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THE PRODUCTIVITY CONNECTION BEHIND OPENNESS

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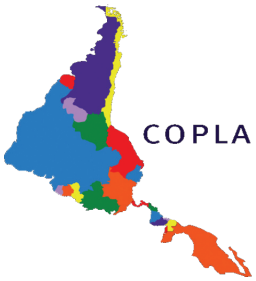

1. Macroeconomic policy such as opennes decisions made by governments can affect productivity and thus competitiveness by lifting the obstacles for countries to improve its technological mix and increasing the size of the markets that can be served.

2. Access to global markets provided by free trade agreements incentives investments in technology that create a productivity advantage. This allows an economy such as the Peruvian to develop an export base different from raw materials.

3. North-South trade not only lowers trade barriers but also promote technology transfers and imitation. Empirical evidence has demonstrated that countries with very little R&D expenses benefit from the R&D of developed countries by trading with them.

4. The current crisis will act as a stress test for Peruvian enterprises that have benefited from preferential access to the US market. Those able to deal with more stable markets, those able to scale up their operations and those capable, through better management and technology, to keep a competitive edge will be the ones to survive.

Ten ways to sell an avocado

Lets assume that you want to become an avocado producer/ seller. Could you answer how many ways there are to produce/ sell a fresh avocado? Think about the decisions that you will have to make. For starters you need to choose the initial size of your operation. A second –related- decision is about your target market. Will you want to only deliver to local markets or you also want to become an exporter? Depending on those answers, you can also include in your business plan the possibility of having a packing facility within your premises. An additional question that is fundamental to finance your business proposal is about the best technology for the project. This last decision will stress the tradeoff between a more cost efficient production process and a bigger project. The use of a more capital-intensive technological solution typically requires a larger project scale to reduce the impact of a higher fixed cost in the expected profits of the project.

Once all this is defined there are even more detailed decisions. Among the most important decisions there is one regarding the intermediate inputs and the equipment required. Those might be imported or they can be provided –if possible- locally. Some of these inputs will be required for the initial stage of the project as preparing the fields, others will be needed for growing and cropping the avocado trees, and others will be required for the commercialization stage. As it seems obvious now, there are many ways to produce/sell an avocado, even if we restraint the question to fresh ones.

As can be seen there are many business decisions that rely on which is the openness stance of the country. There are three key questions that you need to explore before starting to invest your

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first dollar in this business. Which are the tariffs that intermediate and final products face? Which are the rules for firms in countries that will compete against you? Which special sanitary restrictions to avocados you might face serving your demand?

The upshot of this paper is emphasizing that productivity is the key to economic growth. One of the main drivers of productivity is technological progress, which could be separated in innovation and imitation. The point here is to recognize that much of that productivity is behind openness decisions made by governments. Avocado producers might simply be blocked to be part of the global market because the government chooses to have a very biased view on how to foster economic development in which the domestic market is the priority. Tariffs could be prohibitively high to bias the input mix towards a more labor-intensive choice. That economy might have the proper weather, the land, the entrepreneurship, but it will always depend on some macroeconomic policy choices of the government.

Global competitiveness of the domestic business in the global avocado market will be driven by macroeconomic factors such as the investment climate, the level of infrastructure readiness, or the quality of basic institutions. The question that we suggest to consider is how much a pro-openness stance can improve the global competitiveness of a country through the channel of lifting the obstacles to improve its technological mix, and increasing the size of the markets that can be served. These two factors are crucial items in the firms' ability to compete into global markets.

Of course, firms have the choice to serve less competitive markets such as local markets in which quality might be important but probably price is the essence. Small markets are more easily served with less technological use. In those markets there might be no reason to look for a standard product (a commodity), or seek for a price premium through quality certification. One thing is to sell an avocado in a local market, and a completely different thing to sell a premium Hass avocado in the Paris market. What's more promising: tapping the domestic market of 8 million low income potential buyers or focus our efforts into getting in a market of one thousand million of high income people in the North?

Peruvian avocado exports in 2008 represent less than 4 percent of world exports compared to Chile that has almost 30 percent very close to Mexico, the largest producer, consumer and exporter of avocados in the world. However, Peruvian producers can achieve twice as much productivity than Chilean avocado growers. Is not hard to imagine that soon Peru will be replacing Chile and competing on the same footing with Mexican producers. What has been the big difference among the three countries? In a nutshell, preferential market access. Peru was blocked to export avocados to the US market while Mexico and Chile were able to sell in that market. The US market represents 40 percent of the world exports. In 2009, Peruvian avocados will be sold in the US market.

This simple example illustrates the main point of this paper. The firms that embrace the challenge of global competitiveness will be forced to make their best effort adjusting their productive process including their technology choices. Those decisions will in fact become the basis for their success, and it will be the explanation why a firm in a small country can become the purveyor of the world. These firms might be packing avocados to global markets, but there might be a lot more technology involved than one can suppose in that simple endeavor.

The Promise of Export-Led Growth

After many decades of indecision, now it is clear that Peru has chosen a path of becoming an economy fully integrated to the world. The openness indicator (exports plus imports over GDP) fluctuated between 20 to 40 percent in the last five decades. Now it shows a consistent increasing trend since 1992 and it has reached its maximum level last year (47 percent).

But besides the figures, the current government has continued the effort of the previous one and it has signed bilateral preferential trade agreements with the USA, Canada, Chile, Singapore, and is negotiating similar agreements with China, Japan, the

European Union, Mexico, South Korea and many other countries.

For observers such as Hausmann and Klinger (2008), this strategy has a fundamental flaw as far as Peru does not change the structure of their exports. If we look at the recent economic history it is true that the Achilles heel of the Peruvian economy has been the external accounts. Every growth spell in the last 50 years ended with a balance-of-payments crisis, as the process was typically focused on pumping the domestic market leaving the development of a sustainable export strategy for later. Is clear from Figure 1 that the evolution of terms of trade has conditioned the economic growth in Peru. Given the size of the current global shock it is hard to be very optimistic about the prospects of the Peruvian economy. The current terms of trade shock is reflecting the paralysis of the global economy and the massive impact of the financial crisis. Although the forecast for the global economy are constantly under revision the most recent ones point to a global contraction in 2009, a fact not seen since World War II.

But Hausmann and Klinger (2008) concern goes beyond the short-run dynamics of the current economic crisis. They argue that the Peruvian economy faces a significant risk, as the export structure is basically the same after facing many external crises. In their words the lack of new export sectors is a key constraint to growth. The common wisdom is that low and middle income countries have an export basket that is biased toward basic goods, in part due to their large natural resource endowment. There are no exports of high tech goods coming from these countries.

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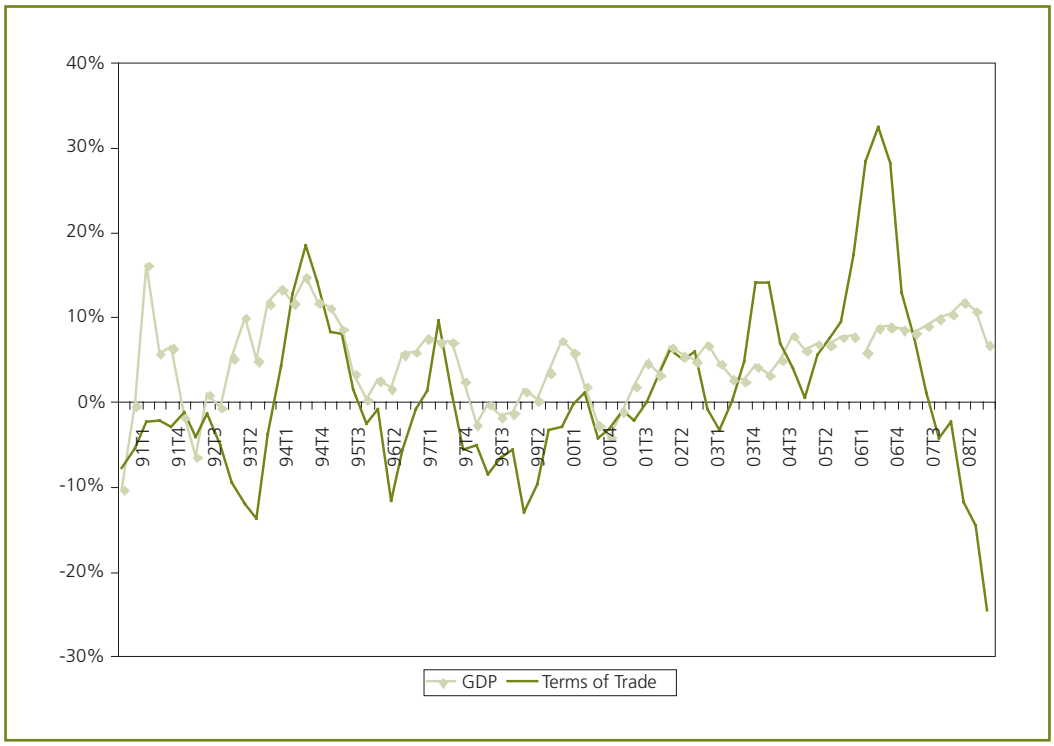
Hausmann, Hwang and Rodrik (2006) calculate an index on the type of exports that a country exports to the rest of the world and they measure how much of the export basket of a low-income country resembles the export basket of a high-income country.

Figure 1.
Economic Growth and Terms of Trade Shocks



Source: Peruvian Central Bank

They suggest that the lack of sophistication in our exports is blocking a more sustainable growth basis. Of course, sophisticated goods are made with sophisticated technology, but that does not imply that sophisticated technology is also required in goods apparently more simple.

However, this approach does not take into account the market that is being served by each economy. If the firms of your economy has no access to global markets, or have an imperfect (costly) access to global markets there is no incentive to invest in technology that creates the productivity advantage. The real gain from preferential agreements is that it reduces the cost to (or even unlocks the) access global markets to local firms.

Without the help of preferential agreements it will be almost impossible to develop an export base that is different from raw materials. If your economy has a strong resource base there is no need to sign special agreements. Every developed country in the world will require those commodities. The recent behavior of China trying to secure enough basic resources for its development process is a clear example of this.

In effect, the export structure of Peru has not changed very much in the last two decades. Peru's mining sector is responsible of more than half of total exports. Perhaps, the most significant change is the emergence of a more dynamic agribusiness export sector. However, he recent surge in commodity prices distorts the comparison shown in Table 1.

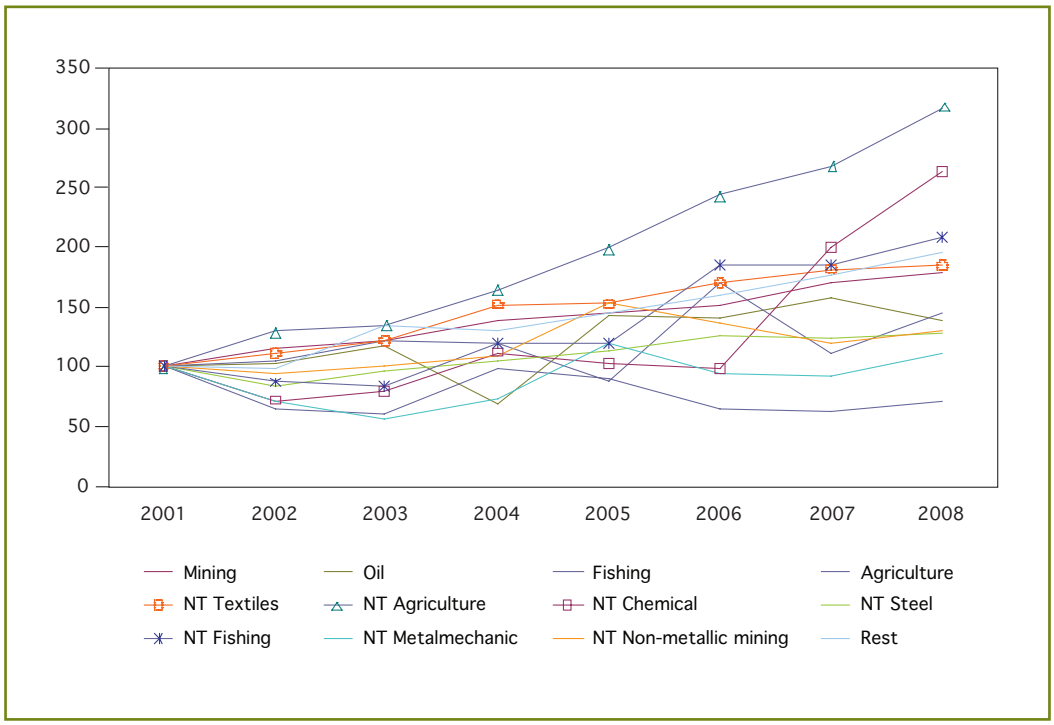
In order to avoid comparison problems of rising prices in the last five years we calculate how much each of these sectors have grown in terms of their exported quantities in the last decade. The surprising fact is that the most dynamic sectors have been those in the non-traditional export group. Agribusiness exports have multiplied by more than three in the period 2001-2008. Chemical exports have multiplied by more than two and a half, non-traditional fishing exports by more than two, and textiles by almost two. These are the most dynamic sectors, which average annual growth rates ranging from 15.5 percent to 8 percent. A significant part of the explanation of this export boom is due to the renovation of the unilateral preferential trade agreement known as ATPDEA (Andean Trade Promotion and Drug Eradication Act) in August 2002. The bilateral trade agreement known as the Trade Promotion Agreement was implemented in January 2009

Table 1:
Exports structure

	1989-1993	1994-1998	1999-2003	2004-2008
Traditional	70%	70%	69%	76%
Mining	46%	45%	49%	60%
Fishing	13%	14%	11%	6%
Oil	6%	5%	6%	8%
Agriculture	5%	6%	3%	2%
Non Traditional	29%	29%	30%	24%
Textiles	10%	8%	9%	7%
Agriculture	4%	5%	7%	6%
Fishing	3%	4%	3%	2%
Chemical	2%	3	3%	3%
Steel/jewelry	6%	5%	3%	3%
Non-metal mineral	1%	1%	1%	1%
Metal mechanics	1%	1%	1%	1%
Others	1%	1%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**

Source:Peruvian Central Bank

Figure 2.
Quantum exported by sector



Source: Peruvian Customs Office.

and replaces the unilateral and temporary preferential tariffs for a definitive and bilateral status.

The importance of this stylized fact is that these sectors face a much larger demand and therefore the possibilities of scaling up their business are endless. Notwithstanding, it is true that these sectors will be hit by the global crisis and their volume of exports will be reduced until the crisis is surpassed. But the long-term prospects are the ones that matter here as we are discussing growth not short run adjustments to the macroeconomic situation.

North-South trade and the productivity growth linkages

In the growth literature there has been a long lasting debate on the consequences of trade on economic growth. The conclusion of the literature is that in effect trade restrictions do have a harmful effect in the long run economic growth of nations.[2] However, another side of the debate is what happens when the pattern of trade is North-South. The standard assumption is that innovation is based in the North and the South is relegated only to imitate the technology available. The common wisdom suggests that southern manufacturing firms –in competing sectors- will be wiped out by their more advance northern counterparts, creating a bias toward concentrating the economy in primary sectors. But the underlying assumption that generates this result is the absence of a technology transfer from North to South. Here is important to understand that technology transfer can occur by reverse engineering, importing equipment or inputs with a much better technology embedded. It can also occur through training, or by the presence of foreign direct investment.

Free trade agreements have been considered vehicles that lower the trade barriers between North and South but also as levers to increase the flow of foreign direct investment as rules become more tightly defined. However, there are other aspects that must be emphasized in the context of the over-arching question of this paper: What is the payoff in terms of economic growth of signing bilateral free-trade agreements? To answer that question is important to describe the mechanisms through a more open

2/ See for example Jones (2001) comment on Rodriguez and Rodrik (2001) paper for a glimpse of the general debate on trade and economic growth.

economy can increase its productivity and therefore its economic growth rate.

The literature is full of models that try to include the characteristic that Southern firms are not innovators but at most imitators of technology created up North. In models in which this knowledge spillovers exists either by an exogenous product cycle (as in Krugman, 1979) or by an endogenous process in which a product cycle interacts with a quality ladder (as in Grossman and Helpman, 1991) the result is that the South will have to resort to technology transfer to keep up with the innovating North.

A recent paper by Connolly and Valderrama (2005) shows, in the context of a endogenous growth model with learning spillovers, that Southern countries trading with the innovating North will be better off in terms of welfare even if remains as a imitator of Northern technologies.

On the empirical side of the discussion it is important to mention the work of Coe, Helpman and Hoffmaister (1997) that found that even countries that have very little R&D expenses benefit from the R&D expenses of developed countries by trading with them. The productivity gains in less developed economies is partially explained by increases in the stock of human capital but also by the new technology embedded in machinery and equipment imported from more advanced economies. Acharya and Keller (2007) in a very detailed study of developed economies found that technology transfer from abroad is three times more potent than the effect of domestic R&D on productivity. In the same vein, Connolly (2003) finds that high technology imports are a fundamental explanatory variable to understand productivity gains in less developed economies.

In our own simulations of a dynamic and stochastic general equilibrium model trying to measure the macroeconomic impact of signing a Free Tree Agreement with the US (Morón et al. 2005) we found that GDP growth rate will receive a one percent increase in the first three years of the agreement, while most of that push was coming through the productivity channel of more dynamic imports of capital goods.

Final words

Openness is a key to many doors. It is the key to face endless demand for a particular good, is the key to seek and have in your production process the best technology being developed in the entire world, and is the key to a sustainable growth path competing with the rest of the world.

We are in the process of looking at firm-level data to explore what really happened in this extraordinary laboratory experiment of granting unilaterally preferential access to the USA markets via the ATPDEA. Our hypothesis is that those firms that engage in a more productive search of global competitiveness have reaped the benefits of openness, and they must be probably the winners once the integration process intensifies after this year implementation of a more secure preferential access to the USA.

The current crisis will serve now as a stress test to these firms. The ones that will survive will be those more able to strike a deal with more stable markets, those that are able to scale up their operations by mergers and acquisitions, and those that through better management and technology choices are capable to keep a competitive edge in world markets.

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