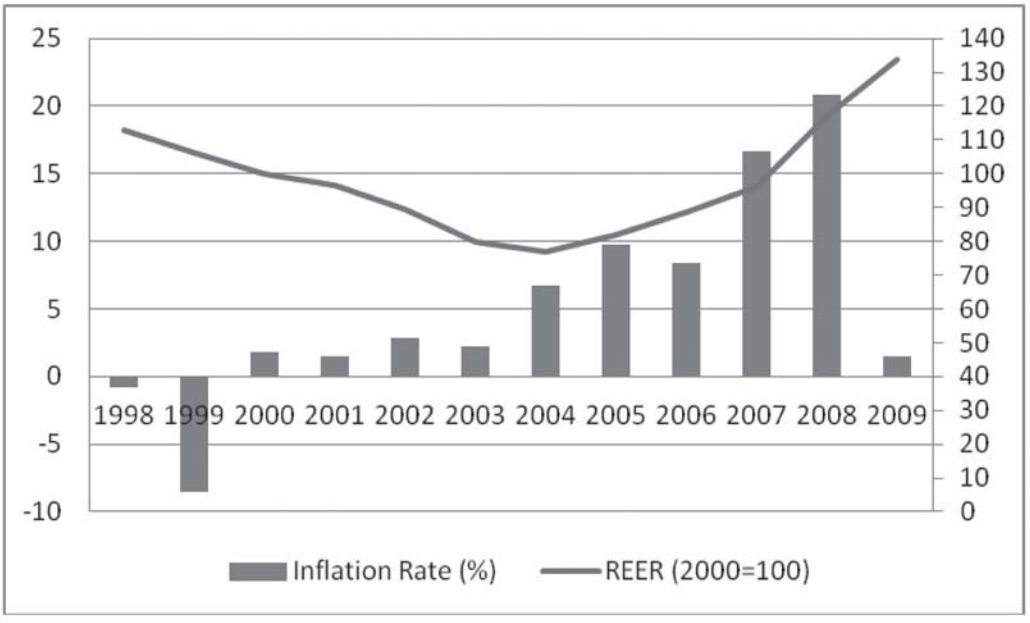
Given that Azerbaijan's development depends on trade, export diversification, and FDI, the effort to improve the business environment needs to be accompanied by a broad reduction in trade barriers affecting non-oil exports. However, the country has accorded only a low priority to trade issues. This is reflected in its low ranking (177^{th} place) in the Doing Business' trading across borders indicator (Table 3.3). Econometric results suggest that the tariff regime is a more severe constraint for commodity exporters than other country groupings but the impact of tariffs remains

small in Azerbaijan as the simple average MFN applied tariff was not particularly high, reaching 8.7% in 2009. The major impediments are found in high transaction costs resulting from informal barriers and administrative procedures for business operations with respect to licenses, customs clearances, and tax inspections that turn away potential investors. These high transaction costs limit the entry of new firms and have a negative impact on the competitiveness, resulting in higher market concentration in various sub-sectors of the economy.

Macroeconomic policies should be compatible with the development of the non-oil sector and preserve its competitiveness. There is a substantial risk of Dutch disease, detrimental to competitiveness of the non-oil tradable sector. Past experience shows that an overvalued exchange rate is a key factor in the failure and reversal of reform aiming at opening up an economy to global trade (see Chapter 1). Moreover, oil price instability could lead to unpredictable public spending that would also raise the real exchange rate and price volatility. Finally, as illustrated in Figure 3.8, Azerbaijan's real effective exchange rate appreciated by 74% during the period 2004-09, in part as a result of the increasing non-oil fiscal deficit, inflationary pressures driven by the country's rapid economic growth, inflows of capital, and rising export receipts.

Figure 3.8 Inflation and real effective exchange rate (REER) of Azerbaijan

(1998-2009)



Source : ISA (2011)

Experience shows that identifying potential non-oil export sectors is difficult. According to Brenton and von Uexhull (2009), aid to export promotion is more successful at helping existing exports than at creating new ones. Azerbaijan's agricultural and agri-business sectors may hold significant potential, given its existing knowledge and export base, and its climatic and geographic advantages (World Bank, 2009). These sectors have received the largest amount of aid-for-trade flows (21% of total aid for trade to the country) since 2005.

Export diversification brings a lot of benefits but depends on "fundamental matters", such as comparative advantage and policies. Therefore it is more useful to improve the business environment across the board rather than provide advantages to a limited number of industries. In this context, Pomfret (2010) highlights the importance of improving soft and hard infrastructure and the need to retain flexibility to ameliorate any mode of transport to any market. Promoting an efficient regional network and implementing regional integration agreements are primordial to reach its full trade potential.

Infrastructure problems do not appear to be a significant constraint to trade. Although Azerbaijan identified network infrastructure as priority for aid for trade (OECD/WTO, 2009), only 13.4% of exporters and 12.0% of non-exporters mention electricity as a problem for their activities in the *Enterprise Surveys*. Similarly, consistent with the econometric findings for both landlocked countries and commodity exporters, no exporter mentions transportation as a constraint. This may reflect the fact that virtually all exports transit through pipelines and that investments in roads and railways have been made in order to reduce the cost of transportation along the country's main corridors (North-South: Russia-Iran and East-West: Baku-Georgia). These corridors are important to achieve another element of Azerbaijan's diversification strategy: promote regional trade and diversify the country's exports market, which are currently limited to the European Union, Russia, and Turkey.

This case study shows that Azerbaijan is endowed with natural resources but that expanding its non-oil exports remains a challenge. Economic diversification and increased competitiveness could help achieve its objective to become an upper-middle income economy in ten years but the needs are numerous and cannot be tackled all at once. It is therefore necessary to prioritise and sequence correctly the reforms. The combination of trade reforms and macroeconomic stability will allow the country to attain better trade performance. Complementary policies in areas of governance, access to finance, and tax regulations as well as regional network are also important to increase its full potential.

Notes

1 The COMESA is a preferential trading area with 19 member states stretching from Libya to Zimbabwe. COMESA was formed in December 1994 with the aim of achieving economic prosperity through regional integration. See Khandelwal (2004) for a detailed description of COMESA. The EAC is a preferential trading area consisting of Uganda, Kenya, Tanzania, Rwanda, and Burundi and its ultimate objective is to first establish a customs union, a common market, then a monetary union and eventually a political federation.

2 Available at : *www.doingbusiness.org*.

3 Available at : *www.transparency.org*.

References

Arvis, J.F., G. Raballand, and J.F. Marteau (2007), *The Cost of Being Landlocked: Logistic Costs and Supply Chain Reliability*, World Bank, Washington, D.C., Policy Research Working Paper 4258.

Brenton, P. and E. von Uexkull (2009), "Product specific technical assistance for exports – has it been effective?" *The Journal of International Trade & Economic Development*, vol. 18(2).

Djankov, S., C. Freund, and C.S. Pham (2010), "Trading on Time", *The Review of Economics and Statistics*, vol. 92(1).

Easterly, W. and A. Reshef (2010), *African Export Successes: Surprises, Stylized Facts, and Explanations*, NBER, Cambridge, MA: Working Paper 16597.

International Strategic Analysis (2011), *Azerbaijan Country Report*, January.

Khandelwal, P. (2004), *COMESA and SADC: Prospects and Challenges for Regional Trade Integration,* Washington, D.C.: International Monetary Fund, Working Paper WP/04/227.

Milner, C., O. Morrissey and N. Rudaheranwa (2000), "Policy and Non-Policy Barriers to Trade and Implicit Taxation of Exports in Uganda", *Journal of Development Studies*, vol. 37(2).

OECD/WTO (World Trade Organization) (2009), *Aid for Trade at a Glance 2009: Maintaining Momentum*, OECD and WTO, Paris and Geneva, doi: 10.1787/9789264069022-en.

Pomfret, R. (2010), "Trade and Transport in Central Asia", *Global Journal of Emerging Market Economies*, vol. 2(3).

Raballand, G., J.F. Marteau, C. Kunaka, J.K. Kabanguka, and O. Hartmann (2008), *Lessons of Corridor Performance Measurement*, Washington, D.C.: World Bank, Sub-Saharan Africa Transport Policy Program, Discussion paper 7.

Rudaheranwa, N. (2006), *Trade Policy and Transport Costs in Uganda*, University of Nottingham, CREDIT Research Paper 06/09.

World Bank (2009), *Azerbaijan: Country Economic Memorandum — A New Silk Road: Export-led Diversification*, Washington, D.C.: World Bank.

World Bank (2011), *East Africa Trade and Transport Facilitation Project*, Aid for Trade Case Story*, www.aid4trade.org*.

World Economic Forum (2010), World Bank *Enterprise Surveys* 2009 and *Doing Business* 2011, *The Global Competitiveness Report 2010-2011*, World Economic Forum, Geneva.

Conclusions

Empirical literature on trade and growth supports the idea that trade can be an engine for growth and development. But needs in order to expand trade are numerous while political capital and financial resources (including aid for trade) to support reforms will be available only over time. Thus, for trade reforms to be successful and for aid for trade to be effective, it is crucial to sequence appropriately the reforms and to complement them with policies that make these reforms sustainable and increase their impact on growth and poverty reduction. Identifying the most binding constraints is not easy. This book has highlighted those identified by the empirical experience as the most common and provided a quantification of their impact on trade and growth. This exercise shows that the most binding constraints differ across countries although it appears that electricity is a major constraint shared by many countries.

Addressing the constraints to trade

The binding constraints that prevent a country from turning trade opportunities into trade flows have been the main focus of aid-for-trade support. Addressing these binding constraints is a prerequisite to achieving the ultimate goal of aid for trade: using trade as a tool for boosting growth and reducing poverty. The empirical literature on the impact of trade on economic growth provides much support for this approach. There is ample empirical evidence that the main objectives of aid for trade, if achieved, will foster economic growth.

Nevertheless, tackling the constraints that choke the impact of trade on economic growth is also crucial to achieve the objective of aid for trade. Indeed, there is no guarantee that trade expansion boosts economic growth. On average, the growth impact of trade expansion is positive but the average masks a substantial heterogeneity across countries. Most countries reaped the benefit of greater trade openness but for a few countries the impact of trade reforms has been negligible and in some cases negative.

The ability of aid for trade to address the binding constraints that choke the impact of trade on economic growth determines its effectiveness. Effectiveness has become a central issue for all types of aid including aid for trade.

The analyses presented in this book show that aid for trade has a role to play in increasing the impact of trade expansion on economic growth. Aid for trade has the means to support both compatible and complementary policies. Compatible policies ensure that trade reform is not reversed. Complementary policies maximise the impact of trade on economic growth. In this context, the importance of sequencing is paramount.

Once a country has identified the most binding constraints to its trade expansion, it should ensure that the measures taken to address them will be sustainable. Reform will be unsustainable and subject to reversal if it triggers a macroeconomic crisis or if it lacks credibility. Thus, the sustainability of a trade reform can be increased if accompanied by compatible policies. Aid for trade can, and does, support some of these compatible policies. For example, as reforms can be politically difficult to implement and sustain, it is important to build political support for the reform process notably by taking measures that will smooth the adjustment cost and help an early response of exports to the reform. On both fronts aid for trade can help. Moreover, the impact of trade reforms on both trade and economic growth will depend on complementary policies. In the package of reforms aiming at tackling the country's most binding constraints to trade expansion, a country should determine the most relevant complementary policies that will ensure that the trade impact translates into higher economic growth. Again, aid for trade has the means to support many of the potential complementary policies.

Identifying the most binding constraints to trade expansion and the appropriate complementary policies is needed to guide the sequencing and the design of both trade reforms and aid-for-trade projects and programmes. Yet this is a difficult task as potential bottlenecks are numerous and tend to be country specific. Therefore, it is important to quantify the relative severity of constraints for various groupings of countries with common characteristics.

Main conclusions of the analysis

The main conclusions of this exercise are the following. First, both imports and exports boost economic growth, but the constraints to exports differ from those applicable to imports. This finding has many policy implications, the most important being that trade reform should focus not only on export promotion but also on the role of imports. Moreover, it confirms the fact that in promoting trade expansion, aid for trade contributes to economic growth in developing countries.

Second, the report confirms a large body of literature suggesting that trade performance depends much less on customs tariff reforms than on a large variety of supply-side constraints, such as electricity or access to credit. The severity of electricity problems in many countries is well recognised but this report shows that it dramatically affects trade performance and economic growth (directly and through trade) of many countries. The impact we estimate is so large, and shared by so many countries, that electricity often appears as a major binding constraint to trade expansion.

Third, compatible and complementary policies are also very important. There are a large number of such policies and only a few could be tested. The macroeconomic environment has a big impact on trade performance, especially the management of the real effective exchange rate. Moreover, reforms improving access to credit and governance, as well as policies fostering investment and labour productivity, are important although their relative importance varies across countries. Complementary policies appear particularly effective in the case of transport infrastructure in landlocked countries.

The significant role of compatible and complementary policies vindicates the large scope accorded to the aid-for-trade agenda: if trade is to be used as an engine for economic growth, poverty reduction, and development, it must tackle many issues. This requires, as mentioned, recognising the specific trade-related needs of countries but also the adequate sequencing of reforms and donor co-ordination.

Fourth, the binding constraints to trade expansion vary significantly across different country groupings. Indeed the severity of the various constraints to trade are different for landlocked countries, small and vulnerable economies, and commodity exporters. As a result, the nature and the sequencing of trade reforms and of aid for trade should differ across countries. In particular, the econometric analysis in Chapter 2 of this study shows that:

*For **landlocked countries**, geographical constraints are not the only reason for their relatively low trade performance.* Better domestic policies could make an important contribution to trade expansion. Better macroeconomic policies would have the largest impact on landlocked countries' trade performance. In this context, the priority should be more on exchange rate policy than fiscal policy. In addition, policies fostering investment and improving the availability of electricity would also have a sizable trade impact. Finally, improving domestic transportation infrastructure alone would not particularly enhance trade performance unless accompanied by reforms that reduce the time to trade, as by improving infrastructure in transit countries, reducing transport costs associated with longer inland transportation than encountered in coastal countries, and addressing regulatory issues of the transport sector, including when crossing borders. The experience of Uganda with trade reforms illustrates these points. Notably, it shows that reforms focusing on the customs tariff had a disappointing impact on trade performance while reforms aimed at reducing the time to trade were successful. In

contrast, access to credit and current customs tariffs are seen not to be significant barriers to trade expansion.

*For **small and vulnerable economies** (SVEs), transportation infrastructure is the main constraint to trade.* Increasing both the density and quality of roads would have a large impact on trade and on economic growth. In contrast, the main complaint of exporters from SVEs concerns shortcomings in the electricity infrastructure, even though our econometric analysis shows these actually have relatively minor effects. Telecommunications infrastructure also contributes to trade performance and economic growth in these countries but its impact is much smaller. Among domestic policies, estimations show that improving access to credit and, to a lesser extent, strengthening property rights, would have the largest pay-off.

*For **commodity exporters**, governance is a priority.* Improving policies related to governance (notably better fiscal spending, investment, and prevention of overvaluation of the real effective exchange rate) would have the largest impact on trade performance. Moreover, compared to the other country groupings, the impact of a tariff reform on trade performance would be larger, although it remains limited. Similarly infrastructure is less of a constraint to trade than in other country groupings and affects only exports. As with the other groupings, the main constraint related to infrastructure is the supply of electricity. The case of Azerbaijan illustrates the challenges faced by commodity exporters. Economic diversification and increased competitiveness are needed to achieve its objective to become an upper-middle income economy but the needs are numerous and cannot be tackled all at once. The combination of trade reforms and macroeconomic stability would allow the country to improve its trade performance especially if accompanied by improvement in governance and in access to finance.

As with all statistical analysis, our results are likely to be qualified and improved upon by other researchers. In particular, there is a need to capture some important variables for which data are not available such as customs efficiency, seaport infrastructure, or time to trade. It will also be important to examine some specific sectors more closely. In the meantime, the conclusions emerging from the present analysis, drawing on available statistics and relevant country experiences, provide a roadmap for strengthening the effectiveness of aid-for-trade policies.

ANNEX A. Method and data sources

A.1. Model and estimation method[1]

The model used to determine the impact of the variables identified as the binding constraints on trade and, subsequently, the impact of trade on growth is composed of two stages. In the first stage, it quantifies the magnitude and direction of the direct effect of the binding constraints on trade indicators (exports, imports, and openness). In the second stage, the model quantifies the magnitude and direction of the composite effect of the binding constraints on the economy's growth rate through their effect on trade indicators. This procedure isolates the explained variation in trade accounted for by the binding constraints on the economy's growth rate by using the Two Stage Least Squares (TSLS) estimator. Contrary to conventional applications of the econometric estimator, in this application, the first stage of the model is equally as important as the second. Therefore, the variables to be included in each stage need to be chosen carefully.

This approach explicitly looks at the supply-side determinants of trade in the first stage and, subsequently, in the second stage looks at the impact of trade on growth. We assume the binding constraints variables affect the countries' trade shares and these trade shares affect GDP growth.

Model specification

The model's specification of the impact of trade on growth is the following:

$$\Delta \boldsymbol{GDP} = \boldsymbol{\alpha_0} + \boldsymbol{\alpha_1 GDP_{t0}} + \boldsymbol{\alpha_2 Trade_{it}} + \boldsymbol{\alpha_3 Investment} + \boldsymbol{X\beta} + \boldsymbol{\omega_{it}}, \qquad (1)$$

Where $\Delta \boldsymbol{GDP}$ is the change in real GDP, $\boldsymbol{GDP_{t0}}$ represents initial GDP, $\boldsymbol{Trade_{it}}$ is the trade indicator (exports, imports, or openness), $\boldsymbol{Investment}$ is the amount of investment in the country as a share of GDP (investment is part of this equation as it is a key determinant of growth and because literature has shown that it is an important channel of the impact of trade on growth), $\boldsymbol{X}$ is a vector of other variables affecting GDP growth, $\boldsymbol{\omega_{it}}$ represents the regression error term, and the $\boldsymbol{\alpha_k}$ and $\boldsymbol{\beta_k}$ are parameters to be estimated.

The first stage is specified as follows:

$$\boldsymbol{Trade_{it}} = \boldsymbol{W\delta} + \boldsymbol{\tau} * \boldsymbol{GDP_{it-1}} + \boldsymbol{\varepsilon_{it}}, \qquad (2)$$

where $\boldsymbol{Trade_{it}}$ is defined as above; $\boldsymbol{W}$ is a vector of variables including all exogenous variables in the model which determine the country's level of trade, this includes the ones related to the binding constraints and a constant; $\boldsymbol{GDP}$ represents initial GDP , $\boldsymbol{\tau}$ is

a parameter to be estimated, $\boldsymbol{\varepsilon_i}$ represents the regression error term, and $\boldsymbol{\delta_n}$ are parameters to be estimated.

Estimation method

The motive for using the TSLS estimator is the presence of an endogenously determined variable in the growth regression, the level of trade. Previous literature such as Frankel and Romer (1999) has documented reverse causality between trade levels and GDP growth. In essence, when a country has its income grow it increases consumption of all type of goods, both domestic and imported, which gradually translates into later growth because some of these imports are higher quality intermediate inputs which increase labour's productivity and increase the quality of the goods produced within the country. These goods can later be sold in international markets increasing exports. Therefore, the TSLS estimator is used as a consequence of the presence of reverse causality between the variables included in the regression model. Recall that reverse causality violates the first assumption of the classical linear regression model. That is, one of the reasons why the expected value of the regression error term given the data is not equal to zero, *i.e.* $E(\varepsilon_i \mid X) \neq 0$.

When the first assumption of the linear regression model is violated, the parameter estimates will not be consistent and in large samples will not approach the true population values. This bias persists and the researchers must adjust the estimation technique to correct this problem. A solution is to use variables called "instruments" to obtain consistent parameter estimates of the unknown coefficients of the population regression function. These instruments must satisfy two conditions. First, the instruments must be correlated with the endogenous variable. Second, the instruments must not be correlated with the regression's error term. The TSLS estimator uses the instruments in the first stage to decompose the endogenous variable into two components by regressing the endogenous variable on the instruments and all other exogenous variables in the model. This regression isolates the variation of the endogenous variable accounted by the instruments from the residual variation which may still be correlated with the regression model's error term. The second stage uses the isolated variation of the endogenous variable, no longer correlated with the regression model's error term, to estimate the parameters of interest.

The procedure to obtain parameter estimates is as follows. Estimate the regression stated in Equation (2) by ordinary least squares to obtain the predicted values. Substitute the recently calculated predicted values for the trade variable in Equation (1) as explanatory variable and run a regression through ordinary least squares. This two stage procedure yields consistent parameter estimates which are critical for inference and internal validity considerations.

The results for the various country groupings remain aggregated and point estimates are valid only for a representative country, and not for all countries within the group. Caution is thus required when using the results for a country-level analysis and aid allocation. Nonetheless, the standard errors of the estimates allow inferences to be made within their range with a high level of confidence.

Dealing with possible endogeneity

Equation (2) explains the trade indicator as a function of the aid-for-trade variables. The purpose is to test explicitly the impact of each binding constraint on trade. Most of these variables change slowly through time so we consider them fixed in the short run (contemporaneously to the trade indicator) and thus exogenous. In Equation (1), predicted values coming from Equation (2) for the trade indicator (exports, imports, or openness) are used. As a result, as much endogeneity as possible has been removed from the trade indicator (which is the focus variable with the ones describing the binding constraints). Moreover, the endogeneity is purged out of GDP because lagged GDP is used (no endogeneity between variables at different periods in time). Some endogeneity issues could still be present regarding the shares of investment and government spending in the growth equation, but these should be minimal.

Distinguishing the direct and indirect effort of the binding constraints on growth

Moreover, the model isolates the direct effect of the variables related to the binding constraints on a country's economic growth rate and their indirect effect on the growth rate through trade. In this case, the impact of trade on the economy's growth rate is captured by $\hat{\alpha}_2$. Since the change of the growth rate in GDP when the trade indicator changes can be expressed as:

$$\frac{\partial \Delta GDP}{\partial Trade} = \widehat{\boldsymbol{\alpha}}_{\mathbf{2}}, \qquad (3)$$

and the impact of the k[th] binding constraint inhibiting trade performance on the economy's growth rate can be expressed as the following:

$$\frac{\partial \Delta GDP}{\partial W_k} = \frac{\partial \Delta GDP}{\partial X_k} + \frac{\partial \Delta GDP}{\partial Trade}\frac{\partial Trade}{\partial W_k}$$

$$= \underbrace{\widehat{\boldsymbol{\beta}_{\boldsymbol{k}}}}_{\boldsymbol{Direct\ effect}} + \underbrace{\widehat{\boldsymbol{\alpha}_{\mathbf{2}}} * \widehat{\boldsymbol{\delta}_{\boldsymbol{k}}}}_{\boldsymbol{Indirect\ effect}}$$

That is, the change in the growth rate in GDP when the k[th] binding constraint changes is the sum of the change of the growth rate in GDP when the k[th] binding constraint changes (direct effect *i.e.* the direct effect of the binding constraint on growth) and the change of the growth rate of GDP when the trade indicator changes multiplied by the change of the trade indicator when the k[th] binding constraint changes (indirect effect *i.e.* effect of the binding constraint on growth through its impact on trade). These effects are captured by the parameters estimated in the model. The total effect of any binding constraint can be quantified in an analogous manner.

The direct effect of the variables on a country's economic growth rate should be seen as suggestive rather than as a precise estimate because we only include the variables for estimating the impact of the binding constraints on economic growth. This implies that the theoretically-based mechanisms by which the binding constraints directly affect growth are not modelled, potentially causing us to ignore many key contributors to economic growth. This leads to the well-known problem of omitted variables. In addition, the growth equation uses the *predicted* values of trade rather than

the *actual* values of trade. Thus, the predictive quality of the first step (the impact of the constraints on trade) determines the quality of the growth equation.

A.2. Data sources and definition of the variables

Air_trans_carr_dep refers to domestic takeoffs and takeoffs abroad of air carriers registered in the country. The figures come from the International Civil Aviation Organization (ICAO), Civil Aviation Statistics of the World and ICAO staff estimates.

Dom_credit represents the amount of credit extended by banks and other financial institutions to the private sector as a share of GDP. The data are from the April 2010 version of the Database on Financial Development and Structure compiled by Beck, Demirguc-Kunt, and Levine.

Electric_cons_percap stands for Electric power consumption measures the production of power plants and combined heat and power plants less transmission, distribution, and transformation losses and own use by heat and power plants. The data are from the World Bank's World Development Indicators.

Electric_power_losses_p_out stands for electric power transmission and distribution losses (percent of output) that include losses in transmission between sources of supply and points of distribution and in the distribution to consumers, including pilferage. The data are from the World Bank's World Development Indicators.

Exports and Imports include goods and services and the data are from the International Monetary Fund's International Financial Statistics (IFS), all in U.S. dollars.

GDP is the gross domestic product in current U.S. dollars and the data are from the World Bank's World Development Indicators.

Gfcf stands for gross fixed capital formation and consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories as a share of GDP. The figures are from World Bank national accounts data, and OECD National Accounts data files.

Government_spending represents government spending (including consumption and transfers) as a percentage of GDP. In most cases, general government expenditure data include all levels of government such as federal, state, and local. In cases where general government spending data are not available, data on central government expenditure are used instead. Data are from the Heritage Foundation.

Gov_spending_imf refers to the total expense plus the net acquisition of nonfinancial assets. Data are from the International Monetary Fund's Government Finance Statistics.

Gov_revenue_imf represents all transactions that increase the net worth of the general sector classified as revenue. Data are from the International Monetary Fund's Government Finance Statistics.

Gov_taxrevenue refers to compulsory transfers to the central government sector for public purposes. Data are from the International Monetary Fund's Government Finance Statistics.

Herfindhal is calculated at HS-4-digit level and the export data are from the United Nations Commodity Trade database (COMTRADE). The Herfindhal Index ranges from 0 to 1 with 1 being the concentration on 1 tariff line.

L_force is the total labour force comprising people aged 15 and older who meet the International Labour Organization definition of the economically active population. Figures are from the International Labour Organization, using World Bank population estimates.

Productivity_per_worker figures come from the United Nations Industrial Development Organization's World Productivity Database.

Property_rights measures the degree to which a country's laws protect private property rights and the degree to which its government enforces those laws. It also assesses the likelihood that private property will be expropriated and analyzes the independence of the judiciary, the existence of corruption within the judiciary, and the ability of individuals and businesses to enforce contracts. The more certain the legal protection of property, the higher a country's score. Similarly, the greater the chances of government expropriation of property, the lower a country's score. The index ranks from 0 to 100. Data are from the Heritage Foundation.

REER is the real effective exchange rate (CPI based). Data are from the International Monetary Fund (INS and IFS).

Railkm2 is the total railway network (length of railway route available for train service, irrespective of the number of parallel tracks) divided by the total land area of the country measured in kilometers square. Data on the rail lines are from the World Bank**'s** Transportation, Water, and Urban Development Department and accessible on the

Raw materials does not refer to a right-handside variable in the econometric work. It is used to define commodity exporters. Export data are from Comtrade and raw materials refers to the following HS-6-digits tariff lines: 010119-010120; 010290; 010391-020890; 030110-030490; 030611-030619; 030710-030721; 030731; 030741; 030751; 030760-030791; 040110-040130; 040700; 040900-060291; 070110-071090; 071410-090111; 100110-100620; 100700-100890; 120100-120799; 120911-140490; 152200; 180100; 230210-230330; 230810-230890; 240110-240130; 250200-252010; 252100; 252400-270119; 270210; 270300; 270900; 271410-271490; 310100; 310410; 391510-391590; 400110-400130; 400400; 410110-410390; 411000; 430110-430190; 440110-440130; 440310-440399; 450110-450190; 470710-470790; 500100-500390; 510111-510330; 520100-520299; 530110; 530130; 530410-530519; 550510-550520; 631010-631090; 701010-701090; 710110-710221; 710231; 710510-710590; 711210-711290; 720410-720450; 740400; 750300; 760200; 780200; 790200; 800200; 810191; 810291; 810310; 810420; 810510; 810600-810710; 810810; 810910; 811000-811211; 811300; 854800.

Roadkm2 refers to the total road network divided by the total land area of the country measured in kilometers square. Data on the road network from the International Road Federation, World Road Statistics and electronic files.

Road_paved refers to the paved roads, as a percentage of all the country's roads, measured in length. The data are from the International Road Federation, World Road Statistics and electronic files.

Secschoolenroll stands for secondary school enrolment ratio. Enrollment ratio is the ratio of total enrollment to the population of the age group that officially corresponds to the level of education shown. Secondary education completes the provision of basic education that began at the primary level, and aims at laying the foundations for lifelong learning and human development, by offering more subject- or skill-oriented instruction using more specialised teachers. Data are from the World Bank's World Development Indicators.

Simple_average1_AHS is the applied tariff and data are from the United Nations Conference on Trade and Development's Trade Analysis Information System (TRAINS).

Simple_average3_MFN is the simple average rate of MFN tariff and data are from the United Nations Conference on Trade and Development's Trade Analysis Information System (TRAINS), WTO, and the World Bank's World Trade Indicators.

Tel100pop stands for the number of fixed telephone lines for 100 habitants. Telephone lines are lines that connect a subscriber's terminal equipment to the public switched telephone network and that have a port on a telephone exchange. Integrated services digital network channels and fixed wireless subscribers are included. Data are from the World Bank's World Development Indicators.

Teldensity stands for the number of fixed telephone lines and cell phone for 100 habitants. Data are from the World Bank's World Development Indicators.

A.3. List of countries[2]

Unrestricted sample (36 countries)[3]

Argentina	Guatemala	Panama
Bangladesh	India	Paraguay
Bolivia	Indonesia	Peru
Cameroon	Jamaica	Philippines
Chile	Jordan	Senegal
Colombia	Kenya	Sri Lanka
Costa Rica	Malaysia	Thailand
Dominican Republic	Morocco	Trinidad and Tobago
Ecuador	Mozambique	Tunisia
El Salvador	Nepal	Turkey
Ethiopia	Nicaragua	Uruguay
Ghana	Pakistan	Venezuela

Landlocked countries (9 countries)	Small and Vulnerable Economies (36 countries)		Commodity Exporters (19 countries)
Belarus	Albania	Jordan	Benin
Bolivia	Barbados	Kyrgyz Republic	Botswana
Botswana	Belize	Malawi	Cameroon
Ethiopia	Benin	Mali	Colombia
Kazakhstan	Bolivia	Mauritius	Ecuador
Mongolia	Botswana	Mongolia	Ethiopia
Nepal	Burkina Faso	Nicaragua	Haïti
Paraguay	Burundi	Niger	Honduras
Zambia	Cambodia	Panama	Iran, Islamic Republic of
	Costa Rica	Papua New Guinea	Kazakhstan
	Dominican Republic	Paraguay	Mongolia
	Ecuador	Rwanda	Namibia
	El Salvador	Senegal	Nicaragua
	Fiji	Swaziland	Oman
	Guatemala	Togo	Panama
	Guyana	Trinidad and Tobago	Paraguay
	Haïti	Zambia	Saudi Arabia
	Honduras		Uruguay
	Jamaica		Venezuela

Notes

1 More details can be found in Hallaert, Cavazos, and Kang (2011) *Estimating the Constraints to Trade of developing Countries*, OECD, Paris, Trade Policy Working Paper 116, *http://www.oecd-ilibrary.org/trade/estimating-the-constraints-to-trade-of-developing-countries_5kg9mq8mx9tc-en.*

2 Overall 65 countries are covered. Some countries are considered in the subsamples but not in the unrestricted sample because some of the data needed for the unrestricted sample specification were not available. Moreover, some countries belong to two groups and country groupings.

3 36 countries when productivity is considered, 47 when secondary school enrolment is considered.

ANNEX B. Alternative regressions

Table B.1 Alternative import tariffs variable in the regressions using the unrestricted sample

	Core results			Alternative regression		
	Openness	Exports	Imports	Openness	Exports	Imports
Loggdp1	-0.287***	-0.413***	-0.192**	-0.117*	-0.161*	-0.062
	(0.091)	(0.106)	(0.081)	(0.068)	(0.082)	(0.065)
l_air_trans_carr_dep	0.101***	0.195***	0.039	0.056	0.101	0.006
	(0.039)	(0.057)	(0.034)	(0.052)	(0.073)	(0.045)
l_roadkm2	0.097***	0.082**	0.111***	0.107***	0.101*	0.107***
	(0.028)	(0.041)	(0.024)	(0.038)	(0.055)	(0.030)
l_electric_power_losses_p_out	-0.185***	-0.240**	-0.170***	-0.290***	-0.347**	-0.285***
	(0.067)	(0.098)	(0.055)	(0.091)	(0.149)	(0.076)
l_dom_credit	0.176**	0.004	0.290***	0.154	0.0124	0.277***
	(0.087)	(0.117)	(0.073)	(0.099)	(0.149)	(0.081)
Simple_average3_mfn	**-0.013****	**-0.014****	**-0.011****			
	(0.006)	**(0.007)**	**(0.005)**			
Simple_average1_AHS				**-0.017****	**-0.018****	**-0.015****
				(0.008)	**(0.010)**	**(0.007)**
l_gfcf1	0.423*	0.218	0.507**	0.293*	0.168	0.349**
	(0.254)	(0.294)	(0.228)	(0.174)	(0.243)	(0.136)
l_property_rights	0.229	0.496**	0.159	-0.141	0.0651	-0.214
	(0.167)	(0.219)	(0.149)	(0.210)	(0.299)	(0.182)
l_l_force	0.138**	0.263***	0.055	0.097	0.170	0.0323
	(0.067)	(0.086)	(0.059)	(0.091)	(0.109)	(0.079)
l_productivitity_per_worker	0.122*	0.309***	-0.027	0.010	0.125	-0.099
	(0.074)	(0.094)	(0.066)	(0.075)	(0.120)	(0.066)
l_reer	-0.678*	-0.696	-0.572*	-0.186	-0.109	-0.192
	(0.367)	(0.440)	(0.332)	(0.261)	(0.416)	(0.202)
l_government_spending	-1.570***	-1.840***	-1.404***	-0.709**	-0.797*	-0.582***
	(0.510)	(0.571)	(0.479)	(0.284)	(0.440)	(0.212)
Landlocked	-0.501***	-0.709***	-0.359***	-0.259	-0.310	-0.226*
	(0.126)	(0.179)	(0.113)	(0.163)	(0.259)	(0.133)
Island	0.005	0.019	-0.033	0.231	0.339*	0.138
	(0.137)	(0.163)	(0.129)	(0.160)	(0.184)	(0.163)
Constant	-2.972	-3.994	-4.095	-8.849***	-11.18***	-9.107***
	(3.778)	(4.230)	(3.493)	(1.919)	(2.834)	(1.518)
Observations	175	176	176	87	87	87
R-squared	0.454	0.411	0.503	0.659	0.492	0.754
Trade variable in growth estimate	0.081	0.054	0.102	0.193	0.134	0.283
	(0.089)	(0.061)	(0.127)	(0.226)	(0.152)	(0.349)

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table B.2 Alternative electricity variable for the regressions using the unrestricted sample

	Core results			Alternative regression		
	Openness	Exports	Imports	Openness	Exports	Imports
Loggdp1	-0.287***	-0.413***	-0.192**	-0.324***	-0.470***	-0.221***
	(0.091)	(0.106)	(0.081)	(0.079)	(0.091)	(0.071)
l_air_trans_carr_dep	0.101***	0.195***	0.039	0.122***	0.209***	0.0681
	(0.039)	(0.057)	(0.034)	(0.047)	(0.067)	(0.043)
l_roadkm2	0.097***	0.082**	0.111***	0.141***	0.136***	0.151***
	(0.028)	(0.041)	(0.024)	(0.031)	(0.040)	(0.027)
l_electric_power_losses_p_out	**-0.185*** (0.067)**	**-0.240** (0.098)**	**-0.170*** (0.055)**			
l_electric_cons_percap				**-0.060 (0.086)**	**-0.0271 (0.121)**	**-0.106 (0.075)**
l_dom_credit	0.176**	0.004	0.290***	0.111	-0.0724	0.225***
	(0.087)	(0.117)	(0.073)	(0.092)	(0.121)	(0.080)
Simple_average3_mfn	-0.013**	-0.014**	-0.011**	-0.018***	-0.020***	-0.015***
	(0.006)	(0.007)	(0.005)	(0.005)	(0.006)	(0.005)
l_gfcf1	0.423*	0.218	0.507**	0.547**	0.363	0.623**
	(0.254)	(0.294)	(0.228)	(0.269)	(0.308)	(0.244)
l_property_rights	0.229	0.496**	0.159	0.410***	0.714***	-0.339***
	(0.167)	(0.219)	(0.149)	(0.151)	(0.211)	(0.130)
l_l_force	0.138**	0.263***	0.055	0.183***	0.338***	0.0829
	(0.067)	(0.086)	(0.059)	(0.069)	(0.085)	(0.061)
l_productivitity_per_worker	0.122*	0.309***	-0.027	0.165*	0.330**	-0.053
	(0.074)	(0.094)	(0.066)	(0.099)	(0.133)	(0.089)
l_reer	-0.678*	-0.696	-0.572*	-0.543	-0.532	-0.447
	(0.367)	(0.440)	(0.332)	(0.333)	(0.406)	(0.301)
l_government_spending	-1.570***	-1.840***	-1.404***	-1.644***	-1.911***	-1.523***
	(0.510)	(0.571)	(0.479)	(0.459)	(0.522)	(0.431)
Landlocked	-0.501***	-0.709***	-0.359***	-0.397***	-0.580***	-0.273**
	(0.126)	(0.179)	(0.113)	(0.141)	(0.187)	(0.131)
Island	0.005	0.019	-0.033	-0.0657	0.0755	-0.0906
	(0.137)	(0.163)	(0.129)	(0.148)	(0.177)	(0.137)
Constant	-2.972	-3.994	-4.095	-4.204	-5.459	-5.093*
	(3.778)	(4.230)	(3.493)	(3.216)	(3.631)	(2.967)
Observations	175	176	176	183	184	184
R-squared	0.454	0.411	0.503	0.452	0.402	0.504
Trade variable in growth estimate	0.081	0.054	0.102	0.0883	0.456	0.098
	(0.089)	(0.061)	(0.127)	(0.122)	(0.385)	(0.180)

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table B.3 Alternative road variable for the regressions using the unrestricted sample

	Core results			Alternative regression		
	Openness	Exports	Imports	Openness	Exports	Imports
Loggdp1	-0.287***	-0.413***	-0.192**	-0.371***	-0.566***	-0.216***
	(0.091)	(0.106)	(0.081)	(0.081)	(0.100)	(0.074)
l_air_trans_carr_dep	0.101***	0.195***	0.039	0.122***	0.259***	0.023
	(0.039)	(0.057)	(0.034)	(0.036)	(0.054)	(0.032)
l_roadkm2	**0.097*** **	**0.082** **	**0.111*** **			
	(0.028)	**(0.041)**	**(0.024)**			
l_road_paved				**0.179*** **	**0.121** **	**0.178*** **
				(0.096)	**(0.112)**	**(0.090)**
l_electric_power_losses_p_ out	-0.185***	-0.240**	-0.170***	-0.100	-0.131	-0.135**
	(0.067)	(0.098)	(0.055)	(0.063)	(0.093)	(0.054)
l_dom_credit	0.176**	0.004	0.290***	0.049	-0.221**	0.246***
	(0.087)	(0.117)	(0.073)	(0.071)	(0.104)	(0.065)
Simple_average3_mfn	-0.013**	-0.014**	-0.011**	-0.017***	-0.0202***	-0.011**
	(0.006)	(0.007)	(0.005)	(0.005)	(0.006)	(0.005)
l_gfcf1	0.423*	0.218	0.507**	0.624***	0.627***	0.568***
	(0.254)	(0.294)	(0.228)	(0.202)	(0.241)	(0.190)
l_property_rights	0.229	0.496**	0.159	0.250*	0.342*	0.257**
	(0.167)	(0.219)	(0.149)	(0.151)	(0.201)	(0.129)
l_l_force	0.138**	0.263***	0.055	0.100	0.273***	-0.0249
	(0.067)	(0.086)	(0.060)	(0.061)	(0.079)	(0.055)
l_productivitity_per_ worker	0.122*	0.309***	-0.027	0.171***	0.453***	-0.023
	(0.074)	(0.094)	(0.066)	(0.065)	(0.095)	(0.055)
l_reer	-0.678*	-0.696	-0.572*	-0.898**	-1.036**	-0.802**
	(0.367)	(0.440)	(0.332)	(0.354)	(0.421)	(0.325)
l_government_spending	-1.570***	-1.840***	-1.404***	-1.322***	-1.737***	-0.965***
	(0.510)	(0.571)	(0.479)	(0.335)	(0.422)	(0.317)
Landlocked	-0.501***	-0.709***	-0.359***	-0.495***	-0.714***	-0.345***
	(0.126)	(0.179)	(0.113)	(0.119)	(0.186)	(0.100)
Island	0.005	0.019	-0.033	0.085	0.091	0.069
	(0.137)	(0.163)	(0.129)	(0.159)	(0.184)	(0.151)
Constant	-2.972	-3.994	-4.095	-3.001	-2.521	-5.136**
	(3.778)	(4.230)	(3.493)	(2.700)	(3.231)	(2.474)
Observations	175	176	176	190	191	191
R-squared	0.454	0.411	0.503	0.460	0.411	0.500
Trade variable in growth estimate	0.081	0.054	0.102	0.166*	0.109*	0.238
	(0.089)	(0.061)	(0.127)	(0.094)	(0.062)	(0.147)

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table B.4 Alternative fiscal variable for the regressions using the unrestricted sample

	Core results			Alternative regression		
	Openness	Exports	Imports	Openness	Exports	Imports
Loggdp1	-0.287***	-0.413***	-0.192**	-0.068	0.037	-0.118
	(0.091)	(0.106)	(0.081)	(0.130)	(0.145)	(0.114)
l_air_trans_carr_dep	0.101***	0.195***	0.039	0.043	0.037	-0.009
	(0.039)	(0.057)	(0.034)	(0.102)	(0.128)	(0.079)
l_roadkm2	0.097***	0.082**	0.111***	0.152***	0.229***	0.092*
	(0.028)	(0.041)	(0.024)	(0.055)	(0.067)	(0.047)
l_electric_power_losses_p_o ut	-0.185***	-0.240**	-0.170***	-0.383**	-0.728***	-0.226
	(0.067)	(0.098)	(0.055)	(0.169)	(0.204)	(0.147)
l_dom_credit	0.176**	0.004	0.290***	0.113	-0.090	0.279**
	(0.087)	(0.117)	(0.073)	(0.139)	(0.180)	(0.109)
Simple_average3_mfn	-0.013**	-0.014**	-0.011**	-0.017***	-0.023***	-0.011**
	(0.006)	(0.007)	(0.005)	(0.005)	(0.007)	(0.004)
l_gfcf1	0.423*	0.218	0.507**	0.324	0.265	0.283
	(0.254)	(0.294)	(0.228)	(0.250)	(0.306)	(0.208)
l_property_rights	0.229	0.496**	0.159	0.164	0.215	0.154
	(0.167)	(0.219)	(0.149)	(0.244)	(0.294)	(0.213)
l_l_force	0.138**	0.263***	0.055	0.112	0.226	0.071
	(0.067)	(0.086)	(0.059)	(0.152)	(0.181)	(0.132)
l_productivitity_per_ worker	0.122*	0.309***	-0.027	-0.0806	-0.107	-0.069
	(0.074)	(0.094)	(0.067)	(0.128)	(0.152)	(0.112)
l_reer	-0.678*	-0.696	-0.572*	0.209	0.403	0.205
	(0.367)	(0.440)	(0.332)	(0.329)	(0.425)	(0.260)
l_government_spending	**-1.570*** **	**-1.840*** **	**-1.404*** **			
	(0.510)	**(0.571)**	**(0.479)**			
l_gov_taxrevenue				**0.728*** **	**1.156*** **	**0.502** **
				(0.239)	**(0.279)**	**(0.212)**
Landlocked	-0.501***	-0.709***	-0.359***	-0.101	-0.409	0.151
	(0.126)	(0.179)	(0.113)	(0.321)	(0.372)	(0.276)
Island	0.005	0.019	-0.033	0.011	-0.189	0.103
	(0.137)	(0.163)	(0.129)	(0.164)	(0.205)	(0.142)
Constant	-2.972	-3.994	-4.095	-16.58***	-21.11***	-15.76***
	(3.778)	(4.230)	(3.493)	(2.603)	(3.184)	(2.180)
Observations	175	176	176	74	74	75
R-squared	0.454	0.411	0.503	0.746	0.726	0.803
Trade variable in growth estimate	0.081	0.054	0.102	1.600	0.348	-0.652
	(0.089)	(0.060)	(0.127)	(5.369)	(0.473)	(0.791)

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table B.5 Alternative electricity variables for the regressions using the landlocked countries sample

	Availability			Reliability		
	Openness	Exports	Imports	Openness	Exports	Imports
Loggdp1	-0.014	-0.034	-0.016	0.033	0.149**	-0.054
	(0.020)	(0.021)	(0.030)	(0.045)	(0.069)	(0.045)
l_roadkm2	-0.016	-0.043*	0.011	0.146***	0.117*	0.163***
	(0.016)	(0.025)	(0.026)	(0.038)	(0.059)	(0.033)
l_electric_cons_percap	**0.201*** **	**0.405*** **	**0.089** **			
	(0.022)	**(0.034)**	**(0.034)**			
l_electric_power_losses_p_out				**-0.138***	**-0.180**	**-0.140*** **
				(0.072)	**(0.152)**	**(0.045)**
Simple_average3_mfn	-0.008	-0.007	-0.006	-0.042***	-0.068***	-0.025***
	(0.006)	(0.011)	(0.010)	(0.007)	(0.014)	(0.004)
l_gfcf1	0.354***	0.278***	0.299**	-0.503**	-1.193***	-0.088
	(0.073)	(0.092)	(0.124)	(0.228)	(0.359)	(0.195)
l_reer	-1.080***	-0.892***	-1.053***	-0.501	-0.390	-0.368*
	(0.171)	(0.218)	(0.271)	(0.339)	(0.860)	(0.180)
l_gov_spending	-0.205**	-0.242***	-0.256*	-0.535*	-0.503	-0.740**
	(0.089)	(0.085)	(0.135)	(0.221)	(0.339)	(0.257)
Constant	-10.71***	-13.23***	-9.999***	--6.965**	-9.263**	-6.364**
	(0.806)	(1.112)	(1.069)	(2.573)	(3.867)	(2.315)
Observations	50	51	50	23	24	23
R-squared	0.932	0.963	0.748	0.934	0.918	0.919
Trade variable in growth estimate	0.269	0.327	0.276	0.307	0.431	0.418
	(0.260)	(0.289)	(0.294)	(0.701)	(1.446)	(0.860)

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table B.6 Alternative fiscal variable for the regressions using the landlocked countries sample

	Fiscal variable: spending			Fiscal variable: revenue		
	Openness	Exports	Imports	Openness	Exports	Imports
Loggdp1	-0.027	-0.038	-0.028	-0.043	-0.064	-0.039
	(0.051)	(0.047)	(0.062)	(0.062)	(0.064)	(0.074)
l_roadkm2	0.041	0.000	0.121***	0.084	0.046	0.156**
	(0.036)	(0.040)	(0.041)	(0.054)	(0.058)	(0.061)
l_roadpaved	-0.109*	-0.075	-0.215***	-0.166	-0.150	-0.251**
	(0.059)	(0.065)	(0.059)	(0.099)	(0.103)	(0.105)
l_electric_cons_percap	0.223***	0.410***	0.131***	0.229***	0.429***	0.125**
	(0.034)	(0.038)	(0.043)	(0.039)	(0.052)	(0.054)
l_dom_credit	-0.073	-0.119*	-0.034	-0.018	-0.032	-0.004
	(0.054)	(0.069)	(0.056)	(0.045)	(0.054)	(0.059)
Simple_average3_mfn	-0.012	-0.018	-0.006	-0.009	-0.010	-0.006
	(0.009)	(0.011)	(0.010)	(0.008)	(0.012)	(0.009)
l_gfcf1	0.382***	0.193	0.475***	0.440***	0.293**	0.496***
	(0.090)	(0.125)	(0.129)	(0.129)	(0.140)	(0.153)
l_reer	-1.173***	-0.933***	-1.271***	-1.169***	-1.018***	-1.199***
	(0.202)	(0.284)	(0.308)	(0.188)	(0.231)	(0.314)
l_gov_spending_imf	**-0.070**	**-0.050**	**-0.093**			
	(0.081)	**(0.077)**	**(0.095)**			
l_gov_revenue_imf				**-0.070**	**-0.065**	**-0.074**
				(0.135)	**(0.140)**	**(0.195)**
Constant	-9.637***	-12.360**	-8.383***	-9.097***	-11.40***	-8.201***
	(1.547)	(1.599)	(1.914)	(1.309)	(1.241)	(2.153)
Observations	56	57	56	57	58	57
R-squared	0.958	0.954	0.856	0.929	0.951	0.812
Trade variable in growth estimate	0.539**	0.678***	0.497***	0.018	0.022	0.018
	(0.215)	(0.227)	(0.243)	(0.193)	(0.220)	(0.189)

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table B.7 Alternative road variables for the regressions using the landlocked countries sample

	Road Quantity			Road Quality			Road Quantity & Quality		
	Openness	Exports	Imports	Openness	Exports	Imports	Openness	Exports	Imports
Loggdp1	-0.017	-0.044	-0.009	-0.031	-0.021	-0.043	-0.0002	-0.026	0.014
	(0.024)	(0.027)	(0.033)	(0.023)	(0.017)	(0.034)	(0.021)	(0.022)	(0.029)
l_roadkm2	**0.006**	**-0.020**	**0.032**				**0.105*** **	**0.084** **	**0.167*** **
	(0.016)	**(0.023)**	**(0.024)**				**(0.033)**	**(0.038)**	**(0.038)**
l_roadpaved				**-0.013**	**-0.090*** **	**0.027**	**-0.196*** **	**-0.207*** **	**-0.268*** **
				(0.019)	**(0.019)**	**(0.029)**	**(0.049)**	**(0.052)**	**(0.053)**
l_electric_cons_percap	0.166***	0.383***	0.036	0.204***	0.394***	0.098***	0.198***	0.417***	0.080**
	(0.017)	(0.026)	(0.031)	(0.017)	(0.017)	(0.031)	(0.021)	(0.027)	(0.036)
l_dom_credit	-0.061	-0.077	-0.053	-0.059*	-0.075**	-0.048	-0.056*	-0.071*	-0.046
	(0.039)	(0.047)	(0.051)	(0.033)	(0.031)	(0.049)	(0.031)	(0.041)	(0.034)
Simple_average3_mfn	-0.021***	-0.017*	-0.025***	-0.013**	-0.014**	-0.012	-0.015***	-0.010	-0.017*
	(0.005)	(0.009)	(0.008)	(0.005)	(0.006)	(0.009)	(0.005)	(0.008)	(0.009)
l_gfcf1	0.363***	0.201*	0.400***	0.355***	0.259***	0.378***	0.457***	0.301***	0.529***
	(0.075)	(0.103)	(0.112)	(0.068)	(0.068)	(0.111)	(0.071)	(0.084)	(0.110)
l_reer	-1.003***	-0.948***	-0.950***	-0.896***	-0.965***	-0.790***	-0.943***	-0.883***	-0.868***
	(0.129)	(0.222)	(0.223)	(0.147)	(0.150)	(0.240)	(0.122)	(0.205)	(0.221)
Constant	-11.11***	-12.77***	-11.14***	-11.60***	-13.02***	-11.96***	-10.72***	-12.37***	-10.60***
	(0.743)	(0.971)	(1.127)	(0.839)	(0.839)	(1.342)	(0.763)	(1.009)	(1.062)
Observations	66	67	66	74	75	74	66	67	66
R-squared	0.889	0.935	0.687	0.876	0.944	0.612	0.921	0.949	0.778
Trade variable in growth estimate	0.092	0.093	0.097	0.222	0.201	0.251	0.165	0.174	0.179
	(0.204)	(0.215)	(0.220)	(0.189)	(0.170)	(0.229)	(0.192)	(0.198)	(0.218)

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table B.8 Alternative transport variable for the regressions using the sample of small and vulnerable economies

	Openness	Exports	Imports
Loggdp1	-0.125	-0.057	-0.176
	(0.148)	(0.188)	(0.138)
l_roadkm2	**0.177***	**0.108**	**0.223*****
	(0.090)	**(0.106)**	**(0.082)**
l_electric_cons_percap	0.076	0.086	0.057
	(0.105)	(0.125)	(0.105)
l_dom_credit	0.444**	0.450**	0.428***
	(0.177)	(0.221)	(0.155)
Simple_average3_mfn	0.0160	0.0238	0.0105
	(0.029)	(0.033)	(0.026)
l_gfcf1	0.278	0.163	0.357
	(0.324)	(0.373)	(0.307)
l_property_rights	0.114	0.557**	-0.048
	(0.169)	(0.215)	(0.162)
l_l_force	0.478	0.496	0.519*
	(0.341)	(0.415)	(0.311)
l_reer	-0.848	-1.007	-0.583
	(0.613)	(0.753)	(0.560)
l_government_spending	-2.956***	-3.052**	-2.907***
	(1.103)	(1.311)	(0.990)
l_Herfindhal	-1.105**	-0.944*	-1.259**
	(0.424)	(0.478)	(0.488)
Constant	-5.500	-8.961	-6.163
	(4.316)	(5.786)	(3.833)
Observations	121	121	122
R-squared	0.369	0.314	0.408
Trade variable in growth estimate	0.092**	0.099*	0.087**
	(0.0427)	(0.054)	(0.036)

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table B.9 Alternative electricity variable for the regressions using the sample of small and vulnerable economies

	Openness	Exports	Imports
Loggdp1	-0.033	-0.080	-0.031
	(0.111)	(0.183)	(0.0890)
l_road_paved	0.499	0.374	0.543*
	(0.323)	(0.384)	(0.290)
l_electric_power_losses_p_out	**-0.424****	**-0.692****	**-0.319***
	(0.206)	**(0.281)**	**(0.176)**
l_dom_credit	0.159	0.0579	0.189
	(0.189)	(0.228)	(0.165)
Simple_average3_mfn	-0.005	-0.005	-0.005
	(0.021)	(0.027)	(0.018)
l_gfcf1	0.486*	0.562	0.474*
	(0.288)	(0.342)	(0.268)
l_property_rights	0.0631	0.521*	-0.135
	(0.201)	(0.268)	(0.181)
l_l_force	0.199	0.349	0.156
	(0.229)	(0.287)	(0.208)
l_reer	-0.858	-1.143	-0.608
	(0.685)	(0.891)	(0.610)
l_government_spending	-1.378	-0.884	-1.560
	(1.217)	(1.466)	(1.099)
l_Herfindhal	-1.119*	-1.078	-1.179*
	(0.620)	(0.656)	(0.663)
Constant	-11.29***	-14.15**	-11.39***
	(3.818)	(5.899)	(3.192)
Observations	87	87	88
R-squared	0.359	0.347	0.390
Trade variable in growth estimate[1]	0.021	-0.010	0.025
	(0.336)	(0.044)	(0.031)

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

[1] This impact is fragile. Small changes in specification of the growth result in large variations

Table B.10 Adding telecommunication infrastructure to the benchmark regression for the small and vulnerable economies

	Openness	Exports	Imports
Loggdp1	-0.218*	-0.313*	-0.177
	(0.128)	(0.173)	(0.114)
l_road_paved	0.515***	0.459**	0.549***
	(0.162)	(0.186)	(0.150)
tel100pop	**0.0226***	**0.0425*****	**0.0131**
	(0.012)	**(0.015)**	**(0.011)**
l_electric_cons_percap	-0.0209	-0.0181	-0.0429
	(0.088)	(0.109)	(0.090)
l_dom_credit	0.341**	0.329	0.332**
	(0.155)	(0.200)	(0.134)
Simple_average3_mfn	-0.00308	-0.00169	-0.00423
	(0.025)	(0.029)	(0.022)
l_gfcf1	0.216	0.178	0.250
	(0.310)	(0.358)	(0.297)
l_property_rights	0.159	0.646***	-0.0313
	(0.168)	(0.219)	(0.161)
l_l_force	0.429**	0.766***	0.282
	(0.201)	(0.258)	(0.183)
l_reer	-0.955*	-0.948	-0.810
	(0.566)	(0.720)	(0.512)
l_government_spending	-2.490***	-2.875***	-2.274***
	(0.799)	(0.957)	(0.724)
l_Herfindhal	-1.116***	-0.856*	-1.333***
	(0.414)	(0.468)	(0.480)
Constant	-6.326*	-9.617*	-6.894**
	(3.751)	(5.135)	(3.347)
Observations	123	123	124
R-squared	0.402	0.340	0.443
Trade variable in growth estimate	0.060*	0.066*	0.058**
	(0.031)	(0.037)	(0.028)

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table B.11 Alternative import tariffs variable for the regressions using the sample of commodity exporters

	Openness	Exports	Imports
Loggdp1	-0.101***	-0.109**	-0.107**
	(0.026)	(0.041)	(0.042)
l_road_paved	0.012	-0.110*	0.100*
	(0.033)	(0.056)	(0.054)
l_electric_cons_percap	0.064	0.034***	-0.097***
	(0.042)	(0.062)	(0.058)
l_dom_credit	-0.155**	-0.533***	-0.017
	(0.064)	(0.108)	(0.079)
Simple_average1_AHS	**-0.048*** **	**-0.043*** **	**-0.048*** **
	(0.005)	**(0.014)**	**(0.009)**
l_gfcf1	0.127	-0.095	0.355***
	(0.087)	(0.126)	(0.128)
l_reer	-0.596***	-1.127***	-0.245
	(0.156)	(0.288)	(0.212)
l_government_spending	0.132	0.527***	-0.112
	(0.151)	(0.173)	(0.201)
l_herfindahl	0.673***	1.134***	0.117
	(0.132)	(0.179)	(0.116)
Constant	-8.588***	-7.295***	-11.12***
	(0.653)	(1.127)	(1.136)
Observations	51	51	51
R-squared	0.860	0.862	0.800
Trade variable in growth estimate	0.096	0.051	0.234
	(0.115)	(0.061)	(0.334)

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table B.12 Alternative electricity variable for the regressions using the sample of commodity exporters

	Reliability			Availability		
	Openness	Exports	Imports	Openness	Exports	Imports
loggdp1	-0.056**	0.097**	-0.137***	-0.128***	-0.166***	-0.143***
	(0.024)	(0.045)	(0.026)	(0.020)	(0.029)	(0.024)
l_road_paved	0.087	0.068	0.089**	-0.044	-0.141***	0.018
	(0.053)	(0.104)	(0.043)	(0.026)	(0.038)	(0.032)
l_electric_power_losses_p_out	**-0.071**	**-0.080**	**-0.096**			
	(0.094)	**(0.174)**	**(0.083)**			
l_electric_cons_percap				**0.163*** **	**0.400*** **	**0.025**
				(0.022)	**(0.028)**	**(0.024)**
l_dom_credit	-0.082	-0.238**	-0.019	-0.085**	-0.355***	0.043
	(0.057)	(0.108)	(0.044)	(0.039)	(0.071)	(0.040)
Simple_average3_mfn	-0.045***	-0.061***	-0.033***	-0.025***	-0.023***	-0.023***
	(0.009)	(0.014)	(0.007)	(0.004)	(0.006)	(0.005)
l_gfcf1	0.425***	0.277	0.637***	0.279***	0.108	0.464***
	(0.110)	(0.277)	(0.092)	(0.063)	(0.099)	(0.075)
l_reer	-0.536**	-0.712	-0.465*	-0.656***	-0.864***	-0.460***
	(0.264)	(0.507)	(0.254)	(0.162)	(0.297)	(0.170)
l_government_spending	-0.182	-0.227	-0.308*	0.002	0.355***	-0.243**
	(0.166)	(0.404)	(0.156)	(0.101)	(0.123)	(0.118)
l_herfindahl	0.774***	1.310***	0.122	0.590***	1.203***	-0.004
	(0.149)	(0.296)	(0.125)	(0.084)	(0.098)	(0.091)
Constant	-9.213***	-10.620***	-9.748***	-8.693***	-9.204***	-10.140***
	(1.102)	(2.337)	(0.926)	(0.684)	(1.339)	(0.705)
Observations	67	68	68	99	100	100
R-squared	0.694	0.539	0.800	0.830	0.843	0.787
Trade variable in growth estimate	0.009	0.006	0.012	0.011	0.011	0.020
	(0.115)	(0.155)	(0.134)	(0.102)	(0.077)	(0.148)

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

ANNEX C. Main business constraints according to firms' surveys

Table C. Main business constraints according to firms' surveys

	Main Constraint (ranked first)				Top 3 constraints (Ranked first to third main constraints)			
	Description	**Number of countries**	**Share in % of possibilities**	**% of firms[2]**	**Description**	**Number of countries**	**Share in % of possibilities[1]**	**% of firms[2]**
All ODA recipients 96 countries	Electricity	28	29.2	39.6	Access to Finance	65	67.7	19.7
	Access to Finance	23	24.0	26.8	Electricity	45	46.9	30.4
	Informal sector	14	14.6	24.0	Informal Sector	40	41.7	18.4
	Political instability	11	11.5	33.1	Tax rates	35	36.5	17.4
	Tax rates	9	9.4	24.7	Political instability	27	28.1	21.6
	Inadequately educated workforce	4	4.2	29.2	Corruption	22	22.9	13.9
	Crime, theft and disorder	4	4.2	28.4	Crime, theft and disorder	19	19.8	17.5
	Licences and permits	2	2.1	27.0	Inadequately educated workforce	14	14.6	11.6
	Corruption	1	1.0	14.2	Transportation	6	6.3	13.1
					Access to land	5	5.2	20.9
					Licences and permits	4	4.2	15.7
					Tax Administration	3	3.1	8.9
					Labour regulations	3	3.1	
Landlocked 30 countries	Access to finance	9	30.0	26.1	Access to finance	23	76.7	21.5
	Electricity	6	20.0	36.0	Tax rates	16	53.3	19.9
	Tax rates	5	16.7	26.3	Informal sector	14	46.7	18.8
	Informal sector	5	1.7	25.1	Electricity	9	30.0	31.6

	Main Constraint (ranked first)				Top 3 constraints (Ranked first to third main constraints)			
	Description	**Number of countries**	**Share in % of possibilities**	**% of firms[2]**	**Description**	**Number of countries**	**Share in % of possibilities[1]**	**% of firms[2]**
	Political instability	4	13.3	35.6	Political instability	8	26.7	24.5
	Crime, theft and disorder	1	3.3	20.0	Corruption	6	20.0	14.1
					Inadequately educated workforce	6	20.0	12.7
					Crime, theft and disorder	3	10.0	16.5
					Access to land	2	6.7	13.5
					Licences and permits	1	3.3	14.6
					Transportation	1	3.3	11.4
					Labour regulation	1	3.3	2.6
SVEs 35 Countries	Electricity	11	31.4	35.4	Access to finance	24	68.6	20.0
	Access to Finance	10	28.6	26.9	Informal sector	18	51.4	18.0
	Informal sector	5	17.1	22.5	Electricity	17	48.6	27.9
	Political Instability	6	14.3	31.7	Political Instability	11	31.4	22.4
	Tax rates	2	5.7	17.8	Tax rates	10	28.6	16.4
	Licences and permits	1	2.9	25.4	Corruption	10	28.6	13.4
					Crime, theft and disorder	5	14.3	14.8
					Inadequately educated workforce	3	8.6	11.7
					Transportation	2	5.7	13.0
					Access to land	2	5.7	10.7
					Licences and permits	1	2.9	25.4
					Tax administration	1	2.9	11.3
					Labour regulation	1	2.9	8.8
Commodity Exporters 48 Countries	Electricity	16	20.8	38.9	Access to finance	35	12.5	22.7
	Access to Finance	12	15.6	26.4	Electricity	25	9.0	30.6
	Informal secor	6	7.8	27.5	Tax rates	18	6.5	18.3
	Political instability	4	5.2	26.1	Informal sector	16	5.7	19.4
	Tax rates	4	5.2	26.0	Corruption	14	5.0	15.4
	Inadequately educated workforce	2	2.6	27.2	Political instability	10	3.6	18.2
	Crime, theft and	2	2.6	20.8	Crime, theft and disorder	9	3.2	17.1

	Main Constraint (ranked first)				Top 3 constraints (Ranked first to third main constraints)			
	Description	**Number of countries**	**Share in % of possibilities**	**% of firms[2]**	**Description**	**Number of countries**	**Share in % of possibilities[1]**	**% of firms[2]**
	disorder							
	Licences and permits	1	1.3	28.7	Inadequately educated workforce	6	2.2	17.2
	Corruption	1	1.3	14.2	Access to land	5	1.8	15.9
					Transportation	5	1.8	11.3
					Licences and permits	1	0.4	28.7
Islands 10 countries	Electricity	3	30.0	23.6	Electricity	6	60.0	18.2
	Informal sector	3	30.0	21.2	Informal sector	6	60.0	18.5
	Political instability	1	10.0	8.8	Crime, theft and disorder	5	50.0	12.6
	Inadequately educated workforce	1	10.0	25.2	Access to Finance	5	50.0	17.0
	Access to finance	1	10.0	30.2	Tax rates	3	30.0	15.2
	Tax rates	1	10.0	17.0	Political instability	1	10.0	44.4
					Labour regulation	1	10.0	8.8
					Inadequately educated workforce	1	10.0	25.2
					Transportation	1	10.0	12.6
					Corruption	1	10.0	17.0

Source: Author's calculations based on *Enterprise Surveys* (World Bank, 2010)
Notes: Data are the latest available for each country in September 2010.
[1] 100% if mentioned by all countries in the top three constraints.
[2] Simple average.

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