

# Analyzing Trade Competitiveness

## A Diagnostics Approach

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## Abstract

Trade has proven to be a powerful engine of growth worldwide. But not all countries have benefited equally. Despite much effort to use trade policy to catalyze exports, many developing countries have failed to achieve successful, sustainable export and economic growth. Even with the benefit of preferential market access, many developing country exporters face a broad and diverse set of constraints that limit their potential to compete

in export markets. This paper discusses the concept of “competitiveness” with respect to trade and the various dimensions on which trade competitiveness might be assessed. It argues there is a need for a framework by which trade competitiveness can be assessed in a systematic way. Inspired by the “growth diagnostics” approach, it outlines a possible framework for assessing factors that facilitate or constrain trade competitiveness.

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This paper—a product of the International Trade Department, Poverty Reduction and Economic Management Network—is part of a larger effort in the department to understand the determinants of trade competitiveness and its implications for growth in developing countries. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The authors may be contacted at [tfarole@worldbank.org](mailto:tfarole@worldbank.org), [jreis@worldbank.org](mailto:jreis@worldbank.org), and [swagle@worldbank.org](mailto:swagle@worldbank.org).

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## **Analyzing trade competitiveness: A diagnostics approach**

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## Trade and economic growth

Despite the recent crisis in the global economy there remains a consensus on the positive relationship between trade and long-run economic growth. Many empirical studies show a strong correlation between a country's trade share and its economic growth performance (c.f. Edwards, 1992; Sachs & Warner, 1995; Frankel & Romer, 1999; Dollar & Kraay, 2004; Romalis, 2007). This relationship runs in both directions: the richer countries become the more they tend to trade; but more importantly, countries that engage in more trade grow richer more quickly. The East Asian experience of export-led growth over the past three decades provides powerful real-world evidence of the potential for trade to be an engine of growth and poverty reduction. Indeed, despite the steep declines in exports in highly open, export-oriented East Asian economies during the recent crisis, growth appears to have rebounded more quickly and robustly than in less globally-integrated regions.

The economic benefits of exporting have a long-established theoretical basis. Specifically these include static efficiency gains derived from exploiting comparative advantage and improved allocation of scarce resources, as well as dynamic gains in the more productive export sector engineered by higher competition, greater economies of scale, better capacity utilization, the dissemination of knowledge, and technological progress. For developing countries, exports are also a main source of hard currency necessary to finance import of capital goods, which are an important source of knowledge spillovers. The literature on heterogeneous firms also emphasizes that exporters on average are more productive, capital-intensive, larger, and pay higher wages than non-exporters (Bernard et al, 2007). Finally openness to imports also acts as a disciplining force on domestic markets, leading to lower cost, higher quality inputs for producers.

But not all trade contributes to sustainable, equitable growth to the same degree or in the same way. Overdependence on commodity exports, for example, can contribute to lower long-run growth. And in the manufacturing sector, the phenomenon of “jobless growth” has been a particular concern: for instance, export-driven manufacturing output in East Asia increased by almost 180 percent in the 1990s, but the associated employment increased by only 3 percent (UNDP, 2005). Further, trade openness is in many countries associated with growing inter-regional inequalities (Rodriguez-Pose, 2010). This suggests that leveraging trade for broad-based economic growth is no simple matter – some paths may be better than others and some countries more capable than others in achieving this.

What are the constraints that prevent countries from exploiting trade potential for long-term economic gain? Traditionally, the focus has been on reducing barriers to market access – through trade policy measures such as reducing tariffs and quotas, granting preferences, and broader liberalization efforts. But while these measures are necessary, they are likely to be insufficient. As Harrison and Rodríguez-Clare (2009) point out, the large body of trade research fails to find a significant correlation between tariffs on final goods and growth performance<sup>2</sup>. This may help to explain why much of the effort to catalyze exports in developing countries through trade policy has failed to deliver successful, sustainable export and economic growth. Even with the benefit of preferential market access, many developing

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<sup>2</sup> The only exception being for intermediate or capital goods, where a higher tariff is associated with lower growth.

country exporters are unable to compete in global markets. The barriers they face are many and diverse, including: macroeconomic policies which distort efficient market entry and competition; poor factor conditions (cost and skill of labor, cost of capital), poor infrastructure and backbone services, and transport and logistics inefficiencies that raise production and trade costs. Moreover, as Rodrik (2007) notes, information and coordination failures and underprovision of public goods – which prevent the exploitation of scale economies and other intra- and inter-industry externalities – are the rule, not the exception, in developing countries. In summary, the problem goes much deeper than simply market access, but encompasses a wide range of supply-side factors that act as constraints to *export competitiveness*.

### **Competitiveness and productivity**

But what exactly is export competitiveness? The term “competitiveness” is used widely and is seemingly intuitive. But, in fact, it is conceptually vague and open to multiple interpretations. Many economists view competitiveness as something experienced only at the firm level, and dismiss notions of “national competitiveness” (Krugman, 1996), while others believe the lack of attention to broader national-level notions of competitiveness has been a glaring failure of economic research and policy (Porter, 1990). While countries may not actually compete in global markets, locations clearly shape firm-level competitiveness (positively or negatively) through natural endowments, human capital, market access, institutions, and a host of other factors. Indeed, competitiveness is normally achieved by entrepreneurs exploiting sources of comparative advantage that are unique to a location. In an increasingly integrated economy where low transport and coordination costs allow firms substantial choice over where they locate, the notion of place-based competitiveness is important. Moreover, while competitiveness is not necessarily a zero-sum game (Ciampi, 1996; Krugman, 1996), in traded goods markets, relative competitiveness does matter.

The OECD’s definition of competitiveness refers to a country’s ability to sell goods (under free and fair conditions) in global markets “...while simultaneously maintaining and expanding the real incomes of its people over the long term” (OECD, 2005). While competitiveness is often observed through changes in global market shares, a country may mask underlying competitive weakness by manipulating exchange rates, for example through devaluations or by maintaining a weak currency (Boltho, 1996). It is also particularly difficult to aggregate global market shares to a national level, where the basket of exports will be in a constant state of flux – with some specific products experiencing declining share and others growing.

The most broadly accepted definition of aggregate national competitiveness is productivity – specifically *total factor productivity*. Fundamentally, productivity determines the rates of return on investment, which in aggregate determines long-run growth rates (Porter, 1990). The ability to generate greater output from any given supply of inputs is, of course, the most direct route to economic growth<sup>3</sup>. Numerous studies affirm the link between productivity and export growth (c.f. Kunst & Marin, 1989; Alcalá & Ciccone, 2004). The relationship has been shown to be recursive, with trade itself raising

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<sup>3</sup> It should be noted, however, that this assumes markets that are not distorted by policy (e.g. trade barriers). It also, crucially, assumes that the resources of an economy are fully utilized (Begg, 1999).

productivity through knowledge spillovers and efficiency effects of greater market competition, contributing to the exit of least productive firms and growing market share of the most productive, as demonstrated by Melitz (2003).

But focusing only on firm-level productivity may not be enough to support competitiveness. As Klinger (2010, p.1) points out: “...*firm productivity is in no small part determined by public inputs to firms’ production, and the good functioning of the markets in which firms operate. States can either do a very good job or a very bad job at creating the environment in which firms can efficiently obtain inputs and sell their outputs. Moreover, some of the inputs required by firms, such as infrastructure, educated workers, and sanitary / safety certifications are directly provided by the State.*” This is particularly true in the export sector, where in addition to policy considerations such as tariffs, quotas, and exchange rates, factors like gateway infrastructure, standards and certification, and sector-level coordination in marketing and logistics all play a critical role in determining the competitiveness of individual exporting firms.

The multifaceted nature of export competitiveness thus requires a deep understanding of the wide range of factors which may contribute or constrain it. And as these factors are often highly endogenous, a piecemeal approach to reform is unlikely to be effective. At the very least, a comprehensive approach to understanding the constraints and how they impact on the export sector is necessary.

### **The outcomes of trade and export competitiveness**

Assessing export competitiveness starts with defining the objectives of an export strategy and understanding relative outcomes. The most common outcome measures include: the *level* (volume, share) *and growth* of exports; *diversification* of exports; and *quality or sophistication* of exports.

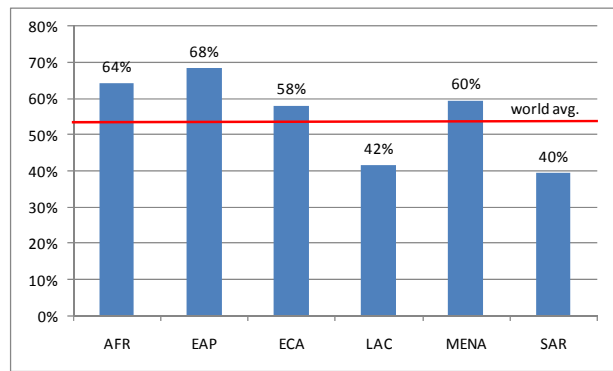
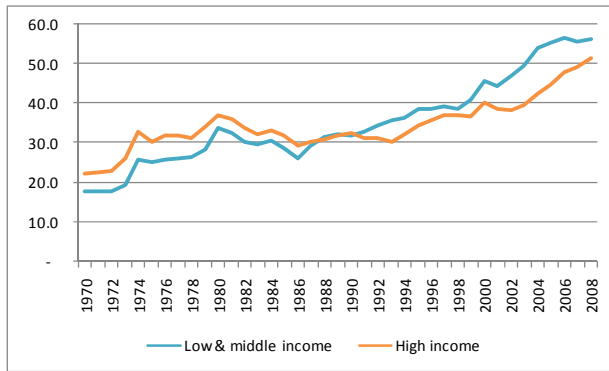
#### Export volume and growth

As discussed at the beginning of this note, much empirical evidence supports a strong association between trade growth and economic growth, with most evidence providing at least some support for a causal relationship between trade and growth. As shown in Figure 1 trade shares of GDP have grown rapidly over the past two decades, particularly in low and middle income countries. However, regions still vary widely in the degree to which they are integrated into global markets<sup>4</sup> (Figure 2). Within regions, the variance is even more dramatic – for example, Vietnam’s trade is 158% of its GDP, Thailand’s 136% and Cambodia’s 113%, while neighboring Laos has a trade share of only 47% of GDP.

#### **Figures 1 and 2: Evolution of trade share of GDP (1970-2008) and Trade share of GDP by region (2008)**

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<sup>4</sup> Of course, trade share is affected significantly by factors unrelated to competitiveness, including natural endowments and, most importantly, country size and geographical location. This explains, for example, the large gap in traded shares of Germany’s economy versus that of the US.



Source: World Development Indicators

For most countries, particularly middle and high income countries, the large majority of export growth takes place at the intensive margin – i.e. by selling more of the same products to the same markets (Brenton & Newfarmer, 2009). This deepening of trade relationships is supported by increasing specialization, which may be across products or within products. Within-product specialization can be observed through levels of intra-industry trade, which may derive from specialization in stages of production as well as from specialization at different levels of the quality ladder. The former is the source of the trade in components – or intermediate inputs – that characterize global production networks. The latter is the source of “cross-hauling”, or the two-way trade in similar end products that allows for the intense two-way trade within high income countries in areas like automobiles (e.g. Fiats to Germany and BMWs to Italy), clothing (e.g. Zara to Sweden and H&M to Spain), and commonplace food items like yoghurt, juice, and ice cream.

At the intensive margin, a critical indicator of competitiveness is the survival rate of export flows. Recent research (Besedes and Prusa, 2006; Brenton, Pierola, & von Uexkull, 2009; Lederman, 2009) also demonstrates that exporting is an activity with very low survival rates for new entrants. This is particularly the case for low income countries, where a host of constraints – including exchange rate volatility, and search and information costs – can conspire to fatally undermine export flows in these vital early years. Thus, beyond the discovery stage of the export cycle, competitiveness challenges for export survival at the intensive margin remain significant.

### Diversification

Export diversity – both in terms of products and markets – is strongly associated with economic growth (Hesse, 2009; Lederman & Maloney, 2009), particularly for developing countries<sup>5</sup>. This positive link between diversity and long-run growth accrues from reduced volatility in output that would otherwise result from the impact of external shocks on concentrated export basket (Haddad, Lim, and Saborowski, 2010), as well as from the increased potential for generating spillovers. Although much of the focus on diversification in low income countries tends to focus on concerns over a “natural resources curse”, there is increasing evidence that it is not natural resources per se that is the problem but rather concentration of exports (Lederman & Maloney, 2007).

<sup>5</sup> In contrast, after reaching a certain income level, advanced countries tend to re-specialize by expanding exports at the intensive margin (Cadot, Carrere & Strauss-Kahn, 2007)

Some of the recent theory on exports and competitiveness suggests that productivity (competitiveness) gains are achieved primarily through inter-industry spillovers, and that these are more likely to be achieved in certain product groups than in others – in the product-space language, in “denser” parts of the “forest” where there are greater opportunities for cross-product linkages (Hidalgo et al., 2007). But others caution there is no firm link between diversification and productivity (Harrison & Rodríguez-Clare, 2009) and that if it is easy to move from one industry to another, then the rents achievable in these industries occupying the “dense” part of the forest should be eroded. This would suggest that it may be quality upgrading (see below) rather than product diversification that is the key route to competitiveness.

The second aspect of diversification relates to markets. Research has shown that the majority of export growth at the extensive margin is achieved not through new products (discovery) but by expanding existing exports to new markets (Brenton & Newfarmer, 2009). Most developing countries export to a relatively narrow range of markets, far fewer than developed countries exporting in the same sector. Expanding market reach in products that have already proven to be competitive in at least some export markets can offer a substantial channel for growth. Yet to do so typically requires overcoming some barriers to competitiveness such as transport costs, standards, or access to market information.

#### Quality / sophistication

Remaining competitive in a dynamic context requires constant upgrading. For countries to maintain export competitiveness while also providing higher returns to workers they must continually improve relative productivity, as knowledge and technology diffusion (which contribute to productivity growth on a global level) will erode rents. This can only be achieved by reducing the costs per unit produced or by increasing the unit price. While both of these elements are crucial, the scope for reducing production costs has its limits<sup>6</sup>. Therefore upgrading *quality* – producing more sophisticated goods and services – is likely to be critical for long term growth. Quality upgrading can either be embodied in the product itself (“quality or product upgrading”) in the technology of how it is produced (“process upgrading”) (de Ferranti & Walton, 2004), or by integrating more production steps within the firm or the location (“functional upgrading”).

It is possible to be highly productive in terms of cost per unit, but low quality, which will be reflected in the potential to earn rents in global markets<sup>7</sup>. The opposite is also true, which explains why countries like Italy can maintain global competitiveness in the footwear sector despite substantially higher production costs than, say, Vietnam. Again, the experience of East Asia, including Korea, Taiwan, China and Malaysia, provides strong anecdotal evidence of how ongoing processes of industrial upgrading underpin long-term export success and sustainable economic growth.

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<sup>6</sup> There is however more scope in reducing costs of other inputs such as back-bone services, logistics and transport and other central infrastructure services.

<sup>7</sup> It can also be reflected in the inability of a country’s exporters to penetrate global markets, despite relatively low unit prices, where they are able to sell low quality output in the domestic market but are unable to penetrate export markets.



A growing literature has highlighted the importance of export quality or sophistication in contributing to competitiveness (c.f. Schott, 2004; Hummels & Klenow, 2005; Hallak & Sivadasan, 2009). While there is no consensus on the foundations of quality, most research suggests there is a strong relationship between the forces that contribute to quality upgrading and those that contribute to productivity growth – in particular human capital, innovation, and knowledge diffusion. One key debate is whether export competitiveness is best achieved through an evolutionary process of upgrading – selling lower quality goods to regional markets and building capabilities before moving into more competitive, sophisticated global markets – or leapfrogging immediately to sophisticated goods and / or rich country markets. Rodrik (2006) suggests that countries experience faster productivity growth by exporting more sophisticated goods. This raises a question, however, of whether competitiveness is best achieved by following comparative advantage or in actively defying it (Lin & Chang, 2009).<sup>8</sup> Hausman, Hwang, and Rodrik (2007) and subsequent concepts of “product space” (Hidalgo, Klingler, Barabasi, & Hausman, 2007) argue that certain goods provide greater opportunities for growth because of greater potential to upgrade vertically within the industry (e.g. cars versus bananas) and to benefit from inter-industry spillovers of knowledge (e.g. through exposure to higher quality technologies and higher productivity possibilities) to redeploy resources horizontally into more sophisticated industries. Others (Harrison & Rodríguez-Clare, 2009; Lederman & Maloney, 2009b), question these conclusions and suggest that competitiveness and growth are achieved by having innovative firms (in whatever sector) not necessarily by participating in sophisticated sectors. A related issue is the assumption that participation in high-technology sectors leads per se to knowledge spillovers. Spillover effects do not only depend on the sector/product but also on the concrete production steps within the sector and the degree to which they can be disaggregated and spatially dispersed. For instance, many production steps in seemingly “high-tech” sectors like ICT or automotive are nowadays standardized and labor-intensive.

### Adjustment

While discussions of productivity tend to focus on relative costs of production, it is important to recognize that competitiveness is not a static concept; nor is it one that should focus exclusively on cost to the disregard of price and demand related issues. Industries and places face constant change. Some of this is evolutionary, while other forces of change act as exogenous shocks. These can take many forms, including: social and environmental (e.g. climate change); political and economic (e.g. trade rules, tax, exchange rates, non-tariff barriers); innovation and “disruptive” technologies (e.g. mobile telecommunications). All of these change the bases of competitiveness in the short or medium term. Therefore, what matters for competitiveness is not only the capability to be productive in a static or slowly evolving external environment, but also the ability *to adjust and adapt to structural changes*. Being able to remain competitive and to adapt to changes requires redeploying resources (capital, labor,

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<sup>8</sup> Many seemingly sophisticated goods may not be that “high tech” after all. As Lin (2009) argues, when Samsung of South Korea started producing dynamic random access memory (DRAM) chip in 1983, it was considered relatively low-tech on the microchip spectrum, and the production was aided by proprietary technology from US and Japanese companies. The caution is against “great leaps,” such as that attempted by China in the 1960s when the largely agrarian economy did not have the comparative advantage to support the kind of industries the leadership promoted without incurring significant economy-wide distortions.

institutions) to higher value activities.

The ability of economies to adapt to a changing environment depends on the degree of flexibility, not only at the more conventional macroeconomic level but also at the microeconomic level. Human capital and innovation are recognized as the main determinants of long-term growth, in part because of their role in facilitating processes of adjustment.<sup>9</sup> Policies that promote entry and exit in both product and factors markets are also important, as inefficient factor and product markets, as well as high costs of entry and exit may lead firms to incur otherwise unnecessary adjustment costs whenever a shock hits an economy.<sup>10</sup> Finally, following Acemoglu, Johnson, & Robinson (2005), it can be argued that institutions – the “rules of the game” in a society (North, 1990) – are the fundamental, “deep determinants” economic growth and development differences across countries., as they ultimately shape incentives for innovation and entrepreneurship and set the main constraints for societies to adapt.

### Integration and linkages

While the issues discussed above address a country’s participation in exports, this is really just an intermediate measure of success. Ultimately, the aim is sustainable, broad-based economic growth, and so an important question that remains is how a country translates trade into growth and poverty reduction. One leading indicator may be the degree to which a country’s export sector is integrated with its wider economy, particularly through forward and backward supply linkages. Indeed, while an enclave sector may contribute to employment and foreign exchange earnings, it is much less likely to deliver the critical, dynamic benefits of exporting. A well-integrated sector, by contrast, should be in a better position to access technology and knowledge spillovers while also benefitting from greater direct and indirect employment and output opportunities. Research on the linkages between FDI and host economies – a relevant proxy for the export sector, particularly in low income countries – indicates that the intensity of these linkages is an important driver of industrial development (c.f. Rodriguez-Clare, 1995; Markusen and Venables, 1999). Not all sectors are equally predisposed to contribute to spillovers and broad-based economic growth. Javorcik (2004) finds evidence of positive *backward* linkages between multi-national firms and upstream (supplying) industries. Typically, however, natural resources based export sectors have shown far less integration with local economies than manufacturing sectors. Agricultural sectors offer significant potential for developing deep value chains. However, in many low income countries, the constraints to competitiveness make long value chains untenable, restricting exports to unprocessed or minimally processed commodities and some niche higher-value products where entire value chains can be controlled by a single agent. Indeed, policies assuming that moving “downstream” is a natural progression in all industries are not supported by international experience (Hausman, et al. 2008). The infrastructure and skills needed to process raw materials are different from those needed to extract them. They point out that the key input for producing aluminum, for example, is

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<sup>9</sup> See Glaeser (2003, 2008) for an ample discussion of the role of human capital for the recovery and adaptation of cities to external shocks and in particular how it helped Boston to reinvent itself.

<sup>10</sup> See, among others, Caballero, Engel and Micco (2004) and Caballero, Cowan, Engel and Micco (2004) for a discussion of the role of microeconomic flexibility on productivity growth in Latin America and in Chile in the end of the 1990s.

cheap energy, not local bauxite deposits; South Africa, therefore, could develop aluminum exports without having bauxite, while Jamaica produces bauxite but not process it. Chile attempted in vain to develop downstream industries that drew on its copper reserves, but it found success when it diversified into sectors that utilized its accumulated productive capabilities – e.g., in the processing of salmon. In wood-rich Finland, Nokia started in the timber business, but graduated on to manufacture for Philips (the branded consumer appliance manufacturer), before excelling in mobile telephones.

### **The elements of a framework for diagnosing competitiveness**

Understanding a country's relative performance (overall or at a sector level) on the aspects of trade discussed in the previous section should provide a guide to its competitiveness in global markets. However, it provides limited insight into the main determinants of competitiveness, or of the policy levers that might be pulled to improve it. This requires an analytical framework which links observed trade outcomes with a set of supply-side determining factors.

Given that most national trade and industrial strategies embrace the concept of improving competitiveness, it is perhaps not surprising that there exist a number of frameworks that attempt to capture its determinants, including Porter's (1990) "diamond", the "pyramid" used in Ireland and the EU, the "triangle" (Lall & Wignaraja, 1998), and the "12 pillars" of the World Economic Forum's "Global Competitiveness Index"<sup>11</sup> (Porter & Schwab, 2008). While all these provide useful frameworks for looking at competitiveness and have much in common, their effectiveness is limited for several reasons. First, they focus on broad economic competitiveness rather than export competitiveness. As such, they cover some issues that may be less critical for the export environment (or too far upstream) and fail to go into sufficient detail in some issues that are particularly critical for exports (e.g. trade policy, diversification, coordination, standards).

The broad-based nature of the concept of competitiveness presents a further challenge. Even defined as simply as productivity, one can quite easily enter the realm of infinite regress when trying to trace back all the channels that may determine it. Most existing analytical frameworks focus on linking productivity – as a proxy for long term growth – and investment climate variables, often overlooking significant market and institutional failures, missing and proprietary information, externalities associated with spatial and industrial agglomeration, and coordination failures between public and private activities. Moreover, studies either tend to focus on the macro picture of competitiveness (trade policy, exchange rate policy, etc.) or on a firm level perspective concentrating on labor costs, labor productivity and access to capital. Important issues such as back-bone services, infrastructure, market and institutional failures named above, industrial policy, and export promotion have not been integrated systematically.

Third, most approaches fail to assess competitiveness at the appropriate operational level which would allow them to be effective. The typical approach is to analyze competitiveness at the national level, comparing one economy against another. In fact, a country's performance in many measures of competitiveness is determined in part by its sectoral mix. And the factors which define competitiveness

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<sup>11</sup> Heretofore referred to as "GCI"

are often highly sector-specific. For example, the competitiveness in the textiles sector is significantly impacted by scale, access to raw materials, and reliable and low cost electricity. By contrast, moving downstream just one step to the garment sector reveals labor costs, productivity, and trade preferences (market access) among the most important determinants of export competitiveness. National-level competitiveness assessment is important, however its value is less for measuring static competitiveness but rather for assessing a country's ability to adjust across sectors in a general equilibrium context.

Finally, most analyses of export competitiveness uncover a series of issues that a country would need to address in order to achieve more success in export markets. This is to be expected, as the factors which constrain exports are generally multiple and simultaneous. But it is seldom financially feasible, operationally practical, or politically possible to address all these issues concurrently. In order to turn an assessment into practical and actionable policy advice, it necessary to prioritize the competitiveness factors – to identify “binding constraints”.

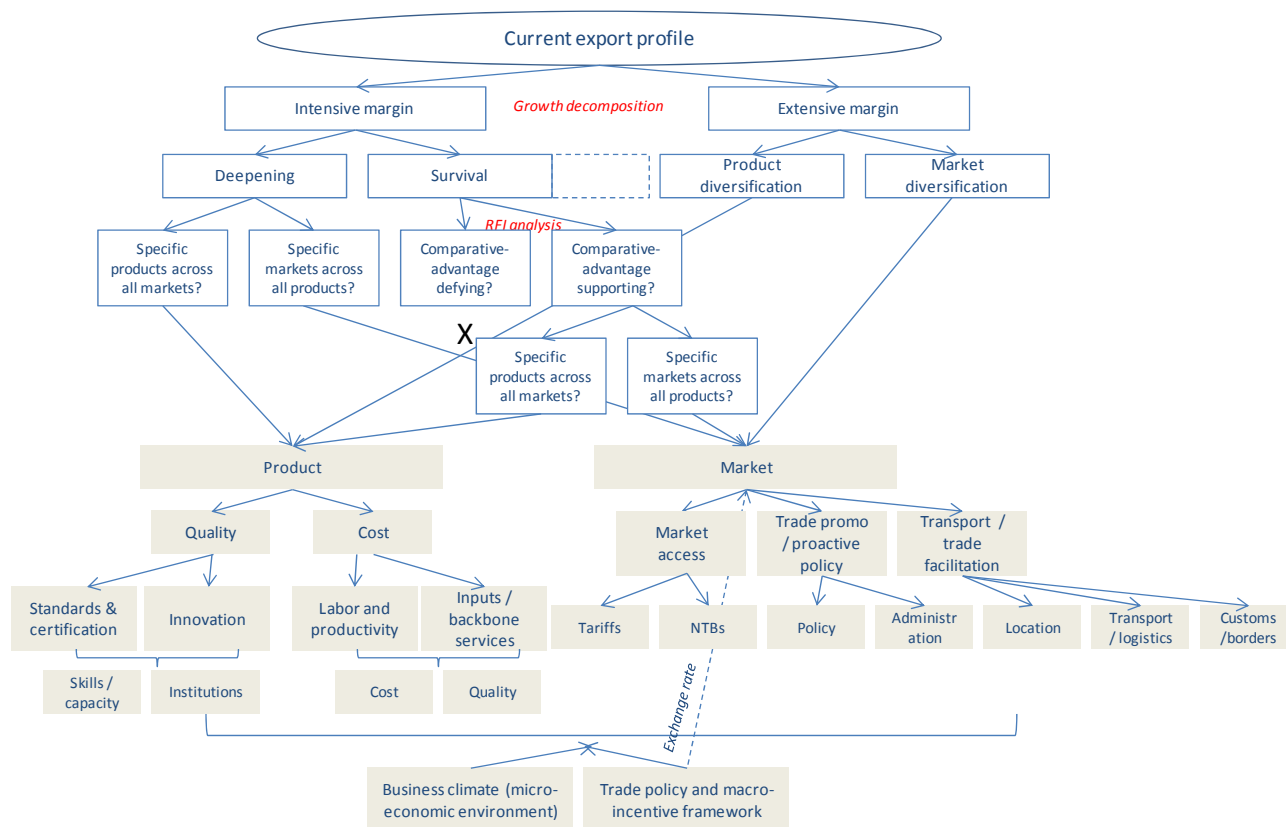
### **A “logical framework” or “binding constraints” approach**

Hausmann, Rodrik, and Velasco (2005) developed a “binding constraints” diagnostic approach to assessing the determinants of growth. The model relies on a decision tree that guides the assessment of which factors have the most important impact on growth. It starts with the premise that growth is a function of the returns to accumulation, the degree to which these can be privately appropriated, and availability (cost) of financing investment. It then follows a logical framework to assess which of these factors has the biggest impact on growth, and how. For example, if the levels of investment are low, is it because of low returns to investment or high costs of finance? If it is low returns to investment is this because overall (social) returns are low or private appropriability of returns are low? If it is the latter is this a function of government failures or market failures?

Such an approach inevitably runs a risk of being too rigid in the analysis. After all, it is probably unrealistic to think that any single constraint is sufficiently “binding” as to offer the hope of unlocking competitiveness on its own. However, the framework does provide a useful methodology for understanding how certain constraints impact on others, and for weighing the possible trade-offs that different factors may have in impacting overall competitiveness. As such, adapting the “growth diagnostics” approach in a trade context might allow for a more effective assessment of export competitiveness.

Figure 3 illustrates a very preliminary concept of how this approach might be used as a diagnostic for export competitiveness. The starting point would be analysis of trade outcomes. Broadly the diagnostic would then proceed through the following questions in a logical sequence:

**Figure 3: Possible structure of Export Competitiveness Diagnostic**



- Are the main challenges to export outcomes (growth, diversification, quality) occurring at the *intensive margin* or the *extensive margin*?
  - If the intensive margin, is the problem with *deepening* trading relationships or export *survival*? If the extensive margin, is the problem with new *markets* or new *products*?
  - If the problem is with deepening, is it a problem with *products* or *markets*? If it is about survival is it in sectors that are *aligned with comparative advantage* or in those that *defy* it? If comparative-advantage supporting is it a problem with *specific products* or *specific markets*?
- If the problem is with products, is it an issue of *quality* or *cost*?
  - If quality, is it an issue with *innovation* or with *standards and certification*? What is the role of *skills* and *institutions* in both of these?
  - If cost, is it an issue of *labor and productivity* or of *inputs (components and capital equipment) and backbone services (cost and quality of utilities, business services, industrial infrastructure, etc.)*?
- If the problem is with markets, is it an issue of *market access*, *transport/trade facilitation*, or *proactive trade promotion policies*?
  - If market access, is it an issue of *tariffs* or *non-tariff barriers*?
  - If transport and trade facilitation, is it an issue of *location*, *transport & logistics markets/services*, or *customs and border-related issues*?
  - If proactive trade promotion, is it an issue of the *policies* in place or the *administration*

of those policies?

In understanding the determinants of exports competitiveness the diagnostic would also focus on two additional issues which are hypothesized to impact a number of the components discussed above. The first of these is the general *microeconomic environment*, or the business regulatory environment. This is the impact of regulations, bureaucracy, and transparency (or lack of), which will support or constrain competitiveness both at the intensive and extensive margins of trade. The second is the trade policy and wider macro-incentive framework in the domestic market – including trade, exchange rate, tax, and competition policy – which can establish an overall anti-export bias or alternatively promote export-oriented activity.

In the economics literature of piecemeal policy reforms launched by Hatta (1977), the two most established results that yield welfare involve, i) wholesale reduction of *all* distortions, and ii) “concertina” reduction of the biggest distortion. In reality, however, it is impossible to be aware of the full range of distortions acting on the economy, especially those that are not in the form of quantifiable taxes or subsidies. Further, as Hausmann et al. (2005) point out, the biggest distortion may not be the one that matters most to the dependent variable of interest (e.g. export growth). This is what justifies a binding constraints approach to policy reform.

The logic for defining binding constraints is as follows: *competitiveness in any sector or product is defined as a function of*: 1) the relative importance of specific competitiveness factors for export success in the sector/product; and 2) the country’s performance (relative to peers) in these factors. But in practice, how one actually assesses the performance of a country within each component and, therefore, how one can make an appropriate (if not unambiguous) decision as to which issues are relatively more important as one moves through the diagnostic, remains a challenge. This has been a reasonable criticism of the growth diagnostics approach. Indeed, country-level examples of growth diagnostics work has resulted in examples, at one end of the spectrum, where a single constraint has been identified and some, at the other end of the spectrum, where virtually all issues are seen to be significant. The former is probably unrealistic and overly limiting. The latter results in the very same “laundry list” that the binding constraints approach aimed to avoid.

Several approaches, especially if combined, may offer useful guidance to the practitioner moving through a diagnostic. These are:

1. Using the evidence of macro-level regressions to develop (sector-specific) hypotheses on components of competitiveness
2. Making use of peer comparisons
3. Supporting the quantitative analysis with additional qualitative techniques

#### Evidence from macro-level regressions

To see how different aspects of competitiveness may affect various sectors differently, it might be useful to run as a first diagnostic step a simple OLS regression to gauge the degree of association between sector-specific dependent variables and pertinent explanatory variables. In the example below, the dependent variables – share of agricultural exports in GDP and share of manufactured exports in GDP,

averaged between 2006 and 2008 – are regressed on a set of 7 explanatory variables that broadly proxy for the themes outlined in the diagnostic in Figure 3. Transport and logistics quality is captured by the Logistics Performance Index (LPI, 2010); 2.) A measure of backbone services is proxied by the ICT price basket (ITU, 2009); 3.) Micro regulatory environment is captured by the Ease of Doing Business Index (2010); 4.) Innovation is captured by a sub-indicator of the Knowledge Economy Index 2009; 5.) General productivity is captured by estimates of total factor productivity (UNIDO, 2009); 6.) Tariff restrictions, disaggregated for agricultural and non-agricultural exports, imposed by foreign markets is captured by the MA-TTRI (WTI, 2010); and 7.) Tariff restrictions at home are captured by TTRI (WTI, 2010)<sup>12</sup>. Added to the list are controls such as income per capita, and population.

Merely used to gauge correlation, and not a causal relationship, this incomplete exercise does, however, give some useful direction for how the diagnostic may be approached. Both manufactured and agricultural exports are affected by the quality of trade-related infrastructure. Manufacturing exports are significantly influenced by the micro-regulatory environment and backbone services, while for agricultural exports, trade policy appears to matter more. While not discounting any component of the diagnostic, sector specific empirical analysis may provide some focus or a set of hypothesis for which factors may be most important; ultimately, country-specific situations may confirm this or re-focus the diagnostic on other issues.

	Manufactured Exports/GDP	Agricultural Exports/GDP
Log of GDP per capita	26.61 [24.33]	13.71* [7.12]
Log of GDP per capita squared	-2.34* [1.39]	-1.09*** [0.40]
Log of population	-2.43* [1.43]	-1.74*** [0.44]
Logistics Performance Index	-0.23** [0.09]	-0.05* [0.03]
Ease of Doing Business	-0.09* [0.05]	0.01 [0.02]
Market Access Trade Tariff Restrictiveness Index	0.04 [0.06]	-0.03 [0.02]
Trade Tariff Restrictiveness Index	-0.01 [0.09]	-0.03* [0.02]
ICT price basket	-0.35** [0.17]	0.00 [0.05]
Total Factor Productivity	-0.02 [0.19]	-0.03 [0.06]
Innovation	0.04 [0.17]	-0.07 [0.05]
Constant	53.95 [127.39]	14.26 [38.63]
Observations	74	74
R-squared	0.42	0.42

<sup>12</sup> The indices were normalized by being converted into ranks. The interpretation of coefficients is therefore in ordinal, not cardinal terms: one rank improvement (i.e., decrease in rank) is associated with a change in the share of exports in GDP.

### Making use of peer comparisons

As competitiveness is a relative concept, benchmarking country performance relative to a set of peers is integral to the diagnostic approach. Thus, a diagnostic should allow for a comparison of the country against global averages, regional and income-level peers, and possibly specific countries with which a country “competes” in key sectors (e.g. as Honduras exports mainly apparel to the US market, it might want to look not only at regional peers but also China, Bangladesh, and Vietnam). While it should be recognized that benchmarking has some inherent challenges in terms of comparability (related both to data definitions as well as the appropriateness of the comparator countries), it is nevertheless a valuable tool for understanding performance and potential.

Any diagnostic should also take into account the stage of economic development of the country under assessment and / or its relative factor abundance. The factors which are particularly important for competitiveness – and the resulting policies that are most appropriate to promote growth – likely vary considerably depending on the location of the country relative to the “technology frontier” (Aghion & Howitt, 2006). The most recent version of the World Economic Forum’s GCI picks up on a similar vein of thinking by weighting differently various categories of competitiveness: “basic requirements” (for factor-driven economies); “efficiency enhancers” (for economies in efficiency-driven stage); “innovation and sophistication” for economies in innovation-driven stage. To the degree that this can be proxied by the export mix of a country it will be inherent in any sectoral approach to competitiveness diagnostics; but given issues like quality ladders and export sophistication within products, a basic sectoral approach may miss this.

### Supporting the quantitative analysis with additional qualitative techniques

In addition to quantitative comparisons, a diagnostic should allow for a thorough qualitative investigation of each component, understanding of the existing situation and the way in which they impact on the competitiveness of exporters. One technique for this is through field interviews, targeting expert informants across the different areas outlined in the framework – these informants would include government officials, representatives from the private sector, and representatives from academia and relevant institutions.

In addition, several analytical tools are available that help identify the factors which shape export competitiveness within specific sectors. Two such tools include:

- Value chains analysis (VCA)
- Cluster analysis (including Cluster Mapping and Porter’s Five Forces)

Both tools help identify constraints at the sector level and rely on consultations and benchmarking. A value chain consists of all activities from the concept stage through all levels of production, delivery and logistics, and even disposal after use (Kaplinsky, 2004). Value chains can be contained within one firm or spread across various and can be geographically concentrated or span the world. The term applies not



only to the production and purchase of goods, but also to services. The value-chain approach is transaction-oriented and has been widely used as a tool for identifying binding constraints in the production of specific products. As discussed in World Bank (2007) it follows three stages: (i) process mapping of industry chains in qualitative terms and quantitative terms by disaggregating metrics such as cost, time, productivity, and value addition along the various segments of each chain; (ii) establishing benchmarks for performance indicators against international competition and best practices; and (iii) understanding explicitly the policy and institutional factors underlying these performance measures.

An agglomeration of companies, suppliers, service providers, and associated institutions in a particular field. Often included are financial providers, educational institutions, and various levels of government. These entities are linked by externalities and complementarities of different types and are usually located near each other (c.f. World Bank, 2009). The clusters approach, spearheaded by Porter since his seminal paper (1990), is a more systemic approach, focusing on identifying the policy and institutional impediments to competitiveness. It aims at solving coordination and information failures through public-private dialogue.

## **Conclusions**

Trade and exports can be a powerful instrument for economic growth and poverty reduction. Firms in developing countries face a plethora of constraints that prevent them from unlocking their trade potential: in addition to policy considerations such as tariffs, quotas, and exchange rates, factors like gateway infrastructure, standards and certification, and sector-level coordination in marketing and logistics all play a critical role in determining the competitiveness of individual exporting firms. Identifying and prioritizing these constraints can help policy makers choose appropriate policy levers to address them.

In this note we describe an ongoing effort to identify the constraints faced by exporting firms. The identification is done through various diagnostic tools, including macro-level regression, benchmarking, and qualitative information, at both the macro and sector levels. The export competitiveness diagnostic provides a framework to help analyze the binding constraints in stages. First, the most pressing characteristics of recent export performance of a country are identified. This trade outcome diagnostic focuses on several dimensions, including levels and growth of exports, diversification, quality and the dynamics of exporting firms. The next step is to relate these outcomes to competitiveness variables. If the intensive margin is slack (i.e., little success in expanding existing products in existing markets), countries should immediately look at the cost structure and related variables that undergird firm-level *productivity*, and factors affecting *export survival*. If, however, the problem on the extensive margin is breaking into new markets, constraints to *market access* posed by the world's major traders in commodities of interest to the exporting country should be examined as a first step before looking at other factors that may affect cost or quality competitiveness to specific markets. If the problem on the extensive margin is about discovering and deploying new products, the most promising avenue may be assessing the incentive and institutional structures in place to redress market failures resulting from *information asymmetry and coordination problems*.

Export performance is certainly not determined by any one single constraint. Instead, the constraints

are likely to be multiple and intertwined, and possibly tied to cross-cutting issues such as governance or geography for which there will not be immediate policy fixes. What this diagnostic exercise nonetheless helps us with is to prioritize areas of attention, and proceed incrementally to alleviate the most binding constraints to export competitiveness in a world characterized by scarce resources and trade-offs among competing economic choices.

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