

What goods should Colombia produce and do we have the adequate institutions to produce them? Shedding some light on the defining of an industrial policy for Colombia*

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Abstract

This paper sheds light on the design of a Modern Industrial Policy for Colombia. Using Hausmann and Klinger's "monkeys and trees" framework, I suggest which products Colombia should attempt "jumping" to. Additionally, I identify some of the distortions and bottlenecks that hinder the production of these products in Colombia. More importantly, using the framework suggested by Hausmann, Rodrik, and Sabel, I analyze if Colombia has the correct set of institutions to implement an effective Modern Industrial Policy to address these distortions and bottlenecks.

Resumen

Este trabajo ofrece lineamientos para el diseño de una Política Industrial Moderna en Colombia. Usando el modelo de "monos y árboles" de Hausmann y Klinger, el documento sugiere en cuáles de los productos colombianos se podría dar "el salto". Adicionalmente, este trabajo identifica algunas de las distorsiones y cuellos de botella que dificultan la producción de dichos bienes en el país. Más importante aún, usando el modelo de Hausmann, Rodrik y Sabel, se analiza si Colombia tiene las instituciones apropiadas para implementar una Política Industrial Moderna efectiva para encarar las distorsiones y cuellos de botella identificados.

Keywords: Industrial policy, Structural transformation, Product space, Distortions, Product-specific public goods, Institutions.

Palabras clave: Política Industrial, Transformación Estructural, Instituciones, Espacio de producto, Bienes públicos

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I. Introduction

Colombia is at a crucial juncture. The negotiation of a Free Trade Agreement (FTA) with the US spurred the need for extensive reform towards increasing the country's competitiveness levels. Consequently, the "Domestic Agenda" has been a large undertaking aimed at improving the education system, strengthening the road network, adapting airport and seaport infrastructure, improving the business environment, simplifying the tax system, enhancing regulatory institutions, increasing the competitiveness at the firm level, among others.

A lot has been done. However, the amount of reform still needed for this undertaking is insurmountable, while the political and financial space for it is rather limited. This constrained optimization problem poses the need to adopt a systematic approach in defining policies to enhance the country's competitiveness. In this spirit -and

as a first approach at harnessing the optimization problem- Colombia, as part of its competitiveness agenda, has undertaken several efforts to come up with a list of products on which to target some sort of "industrial policy."¹

However, many of these efforts have not been successful². In some cases, this failure was due to the fact that the selection process for economic activities is prone to political capture -leading to the selection of goods and services that have a strong political clout and lobbying capacity, rather than those that would translate into higher productivity gains for the country³. This, along with the lack of a systematic selection process, rendered long lists of products, making it extremely difficult and costly to target an industrial policy.⁴

Hausmann and Klinger (2007)⁵ have shed some light on how to target an industrial policy for Colombia. Using their methodology of the

¹ The Government has never used the term "industrial policy" to refer to this "Domestic Agenda", mainly due to the animosity that such term raises. However, one could easily fit both the policies and the spirit of the reforms into the definition that, for example, Rodrik (2007) has given for industrial policy: "*policies that stimulate specific economic activities and promote structural change*" (page 3).

² The first version of this paper was written when the Ministry of Trade, Industry, and Tourism hadn't launched its Productive Transformation Program, which has been a rather successful attempt to implement vertical policies. This program will be assessed more carefully later on in this paper.

³ Before going to the John F. Kennedy School of Government, and as public official, the author worked in some of the first attempts to come up with a list of products for the agriculture sector.

⁴ See for example Hausmann, R. and Klinger, B., "Achieving Export-Led Growth in Colombia", 2007, in which the authors assess a list of 500 products that were identified by the firm Araujo, Ibarra & Asociados, in a study commissioned by the government.

⁵ Op. cit.

*product space*⁶ and using concepts such as *product sophistication* developed by Hausmann, Hwang, and Rodrik,⁷ they came up with some lists of products that Colombia could aim at producing, due to their relative *closeness*, their contribution to the *export basket sophistication*, and their *strategic value*.

In this exercise, Hausmann and Klinger used product data at the Harmonized System (HS) 4-digit level in order to come up with their lists of products.⁸ While this provides valuable insights in narrowing the scope for an industrial policy in Colombia, a greater level of specificity would allow for a more effective targeting of domestic policies, through a better understanding of competitive products and associated distortions.

The first part of this paper uses the data at the HS 6-digit level to obtain a more detailed product level. It is important to acknowledge up front that the 6-digit level data set was constructed using just export data of all countries in the world to the US market -as opposed to the 4-digit level *product space*, which was constructed using export data across a large sample

of countries, using the World Trade Flows data set from Feenstra *et al.* (2005) and UN COMTRADE. Therefore, one should take that into account when considering the generalizability of the results.

The identification of competitive products leads to the question of why the products suggested by the analysis are not being -or planned to be-produced in Colombia. The second part of this paper attempts to address questions such as: are there distortions associated to the production of those goods? If so, which are they? How can they be addressed?

Thus, identifying the potential subsectors is not the only factor for effective industrial policy. The country should also make sure that it counts on an institutional framework that will facilitate the identification and addressing of potential distortions that the production of new goods might encompass. Moreover, these institutions shall provide a coordination space between the public and private sectors, allowing for the identification and provision of specific public inputs that these products might require.

⁶ Hausmann, R. and Klinger, B., "The Structure of the Product Space and the Evolution of Comparative Advantage," Center for International Development, Harvard University, April 2007.

⁷ Hausmann, R., Hwang, J., and Rodrik, D., "What You Export Matters," *Journal of Economic Growth*, Volume 12, Issue 1, 2007, 1-25.x

⁸ The Harmonized System is a goods nomenclature that was developed by the World Customs Organization. Each good has an associated number, in which the first two digits represent the chapter to which the good belongs. Countries use classifications at the 2, 4, 6, and 10 digits. The more digits involved will obviously allow a greater degree of product disaggregation. Up to 6 digits, all countries share the same nomenclature. Ten digit classifications will vary across countries.

The momentum generated by the need to undertake a "Domestic Agenda" for Colombia spurred the surge of a number of institutions that might seem fit to undertake this role. The creation of a National Competitiveness System and the establishment of the Private Council on Competitiveness, both of which aim to help coordinate the country's efforts towards improving Colombia's competitiveness, are a demonstration of the institutional landscape resetting that has been taking place to address these issues. These new institutions, along with some existing ones, have the responsibility to define policies towards strengthening existing activities and fostering structural change, with the objective of increasing the country's productivity levels.

In his paper "Industrial Policy for the Twenty-First Century," Dani Rodrik has proposed a series of principles that the designing of an industrial policy should entail.⁹ In their paper "Doomed to Choose: Industrial Policy as a Predicament" Hausmann and Rodrik group these principles into three broad ones: open architecture, self-organization, and transparency.¹⁰ Hausmann, Rodrik, and Sabel have

made use of a similar framework to analyze the institutional setting in South Africa for the implementation of an industrial policy in this country.¹¹ The third part of this paper attempts to assess -in light of these principles and frameworks- whether the current institutional setting in Colombia is suited to undertake sound industrial policy.

The goal of this paper is not to be prescriptive about Colombia's industrial policy, but rather to contribute to the discussion and direction of this policy. The development of this policy in Colombia should undergo a participatory process in which both the public and private sectors establish an institutional environment that facilitates the identification of products and potential distortions that must be jointly addressed. In this sense, this paper should be viewed as an additional element for discussion in this type of setting.

This paper is organized as follows: In section II, some elements of the theoretical discussion that underpins the question on what Colombia should strive to produce, will be provided. In section III, a brief explanation will be given of the methodology used

⁹ For a detailed explanation on these principles see Rodrik, D., "Industrial Policy for the Twenty-First Century", *One Economics Many Recipes*, Princeton University Press, 2007 and Rodrik, D., "Normalizing Industrial Policy", Harvard University, Draft, August, 2007.

¹⁰ For a detailed explanation on this perspective see Hausmann, R. and Rodrik, D., *Doomed to Choose: Industrial Policy as Predicament* September 2006.

¹¹ For a detailed explanation, see Hausmann, R., Rodrik, D., and Sabel, C., "Reconfiguring Industrial Policy: A Framework with an Application to South Africa", *Rough Draft*, August 2007.

by Hausmann and Klinger to construct their *product space*, which has been further expanded in this paper to assess products at the 6-digit specificity level. Section IV will present the results from the 6-digit level product analysis and will compare these with those found by Hausmann and Klinger at a 4-digit level. In section V, a survey of the distortions that might be hindering the production of some of the products identified by the analysis above, will be presented. In section VI, the principles that should guide the design of a sound industrial policy that facilitates the "jumping" into these new goods, will be discussed. In section VII, Colombia's current institutional setting for the implementation of industrial policies will be assessed in light of the principles discussed in the previous section. Finally, section VIII will offer some conclusions and recommendations.

II. Why Countries Export What They Do?

A good starting point to attempt to generate a list of goods in which Colombia should focus its industrial policy efforts would be to try to answer an apparently simple question: why do countries export what they do? In trying to answer this question, the economics profession has made use of the widely used -yet not well understood by everyone- concept of comparative advantage.

This concept allows us to give a first, yet incomplete, answer to the question: countries specialize in those products in which they have comparative advantage. This answer leads us to an obvious follow-up question: what determines this comparative advantage?

Any international trade course would start by answering this question examining the classic Ricardian model in which comparative advantage is determined by the difference in technology between countries and across industries. This model's simplest form, better known as the 2x2 case (2 goods and 2 countries), leads to countries specializing in the production of one good, allowing them to attain higher utility levels under free trade.

Another attempt to provide an answer to that question is the widely known Heckscher-Ohlin (HO) model, which uses differences in factor endowments (*ie.* labor, capital, land, etc.) to explain the source of comparative advantage. Thus, countries specialize in the production of those goods that are more intensive in the use of factors in which they are relatively more endowed. In a more recent paper, Nunn¹² shows evidence of institutional differences between countries -and institutional requirements across industries- being the source of comparative advantage.

¹² Nunn, N., "Relationship-Specificity, Incomplete Contracts and the Pattern of Trade", *Quarterly Journal of Economics*, Vol. 122, No. 2, May 2007, pp. 569-600.

Trade theorists have used these models in which comparative advantage is determined by differences in technology, factor endowment, and institutions, among others, as their "work horses". Many of these do partly explain differences in broad specialization patterns in the real world. Moreover, the Heckscher-Ohlin-Vanek (HOV) model -a further development of the HO model- allows for technological differences, and fares quite reasonably when explaining broad factor trade between countries.¹³

However, these models fall short when trying to explain more specific specialization patterns that are manifest in the empirical evidence. The reason behind why some countries with apparently similar comparative advantages, produce substantially different array of goods remains a mystery if one looks only from a comparative advantage perspective. For example, Hausmann and Rodrik (2003)¹⁴ highlight the difference between the export baskets of Pakistan and Bangladesh, despite these countries having apparently similar comparative advantage in the production of garments. According to these authors, these countries share just 6 items in their top 25 export list. Moreover, Hausmann and Rodrik raise the question of what's behind Pakistan specializing in the produc-

tion of bedsheets and Bangladesh specializing in the production of hats, and not vice versa? There seems to be a great dose of indeterminacy in what countries finally specialize in, when one tries to explore beyond the coarse factor-intensive level and look at a more product-specific level.

These authors offer the existence of self-discovery costs as an explanation behind these differences in specialization patterns. According to this view, there are information spillovers on finding out if a country is competitive at producing a determined good. Given that this information is public, while the costs are borne only by the private investor, there is a wedge between private and social valuations. This translates in investment in the discovery of new activities being undersupplied *ex ante* and a lot of copycatting *ex post*, leading to a socially suboptimal equilibrium. Thus, countries like Pakistan and Bangladesh, with apparently similar comparative advantages, can end up producing a whole different array of goods due to these self-discovery costs.

Hausmann and Klinger (2007)¹⁵ give an alternate -and somewhat complementary- explanation to why countries export what they do. Every good

¹³ See Daniel Trefler, "The Case of Missing Trade and Other Mysteries," *American Economic Review*, 85, 1995, 1029-1046.

¹⁴ Hausmann, R. and Rodrik, D., "Economic Development as Self-Discovery" *Journal of Development Economics*, vol. 72, December 2003.

¹⁵ Op. cit. Hausmann R. and Klinger B. (2007).

requires a large number of both private and public specific inputs or capabilities. These inputs cannot easily be redeployed to the production of other products given their specificity. Thus, structural transformation is restricted in a certain way by the products that are currently being produced. In the next section, I will provide a more detailed explanation of the methodology used by Hausmann and Klinger. However, in short, the authors support their view by showing evidence that suggests that investors do not randomly jump to the production of a particular good. Investment decisions in new products are strongly correlated with how "distant" the new products are from the country's current export basket in the *product space*; namely, how different are the capabilities needed to produce the new product from the country's current capabilities.

Hausmann, Hwang, and Rodrik (2007) have also shown that countries "become what they export".¹⁶ The rate of growth of countries is associated with the *sophistication level* of their current export basket. As a corollary of this result, one could argue that the development process implies changing what you produce. It is structural transformation

what may lead countries to future growth. According to Hausmann, this notion would contradict traditional trade theory, which says that countries that specialize away from their comparative advantage should grow more slowly.¹⁷

Combining this evidence -the implicit *distance* between products due to input specificity, along with countries becoming what they export- renders profound policy implications. Countries should strive to jump towards products that are associated with higher income levels and that are closer to more sophisticated products. Industrial policy should be targeted at reducing potential distortions that prevent the structural transformation process from aiming at more sophisticated products.

As it has been already mentioned, the recent negotiation and signature of a Free Trade Agreement with the US catalyzed a new wave of support for the definition of a competitiveness agenda in Colombia. Despite widely publicized efforts to come up with lists of products towards which to target this agenda, the government hasn't felt comfortable in a role of "picking winners".¹⁸ Thus,

¹⁶ Op. cit. Hausmann, R., Hwang, J., and Rodrik, D. (2007).

¹⁷ Hausmann, R., Lectures 13 and 14: Structural Transformation and the Role of Industrial Policy, PED 309, Fall 2007.

¹⁸ This is true even under the new scenario where the Ministry of Trade, Industry, and Tourism has launched the Productive Transformation Program, which intends to focalize efforts on a set of products. The Government has had difficulty in sending out the message that it is concentrating on some products at the national level, while there are efforts at the department level that don't necessarily coincide with these products.

the government has privileged "horizontal" (or transversal) policies, instead of "vertical" (product-specific) ones. As Rodrik puts it: "interestingly, governments often act in ways that show they are cognizant of the specificity of private needs and public inputs, even when they maintain the fiction that they do not engage in industrial (read preferential) policies."¹⁹

However, as Hausmann and Rodrik argue, "resources are limited, as is the technical capacity to work out the needed public inputs and how best to provide them. Choices must be made, including the choice of how many resources to allocate to the general area of providing the public inputs to economic activity. We may be doomed to choose, indeed."²⁰

In this sense, Hausmann and Klinger (2007), as advisors to the Colombian government in the definition of the country's "Domestic Agenda", have undertaken a first exercise that tries to shed light as to how to focus an industrial policy in Colombia. As mentioned earlier, this paper expands on the work done by Hausmann and Klinger by

replicating some of their analysis at a HS 6-digit level disaggregation. Thus, this work constitutes an additional element in this convoluted discussion on how to define an industrial policy for Colombia.

III. Hausmann and Klinger Redux

Hausmann and Klinger give an alternative explanation as to why countries export what they do by suggesting that products require specific inputs that are not easily redeployed in the production of other goods. This feature hinders a country's capacity for structural transformation, given that investors can only "jump" to produce goods that are similar in their input requirement to those that are already being produced.²¹ This leads to a concept of implicit *distance* between products that these authors explain through the use of their "monkeys and trees" analogy. Products are, thus, like trees in a forest and investors are monkeys that occupy some of the trees in that forest. The capacity of investors (monkeys) to jump to the production of other goods (trees) will depend on the *distance* between those unoccupied trees and those in which the monkeys currently find themselves.

¹⁹ Rodrik, D., "Normalizing Industrial Policy", Harvard University, Draft, August, 2007.

²⁰ Op. cit. Hausmann, R. and Rodrik, D. (2006).

²¹ An alternative way in which one might interpret that a country's structural transformation is restricted by its current capabilities would be through the use of cluster theory. Countries develop industries around particular clusters and, therefore, jumps to new goods appear to be made towards goods that support particular clusters. For a more detailed explanation of cluster theory see Porter, M., *On Competition*, Harvard Business School Press, 1998.

To capture this idea of *distance* between products, the authors have estimated the conditional probability of producing one good given the production of another one. Namely, the authors use the World Trade Flows data set from Feenstra *et al.* (2005) and UN COMTRADE -which includes exports from a large sample of countries at HS 4-digit disaggregation- to estimate what is the probability that a country produces a particular good with revealed comparative advantage (RCA²²) given that it produces another one with RCA. Given the asymmetric character of this probability, they take the minimum of the two converse probabilities as the measure of the *distance* between products, as shown in the following equation:

$$\varphi_{i,j,t} = \min \{P(x_{i,t} | x_{j,t}), P(x_{j,t} | x_{i,t})\}$$

where for any country:

$$x_{i,c,t} = \begin{cases} 1 & \text{if } RCA_{i,c,t} > 1 \\ 0 & \text{otherwise} \end{cases}$$

In such a way they obtain a measure of *distance* between each product at a HS 4-digit level, which they use to build up their notion of *product space*

or "forest". This forest is not uniform in terms of the *distance* between trees. There are some sparser parts of the forest in which products are further away from each other, whereas there are some areas where trees are relatively cluttered. Using this idea, the authors come up with a measure of how close the country's monkeys are to a particular tree -namely, how close the unoccupied trees are to the country's current export basket. They call this measure *density* and it captures how easy it is to adapt existing factors to the production of a new good.²³ It would be easier for a country to jump to produce goods with a higher *density*.

Now, as it was explained earlier, Hausmann, Hwang, and Rodrik (2007) have shown that not all products are equal: some are correlated with higher levels of income relative to others; namely, the production of more sophisticated goods is associated with a country attaining higher economic growth. To define this sophistication level for each product they construct an index, which they name PRODY. This index estimates the level of income of a country associated with the export of a determined good. This index is estimated using the following equation:²⁴

²² A country is said to export a good with "revealed comparative advantage" when the ratio of the country's exports of that product over the total country's exports is greater than the ratio of world's exports of that product over the world's total exports.

²³ More specifically, this measurement is constructed by adding the conditional probability to a new tree for all the surrounding trees you occupy, divided by all the number of paths leading to that product. For a more in depth explanation on the construction of this measure see Op. cit. Hausmann, R. and Klinger, B. (2007).

²⁴ For a more in depth explanation on the construction of this index see Op. cit. Hausmann, R., Hwang, J., and Rodrik, D. (2007).

$$PRODY_k = \sum_j \frac{(x_{jk}/X_j)}{\sum_j (x_{jk}/X_j)} Y_j$$

Thus, countries would prefer jumping to trees with a higher *PRODY*, or *sophistication levels*. However, these more *sophisticated* trees are usually further away from the current export basket of developing countries. Thus, one can start sensing a notion of an efficient frontier between *distance* and *sophistication level*. Countries will not only have to decide on whether to jump to nearby trees, but will also have to consider jumping to those associated with a higher income. For developing countries, in general, a higher level of income of those trees means that they are further away from the country's current production capabilities.

Furthermore, countries will face more than just the tradeoff between *distance* and *sophistication level*. Two trees located at the same *distance* from the country's current export basket, associated with the same income level, might pose different *strategic values* for a country. One of the trees could be in a denser part of the forest, closer to other unoccupied trees with high *sophistication levels*, while the other one could be located in a sparser part of the forest. Taking this into account, a country would prefer jumping to the former tree.

In order to capture this idea, the authors develop a measure they call *open forest*. This measure tries to capture the value of the option to move to an export basket associated with a higher income level. More specifically, this measure calculates the value of the unoccupied trees by weighting their closeness and their *PRODY*. The exact measure is calculated using the following equation:²⁵

$$open_forest_{c,t} = \sum_i \sum_j \left[\frac{P(x_{j,t} | x_{i,t})}{\sum P(x_{j,t} | x_{i,t})} (1-x_{c,j,t}) x_{c,i,t} PRODY_{j,t} \right]$$

To measure the *strategic value* of moving to a determined tree, the authors measure the change in the value of *open forest* when the country's export basket includes the unoccupied tree.

With these three measures in place -*density*, *PRODY*, and *strategic value*- one can analyze the current standing of a country's export basket in the *product space*, as well as analyze potential jumps to unoccupied products. Namely, one can shed light as to how a country could target an industrial policy based on which goods are closer to the current production capabilities, which goods would contribute to a higher level of *sophistication* in its export basket, and which goods would be strategically preferable to move towards given that they are in a denser and richer part of the forest.

²⁵ For a more in depth explanation on the construction of this measure see Hausmann, R. and Klinger, B. (2007).

IV. What Goods Should Colombia Strive to Produce?

In their role as advisors to the Colombian Government for defining the "Domestic Agenda", Hausmann and Klinger used their analytical framework to assess different scenarios for an industrial policy in Colombia. As part of this work, these authors came out with several lists of products based on the notions of density, *PRODY*, and *strategic value*.

As mentioned before, this paper aims at expanding these authors' analysis by using a database at a HS 6-digit level disaggregation, which gives a higher level of product specificity.²⁶ As was noted earlier, this HS 6-digit *product space* was constructed based on export data from all countries to the US market only. Therefore this analysis might capture particular infrastructure or marketing requirements that are specific for sales to the US and that might not be generalized to the rest of the world.

Despite this caveat, this analysis is worthwhile doing, not only because the US is the main desti-

nation for Colombia's exports,²⁷ but also because there is a need for a more targeted industrial policy for Colombia. The country should strive at zeroing in on an industrial policy more carefully, so that efforts at providing specific public inputs are more effective and potential market distortions are tackled more directly, thus avoiding introducing negative second-best interactions.²⁸ In order to check for consistency, this paper compares the results obtained at the 4 and 6-digits disaggregation levels.

The tables presented in this document were done separately for agriculture and non-agriculture goods. One reason for this was to be able to compare with Hausmann and Klinger's paper, in which this disaggregation is done. More importantly, this disaggregation takes into account the political sensitivity of the agriculture sector in Colombia.²⁹

For both the agriculture and non-agriculture sectors, this paper starts by presenting the products that -according to the *product space* analysis- ap-

²⁶ To better understand the greater level of specificity it is worthwhile mentioning that at a HS 4-digit level one can find over 1,200 tariff lines, whereas at a HS 6-digit level these would add up to around 5,000.

²⁷ More than 40% of Colombia's exports go to the US, according to the Ministry of Trade, Industry, and Tourism of Colombia.

²⁸ This idea will be explained in more detail later in the paper (see Section V).

²⁹ Even if it were more strategic for the country to jump only into non-agriculture products, domestic political circumstances suggest the need for an industrial policy for the agriculture sector that provides economically feasible alternatives to illicit crop cultivation. Moreover, in order for any industrial policy effort to be politically feasible, it must involve an agriculture component.

pear to be closer to the current capabilities of the country. This translates to a list of products with the highest *densities*, as has been defined above.

Additionally, for both sectors, this paper presents what Hausmann and Klinger have denoted as the "best" new products to which Colombia could jump to. They have defined "best" as those products with the highest standardized scores based on the criteria of closeness (*density*), *sophistication*

level (PRODY), and *strategic value*. The standardized score has been constructed giving a weight of 1/3 to each of these three criteria (See Insert 1). The values of *density*, *PRODY*, and *strategic value* have been standardized by subtracting the mean and dividing by the standard deviation of the products in which Colombia is not currently exporting with comparative advantage ($RCA < 1$) -i.e. the subset of products which Colombia could jump to producing.

Insert 1

ON THE WEIGHTS FOR THE STANDARDIZED SCORE

A comment that has been brought up on several occasions is related to the arbitrary selection of 1/3 as the weight given to each of the criteria in the construction of the standardized score. A first reason to have chosen this set of weights was for comparative purposes, given that Hausmann and Klinger have used it in their paper. Additionally, by giving 1/3 to each criterion one tries to avoid entering into the terrain of the political decisions that the country will have to take; namely, weighing the tradeoffs between jumping closer -and, thus, having a less ambitious structural transformation process- and attaining lower level of *sophistication* in the country's export basket.

However, in order to check for consistency and assuage potential concerns, a sensitivity analysis was undertaken using different weight specifications. In particular, different specifications that were used by the Private Council on Competitiveness in their report on competitiveness for 2007 were tried. These specifications gave a greater weight to *distance*. In other words, there is a bias towards products that are closer to the country's current capabilities. The list of best products didn't change substantially when using these specifications. A combined list of products from the different specifications was constructed. The table for agriculture goods is presented in the Annex (Table A14) and shows that 50 out of the 70 goods that appear in that list had arisen under the 1/3-1/3-1/3 specification.

Given the above mentioned considerations and the fact that the objective of this paper is not to develop a final list of goods that should be targeted by Colombia, but to incentivize the discussion on why Colombia is not producing them and assess the institutions that would allow jumping to them- this paper will disregard the lists that originate from the different set of weights.

As the reader will be able to notice, the products that are closer to the current Colombian export basket need not necessarily be included in the "best" products list; thus, confirming the tradeoffs between *distance*, *sophistication level*, and *strategic value*.

In the following two subsections, the tables included in the work by Hausmann and Klinger on Colombia will be presented, followed by the tables constructed for this paper at a HS 6-digit disaggregation level.³⁰ Given the difference in disaggregation level between these sets of tables, the top-25 product lists are going to be presented for the HS 4-digit analysis, whereas the top-50 product lists will be presented for the HS 6-digit level one.

A. Agriculture Sector

As Hausmann and Klinger do in their work on Colombia, this paper uses two definitions of agriculture in terms of the tariff lines included in the analysis. The "narrow" definition involves the first 14 chapters of the Harmonized System (tariff lines less than 150000 at the HS 6-digit level), which consist mostly of primary products. The "broad" definition includes the first 24 chapters of

the Harmonized System, involving both primary products, as well as processed food.

1. Nearest Products

The products that are closer in terms of the current capabilities of Colombia for the "narrow" and "broad" definition of agriculture are presented in the Annex, both at the HS 4 and HS 6-digit level (Tables A1- A4).

It is worth mentioning that at the HS 6-digit disaggregation level, for the "narrow" definition of agriculture, the nearest products seem to be concentrated in chapter 3 (Fish and crustaceans, mollusks and other aquatic invertebrates), chapter 7 (Edible vegetables and certain roots and tubers), and chapter 8 (Edible fruits and nuts) of the Harmonized System. Although at the 6-digit level 64% of the top 50 "nearest" tariff lines are concentrated in these three chapters, at the 4-digit level these chapters account for only 44% of the top 25 "nearest" ones.

When one expands the definition of agriculture to include the first 24 chapters, one can notice that at the 6-digit level, the "nearest" tariff lines are concen-

³⁰ It is worth noticing that these tables are not exactly those included in Hausmann and Klinger's work on Colombia, given that this paper has included five additional products in each list to make them a top-25 list instead of the top-20 list these authors present in their paper. Moreover, the tables assessing the non-agricultural sector are presented as coming from these authors' work, despite they did not include them in their original paper. However, these tables were reconstructed based on the same dataset used by these authors in their work and, thus, for presentational purposes, they will be treated as Hausmann and Klinger's to differentiate between their HS 4-digit level analysis and the HS 6-digit-level one presented by this paper.

trated around the chapters mentioned above plus chapter 20 (Preparation of vegetables, fruits, nuts or other parts of plant). 62% of the top 50 "nearest" tariff lines are concentrated in these four chapters. Meanwhile, at the 4-digit level these chapters account for just 40% of the top 25 tariff lines.

2. "Best" Products

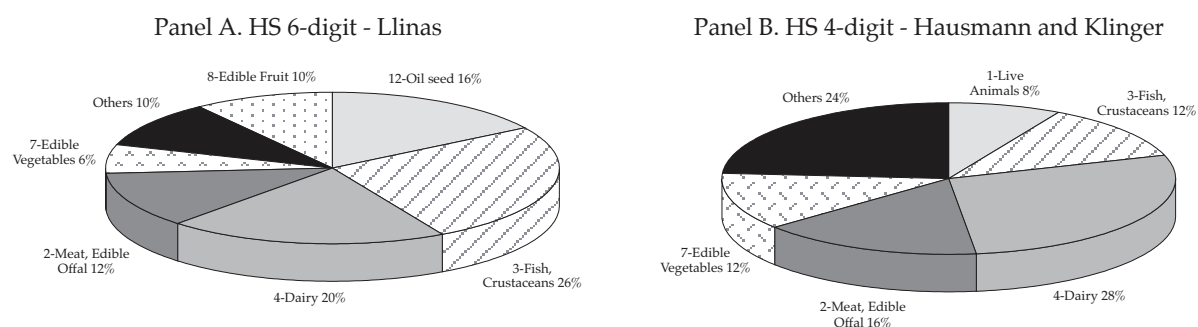
The products that achieve the highest standardized score in terms of their closeness, sophistication level, and strategic value for the "narrow" and "broad" definition of agriculture are presented in tables A5 through A8, both at the HS 4 and HS 6-digit level, respectively.

It is worth noticing that when considering the "best" products list for the "narrow" definition of agriculture at the 6-digit level, there is a decrease in the participation of some chapters that appeared to be

"near"-such as Chapter 7 (Vegetables) and Chapter 8 (Fruits)- as opposed to a higher share of chapters that seem to have higher *sophistication level* and *strategic value*-such as Chapter 2 (Meat and edible meat offal), Chapter 4 (Dairy produce, birds eggs, natural honey, edible products of animal origin), and Chapter 12 (Oils seeds, oleaginous fruits, miscellaneous grains). The chapter participation in the "best" products lists for the "narrow" definition of agriculture, at the 6 and 4-digit disaggregation level, are presented below respectively (Graphs 1 panel A and B).

When considering the "broad" definition of agriculture, the trend mentioned above keeps holding. It is worthwhile mentioning the consistency of Chapter 3's (Fish and fish products) participation in both the "narrow" and "broad" definition of agriculture in both the "nearest" and "best" products list. The chapter participation in the "best" products lists for the "broad" definition of agriculture, at the

Graph 1
 AGRICULTURE (NARROW) "BEST PRODUCTS"



Source: Author's calculations. "Others" include chapters with less than 3 tariff lines in the "best" products list in the case of the HS 6-digit, and less than 2 tariff lines in the case of the HS 4-digit.

6 and 4-digit disaggregation level, are presented below respectively (Graph 2 Panels A and B).

B. Non-Agriculture Sector

Once again, as Hausmann and Klinger do, the non-agriculture sector is defined in this paper as those chapters of the Harmonized System other than the first 24 chapters (tariff lines greater than or equal to 250000 at the HS 6-digit level).

1. Nearest Products

The products that are closer in terms of the current capabilities of Colombia for the non-agriculture sector are presented in the Annex, both at the HS 4 and HS 6-digit level, respectively (Tables A9 and A10). As may be apparent, a great portion of the closest products -in terms of the country's current capabilities- are associated with products in the textile and

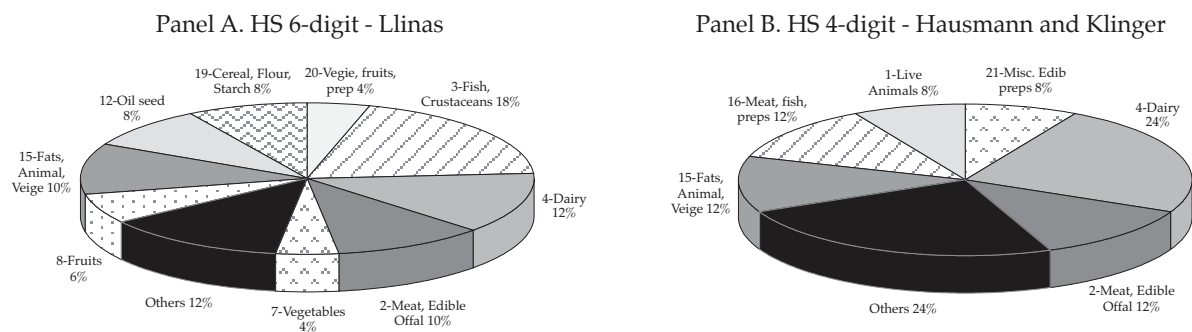
garment industry (for example, chapters 61 and 62), where Colombia has a well-known production capacity already. This pattern is reflected at both the 4 and 6-digit level of product disaggregation.

2. "Best" Products

As opposed to what happens in the agriculture sector (where many of the products in the "nearest" product list appear in the "best" product list), the "nearest" products practically disappear when we take into consideration the *sophistication level* and *strategic value* criteria for the non-agriculture sector.

The products that achieve the highest standardized scores in terms of their *closeness*, *sophistication level*, and *strategic value* for the non-agriculture sector are presented in the Annex, both at the HS 4 and HS 6-digit level, respectively (Tables A11 and A12).

Graph 2
AGRICULTURE (BROAD) "BEST PRODUCTS"



Source: Author's calculations. "Others" include chapters with less than 2 tariff lines in the "best" products list in both the HS 6-digit and HS 4-digit analysis.

Colombia seems to face a greater tradeoff in its non-agriculture sector than it does in the agriculture one. Those sectors that appear closer to the country's current capabilities are not necessarily those that would lead it to greater *sophistication levels*. When one considers criteria other than *distance*, products such as 'iron and steel' (Chapter 72) and 'nuclear reactors, boilers, machinery and mechanical appliances; parts thereof' (Chapter 84) seem a better option for Colombia. The chapter participation in the "best" products lists for the non-agriculture sector, at the 6 and 4-digit disaggregation level, are presented below respectively (Graph 3 Panels A and B).

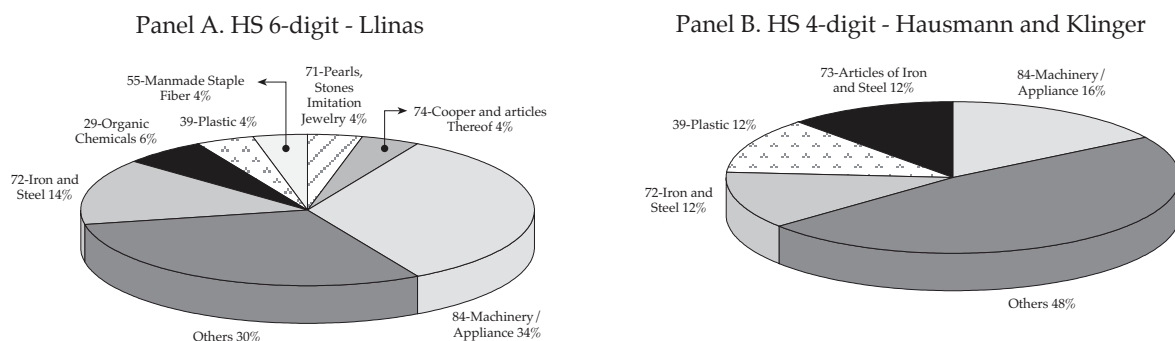
V. Product Specific Requirements for Industrial Policy: Some Examples

Knowing which products to jump to is just part of the challenge behind targeting an industrial

policy. The first question that might arise is why the country is not already producing these goods in the first place, if they seem such a good option. It is highly probable that one of the reasons behind this is the great number of distortions that could be associated with the production of these goods. For example, these goods might need the provision of product-specific public goods in order to be competitive; or there might be the need to coordinate several complementary investments in order for the production of this good to unleash its economic potential.

The search for these types of distortions has to be made at a product-specific level. In this same sense, the policies towards minimizing these distortions should be zeroed in on as closely as possible to their sources and, thus, should be addressed in a product-specific context. The closer to the source you intervene to minimize a distortion,

Graph 3
 NON AGRICULTURE "BEST PRODUCTS"



Source: Author's calculations. "Others" include chapters with less than 2 tariff lines in the "best" products list in both the HS 6-digit and HS 4-digit analysis.

the lesser the second-best interactions that you might unleash with your intervention. Namely, it is preferable to focus the intervention as close to the source of distortion as possible in order to minimize potential negative second-best interactions.³¹

Governments very often avoid addressing product-specific policies in order to avoid being criticized for "picking winners" -despite, as it has been explained, many of the distortions that hinder the production of these goods are product-specific.

In order to do a preliminary assessment of what are the type of distortions and specific-public-goods required to foster structural transformation processes for the Colombian economy, this paper does a survey of these for some of the "best" products identified by the product-space analysis. In particular, this survey tries to identify possible underlying issues hindering the production of some goods belonging to the following HS chapters: Meat and Edible Offal (Chapter 2), Fish and Crustaceans (Chapter 3), Dairy (Chapter 4), Fats from Animals and Vegetables (Chapter 15), Iron and Steel (Chapter 72), and Nuclear Reactors, Boilers, Machinery and Mechanical Appliances; Parts Thereof' (Chapter 84).

This survey has been put together by using the most recent assessments that have been done on the competitiveness of the goods -or clusters- belonging to these chapters. The results of this survey are summarized in Table 1.

Common issues come up in this table for the various groups of products. Many of the issues hindering the production of these goods are related to coordination failures, information spillovers (including self-discovery-related), need of product-specific public goods, and other type of market distortions. However, although they may seem as common topics, these are product-specific in nature and thus have to be addressed in specific ways. Below are some examples for the cases of coordination failures, information spillovers, and product-specific public good requirements:

A. Examples of Coordination Failures

According to Espinal *et al.*, there would seem to be a coordination failure in the pisciculture sector, given that the competitiveness of this sector seems to depend on the existence of a competitive fish feed industry.³² However, a competitive fish feed industry would require a certain level of demand

³¹ For more on second-best interactions see Hausmann, R., Rodrik, D., Velasco, A., "Growth Diagnostics", Harvard University, 2005.

³² Espinal, C.F., Martínez, H, González, F., La Cadena de la Piscicultura en Colombia, Una Mirada Global de su Estructura y Dinámica 1991-2005, 2005.

from the pisciculture sector that would allow it to attain some scale economies.

Another case of coordination failure might seem to arise both in the metal-mechanic and machinery and electrical equipment sectors. Reports by the National Planning Department suggest that the economic feasibility of these sectors is highly dependent on a robust demand by the agriculture and construction sectors, in the case of the former, and a competitive input supply from the petrochemical cluster, in the case of the latter.³³

A successful industrial policy for the above-mentioned sectors should try, therefore, to bridge the gap so that investors on each side will have the correct incentives to pursue the socially optimum amount of investment in their respective sectors.

B. Examples of Information Spillovers

Back to the pisciculture sector, Espinal *et al.* also point out the need to scale up in the value-added

ladder into the production of more sophisticated agro-industrial products, such as sausages or ready-to-fry fillets.³⁴ However, currently there is no production of these type of goods in the country and, thus, there would be the need for investors to pioneer into their production. A similar case seems to be happening in the apiculture sector. According to another study by Espinal *et al.*,³⁵ there seems to be a very low knowledge of the business in Colombia and no one has ventured to make high stakes investments in it, despite seeming like such a good option for the country.³⁶

In both of these cases, the fact that -if successful- pioneers would be easily copied by followers that wouldn't bear the initial risks and costs associated to discovering whether they can be competitive, leads to an underprovision of pioneer investment (representing a case of Hausmann and Rodrik's *self-discovery* type of *distortion*).³⁷ Thus, a successful industrial policy would try to bridge the gap between the social and private valuations by -for example- subsidizing initial investment in these new activities.

³³ Metalmecánica, Cadenas Productivas Estructura, Comercio Internacional y Protección - Departamento Nacional de Planeación, 2004 and Maquinaria y Equipo Eléctrico, Cadenas Productivas Estructura, Comercio Internacional y Protección - Departamento Nacional de Planeación, 2004.

³⁴ Op. cit. Espinal et al (2005).

³⁵ Espinal, C.F., Martínez, H, Santos, C., La Cadena de las Abejas y la Apicultura en Colombia, Una Mirada Global de su Estructura y Dinámica 1991-2005, 2006.

³⁶ Bees wax was one of the highest ranked products among the broad agriculture "best" products list.

³⁷ Op. cit. Hausmann, R. and Rodrik, D. (2003).

Apart from the self-discovery type, many of these products seem to be subject to more general forms of information spillovers. In several cases, the competitiveness of these goods hinges upon R&D investment that is not easily patentable. Thus, private agents don't have the incentives to undertake efficient levels of R&D investment. For example, according to Espinal *et al.*, the pisciculture sector requires the production of a genetically enhanced seed -especially for trout- given that the country is heavily dependent on the import of this material.³⁸ A study by the Corporación Colombia Internacional (CCI) advocates for a state supported R&D policy for the fish and crustacean sector,³⁹ as does Espinal *et al.* for the apiculture sector⁴⁰ and the National Planning Department for the metalmechanic sector.⁴¹ Thus, some joint public-private R&D effort would be a sensible policy that could be applied in these cases.

Labor training is another area that is subject to information spillovers. In particular, firms don't have the incentives to spend on training their workers given the possibility of labor turnover after they have invested in this training. A report

by the National Planning Department finds, for example, that one of the major constraints affecting the steel sector is the requirement of high skilled labor.⁴² In such a case, one could consider policies towards subsidizing sector-specific training in order to overcome the distortion.

C. Examples of Product-Specific Public Goods

Another issue that comes up very frequently among the analyzed products is the need for the provision of product-specific public goods. These product-specific public goods are not only of the infrastructure type (like roads, ports, etc.) but also include specific legislation and rules and public institutions strengthening. A case that repeats itself often for agricultural and agro-industrial goods is related to sanitary and phytosanitary (SPS) matters. In many cases, the most demanding markets from an SPS perspective require making sure that the exporting country's system for monitoring SPS comply with the requirements that importing countries established. Moreover, the recognition of equivalence

³⁸ Op. cit. Espinal (2005).

³⁹ Pesca y Acuicultura, Colombia 2006, Corporación Colombia Internacional (CCI), 2007.

⁴⁰ Op. cit. Espinal (2006).

⁴¹ Op. cit. Departamento Nacional de Planeación (2004).

⁴² Siderurgia, Cadenas Productivas Estructura, Comercio Internacional y Protección - Departamento Nacional de Planeación, 2004.

-as it is technically known⁴³ often takes place at a product-by-product basis. Under this scenario, no individual private agent can attain access to those markets unless the national system is certified as SPS compliant for that particular product.

Such is the case of the Bovine Meat and Edible Offals products. For some products in this HS chapter, the country not only needs to be recognized as having a Foot and Mouth Disease free area, but its food safety system has to be recognized as equivalent.⁴⁴ A similar case applies to dairy products, for which both individual plants as well as the national system have to be authorized if they want to export liquid milk products to the US. A similar situation is faced by apiculture products and fish and crustacean products (See Table 1).

VI. Framework and Principles to Evaluate the Design of an Industrial Policy

In order to identify and address these types of product-specific distortions it is important that the country institutionalizes the processes of searching

for new activities and of identifying and harnessing distortions associated with these activities. In other words, the country must have a set of institutions that fosters structural transformation.

Given that this process involves substantial eliciting of information from -and strategic cooperation with- the private sector, there are many critics that discard the implementation of industrial policy due to the risk of potential political capture of the government by private interests that this process might entail. However, this is no good reason to abandon the possibility of undertaking well formulated industrial policy -especially when there is evidence suggesting that most of the development successes of the second half of the twentieth century (ie. South Korea, Taiwan, Chile, for example) involved some type of industrial policy.⁴⁵ As Rodrik puts it "scratch the surface of nontraditional export success stories from anywhere around the world, and you will more often than not find industrial policies, public R&D, sectoral support, export subsidies, preferential tariff arrangements, and other similar interventions lurking beneath the surface."⁴⁶

⁴³ Equivalence is one of the principles of the Sanitary and Phytosanitary Measures Agreement under the WTO, through which a country recognizes that the other country's SPS system provides an adequate level of protection.

⁴⁴ Such is the case for the access of these products into the US market, where the country has to be recognized as having a FMD free zone by the Animal and Plant Health Inspection Service (APHIS) and an equivalent food safety system by the Food Safety Inspection Service (FSIS).

⁴⁵ For further evidence see Rodrik, D., "Fifty Years of Growth", *One Economics Many Recipes*, Princeton University Press, 2007.

⁴⁶ Rodrik, D., "Industrial Policy for the Twenty-First Century", *One Economics Many Recipes*, Princeton University Press, 2007. Rodrik (2007), page 109.

Table 1
SURVEY ON DISTORTIONS/ISSUES SURROUNDING THE PRODUCTION OF SOME OF THE "BEST" GOODS

| Chapter | Product | Report | Distortion/Issues |
|-----------|-------------------------|--|--|
| Chapter 2 | Bovine Meat | Espinal, C.F., Martínez, H., Acevedo, X., La Cadena de la Carne Bovina en Colombia, Una Mirada Global de su Estructura y Dinámica 1991-2005, 2005 | <ul style="list-style-type: none"> <input type="checkbox"/> Specific public good: Food safety and animal health standards. SPS access in most SPS demanding markets is denied until the country complies with importing country standards (ie. US, EU) (FMD free zone (APHIS) and Equivalence recognition (FSIS)). <input type="checkbox"/> Specific public good: Environmental regulation. Dolphin safe fishing methods have not started to be implemented in Colombia. <input type="checkbox"/> Coordination failure: There is need for investment in downstream industry. Tuna processing (canning) industry doesn't have the capacity to absorb the supply from the tuna fishing industry. <input type="checkbox"/> Specific public good: Information infrastructure. There is the need of an information system to monitor more closely the cluster's participants. |
| Chapter 3 | Tuna | Espinal, C.F., Martínez, H., González, E., La Cadena del Atún en Colombia, Una Mirada Global de su Estructura y Dinámica 1991-2005, 2005. | <ul style="list-style-type: none"> <input type="checkbox"/> Information spillover: R&D. The country requires the production of a genetically enhanced seed -especially for trout-, given that the country is heavily dependent on the import of this material. R&D is crucial aspect that must be addressed. <input type="checkbox"/> Coordination failure: To make this sector feasible there is the need of an upstream industry (feeding). The heavy dependence on the import of feeding hinders this sector's competitiveness. Import costs are linked with exchange rate and tariff protection by the SAPP (Andean tariff band system). <input type="checkbox"/> Information spillover: There is the need to develop both domestic and foreign market feasibility studies. <input type="checkbox"/> Information spillover: There is the need to implement advertising campaigns promoting consumption of the Colombian product. <input type="checkbox"/> Self-discovery costs: High costs and risks associated to the pioneer's jump into production of higher value-added agroindustrial products (sausages, ready-to-try filets, etc.). <input type="checkbox"/> Specific public good: SPS and environmental regulation in order to access foreign markets. <input type="checkbox"/> Coordination failure: establish a better transport and cold chain logistics system for all production and commercialization stages. <input type="checkbox"/> Other market failure: Asymmetric information. There is the need for specialized access-to-credit programs. <input type="checkbox"/> Specific public good: Information infrastructure. There is the need of an information system to monitor more closely the cluster's participants. |
| | Pisciculture | Espinal, C.F., Martínez, H., González, E., La Cadena de la Piscicultura en Colombia, Una Mirada Global de su Estructura y Dinámica 1991-2005, 2005 | |
| | Fishing and Aquaculture | Pesca y Acuicultura, Colombia 2006, Corporación Colombia Internacional (CCI), 2007 | |
| | Shrimp | Perry, S., Estudio de Competitividad de la Cadena de Camarón de Cultivo, 2002 | <ul style="list-style-type: none"> <input type="checkbox"/> Information spillover: R&D Need for R&D policy, support policy (credit, technical assistance), and promotion policy. <input type="checkbox"/> Coordination failure: There costs of inputs for the production of feed are high given that most of it is imported. <input type="checkbox"/> Information spillover: Lack of skilled labor for the development of value-added products. |

Table 1
SURVEY ON DISTORTIONS/ISSUES SURROUNDING THE PRODUCTION OF SOME OF THE "BEST" GOODS

| Chapter | Product | Report | Distortion/Issues |
|------------|--------------------------------|---|--|
| Chapter 3 | Shrimp | Perry, S., Estudio de Competitividad de la Cadena de Camarón de Cultivo, 2002. | <ul style="list-style-type: none"> <input type="checkbox"/> Specific public good: Food safety and animal health standards. <input type="checkbox"/> Other market failure: Capital access. <input type="checkbox"/> Information spillover: Lack of technical information that is specific to the sector (no programs in the SENA that are suited for the sector's specific needs). <input type="checkbox"/> Specific public good: Infrastructure. There is the need to enhance port infrastructure. |
| | | Espinal, C.F., Martínez, H, González, F., La Cadena del Camarón de Cultivo en Colombia, Una Mirada Global de su Estructura y Dinámica 1991-2005, 2006. | <ul style="list-style-type: none"> <input type="checkbox"/> Coordination failure: There is need for upstream investment. In order for this sector to be feasible, there has to be a competitive supply by the feeding industry. <input type="checkbox"/> Self-discovery costs: High costs and risks associated to the pioneer's jump into the production of shrimp-based frozen preparations (with sauce, cooked, deshelled, etc) <input type="checkbox"/> Information spillover: Consolidate R&D programs towards increasing productivity. |
| | | Espinal, C.F., Martínez, H, González, F., La Cadena del Camarón de Pesca en Colombia, Una Mirada Global de su Estructura y Dinámica 1991-2005, 2006. | <ul style="list-style-type: none"> <input type="checkbox"/> Coordination failure: overexploitation seems to have led to the decrease in the shrimp stock. Work needed to limit fishing and repopulate. <input type="checkbox"/> Specific public good: Need of an information system to monitor more closely the cluster's participants. |
| Chapter 4 | Dairy | Espinal, C.F., Martínez, H, González, F., La Cadena de Lácteos en Colombia, Una Mirada Global de su Estructura y Dinámica 1991-2005, 2005. | <ul style="list-style-type: none"> <input type="checkbox"/> Coordination failure: Weaknesses in the production of yogurt, animal feeding, children powder milk. <input type="checkbox"/> Specific public good: SPS access to markets (ie. US, liquid milk - recognition of equivalence for milk - FDA) (SPS Team - MLL). |
| Chapter 15 | Apiculture | Espinal, C.F., Martínez, H, Santos, C., La Cadena de las Abejas y la Apicultura en Colombia, Una Mirada Global de su Estructura y Dinámica 1991-2005, 2006. | <ul style="list-style-type: none"> <input type="checkbox"/> Self-discovery costs: Low knowledge of business. <input type="checkbox"/> Specific public good: SPS issues: traditional production doesn't comply with SPS standards demanded by international markets. <input type="checkbox"/> Information spillover: R&D. There is a need for R&D and technical assistance. |
| Chapter 72 | Steel Sector | Cadenas Productivas Estructura, Comercio Internacional y Protección - Departamento Nacional de Planeación, 2004. | <ul style="list-style-type: none"> <input type="checkbox"/> Coordination failure: Scale economies. <input type="checkbox"/> Information spillover: Requires high-skilled labor. |
| Chapter 84 | Machinery and Electrical | Cadenas Productivas Estructura, Comercio Internacional y Protección - Departamento Nacional de Planeación, 2004. | <ul style="list-style-type: none"> <input type="checkbox"/> Coordination failure: Dependence on the supply from other chains (petrochemical). |
| | Equipment Metalmechanic Sector | Cadenas Productivas Estructura, Comercio Internacional y Protección - Departamento Nacional de Planeación, 2004. | <ul style="list-style-type: none"> <input type="checkbox"/> Other market failure: Access to credit. <input type="checkbox"/> Specific public good: High transport costs. <input type="checkbox"/> Coordination failure: Heavy dependence on imported inputs. <input type="checkbox"/> Coordination failure: Heavy dependence on other sectors (agriculture and construction). <input type="checkbox"/> Information spillover: Lack of R&D investment. |

Furthermore, in all of these cases, governments were able to engage in close interaction with the private sector while guaranteeing independence from it and, more importantly, while maintaining the capacity to detach from those projects that failed.

Hausmann, Rodrik, and Sabel have come up with a framework that distinguishes between industrial policy for existing and/or nearby economic activities, and industrial policy for fostering jumps towards new products that are further away from a country's current capabilities.⁴⁷ They call the former one industrial policy "in the small", while the latter -not surprisingly- industrial policy "in the large".

A. Industrial Policy "in the small"

These authors state that the government faces a three-fold problem while undertaking industrial policy "in the small": an information problem (it doesn't know what product-specific public inputs are needed), an incentive problem (rewards for providing rents could be higher than those for increasing productivity), and a resource problem (there are no market signals for assigning product-specific public goods).

In order to address these issues, Hausmann *et al.* propose four elements that an industrial policy "in the small" should entail:⁴⁸

1. *A mechanism that fosters public and private interaction towards identifying and addressing specific coordination failures*

Namely, there should be an institutional mechanism, or space, through which public and private agents can interact to identify and address distortions associated with the production of specific goods. These authors propose that this mechanism shouldn't be too aggregated so as to just be able to tackle horizontal issues; nor too narrow so as to be unmanageable with the nitty-gritty of product specificities.

2. *A new budgetary procedure to increase the responsiveness capacity of the public sector*

Hausmann *et al.* propose a centralized budget that can be allocated to different public entities, towards addressing specific distortions. They argue that this way of proceeding can partially solve the lack of market signals for the allocation of product-specific public inputs. A centralized budget would incentivize competition from different entities for

⁴⁷ Op. cit. Hausmann, R., Rodrik, D., and Sabel, C. (2007).

⁴⁸ For a more detailed explanation see Op. cit. Hausmann, R., Rodrik, D., and Sabel, C. (2007).

these public resources, thus somewhat resembling a private market.

3. A new monitoring procedure to discipline project selection and spread the lessons from successes and failures

The authors propose a monitoring system that allows disseminating the lessons both from successes as well as failures. This is crucial given that industrial policy is experimental in nature and thus feedback becomes a critical element that will allow fine-tuning the policymaking process along the way.

4. A set of operating principles

This process has to be led by a set of operating principles that will allow it to cope with conflicting incentives issues, as well as to fulfill its objectives of eliciting information and generating an interaction space between public and private agents, without falling prey to individualistic interests and rent seeking. The authors provide a short list of these principles and point out that Rodrik (2007) has further discussed some potential operating principles.⁴⁹ Rodrik's list of principles, as well as a brief description of them is provided in Table A13 of the Annex.

a. Industrial Policy "in the large"

In contrast with industrial policy "in the small", industrial policy "in the large" implies identifying and promoting activities that need not be close to the current country's capabilities. Thus, this involves, as the authors suggest, "backing up all its public input needs plus some subsidies to get the private juices going."⁵⁰

As one would expect, this requires a higher level of centralization and more prioritization, as well as a new set of institutions that serve as explorers into unexplored areas of the *product space*. According to the authors, these institutions would resemble venture funds, which would be permanently looking for new opportunities. They cite as a successful example of this type of institution that of Fundación Chile in Chile, which operated as a public venture fund. Moreover, the authors explain that development banks in developing countries would have the capabilities to perform such tasks.

Finally, the authors stress the importance of not evaluating industrial policy "in the large" with a criteria of minimizing the number of failures. Given its exploratory nature, failures will occur. However, the criteria should be to minimize the

⁴⁹ For a more thorough description of these see Op. cit. Rodrik, D. (2007).

⁵⁰ Op. cit. Hausmann, R., Rodrik, D., and Sabel, C., page 10 (2007).

cost of those failures by letting them go as soon as one identifies them as such.

VII. Colombia's Institutions for Undertaking Industrial Policy in Light of the Framework and Principles

This section analyzes the institutional framework and the set of policies that Colombia has put in place, in light of the framework that Hausmann *et al.* (2007) have proposed, as well as in light of the requirement for a more product-specific approach that the findings of this paper suggests.

As has already been mentioned, the negotiation of the FTA with the US spurred the need to rearrange and enhance Colombia's competitiveness-related institutional framework. This momentum led to several initiatives towards defining medium and long-term programs (See Table 2).

"Vision 2019" set some goals that the country should pursue by the year 2019 -when it will be celebrating the 2nd centenary of its independence- through the implementation of horizontal policies. The "Domestic Agenda" framed a set of policies towards streamlining Colombia's productive ca-

Table 2

SUMMARY OF COLOMBIA'S COMPETITIVENESS ENHANCEMENT POLICIES

| | Main Objectives | Targeted Market | Policy Focus |
|---------------------------------|--|---|--|
| Vision 2019 | <ul style="list-style-type: none"> <input type="checkbox"/> Increase GDP / capita \$3,810 (2004US\$) <input type="checkbox"/> TFP Growth to 2.1% (1% today) | <ul style="list-style-type: none"> <input type="checkbox"/> International markets | <ul style="list-style-type: none"> <input type="checkbox"/> Neutral policy <input type="checkbox"/> Business environment conditions <input type="checkbox"/> Strictly horizontal |
| Domestic Agenda (Conpes 3297) | <ul style="list-style-type: none"> <input type="checkbox"/> Streamlining of productive capacity for FTA challenge <input type="checkbox"/> Mitigate FTA negative effects | <ul style="list-style-type: none"> <input type="checkbox"/> US market | |
| National Development Plan (PND) | <ul style="list-style-type: none"> <input type="checkbox"/> Decrease labor informality to 46% (59% today) <input type="checkbox"/> Increase exports (8.5% annual real growth) <input type="checkbox"/> Investment/GDP (26%) | <ul style="list-style-type: none"> <input type="checkbox"/> International markets <input type="checkbox"/> Traditional and new sectors | <ul style="list-style-type: none"> <input type="checkbox"/> In addition to horizontal policies, active sectoral policy <input type="checkbox"/> Domestic Agenda prioritization <input type="checkbox"/> Sectoral and regional focus |
| Conpes 3439 | <ul style="list-style-type: none"> <input type="checkbox"/> Reach ICC of 4.69 by 2014 (3.8 today) <input type="checkbox"/> Be the 3rd most competitive country in Latin America | <ul style="list-style-type: none"> <input type="checkbox"/> International markets <input type="checkbox"/> Traditional and new sectors | <ul style="list-style-type: none"> <input type="checkbox"/> Creation of National Competitiveness System <input type="checkbox"/> Institutional enhancements <input type="checkbox"/> Competitiveness policy principles |
| Conpes 3527 | <ul style="list-style-type: none"> <input type="checkbox"/> Define the National Competitiveness Policy | <ul style="list-style-type: none"> <input type="checkbox"/> International and domestic markets <input type="checkbox"/> Traditional and new sectors | <ul style="list-style-type: none"> <input type="checkbox"/> 15 concrete plans involving horizontal and vertical policies |

Source: National Competitiveness System Presentation.

capacity in order to benefit from the FTA with the US, as well as providing support for enhancing the competitiveness or promoting the structural transformation of those sectors that might be hurt by increasing trade with the US. The National Development Plan, in addition to horizontal policies, included a sector approach that aimed at increasing the country's global competitiveness. The Conpes 3439⁵¹ was an attempt to organize all these efforts through the creation of the National Competitiveness Council and the establishment of Colombia's Competitiveness Policy. Finally, the Conpes 3527 (2008) further developed Colombia's Competitiveness Policy through 15 concrete action plans involving the following areas (see Table 3).

Thus, Colombia has put in place a new set of institutions and policies towards the implementation of some serious industrial policy measures. The question that arises is whether or not the institutions and policies established are adequate for the type of challenge that the country is facing. As Hausmann *et al.* (2007) have proposed, there should be a different set of institutions depending on how far from the country's current capabilities one would want to jump.

Furthermore, this paper has argued that jumping to new trees will involve the identification and

Table 3
ACTION PLANS - CONPES 3527 (2008)

-
- 1 World class sectors development
 - 2 Jump in productivity and employment
 - 3 Agriculture sector competitiveness
 - 4 Business formality
 - 5 Labor formality
 - 6 Science, technology, and innovation
 - 7 Education and labor skills
 - 8 Mining and energy infrastructure
 - 9 Logistics and transportation infrastructure
 - 10 Finance deepening
 - 11 Tax simplification
 - 12 Information and Communication Technology
 - 13 Contract compliance
 - 14 Environmental sustainability
 - 15 Institutional strengthening for competitiveness
-

Source: Conpes 3527 (2008).

addressing of product-specific distortions that will often require product-specific public inputs. Again, the question would be whether these institutions and policies are appropriate to address product-specific issues.

A. Colombia's Institutional Rearrangement and Competitiveness Policy

Colombia has put in place the most ambitious effort ever, involving the creation of new institutions and the definition of new policies towards enhancing the country's competitiveness level.

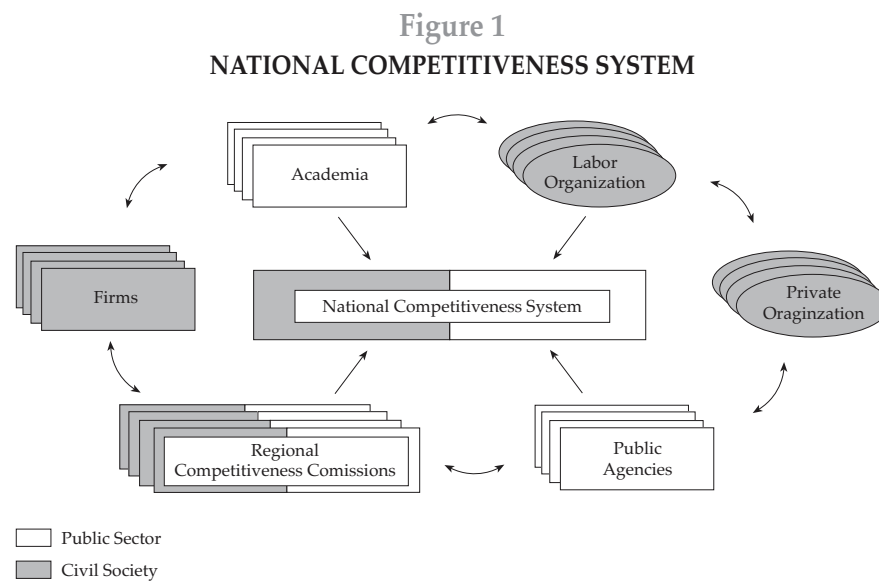
⁵¹ CONPES stands for Consejo Nacional de Política Económica y Social and is the highest-level council for economic and social policies in Colombia. The documents that are prepared for this council are known as Conpes.

The Government has created a National Competitiveness System (NCS), in which the relevant public and private agents are able to interact with the objective of addressing competitiveness-related issues (See Figure 1).

The NCS revolves around the National Competitiveness Commission (NCC), which is a high-level deliberation council presided by the President of Colombia, in which both government officials as well as private sector representatives are expected to address competitiveness-related issues. The Commission has a general coordinator, which has the empowerment of a cabinet-level minister.

Since its creation this role has been appointed to the High Counselor on Competitiveness and Regional Issues.⁵²

It is worth mentioning that it is the first time in Colombia that a "principal" with such political authority is assigned to competitiveness policy -which is usually a transversal issue and, as such, often "no man's land". In addition to enhancing policy impact prospects, this scheme should allow for greater accountability. Now, it is worthwhile mentioning that this role as the "principal" of the NCS should be institutionalized, given that it currently depends on the President's willingness to



Source: Informe de Gestión 2007, Sistema Nacional de Competitividad, Alta Consejería para la Competitividad y Productividad.

⁵² Alto Consejero para la Competitividad y las Regiones.

have this figure as part of the President's Office. Thus, Colombia faces a great challenge -especially with the government transition that took place in 2010- of maintaining and formalizing the presidential-level principal on competitiveness, given that its role is crucial for coordinating all the ministries and other public agencies that are involved in the competitiveness agenda.

The NCC is supported by the work of a Technical Secretariat -conformed by some public agencies (the National Planning Department and the Ministry of Trade, Industry, and Tourism) as well as by a private sector representative (Colombia's Private Council on Competitiveness).

This same institutional architecture of the NCC is replicated at the sub-national level with the Regional Competitiveness Commissions (RCCs). There are 32 Regional Competitiveness Commissions, one for each department, and each one of them has a Technical Secretariat and has established its own Regional Competitiveness Plan. At the sub-national level the Technical Secretariat is conformed -from the public side- by the departmental government, while the local chamber of commerce usually assumes the private role. Recent assessments have

found a great heterogeneity in the institutional strength and functions of the RCCs.⁵³ It is critical to enhance their institutional and technical capacity given that they appear as the best-suited fora to address product-specific distortions and to launch local competitiveness initiatives.

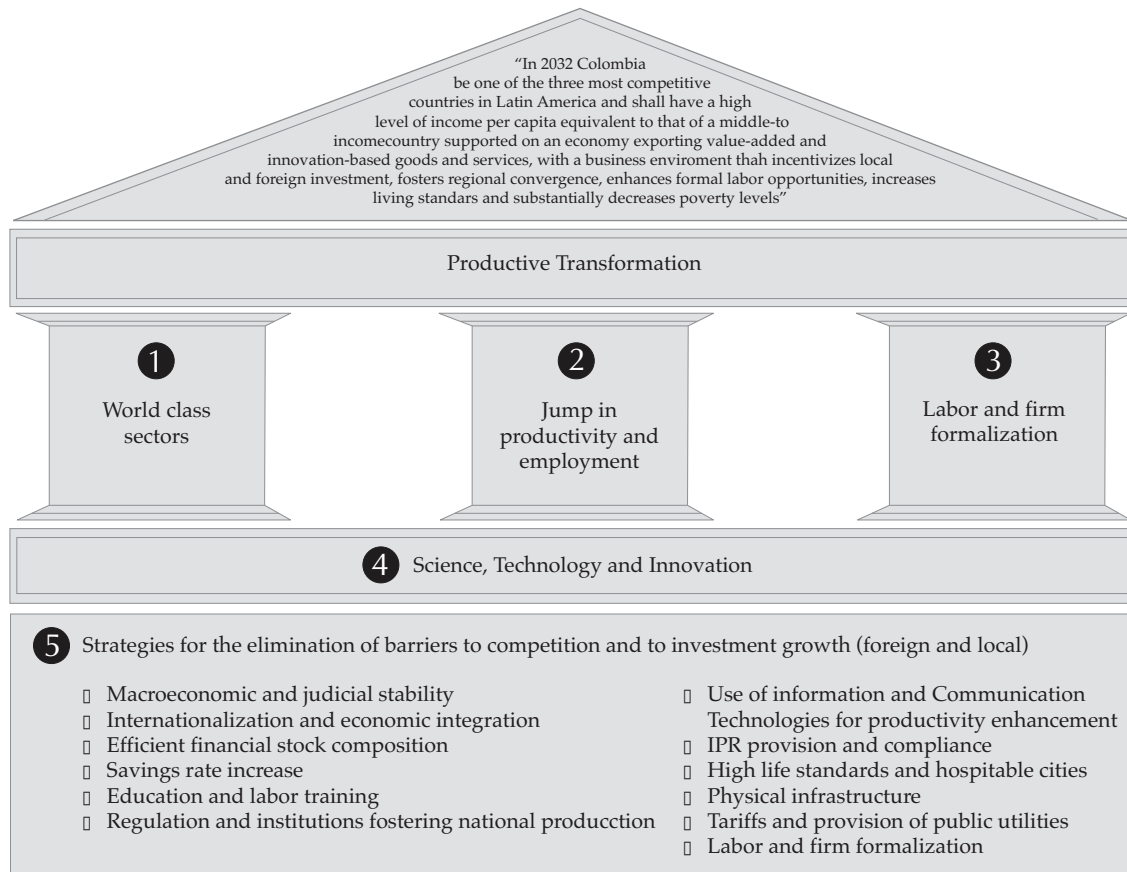
The NCC approved the Competitiveness and Productivity Policy in 2007, which has defined a very ambitious vision to be attained by the year 2032, along with the strategies that will underpin the achievement of that vision. According to this vision, "in 2032 Colombia shall be one of the three most competitive countries in Latin America and shall have a high level of income per capita equivalent to that of a middle-to-high income country, supported on an economy exporting value-added and innovation-based goods and services, with a business environment that incentivizes local and foreign investment, fosters regional convergence, enhances formal labor opportunities, increases living standards, and substantially decreases poverty levels."⁵⁴ A sketch of this policy is presented in Figure 2.

Furthermore, the NCC has created fourteen technical committees -involving public and pri-

⁵³ Estudio sobre las Comisiones Regionales de Competitividad, Universidad Nacional, Ministerio de Comercio, Industria y Turismo, 2010.

⁵⁴ Lineamientos Estratégicos de la Política de Competitividad, Sistema Nacional de Competitividad, 2007, Alta Consejería para la Competitividad y la Productividad.

Figure 2
COMPETITIVENESS AND PRODUCTIVITY POLICY



Source: Lineamientos Estratégicos de la Política de Competitividad, Sistema Nacional de Competitividad, 2007, Alta Consejería para la Competitividad y la Productividad.

vate participation- to address the following topics: Logistics and Transport, Tourism, Jewelry, Biodiversity, Offsets, Construction, Formalization, Air Transport, Culture Industries, Obstacles to Investment, Sanitary and Phytosanitary (SPS) Measures, Capital Markets, Biofuels, and Procedure Simplification.

In order to target its policies and foster structural change, the NCC supported the elaboration of three studies that attempted to come up with a list of goods in which Colombia should concentrate. The first one was the already-mentioned study by Hausmann and Klinger (2007). The second one was the study by the firm Araújo-Ibarra, which

identifies 590 new goods and services with great export potential to the US market. The third one was prepared by Proexport and International Development Ireland (IDI) and identified some sectors with FDI attracting potential.

In addition to this, it is worthwhile mentioning the Ministry of Trade, Industry, and Tourism's Productive Transformation Program (PTP), which is the Government's most recent attempt to focus its policy agenda on a set of sectors. This program started with an open request by the Government to the private sector to send in proposals in order to undertake a structural transformation agenda for their sector and turn it into a "world-class" one. The best proposals were to receive Government's financial support to hire an international consulting firm that would come up with the sector's new business plan. Additionally, these sectors would receive special attention from the government to address obstacles that currently hinder their competitiveness. Eight non-agriculture sectors were selected. Four of them were already-established sectors that require productivity overhauls if they want to continue existing (Autopart industry, Textile and Garment sector, Electricity sector, and Graphic industry). The other four were relatively

new sectors, in which Colombia could become a world-class player (Software industry, Cosmetics, Health Tourism sector, and Business Process Outsourcing). A second round of this program was launched to select four sectors from the agriculture sector. The best proposals were the ones from the Shrimp industry, the Bovine Meat industry, the Chocolate and Cacao sector, and the Palm and Oil industry.

Another attempt at implementing vertical policies has come from the RCCs, which have prioritized some sectors in their Regional Competitiveness Plans. Although there are caveats with regards to the way this prioritization was done, it is a step in the right direction in terms of the RCCs becoming the perfect fora for industrial policy implementation.

Finally, it is worth mentioning the issuance of the new Law for Science, Technology, and Innovation⁵⁵ and the National Policy on Science, Technology, and Innovation.⁵⁶ Both of these policies attempt to strengthen Colombia's science, technology, and innovation-related institutions and try to link research, development, and innovation to the competitiveness agenda.

⁵⁵ Ley de Ciencia, Tecnología e Innovación - Ley 1286 de 2009.

⁵⁶ Documento Conpes 3582, Política Nacional de Ciencia, Tecnología e Innovación, Departamento Nacional de Planeación, 27 de abril de 2009.

B. Assessment in Light of the Framework and Principles

Colombia seems to be going in the right direction in terms of its efforts to conduct sensible industrial policy. However, it seems that the institutions and policies that have been put in place are better suited to conduct industrial policy "in the small" than industrial policy "in the large".

1. *Industrial Policy "in the small" in Colombia*

The NCS, along with its National Competitiveness Commission and Regional Commissions, seem to adequately fit the requirement of a space for interaction between public and private sectors, towards identifying and addressing distortions.

However, so far this institutional architecture has prioritized the addressing of horizontal issues, instead of more product-specific ones and, thus, they don't generate a "quality" assessment, in the sense that Hausmann, Rodrik, and Sabel propose in their paper. The country is still struggling with the debate of whether it should try to focus on a set of

goods or, on the contrary, adopt a more across-the-board approach -namely, concentrating on business environment enhancement.⁵⁷ Now, the Technical Committees and Regional Commissions, along with the implementation of the Productive Transformation Program, come up as preliminary efforts that could allow addressing more product-specific issues and overthrow the horizontality paradigm.

With regards to the budgetary process, currently the National Competitiveness Commission doesn't meet the criteria of having a centralized budget. Thus, in the short run, the NCC will only identify investment on competitiveness-related issues in the relevant agencies' budgets. However, in the medium term, the idea would be to give the National Competitiveness System the capacity to guide resource allocation for competitiveness issues through recommendations to the budgeting process and by taking into account competitiveness-related demands from the RCCs in the national budget.⁵⁸

In relation to a monitoring procedure to discipline project selection and spread the lessons from

⁵⁷ As an example, this debate can be noticed in the documents that different advisors have prepared under the auspices of the National Competitiveness Commission. On one side, Hausmann and Klinger have been supporters of a more product-targeted approach. On the other, Michael Porter, as well as the people from International Development Ireland, have backed a more horizontal approach. Moreover, Porter thinks Colombia should build upon its current clusters, based upon the idea that no cluster is better than other. This clearly clashes with Hausmann, Hwang and Rodrik's view that "what you export matters".

⁵⁸ Presentation - Política Nacional de Competitividad: Ideas para la Discusión, Sistema Nacional de Competitividad, Nov. 2007.

both successes and failures, there has been a high level of transparency with regards to the progress being made by the National Competitiveness System. Firstly, there has been a permanent disclosure of discussions and presentations taking place at the National Competitiveness Commission. The government has put in place a three-pronged monitoring system: a monitoring system for the competitiveness-related policy documents (ie. Conpes 3527), an observatory for competitiveness indicators, and a monitoring system for regional competitiveness-related issues. Furthermore, the government has included the activities related to the NCS in a wider monitoring system for all government-related matters called SIGOB.⁵⁹ Finally, there has been a permanent effort to spread the progress that has been made through diverse presentations and meetings across the country.

In addition to greater transparency, the National Competitiveness Council has been meeting regularly (once or twice a year), to review the progress being made in the projects under its supervision.

However, a better procedure should be established both to discipline project selection and to spread the lessons from the implementation of the Productive Transformation Program. In terms of project selection, the open request for proposals privileges those that come from well established

sectors, over those coming from less organized (or inexistent) ones but with better competitiveness potential. In terms of lessons spreading, so far this program has been led by the Ministry of Trade, Industry, and Tourism and, thus, there hasn't been much feedback from, and to, other agents of the NCS. A similar procedure should be established for the Regional Competitiveness Commissions in order to enhance project selection and spread best practices among them, so as to include productivity increase potential into their project selection criteria and to close the current gaps in terms of institutional and functional strength.

With regards to operating principles, the NCS seems to comply with some but not all the principles that Rodrik suggests an industrial policy should entail. A summary of the NCS's compliance level with these principles is presented in Table 4.

In terms of the operating principles, it is worth mentioning the importance of setting criteria for success and failure and sunset clauses for the Productive Transformation Program and the sectors prioritized by the RCCs, in order to have the correct incentives that lead to productivity gains in these strategic bets. Additionally, it is important to have a more aggressive approach in terms of making these strategic bets. This will depend on making the project selection process more flexible, both for

⁵⁹ See www.sigob.gov.co

Table 4
NCS COMPLIANCE WITH RODRIK'S PRINCIPLES

| | National Competitiveness System | Comments/Issues |
|--|---------------------------------|---|
| 1 Incentives just to new activities | No | Two examples: the Productive Transformation Program has included incentives to old activities. The RCCs have prioritized well-established sectors in their regional plans. |
| 2 Criteria for success and failure | No | Benchmarks haven't been set for the Productive Transformation Program, nor for the sectors prioritized by the RCCs. |
| 3 Sunset clause | No | Neither the Productive Transformation Program, nor the sectors prioritized by the RCCs include so far any sunset clause. |
| 4 Support to activities, not sectors | No | For example, the Productive Transformation has a sectoral approach. In addition, there is still much debate as to whether horizontal or vertical policies should be implemented. |
| 5 Supported activities with spillovers and demonstration effects | Yes | Horizontal policies have been the paradigm. |
| | Yes | The most competent agencies have been involved (DNP, CPC, MCIT, etc.) |
| 6 Agencies with demonstrated competence | Yes | The NCS has presidential-level coordination (High Counselor on Competitiveness and Regional Issues). |
| 7 Monitoring by principal with political authority | Yes | There are communication channels at the national, regional, and local level. |
| 8 Channels of communication with private sector | No | Although mistakes are contingent on a definition of criteria for success and failure, one could say that the Productive Transformation Program and the RCCs could be more aggressive in their sector selection. |
| 9 Mistakes picking "losers" will occur (how aggressive) | No | The project selection process for the Productive Transformation Program and the RCCs is very rigid, hindering their capacity of renewal and making their trial and error process rather inflexible. |
| 10 Capacity of renewal | | |

Source: Author.

the PTP and the RCCs' sectors, in order to make it a more dynamic trial-and-error process.

To recap, Colombia doesn't fare that bad in terms of the four elements that Hausmann *et al.* (2007) propose for undertaking an industrial policy "in the small". However, the horizontal approach adopted for industrial policy "in the small" doesn't seem consistent with the need to address product-specific distortions and deliver product-specific public goods. Thus, in order to do this, the government will have to adapt its current approach so that it is able to identify and address distortions associated to goods that are near Colombia's current capabilities. The Technical Committees, the Regional Competitiveness Commissions, and the Productive Transformation Program are potential tools that could be used to have this product-specific approach.

2. Industrial Policy "in the large" in Colombia

With regards to the implementation of industrial policy "in the large", as was stated before, Colombia seems entrenched in a debate about whether or not to target specific goods. From a political perspective, it is normal that this debate is taking place. Firstly, the notion of targeting implies reallocating resources to some activities and, probably, away from some others. Thus, targeting some goods or subsectors will certainly generate discomfort -to say the least- in the non-targeted ones. Secondly, an additional complication arises from the political

economy perspective with the implementation of industrial policy "in the large": one would be favoring sectors that most probably don't have much advocacy, or no representation at all because most probably they currently don't exist.

So far, the policies and projects seem to reflect the needs of existing sectors and not those of potential goods. This is the case of the Productive Transformation Program and the sectors prioritized by the RCCs. Despite the PTP's spirit to foster new sectors, its project selection process leads it to favoring existing ones. Just four sectors, out of the twelve sectors selected so far, could be deemed as new ones (Software industry, Cosmetics, Health Tourism sector, and Business Process Outsourcing); and even these sectors have been around -although marginally- for quite some time. With regards to the sectors prioritized by the RCCs, none of them correspond to new sectors. Thus, one could say that Colombia is not undertaking a very ambitious industrial policy "in the large" that could lead the country into "rich" and unexplored areas of the *product space*.

Despite these hindrances, there are positive signs in the development of industrial policy in the large for Colombia. Firstly, it is true that many structural issues that are being addressed with a horizontal perspective will most probably translate into a better business environment that will enhance the chances of new activities being spurred. Investments in infrastructure, enhance-

ment of the sanitary and phytosanitary-related institutions, reducing the cost of doing business, among others, certainly should facilitate spurring current as well as potential activities.

Secondly, apart from the Productive Transformation Program, Colombia has a set of institutions and agencies that resemble the profile described by Hausmann, Rodrik, and Sabel (2007) for the type of agencies that need be in place to undertake real industrial policy "in the large". So far, the government has not included them as pivotal elements in the implementation of its competitiveness policy. However, with some fine-tuning to their scope and resources, these agencies have the potential to foster the incursion into unexplored regions of the *product space*.

For the agriculture sector, there seem to be two institutions in place that could undertake that role. The first one is the Corporación Colombia Internacional, which -in a minor scale- tries to emulate the role that Fundación Chile has played for the Chilean agriculture sector. This is a public-private agency intended to promote, incubate, and catalyze the agribusiness and food sectors in Colombia. Although fitting the profile, the government would have to expand its resources and refocus it to serve a pivotal role in undertaking agriculture's industrial policy. The second agency is Banagrario, which is one of the government's development banks. So far, the government has used Banagrario to provide subsidized credit to

the agriculture sector, as well as to manage some other credit-related incentives. In this case, the government would have to shift the scope of Banagrario so that it could act more as a public venture capital fund, intended to promote investment in new agriculture goods.

For the non-agriculture sector, there also seem to be some agencies that could perform the role of venture capital funds. Agencies such as Bancoldex and Proexport could be refocused to enable this exploration into the *product space* frontier.

With regards to the capacity of having a more product-specific approach, certainly these agencies' profiles -as well as their mission for industrial policy purposes- would allow them to identify the distortions associated with the production of new goods. However, there would have to be an interface between these agencies and other public agencies when addressing these specific distortions, so that they don't escape from the purview of the public agencies.

Thirdly, the Regional Competitiveness Commissions have the potential to become the perfect tools for the implementation of industrial policy "in the large". The possibility of having 32 different departments making several strategic bets, in a continuous ways, increases Colombia's chances of having successful results. As Hidalgo and Hausmann state, "the level of development is indeed associated to the complexity of a country's

economy."⁶⁰ In other words, the greater the accumulation of different sets of capabilities, the higher the development prospects of the country. Therefore, having the RCCs making bets -in a dynamic fashion- for different goods and services will certainly increase the complexity of Colombia's capabilities set and, thus, its growth prospects.

Last but not least, the new law and policy for science, technology, and innovation discussed above, have the potential to enhance the implementation of industrial policy "in the large", given that only through the use of research, development, and innovation will Colombia be able to take long jumps to "richer" and more strategic areas of the *product space*. It is thus critical that the National Competitiveness System and the National Science, Technology, and Innovation System are able to work together and build synergies. Today they seem as parallel universes with just a few communicating channels. Again, it is only through competitiveness-related institutions that include science, technology, and innovation as their main drivers, that a successful industrial policy will result in Colombia.

VIII. Conclusions and Recommendations

This paper has tried to shed some light as to how Colombia should target an industrial policy. For

this purpose, it has used a methodology developed by Hausmann and Klinger (2007) -along with some concepts developed by Hausmann, Hwang, and Rodrik (2007)- in order to identify potential sectors or subsectors in which Colombia could target this type of policy. As was mentioned above, this paper further develops a previous assessment done by Hausmann and Klinger on Colombia (2007), by analyzing the *product space* at a HS 6-digit disaggregation level.

To reiterate, the objective of this paper is to provide more food for thought in a discussion that should be undertaken jointly between the public and private sectors in Colombia. Given the technical characteristics of this analysis, this paper can become a guide that provides concrete evidence in this discussion.

The tables generated by this analysis suggest that Colombia will have an easier time with a potential industrial policy targeted at its agriculture sector, given that many of the "nearest" products in this sector are also those that might lead to a higher export basket *sophistication* level and would represent a better *strategic* choice for the country. In particular, the fish and fish product sector seems to be one of those "low hanging" and -at the same time- "rich" fruits that the country could easily reach.

⁶⁰ Hidalgo, C. and Hausmann, R., "The Building Blocks of Economic Complexity", Center for International Development, Harvard Kennedy School, 2009.

This is contrary to the case in the non-agriculture sector where the "nearest" product list drastically changes when one considers criteria such as *sophistication level* and *strategic value*. In this sense, the country would have to make greater bets in this sector, given that it would have to take greater leaps to reach more strategic products, in order to increase Colombia's productivity levels.

More importantly and beyond suggesting a potential list of products, this paper provides a preliminary assessment of why Colombia is not producing the products suggested by the methodology. A closer look at some of the goods that came out of the analysis reveals that many of these products are subject to market distortions that hinder the country's capacity to produce them competitively. Some common distortions affecting these goods are coordination failures, information spillovers (including Hausmann and Rodrik's *self-discovery* type), and product-specific public goods requirements, among others. Despite the apparent commonality, this paper has shown that many of these distortions are product-specific and, thus, should be addressed in a product-specific fashion in order to address the distortions more directly and avoid negative second-best interactions. A sensible industrial policy should address these distortions, so as to facilitate the country's jumps to unexplored areas of the *product space*.

This leads us to the question of whether the country has the correct set of institutions that will

allow it to address product-specific distortions. In this regard, one would have to recognize the great effort that Colombia has put into setting up an institutional framework that will facilitate the implementation of industrial policy.

However, there seems to be a bias in favor of less ambitious structural transformation, or as Hausmann, Rodrik, and Sabel (2007) call it, in favor of industrial policy "in the small". While from a political economy point of view this result is understandable, the Government -in its role of maximizing the country's competitiveness potential, as opposed to favoring some existing sectors- should strike a better balance in terms of its industrial policy objectives.

In this sense, the country should try to focus on sectors that would have potential spillovers effects over a broader range of economic activities, and not necessarily on those that present a better value proposal. Namely, one of the main criteria for choosing a sector should be making sure that policies targeted on that sector will generate positive externalities on other potential economic activities. For example, a good candidate for targeting would be a sector whose publicly-aided labor training programs, infrastructure needs, regulatory requirements, or institutional capacity building, will benefit a much greater number of sectors.

In addition to focusing on sectors with spillover effects, the National Competitiveness System

should craft mechanisms that allow it to address more product-specific issues. Despite some progress has been made in this sense with the Productive Transformation Program, the Technical Committees, and the Regional Competitiveness Commissions, so far a crosscutting approach has prevailed. If the NCS doesn't consolidate these mechanisms and create new ones, it will be hard to address the level of specificity that is required. Thus, there must be a deliberate shift in the policy orientation of these program, committees, and commissions towards having a more product-specific approach.

Finally, focusing on existing sectors will not necessarily bring about the dynamism needed

to permanently move to unexplored areas of the *product space*. It is worth remembering that it is structural change and innovation what leads to sustained economic development. Thus, there should be a greater degree of awareness of the need for institutions that will constantly be on the prowl for new economic activities. The bad news is that, so far, the competitiveness policy in Colombia doesn't seem to incorporate any policy on this regard. The good news is that Colombia has a set of agencies (ie. CCI, Banagrario, Proexport, Bancoldex) and institutions (ie. NCS, National Science, Technology, and Innovation System, and Regional Competitiveness Commissions) that -with some fine-tuning and more resources- seem fit to undertake this role.

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Appendix

Table A1
THE 25 NEAREST PRODUCTS IN AGRICULTURE (NARROW),
COLOMBIA 2005 - HAUSMANN AND KLINGER

| | Product (HS 1992 4-digits) | Product Name | Exports (US\$ M) | World Market (US\$ B) | PRODY (PPP) | Strategic Value | Density |
|----|-------------------------------|---|---------------------|--------------------------|----------------|--------------------|---------|
| 1 | 1207 | Other oil seeds and oleaginous frui | 1.50 | 1.14 | 3,030 | 8,963 | 0.23 |
| 2 | 804 | Dates, figs, pineapples...etc, fres | 1.28 | 3.05 | 6,692 | 9,710 | 0.23 |
| 3 | 709 | Other vegetables, fresh or chilled | 3.54 | 7.00 | 10,274 | 10,483 | 0.23 |
| 4 | 304 | Fish fillets and other fish meat, f | 1.93 | 10.96 | 13,627 | 9,665 | 0.23 |
| 5 | 305 | Fish, salted, dried...; smoked fish; fi | 1.23 | 3.41 | 21,799 | 9,424 | 0.22 |
| 6 | 807 | Melons and papaws, fresh | 0.24 | 1.93 | 6,825 | 9,014 | 0.22 |
| 7 | 302 | Fish, fresh or chilled (excl. those | 3.69 | 8.11 | 12,231 | 9,767 | 0.22 |
| 8 | 1101 | Wheat or meslin flour | 3.73 | 2.02 | 5,652 | 9,503 | 0.22 |
| 9 | 1212 | Seaweeds, algae, sugar beet and can | 1.46 | 0.90 | 7,190 | 10,099 | 0.21 |
| 10 | 710 | Vegetables, frozen | 0.86 | 3.44 | 10,938 | 12,556 | 0.21 |
| 11 | 307 | Molluscs & aquatic invertebrates,ne | 0.50 | 5.49 | 7,883 | 10,534 | 0.21 |
| 12 | 811 | Fruit and nuts, frozen | 1.00 | 1.64 | 12,005 | 13,373 | 0.21 |
| 13 | 409 | Natural honey | 0.00 | 0.69 | 11,294 | 13,087 | 0.21 |
| 14 | 508 | Coral; shells of molluscs, crustace | 0.04 | 0.09 | 11,269 | 11,158 | 0.20 |
| 15 | 708 | Leguminous vegetables, shelled or u | 0.10 | 0.55 | 2,514 | 9,973 | 0.20 |
| 16 | 910 | Ginger, saffron, turmeric (curcuma) | 1.58 | 0.90 | 7,234 | 12,143 | 0.20 |
| 17 | 812 | Fruit and nuts, provisionally presser | 0.00 | 0.13 | 9,727 | 11,575 | 0.20 |
| 18 | 805 | Citrus fruit, fresh or dried | 2.22 | 6.79 | 9,485 | 10,061 | 0.20 |
| 19 | 401 | Milk and cream, not concentrated or | 4.24 | 4.58 | 17,027 | 14,826 | 0.20 |
| 20 | 604 | Other parts of plants for ornamenta | 1.14 | 0.92 | 10,597 | 13,335 | 0.20 |
| 21 | 801 | Coconuts, Brazil nuts and cashew nu | 0.16 | 1.53 | 2,112 | 6,590 | 0.19 |
| 22 | 406 | Cheese and curd | 11.24 | 17.13 | 17,123 | 14,058 | 0.19 |
| 23 | 902 | Tea, whether or not flavoured | 0.08 | 1.95 | 1,470 | 7,942 | 0.19 |
| 24 | 202 | Meat of bovine animals, frozen | 1.81 | 8.29 | 10,868 | 7,804 | 0.19 |
| 25 | 909 | Seeds of anise, badian, fennel, corian | 0.03 | 0.16 | 7,580 | 10,802 | 0.19 |

Source: Author's calculations using dataset prepared by Hausmann and Klinger (2007). Product codes are HS 1988/1992 4-digit. Products with HS < 1500 not exported by Colombia with revealed comparative advantage (RCA < 1) in 2005, sorted by density.

Table A2
THE 25 NEAREST PRODUCTS IN AGRICULTURE (BROAD),
COLOMBIA 2005 – HAUSMANN AND KLINGER

| | Product (HS 1992 4-digits) | Product Name | Exports (US\$ M) | World Market (US\$ B) | PRODY (PPP) | Strategic Value | Density |
|----|---------------------------------------|---|-----------------------------|----------------------------------|------------------------|----------------------------|----------------|
| 1 | 2401 | Unmanufactured tobacco; tobacco ref | 12.15 | 6.46 | 2,166 | 8,739 | 0.23 |
| 2 | 1207 | Other oil seeds and oleaginous frui | 1.50 | 1.14 | 3,030 | 8,963 | 0.23 |
| 3 | 804 | Dates, figs, pineapples...etc, fres | 1.28 | 3.05 | 6,692 | 9,710 | 0.23 |
| 4 | 709 | Other vegetables, fresh or chilled | 3.54 | 7.00 | 10,274 | 10,483 | 0.23 |
| 5 | 2009 | Fruit juices (incl. grape must) and | 6.04 | 8.71 | 7,766 | 10,620 | 0.23 |
| 6 | 304 | Fish fillets and other fish meat, f | 1.93 | 10.96 | 13,627 | 9,665 | 0.23 |
| 7 | 305 | Fish, salted, dried...; smoked fish; fi | 1.23 | 3.41 | 21,799 | 9,424 | 0.22 |
| 8 | 807 | Melons and papaws, fresh | 0.24 | 1.93 | 6,825 | 9,014 | 0.22 |
| 9 | 302 | Fish, fresh or chilled (excl. those | 3.69 | 8.11 | 12,231 | 9,767 | 0.22 |
| 10 | 1101 | Wheat or meslin flour | 3.73 | 2.02 | 5,652 | 9,503 | 0.22 |
| 11 | 1512 | Sunflower-seed, safflower or cotton | 0.13 | 2.84 | 5,523 | 10,425 | 0.22 |
| 12 | 2207 | Ethyl alcohol, undenatured of >=80% | 0.69 | 2.27 | 7,515 | 10,864 | 0.22 |
| 13 | 2005 | Other vegetables preserved other th | 5.72 | 5.94 | 11,530 | 13,457 | 0.22 |
| 14 | 2001 | Vegetables, fruit, etc, preserved b | 0.32 | 1.04 | 9,141 | 13,032 | 0.21 |
| 15 | 1212 | Seaweeds, algae, sugar beet and can | 1.46 | 0.90 | 7,190 | 10,099 | 0.21 |
| 16 | 2201 | Waters, (incl. mineral waters and a | 0.18 | 2.22 | 9,265 | 10,230 | 0.21 |
| 17 | 710 | Vegetables, frozen | 0.86 | 3.44 | 10,938 | 12,556 | 0.21 |
| 18 | 2007 | Jams, fruit jellies, marmalades, et | 3.17 | 1.47 | 10,452 | 12,576 | 0.21 |
| 19 | 307 | Molluscs & aquatic invertebrates, ne | 0.50 | 5.49 | 7,883 | 10,534 | 0.21 |
| 20 | 1902 | Pasta, such as spaghetti, macaroni, | 0.33 | 4.15 | 14,681 | 10,599 | 0.21 |
| 21 | 811 | Fruit and nuts, frozen | 1.00 | 1.64 | 12,005 | 13,373 | 0.21 |
| 22 | 2302 | Brans, sharps and other residues, d | 0.59 | 0.51 | 6,508 | 10,668 | 0.21 |
| 23 | 409 | Natural honey | 0.00 | 0.69 | 11,294 | 13,087 | 0.21 |
| 24 | 2002 | Tomatoes prepared or preserved othe | 0.17 | 2.33 | 12,611 | 9,046 | 0.21 |
| 25 | 2309 | Preparations of a kind used in anim | 6.50 | 11.33 | 13,571 | 14,248 | 0.20 |

Source: Author's calculations using dataset prepared by Hausmann and Klinger (2007). Product codes are HS 1988/1992 4-digit. Products with HS < 2500 not exported by Colombia with revealed comparative advantage (RCA < 1) in 2005, sorted by density.

Table A3
THE 50 NEAREST PRODUCTS IN AGRICULTURE (NARROW), COLOMBIA 2005 - LLINAS

| Product (HS 6-digits) | Product Name | PRODY (PPP) | Strategic Value | Density |
|-----------------------|---|-------------|-----------------|---------|
| 1 | 30375 Frozen dogfish and other sharks | 7,073 | 1,220 | 0.16 |
| 2 | 80430 Fresh or dried pineapples | 7,489 | 3,224 | 0.14 |
| 3 | 71410 Fresh, chilled, frozen or dried roots and tubers of manioc "cassava", whether or not sliced or in the form of pellets | 8,083 | 3,478 | 0.14 |
| 4 | 120710 Palm nuts and kernels, whether or not broken | 2,867 | 1,888 | 0.12 |
| 5 | 80110 Coconuts, fresh or dried, whether or not shelled | 4,833 | 4,306 | 0.12 |
| 6 | 30490 Frozen fish meat, whether or not minced (excl. filets) | 9,678 | 5,840 | 0.11 |
| 7 | 70990 Fresh or chilled vegetables (excl. potatoes, tomatoes, vegetables of the Allium spp., cabbages of the genus Brassica, lettuces of the species Lactuca sativa and Cichorium, carrots, turnips, salad beetroot, salsify, celeriac, radishes and similar edible roots, cucumbers and gherkins, leguminous vegetables, artichokes, asparagus, aubergines, mushrooms, truffles, fruits of the genus Capsicum or of the genus Pimenta, spinach, New Zealand spinach and orache spinach) | 6,871 | 7,487 | 0.11 |
| 8 | 80710 Melons, including cantaloupes and watermelons, fresh | 4,979 | 6,093 | 0.11 |
| 9 | 30233 Fresh or chilled skipjack or stripe-bellied bonito | 10,560 | 2,671 | 0.11 |
| 10 | 70810 Fresh or chilled peas "Pisum sativum", shelled or unshelled | 4,334 | 1,694 | 0.11 |
| 11 | 81190 Frozen fruit and nuts, uncooked or cooked by steaming or boiling in water, whether or not sweetened (excl. strawberries, raspberries, blackberries, mulberries, loganberries, black, white or red currants and gooseberries) | 10,309 | 9,996 | 0.10 |
| 12 | 30410 Fresh or chilled filets and other fish meat, whether or not minced | 10,031 | 7,186 | 0.10 |
| 13 | 71333 Dried, shelled kidney beans "Phaseolus vulgaris", whether or not skinned or split | 7,148 | 9,383 | 0.10 |
| 14 | 110620 Flour, meal and powder of sago or of roots or tubers of manioc arrowroot, salep, sweet potatoes and similar roots and tubers with a high content of starch or inulin of heading 0714 | 6,091 | 7,572 | 0.10 |
| 15 | 30232 Fresh or chilled yellowfin tunas "Thunnus albacares" | 6,733 | 7,571 | 0.10 |
| 16 | 30342 Frozen yellowfin tunas "Thunnus albacares" | 7,012 | 5,116 | 0.10 |
| 17 | 30239 Fresh or chilled tunas of the genus "Thunnus" (excl. Thunnus alalunga, Thunnus albacares, Thunnus thynnus and Thunnus maccoyii) | 6,198 | 8,331 | 0.10 |
| 18 | 30219 Fresh or chilled salmonidae (excl. trout "Salmo trutta, Oncorhynchus mykiss, Oncorhynchus clarki, Oncorhynchus aguabonita, Oncorhynchus gilae, Oncorhynchus apache and Oncorhynchus chrysogaster", Pacific salmon "Oncorhynchus nerka, Oncorhynchus gorbuscha, Oncorhynchus keta, Oncorhynchus tshawytscha, Oncorhynchus kisutch, Oncorhynchus masou and Oncorhynchus rhodurus", Atlantic salmon "Salmo salar" and Danube salmon "Hucho hucho") | 7,099 | 2,507 | 0.10 |
| 19 | 80450 Fresh or dried guavas, mangoes and mangosteens | 4,757 | 10,172 | 0.10 |
| 20 | 30559 Dried fish, salted, not smoked (excl. cod and other filets) | 7,742 | 7,554 | 0.10 |
| 21 | 80720 Fresh papapaws "papayas" | 6,781 | 7,220 | 0.10 |
| 22 | 90240 Black fermented tea and partly fermented tea, whether or not flavoured, in immediate packings of > 3 kg | 2,338 | 7,025 | 0.10 |
| 23 | 140410 Raw vegetable materials primarily for dyeing or tanning, n.e.s. | 4,886 | 6,123 | 0.09 |
| 24 | 70820 Fresh or chilled beans "Vigna spp., Phaseolus spp.", shelled or unshelled | 5,771 | 5,485 | 0.09 |
| 25 | 100700 Grain sorghum | 6,122 | 4,009 | 0.09 |

Source: Author's calculations using dataset at HS 6 digit level for Colombia. Products with HS<150000 not exported by Colombia with revealed comparative advantage (RCA<1) in 2005, sorted by density.

Table A3 (Continued)
 THE 50 NEAREST PRODUCTS IN AGRICULTURE (NARROW), COLOMBIA 2005 - LLINAS

| Product (HS 6-digits) | Product Name | PRODY (PPP) | Strategic Value | Density |
|--------------------------|---|----------------|--------------------|---------|
| 26 | Frozen fish fillets | 19,627 | 8,979 | 0.09 |
| 27 | Nuts, fresh or dried, whether or not shelled or peeled (excl. coconuts, Brazil nuts, cashew nuts, almonds, hazelnuts, walnuts, chestnuts "Castanea spp." and pistachios) | 2,033 | 8,338 | 0.09 |
| 28 | Products of fish or crustaceans, mollusks or other aquatic invertebrates; dead fish, crustaceans, molluscs or other aquatic invertebrates, unfit for human consumption | 2,963 | 10,537 | 0.09 |
| 29 | Dried apricots | 7,638 | 3,134 | 0.09 |
| 30 | Pepper of the genus Piper, neither crushed nor ground | 5,433 | 8,931 | 0.09 |
| 31 | Spices (excl. pepper of the genus Piper, fruit of the genus Capsicum or of the genus Pimenta, vanilla, cinnamon, cinnamon-tree flowers, clove "wholefruit", clove stems, nutmeg, mace, cardamoms, seeds of anise, badian, fennel, coriander, cumin and caraway, and juniper berries, ginger, saffron, turmeric "curcuma", thyme, bay leaves, curry and mixtures of various types of spices) | 6,766 | 11,301 | 0.09 |
| 32 | Fruit and nuts, provisionally preserved, e.g. by sulphur dioxide gas, in brine, in sulphur water or in other preservative solutions, but unsuitable in that state for immediate consumption (excl. cherries) | 2,736 | 10,293 | 0.09 |
| 33 | Foliage, branches and other parts of plants, without flowers or flower buds, grasses, for bouquets or ornamental purposes; dried, dyed, bleached, impregnated or otherwise prepared | 4,602 | 9,690 | 0.09 |
| 34 | Sweet potatoes, fresh, chilled, frozen or dried, whether or not sliced or in the form of pellets | 2,866 | 9,735 | 0.09 |
| 35 | Frozen freshwater and saltwater fish (excl. salmonidae, flat fish, tunas, skipjack or stripe-bellied bonito, herrings, cod, sardines, sardineella, brisling or sprats, haddock, coalfish, mackerel, dogfish and other sharks, eels, sea bass and hake) | 8,499 | 9,691 | 0.09 |
| 36 | Fresh raspberries, blackberries, mulberries and loganberries | 9,331 | 7,039 | 0.09 |
| 37 | Crushed or ground cinnamon and cinnamon-tree flowers | 5,494 | 8,540 | 0.09 |
| 38 | Sesamum seeds, whether or not broken | 4,003 | 7,657 | 0.08 |
| 39 | Husked or brown rice | 2,957 | 12,665 | 0.08 |
| 40 | Vegetable products n.e.s | 9,058 | 8,776 | 0.08 |
| 41 | Fresh or chilled dogfish and other sharks | 7,333 | 12,335 | 0.08 |
| 42 | Groats and meal of wheat | 10,917 | 11,590 | 0.08 |
| 43 | Frozen tunas of the genus "Thunnus" (excl. Thunnus alalunga, Thunnus albacares, Thunnus obesus, Thunnus thynnus and Thunnus maccoyii) | 5,585 | 6,584 | 0.08 |
| 44 | Natural honey | 8,696 | 11,608 | 0.08 |
| 45 | Ginger | 5,929 | 11,111 | 0.08 |
| 46 | Coffee substitutes containing coffee | 6,896 | 10,945 | 0.08 |
| 47 | Fresh or chilled leguminous vegetables, shelled or unshelled (excl. peas "Pisum sativum" and beans "Vigna spp., Phaseolus spp.") | 2,331 | 5,815 | 0.08 |
| 48 | Fresh or chilled onions and shallots | 7,659 | 6,879 | 0.08 |
| 49 | Fresh or dried figs | 16,330 | 9,453 | 0.08 |
| 50 | Fresh or chilled cauliflowers and headed broccoli | 4,105 | 5,448 | 0.08 |

Source: Author's calculations using dataset at HS 6 digit level for Colombia. Products with HS<150000 not exported by Colombia with revealed comparative advantage (RCA<1) in 2005, sorted by density.

Table A4
THE 50 NEAREST PRODUCTS IN AGRICULTURE (BROAD), COLOMBIA 2005 - LLINAS

| Product (HS 6-digits) | Product Name | PRODY (PPP) | Strategic Value | Density |
|--------------------------|--|----------------|--------------------|---------|
| 1 | 30375 Frozen dogfish and other sharks | 7,073 | 1,220 | 0.16 |
| 2 | 80430 Fresh or dried pineapples | 7,489 | 3,224 | 0.14 |
| 3 | 71410 Fresh, chilled, frozen or dried roots and tubers of manioc "cassava", whether or not sliced or in the form of pellets | 8,083 | 3,478 | 0.14 |
| 4 | 120710 Palm nuts and kernels, whether or not broken | 2,867 | 1,888 | 0.12 |
| 5 | 80110 Coconuts, fresh or dried, whether or not shelled | 4,833 | 4,306 | 0.12 |
| 6 | 30490 Frozen fish meat, whether or not minced (excl. fillets) | 9,678 | 5,840 | 0.11 |
| 7 | 70990 Fresh or chilled vegetables (excl. potatoes, tomatoes, vegetables of the Allium spp., cabbages of the genus Brassica, lettuces of the species Lactuca sativa and Cichorium, carrots, turnips, salad beetroot, salify, celeriac, radishes and similar edible roots, cucumbers and gherkins, leguminous vegetables, artichokes, asparagus, aubergines, mushrooms, truffles, fruits of the genus Capsicum or of the genus Pimenta, spinach, New Zealand spinach and orache spinach) | 6,871 | 7,487 | 0.11 |
| 8 | 200940 Pineapple juice, not fermented or spirited | 6,481 | 5,694 | 0.11 |
| 9 | 200891 Palm hearts, prepared or preserved, whether or not containing added sugar or other sweetening matter or spirit (excl. prepared or preserved with vinegar) | 4,856 | 4,604 | 0.11 |
| 10 | 80710 Melons, including cantaloupes and watermelons, fresh | 4,979 | 6,093 | 0.11 |
| 11 | 30233 Fresh or chilled skipjack or stripe-bellied bonito | 10,560 | 2,671 | 0.11 |
| 12 | 70810 Fresh or chilled peas "Pisum sativum", shelled or unshelled | 4,334 | 1,694 | 0.11 |
| 13 | 81190 Frozen fruit and nuts, uncooked or cooked by steaming or boiling in water, whether or not sweetened (excl. strawberries, raspberries, blackberries, mulberries, loganberries, black, white or red currants and gooseberries) | 10,309 | 9,996 | 0.10 |
| 14 | 200990 Mixtures of fruit juices, incl. grape must, and vegetable juices, fermented, whether or not containing added sugar or other sweetening matter (excl. containing spirit) | 8,147 | 8,051 | 0.10 |
| 15 | 30410 Fresh or chilled fillets and other fish meat, whether or not minced | 10,031 | 7,186 | 0.10 |
| 16 | 240110 Tobacco, unstemmed/unstripped | 3,874 | 7,188 | 0.10 |
| 17 | 71333 Dried, shelled kidney beans "Phaseolus vulgaris", whether or not skinned or split | 7,148 | 9,383 | 0.10 |
| 18 | 110620 Flour, meal and powder of sago or of roots or tubers of manioc, arrowroot, salep, sweet potatoes and similar roots and tubers with a high content of starch or inulin of heading 0714 | 6,091 | 7,572 | 0.10 |
| 19 | 30232 Fresh or chilled yellowfin tunas "Thunnus albacares" | 6,733 | 7,571 | 0.10 |
| 20 | 30342 Frozen yellowfin tunas "Thunnus albacares" | 7,012 | 5,116 | 0.10 |
| 21 | 30239 Fresh or chilled tunas of the genus "Thunnus" (excl. Thunnus alalunga, albacares, Thunnus obesus, Thunnus thynnus and Thunnus maccoyii) | 6,198 | 8,531 | 0.10 |
| 22 | 200190 Vegetables, fruit, nuts and other edible parts of plants, prepared or preserved by vinegar or acetic acid (excl. cucumbers and gherkins) | 13,760 | 8,736 | 0.10 |
| 23 | 160414 Prepared or preserved tunas, skipjack and Atlantic bonito, whole or in pieces (excl. minced) | 6,292 | 5,947 | 0.10 |
| 24 | 30219 Fresh or chilled salmonidae (excl. trout "Salmo trutta, Oncorhynchus mykiss, Oncorhynchus clarki, Oncorhynchus aguabonita, Oncorhynchus gilae, Oncorhynchus apache and Oncorhynchus chrysogaster", Pacific salmon "Oncorhynchus nerka, Oncorhynchus gorbuscha, Oncorhynchus keta, Oncorhynchus tshawytscha, Oncorhynchus kisutch, Oncorhynchus masou and Oncorhynchus rhodurus", Atlantic salmon "Salmo salar" and Danube salmon "Hucho hucho") | 7,099 | 2,507 | 0.10 |
| 25 | 80450 Fresh or dried guavas, mangoes and mangoosteens | 4,757 | 10,172 | 0.10 |

Source: Author's calculations using dataset at HS 6 digit level for Colombia. Products with HS<150000 not exported by Colombia with revealed comparative advantage (RCA-1) in 2005, sorted by density.

Table A4 (Continued)
 THE 50 NEAREST PRODUCTS IN AGRICULTURE (BROAD), COLOMBIA 2005 - LLINAS

| Product (HS 6-digits) | Product Name | PRODY (PPP) | Strategic Value | Density |
|-----------------------|---|-------------|-----------------|---------|
| 26 | Cane or beet sugar and chemically pure sucrose, in solid form (excl. cane and beet sugar containing added flavouring or colouring and raw sugar) | 3,421 | 5,381 | 0.10 |
| 27 | Tobacco refuse | 7,519 | 7,959 | 0.10 |
| 28 | Nuts and other seeds, incl. mixtures, prepared or preserved (excl. prepared or preserved with vinegar, preserved with sugar but not laid in syrup, jams, fruit jellies, marmalades, fruit purée and pastes, obtained by cooking, and groundnuts) | 3,065 | 8,519 | 0.10 |
| 29 | Dried fish, salted, not smoked (excl. cod and other fillets) | 7,742 | 7,554 | 0.10 |
| 30 | Fresh papapaws "papayas" | 6,781 | 7,220 | 0.10 |
| 31 | Orange juice, unfermented, whether or not containing added sugar or other sweetening matter (excl. containing spirit, frozen, and of a Brix value ≤ 20 at 20°C) | 7,950 | 6,432 | 0.10 |
| 32 | Black fermented tea and partly fermented tea, whether or not flavoured, in immediate packings of > 3 kg | 2,338 | 7,025 | 0.10 |
| 33 | Tobacco, partly or wholly stemmed/ stripped, otherwise unmanufactured | 2,706 | 9,091 | 0.09 |
| 34 | Raw vegetable materials primarily for dyeing or tanning, n.e.s. | 4,886 | 6,123 | 0.09 |
| 35 | Fresh or chilled beans "Vigna spp., Phaseolus spp.", shelled or unshelled | 5,771 | 5,485 | 0.09 |
| 36 | Grain sorghum | 6,122 | 4,009 | 0.09 |
| 37 | Frozen fish fillets | 19,627 | 8,979 | 0.09 |
| 38 | Food preparations for infant use, put up for retail sale, of flour, groats, meal, starch or malt extract, not containing cocoa or containing < 40% by weight of cocoa calculated on a totally defatted basis, n.e.s. and of milk, sour cream, whey, yoghourt, kefir or similar goods of heading 0401 to 0404, not containing cocoa or containing < 5% by weight of cocoa calculated on a totally defatted basis, n.e.s. | 10,889 | 11,132 | 0.09 |
| 39 | Nuts, fresh or dried, whether or not shelled or peeled (excl. coconuts, Brazil nuts, almonds, hazelnuts, walnuts, chestnuts "Castanea spp." and pistachios) | 2,033 | 8,338 | 0.09 |
| 40 | Uncooked pasta, not stuffed or otherwise prepared, not containing eggs | 16,983 | 11,163 | 0.09 |
| 41 | Products of fish or crustaceans, molluscs or other aquatic invertebrates; dead fish, crustaceans, molluscs or other aquatic invertebrates, unfit for human consumption | 2,963 | 10,537 | 0.09 |
| 42 | Dried apricots | 7,638 | 3,134 | 0.09 |
| 43 | Pepper of the genus Piper, neither crushed nor ground | 5,433 | 8,931 | 0.09 |
| 44 | Spices (excl. pepper of the genus Piper, fruit of the genus Capsicum or of the genus Pimenta, vanilla, cinnamon, cinnamon tree flowers, clove "wholefruit", clove stems, nutmeg, mace, cardamoms, seeds of anise, badian, fennel, coriander, cumin and caraway, and juniper berries, ginger, saffron, turmeric "curcuma", thyme, bay leaves, curry and mixtures of various types of spices) | 6,766 | 11,301 | 0.09 |
| 45 | Fruit and nuts, provisionally preserved, e.g. by sulphur dioxide gas, in brine, in sulphur water or in other preservative solutions, but unsuitable in that state for immediate consumption (excl. cherries) | 2,736 | 10,293 | 0.09 |
| 46 | Vegetables and mixtures of vegetables, prepared or preserved otherwise than by vinegar, non-frozen (excl. preserved by sugar, homogenized vegetables of subheading 2005.10, and tomatoes, mushrooms, truffles, potatoes, peas "Pisum sativum", beans "Vigna, Phaseolus", asparagus, olives and sweet corn "Zea Mays var. Saccharata", unmixed) | 10,655 | 10,996 | 0.09 |
| 47 | Crude ground-nut oil | 4,392 | 2,207 | 0.09 |
| 48 | Foliage, branches and other parts of plants, without flowers or flower buds, grasses, for bouquets or ornamental purposes; dried, dyed, bleached, impregnated or otherwise prepared | 4,602 | 9,690 | 0.09 |
| 49 | Olives, prepared or preserved otherwise than by vinegar or acetic acid (excl. frozen) | 12,908 | 7,298 | 0.09 |
| 50 | Soups and broths and preparations therefore | 11,539 | 10,750 | 0.09 |

Source: Author's calculations using dataset at HS 6 digit level for Colombia. Products with HS<150000 not exported by Colombia with revealed comparative advantage (RCA<1) in 2005, sorted by density.

Table A5
THE 25 “BEST” PRODUCTS IN AGRICULTURE (NARROW),
COLOMBIA 2005 - HAUSMANN AND KLINGER

| | Product (HS 1992 4-digits) | Product Name | Exports (US\$ M) | World Market (US\$ B) | PRODY (PPP) | Strategic Value | Density |
|----|---|-------------------------------------|-----------------------------------|--|------------------------------|----------------------------------|----------------|
| 1 | 203 | Meat of swine, fresh, chilled or fr | 0.00 | 18.10 | 23,296 | 17,660 | 0.15 |
| 2 | 305 | Fish,salted,dried...;smoked fish;fi | 1.23 | 3.41 | 21,799 | 9,424 | 0.22 |
| 3 | 401 | Milk and cream, not concentrated or | 4.24 | 4.58 | 17,027 | 14,826 | 0.20 |
| 4 | 209 | Pig and poultry fat, fresh, chilled | | 0.52 | 22,659 | 16,794 | 0.15 |
| 5 | 103 | Live swine | 0.44 | 2.63 | 24,079 | 13,687 | 0.17 |
| 6 | 208 | Other meat and edible meat offal, f | 0.00 | 0.73 | 18,837 | 14,933 | 0.18 |
| 7 | 406 | Cheese and curd | 11.24 | 17.13 | 17,123 | 14,058 | 0.19 |
| 8 | 405 | Butter and other fats and oils deri | 0.58 | 4.22 | 18,465 | 13,564 | 0.19 |
| 9 | 105 | Live poultry | 1.82 | 1.35 | 16,217 | 14,242 | 0.19 |
| 10 | 404 | Whey and other natural milk constit | 0.64 | 2.24 | 20,578 | 15,971 | 0.15 |
| 11 | 403 | Buttermilk, curdled milk and cream, | 1.02 | 2.75 | 15,715 | 14,627 | 0.18 |
| 12 | 811 | Fruit and nuts, frozen | 1.00 | 1.64 | 12,005 | 13,373 | 0.21 |
| 13 | 408 | Birds' eggs, not in shell, and egg | 0.01 | 0.46 | 20,122 | 15,741 | 0.15 |
| 14 | 210 | Meat and offal, salted... or smoked | 0.17 | 2.54 | 25,397 | 14,892 | 0.12 |
| 15 | 706 | Carrots, turnips, salad beetroot... | 0.01 | 0.87 | 13,917 | 15,943 | 0.17 |
| 16 | 409 | Natural honey | 0.00 | 0.69 | 11,294 | 13,087 | 0.21 |
| 17 | 304 | Fish fillets and other fish meat, f | 1.93 | 10.96 | 13,627 | 9,665 | 0.23 |
| 18 | 710 | Vegetables, frozen | 0.86 | 3.44 | 10,938 | 12,556 | 0.21 |
| 19 | 709 | Other vegetables, fresh or chilled | 3.54 | 7.00 | 10,274 | 10,483 | 0.23 |
| 20 | 1302 | Vegetable saps and extracts derived | 0.09 | 2.65 | 14,523 | 15,425 | 0.16 |
| 21 | 302 | Fish, fresh or chilled (excl. those | 3.69 | 8.11 | 12,231 | 9,767 | 0.22 |
| 22 | 511 | Animal products, nes; dead of Chapt | 0.94 | 0.93 | 12,633 | 13,004 | 0.19 |
| 23 | 604 | Other parts of plants for ornamenta | 1.14 | 0.92 | 10,597 | 13,335 | 0.20 |
| 24 | 1205 | Rape or colza seeds | | 2.36 | 16,678 | 12,365 | 0.18 |
| 25 | 1105 | Flour, meal, flakes, granules and p | 0.00 | 0.31 | 21,010 | 14,906 | 0.13 |

Source: Author's calculations using dataset prepared by Hausmann and Klinger (2007). Product codes are HS 1988/1992 4-digit. Products with HS<1500 not exported by Colombia with revealed comparative advantage (RCA<1) in 2005, sorted by standardized score. Standardized score is calculated combining standardized scores for PRODY, density, and strategic value, with 1/3 weight on each.

Table A6
THE 25 "BEST" PRODUCTS IN AGRICULTURE (BROAD),
COLOMBIA 2005 - HAUSMANN AND KLINGER

| | Product (HS 1992 4-digits) | Product Name | Exports (US\$ M) | World Market (US\$ B) | PRODY (PPP) | Strategic Value | Density |
|----|---------------------------------------|-------------------------------------|-----------------------------|----------------------------------|------------------------|----------------------------|----------------|
| 1 | 2403 | Other manufactured tobacco and subs | 0.00 | 2.17 | 27,836 | 13,601 | 0.19 |
| 2 | 203 | Meat of swine, fresh, chilled or fr | 0.00 | 18.10 | 23,296 | 17,660 | 0.15 |
| 3 | 305 | Fish,salted,dried...,smoked fish;fi | 1.23 | 3.41 | 21,799 | 9,424 | 0.22 |
| 4 | 401 | Milk and cream, not concentrated or | 4.24 | 4.58 | 17,027 | 14,826 | 0.20 |
| 5 | 1601 | Sausages and similar products; food | 0.00 | 2.41 | 15,387 | 14,870 | 0.20 |
| 6 | 1518 | Animal or vegetable fats and oils.. | 0.12 | 0.51 | 17,148 | 18,887 | 0.15 |
| 7 | 209 | Pig and poultry fat, fresh, chilled | | 0.52 | 22,659 | 16,794 | 0.15 |
| 8 | 103 | Live swine | 0.44 | 2.63 | 24,079 | 13,687 | 0.17 |
| 9 | 1514 | Rape, colza or mustard oil and frac | 0.00 | 2.20 | 20,465 | 17,680 | 0.15 |
| 10 | 1501 | Lard, other pig fat and poultry fat | 0.00 | 0.29 | 22,720 | 17,834 | 0.14 |
| 11 | 208 | Other meat and edible meat offal, f | 0.00 | 0.73 | 18,837 | 14,933 | 0.18 |
| 12 | 406 | Cheese and curd | 11.24 | 17.13 | 17,123 | 14,058 | 0.19 |
| 13 | 1901 | Malt extract; food preparations of | 11.04 | 7.44 | 17,152 | 15,967 | 0.18 |
| 14 | 2309 | Preparations of a kind used in anim | 6.50 | 11.33 | 13,571 | 14,248 | 0.20 |
| 15 | 405 | Butter and other fats and oils deri | 0.58 | 4.22 | 18,465 | 13,564 | 0.19 |
| 16 | 2005 | Other vegetables preserved other th | 5.72 | 5.94 | 11,530 | 13,457 | 0.22 |
| 17 | 105 | Live poultry | 1.82 | 1.35 | 16,217 | 14,242 | 0.19 |
| 18 | 404 | Whey and other natural milk constit | 0.64 | 2.24 | 20,578 | 15,971 | 0.15 |
| 19 | 403 | Buttermilk, curdled milk and cream, | 1.02 | 2.75 | 15,715 | 14,627 | 0.18 |
| 20 | 2105 | Ice cream and other edible ice, whe | 0.54 | 2.04 | 12,546 | 14,767 | 0.20 |
| 21 | 2103 | Sauces and sauce preparations; mixe | 8.03 | 5.12 | 12,505 | 14,090 | 0.20 |
| 22 | 1605 | Crustaceans... and other aquatic in | 1.00 | 5.78 | 22,072 | 11,068 | 0.18 |
| 23 | 811 | Fruit and nuts, frozen | 1.00 | 1.64 | 12,005 | 13,373 | 0.21 |
| 24 | 408 | Birds' eggs, not in shell, and egg | 0.01 | 0.46 | 20,122 | 15,741 | 0.15 |
| 25 | 1602 | Other prepared or preserved meat, m | 0.01 | 8.11 | 15,057 | 13,264 | 0.19 |

Source: Author's calculations using dataset prepared by Hausmann and Klinger (2007). Product codes are HS 1988/1992 4-digit. Products with HS<2500 not exported by Colombia with revealed comparative advantage (RCA<1) in 2005, sorted by standardized score. Standardized score is calculated combining standardized scores for PRODY, density, and strategic value, with 1/3 weight on each.

Table A7
THE 50 'BEST' PRODUCTS IN AGRICULTURE (NARROW), COLOMBIA 2005 - LLINAS

| Product (HS 6-digits) | Product Name | PRODY (PPP) | Strategic Value | Density |
|--------------------------|---|----------------|--------------------|---------|
| 1 | 30375 Frozen dogfish and other sharks | 7,073 | 1,220 | 0.16 |
| 2 | 80430 Fresh or dried pineapples | 7,489 | 3,224 | 0.14 |
| 3 | 80250 Fresh or dried pistachios, whether or not shelled or peeled | 35,815 | 19,228 | 0.06 |
| 4 | 30374 Frozen mackerel "Scomber scombrus, Scomber australasticus, Scomber japonicus" | 33,414 | 17,414 | 0.06 |
| 5 | 71410 Fresh, chilled, frozen or dried roots and tubers of manioc "cassava", whether or not sliced or in the form of pellets | 8,083 | 3,478 | 0.14 |
| 6 | 40640 Blue-veined cheese | 29,710 | 24,539 | 0.05 |
| 7 | 30380 Frozen fish livers and roes | 30,550 | 12,295 | 0.07 |
| 8 | 40700 Birds' eggs, in shell, fresh, preserved or cooked | 22,494 | 22,610 | 0.05 |
| 9 | 21019 Meat of swine, salted, in brine, dried or smoked (excl. hams, shoulders and cuts thereof, with bone in, and bellies and cuts thereof) | 25,387 | 24,136 | 0.04 |
| 10 | 30350 Frozen herrings "Clupea harengus, Clupea pallasii" | 33,196 | 11,087 | 0.07 |
| 11 | 30420 Frozen fish filets | 19,627 | 8,979 | 0.09 |
| 12 | 30321 Frozen trout "Salmo trutta, Oncorhynchus mykiss, Oncorhynchus clarki, Oncorhynchus aguabonita, Oncorhynchus gilae, Oncorhynchus apache and Oncorhynchus chrysogaster" | 31,565 | 14,032 | 0.06 |
| 13 | 81190 Frozen fruit and nuts, uncooked or cooked by steaming or boiling in water, whether or not sweetened (excl. strawberries, raspberries, blackberries, mulberries, loganberries, black, white or red currants and gooseberries) | 10,309 | 9,996 | 0.10 |
| 14 | 30530 Fish filets, dried, salted or in brine, not smoked | 30,346 | 13,428 | 0.06 |
| 15 | 51110 Bovine semen | 25,316 | 17,879 | 0.05 |
| 16 | 20649 Edible offal of swine, frozen (excl. livers) | 28,065 | 18,354 | 0.05 |
| 17 | 30490 Frozen fish meat, whether or not minced (excl. filets) | 9,678 | 5,840 | 0.11 |
| 18 | 120923 Fescue seed for sowing | 35,989 | 14,297 | 0.05 |
| 19 | 120929 Seeds of forage plants for sowing (excl. of cereals and of sugar beet, alfalfa, clover "Trifolium spp.", fescue, Kentucky blue grass "Poa pratensis L.", rye grass "Lolium multiflorum lam., Lolium perenne L." and Timothy grass) | 20,159 | 15,577 | 0.07 |
| 20 | 40630 Processed cheese, not grated or powdered | 21,619 | 16,822 | 0.06 |
| 21 | 60299 Live plants (including their roots), trees and shrubs, nesoi | 16,268 | 16,097 | 0.07 |
| 22 | 20329 Frozen meat of swine (excl. carcasses and half-carcasses, and hams, shoulders and cuts thereof, boneless) | 30,072 | 17,794 | 0.04 |
| 23 | 70990 Fresh or chilled vegetables (excl. potatoes, tomatoes, vegetables of the Allium spp., cabbages of the genus Brassica, lettuces of the species Lactuca sativa and Cichorium, carrots, turnips, salad beetroot, salsify, celeriac, radishes and similar edible roots, cucumbers and gherkins, leguminous vegetables, artichokes, asparagus, aubergines, mushrooms, truffles, fruits of the genus Capsicum or of the genus Pimenta, spinach, New Zealand spinach and orache spinach) | 6,871 | 7,487 | 0.11 |
| 24 | 40620 Grated or powdered cheese | 23,950 | 14,755 | 0.06 |
| 25 | 120791 Poppy seeds, whether or not broken | 23,581 | 17,215 | 0.06 |

Source: Author's calculations using dataset at HS 6 digit level for Colombia. Products with HS<150000 not exported by Colombia with revealed comparative advantage (RCA<1) in 2005, sorted by density.

Table A7 (Continued)
THE 50 "BEST" PRODUCTS IN AGRICULTURE (NARROW), COLOMBIA 2005 - LLINAS

| Product (HS 6-digits) | Product Name | PRODY (PPP) | Strategic Value | Density |
|-----------------------|---|-------------|-----------------|---------|
| 26 | Frozen hams, shoulders and cuts thereof of swine, boneless | 28,289 | 17,102 | 0.05 |
| 27 | Butter and other fats and oils derived from milk | 17,231 | 14,625 | 0.07 |
| 28 | Vegetable seeds, for sowing | 17,692 | 13,594 | 0.07 |
| 29 | Hams, shoulders and cuts thereof of swine, salted, in brine, dried or smoked, with bone in | 24,768 | 19,672 | 0.05 |
| 30 | Fresh or chilled fillets and other fish meat, whether or not minced | 10,031 | 7,186 | 0.10 |
| 31 | Buttermilk, curdled milk and cream, kephir and other fermented or acidified milk and cream, whether or not concentrated or flavoured or containing added sugar or other sweetening matter, fruits, nuts or cocoa (excl. yogurt) | 14,551 | 13,634 | 0.08 |
| 32 | Flour, meal and powder of peas, beans, lentils and the other dried leguminous vegetables of heading 0713 | 17,280 | 19,771 | 0.06 |
| 33 | Dried, shelled kidney beans "Phaseolus vulgaris", whether or not skinned or split | 7,148 | 9,383 | 0.10 |
| 34 | Milk and cream in solid forms, of a fat content by weight of > 1.5%, unsweetened | 22,497 | 14,059 | 0.06 |
| 35 | Frozen lesser or Greenland halibut "Reinhardtius hippoglossoides", Atlantic halibut "Hippoglossus hippoglossus" and Pacific halibut "Hippoglossus stenolepis" | 25,182 | 16,513 | 0.05 |
| 36 | Cheese (excl. fresh cheese, incl. whey cheese, not fermented, curd, processed cheese, blue-veined cheese, and grated or powdered cheese) | 17,268 | 12,876 | 0.07 |
| 37 | Cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets | 19,240 | 23,490 | 0.04 |
| 38 | Live sheep | 20,915 | 17,908 | 0.06 |
| 39 | Milk and cream of a fat content by weight of > 6%, not concentrated nor containing added sugar or other sweetening matter | 21,963 | 14,891 | 0.06 |
| 40 | Frozen flat fish "Pleuronectidae, Bothidae, Cynoglossidae, Soleidae, Scophthalmidae und Citharidae" (excl. halibut, plaice and sole) | 24,506 | 10,570 | 0.07 |
| 41 | Hulled, pearled, sliced, kibbled or otherwise worked oat grains (excl. oat flour) | 34,635 | 15,066 | 0.04 |
| 42 | Fresh or chilled carcasses and half-carcasses of swine | 29,982 | 16,610 | 0.04 |
| 43 | Kentucky blue grass "Poa pratensis L." seed for sowing | 29,564 | 16,343 | 0.04 |
| 44 | Flours and meal of oil seeds or oleaginous fruit (excl. soya and mustard) | 20,915 | 15,514 | 0.06 |
| 45 | Rye grass "Lolium multiflorum lam., Lolium perenne L." seed, for sowing | 24,935 | 16,279 | 0.05 |
| 46 | Coconuts, fresh or dried, whether or not shelled | 4,833 | 4,306 | 0.12 |
| 47 | Fresh or chilled lesser or Greenland halibut "Reinhardtius hippoglossoides, Atlantic halibut "Hippoglossus hippoglossus" and Pacific halibut "Hippoglossus stenolepis" | 32,026 | 13,155 | 0.05 |
| 48 | Fresh or dried figs | 16,330 | 9,453 | 0.08 |
| 49 | Milk and cream of a fat content by weight of > 1% but <= 6%, not concentrated nor containing added sugar or other sweetening matter | 29,010 | 11,927 | 0.05 |
| 50 | Cod "Gadus morhua, Gadus ogac, Gadus macrocephalus", salted or in brine only (excl. fillets) | 29,358 | 16,745 | 0.04 |

Source: Author's calculations using dataset at HS 6 digit level for Colombia. Products with HS=150000 not exported by Colombia with revealed comparative advantage (RCA<1) in 2005, sorted by standardized score. Standardized score is calculated combining standardized scores for PRODY, density, and strategic value, with 1/3 weight on each.

Table A8
THE 50 "BEST" PRODUCTS IN AGRICULTURE (BROAD), COLOMBIA 2005 - LLINAS

| Product (HS 6-digits) | Product Name | PRODY (PPP) | Strategic Value | Density |
|-----------------------|---|-------------|-----------------|---------|
| 1 | 30375 Frozen dogfish and other sharks | 7,073 | 1,220 | 0.16 |
| 2 | 80430 Fresh or dried pineapples | 7,489 | 3,224 | 0.14 |
| 3 | 80250 Fresh or dried pistachios, whether or not shelled or peeled | 35,815 | 19,228 | 0.06 |
| 4 | 30374 Frozen mackerel "Scomber scombrus, Scomber australasicus, Scomber japonicus" | 33,414 | 17,414 | 0.06 |
| 5 | 71410 Fresh, chilled, frozen or dried roots and tubers of manioc "cassava", whether or not sliced or in the form of pellets | 8,083 | 3,478 | 0.14 |
| 6 | 40640 Blue-veined cheese | 29,710 | 24,539 | 0.05 |
| 7 | 160100 Sausages and similar products, of meat, offal or blood; food preparations based on these products | 24,591 | 20,265 | 0.06 |
| 8 | 30380 Frozen fish livers and roes | 30,550 | 12,295 | 0.07 |
| 9 | 40700 Birds' eggs, in shell, fresh, preserved or cooked | 22,494 | 22,610 | 0.05 |
| 10 | 21019 Meat of swine, salted, in brine, dried or smoked (excl. hams, shoulders and cuts thereof, with bone in, and bellies and cuts thereof) | 25,387 | 24,136 | 0.04 |
| 11 | 230120 Flours, meals and pellets of fish or crustaceans, molluscs or other aquatic invertebrates, unfit for human consumption | 28,405 | 7,725 | 0.08 |
| 12 | 210610 Protein concentrates and textured protein substances | 19,386 | 20,158 | 0.06 |
| 13 | 30350 Frozen herrings "Clupea harengus, Clupea pallasii" | 33,196 | 11,087 | 0.07 |
| 14 | 30420 Frozen fish fillets | 19,627 | 8,979 | 0.09 |
| 15 | 152190 Beeswax, other insect waxes and spermaceti, whether or not refined or coloured | 17,880 | 25,977 | 0.05 |
| 16 | 30321 Frozen trout "Salmo trutta, Oncorhynchus mykiss, Oncorhynchus clarki, Oncorhynchus aguabonita, Oncorhynchus gilae, Oncorhynchus apache and Oncorhynchus chrysogaster" | 31,565 | 14,032 | 0.06 |
| 17 | 81190 Frozen fruit and nuts, uncooked or cooked by steaming or boiling in water, whether or not sweetened (excl. strawberries, raspberries, blackberries, mulberries, loganberries, black, white or red currants and gooseberries) | 10,309 | 9,996 | 0.10 |
| 18 | 150410 Fish-liver oils and their fractions, whether or not refined (excl. chemically modified) | 33,498 | 14,079 | 0.05 |
| 19 | 190219 Uncooked pasta, not stuffed or otherwise prepared, not containing eggs | 16,983 | 11,163 | 0.09 |
| 20 | 151590 Fixed vegetable fats and oils and their fractions, whether or not refined, but not chemically modified (excl. soya-bean, ground-nut, olive, palm, sunflower-seed, safflower, cotton-seed, coconut, palm kernel, babassu, rape, colza and mustard, linseed, maize, castor, tung and sesame oil) | 22,837 | 15,858 | 0.07 |
| 21 | 220429 Wine of fresh grapes, incl. fortified wines, and grape must whose fermentation has been arrested by the addition of alcohol, in containers of > 2 l (excl. sparkling wine) | 21,010 | 12,017 | 0.08 |
| 22 | 190590 Bread, pastry, cakes, biscuits and other bakers' wares, whether or not containing cocoa; communion wafers, empty cachets of a kind suitable for pharmaceutical use, sealing wafers, rice paper and similar products (excl. crispbread, gingerbread and the like, sweet biscuits, waffles and wafers with water content of <= 10%, rusks, toasted bread and similar toasted products) | 14,946 | 15,685 | 0.08 |
| 23 | 200190 Vegetables, fruit, nuts and other edible parts of plants, prepared or preserved by vinegar or acetic acid (excl. cucumbers and gherkins) | 13,760 | 8,736 | 0.10 |
| 24 | 30530 Fish fillets, dried, salted or in brine, not smoked | 30,346 | 13,428 | 0.06 |
| 25 | 151521 Crude maize oil | 23,409 | 23,650 | 0.04 |

Source: Author's calculations using dataset at HS 6 digit level for Colombia. Products with HS<-250000 not exported by Colombia with revealed comparative advantage (RCA<1) in 2005, sorted by standardized score. Standardized score is calculated combining standardized scores for PRODY, density, and strategic value, with 1/3 weight on each.

Table A8 (Continued)
THE 50 "BEST" PRODUCTS IN AGRICULTURE (BROAD), COLOMBIA 2005 - LLINAS

| Product (HS 6-digits) | Product Name | PRODY (PPP) | Strategic Value | Density |
|--------------------------|--|----------------|--------------------|---------|
| 26 | 51110 Bovine semen | 25,316 | 17,879 | 0.05 |
| 27 | 20649 Edible offal of swine, frozen (excl. livers) | 28,065 | 18,354 | 0.05 |
| 28 | 151800 Animal or vegetable fats and oils and their fractions, boiled, oxidised, dehydrated, sulphurized, blown, polymerized by heat in vacuum or in inert gas or otherwise chemically modified, inedible mixtures or preparations of animal or vegetable fats or oils or of fractions of different fats or oils, n.e.s. | | | |
| 29 | 30490 Frozen fish meat, whether or not minced (excl. filets) | 16,198 | 22,805 | 0.06 |
| 30 | 120923 Fescue seed for sowing | 9,678 | 5,840 | 0.11 |
| 31 | 120923 Fescue seed for sowing | 35,989 | 14,297 | 0.05 |
| 31 | 230310 Residues of starch manufacture and similar residues | 28,759 | 20,232 | 0.04 |
| 32 | 120929 Seeds of forage plants for sowing (excl. of cereals and of sugar beet, alfalfa, clover "Trifolium spp.", fescue, Kentucky blue grass "Poa pratensis L.", rye grass "Lolium multiflorum lam., Lolium perenne L." and "Timothy grass") | 20,159 | 15,577 | 0.07 |
| 33 | 40630 Processed cheese, not grated or powdered | 21,619 | 16,822 | 0.06 |
| 34 | 60299 Live plants (including their roots), trees and shrubs, nesoi | 16,268 | 16,097 | 0.07 |
| 35 | 20329 Frozen meat of swine (excl. carcasses and half-carcasses, and hams, shoulders and cuts thereof, boneless) | 30,072 | 17,794 | 0.04 |
| 36 | 190110 Food preparations for infant use, put up for retail sale, of flour, groats, meal, starch or malt extract, not containing cocoa or containing < 40% by weight of cocoa calculated on a totally defatted basis, n.e.s. and of milk, sour cream, whey, yoghurt, kefir or similar goods of heading 0401 to 0404, not containing cocoa or containing < 5% by weight of cocoa calculated on a totally defatted basis, n.e.s. | | | |
| 37 | 70990 Fresh or chilled vegetables (excl. potatoes, tomatoes, vegetables of the Allium spp., cabbages of the genus Brassica, lettuces of the species Lactuca sativa and Cichorium, carrots, turnips, salad beetroot, salsify, celeriac, radishes and similar edible roots, cucumbers and gherkins, leguminous vegetables, artichokes, asparagus, aubergines, mushrooms, truffles, fruits of the genus Capsicum or of the genus Pimenta, spinach, New Zealand spinach and orache spinach). | 10,889 | 11,132 | 0.09 |
| 38 | 40620 Grated or powdered cheese | 23,950 | 14,755 | 0.06 |
| 39 | 120791 Poppy seeds, whether or not broken | 23,581 | 17,215 | 0.06 |
| 40 | 20322 Frozen hams, shoulders and cuts thereof of swine, boneless | 28,289 | 17,102 | 0.05 |
| 41 | 40500 Butter and other fats and oils derived from milk | 17,231 | 14,625 | 0.07 |
| 42 | 230110 Flours, meals and pellets, of meat or offal, unfit for human consumption; greaves | 21,378 | 17,353 | 0.06 |
| 43 | 120991 Vegetable seeds, for sowing | 17,692 | 13,594 | 0.07 |
| 44 | 21011 Hams, shoulders and cuts thereof of swine, salted, in brine, dried or smoked, with bone in | 24,768 | 19,672 | 0.05 |
| 45 | 30410 Fresh or chilled filets and other fish meat, whether or not minced | 10,031 | 7,186 | 0.10 |
| 46 | 40390 Buttermilk, curdled milk and cream, kephir and other fermented or acidified milk and cream, whether or not concentrated or flavoured or containing added sugar or other sweetening matter, fruits, nuts or cocoa (excl. yogurt) | | | |
| 47 | 200791 Citrus fruit jams, jellies, marmalades, purees or pastes, obtained by cooking, whether or not containing added sugar or other sweetening matter (excl. homogenized preparations of subheading 2007.10) | 14,551 | 13,634 | 0.08 |
| 48 | 230990 Preparations of a kind used in animal feeding (excl. dog or cat food put up for retail sale) | 15,684 | 17,564 | 0.07 |
| 49 | 110610 Flour, meal and powder of peas, beans, lentils and the other dried leguminous vegetables of heading 0713 | 16,246 | 22,323 | 0.05 |
| 50 | 190211 Uncooked pasta, not stuffed or otherwise prepared, containing eggs | 17,280 | 19,771 | 0.06 |
| | | 16,137 | 12,204 | 0.08 |

Source: Author's calculations using dataset at HS 6 digit level for Colombia. Products with HS-250000 not exported by Colombia with revealed comparative advantage (RCA<1) in 2005, sorted by standardized score. Standardized score is calculated combining standardized scores for PRODY, density, and strategic value, with 1/3 weight on each.

Table A9
THE 25 NEAREST PRODUCTS IN NON AGRICULTURE,
COLOMBIA 2005 - HAUSMANN AND KLINGER

| | Product (HS 1992 4-digits) | Product Name | Exports (US\$ M) | World Market (US\$ B) | PRODY (PPP) | Strategic Value | Density |
|----|---|---------------------------------------|-----------------------------------|--|------------------------------|----------------------------------|----------------|
| 1 | 6305 | Sacks and bags, used for packing go | 4.47 | 2.02 | 7,260 | 10,090 | 0.24 |
| 2 | 6104 | Women's or girls' suits, ensembles, | 17.84 | 8.71 | 7,972 | 10,966 | 0.23 |
| 3 | 6206 | Women's or girls' blouses, shirts a | 15.09 | 7.70 | 7,221 | 11,972 | 0.23 |
| 4 | 7214 | Other bars, rods of iron/ non-alloy s | 6.64 | 11.79 | 12,213 | 10,733 | 0.22 |
| 5 | 5607 | Twine, cordage, ropes and cables | 2.15 | 1.29 | 10,890 | 12,361 | 0.22 |
| 6 | 6103 | Men's or boys' suits, ensembles, et | 7.00 | 4.66 | 6,474 | 10,329 | 0.22 |
| 7 | 7313 | Barbed, twisted, single wire of iron/ | 0.16 | 0.13 | 8,644 | 11,938 | 0.22 |
| 8 | 6110 | Jerseys, pullovers, cardigans and s | 14.16 | 29.88 | 9,302 | 11,028 | 0.21 |
| 9 | 4418 | Builders' joinery and carpentry of | 3.23 | 11.15 | 15,190 | 12,082 | 0.21 |
| 10 | 4407 | Wood sawn or chipped lengthwise, sl | 0.74 | 29.29 | 13,218 | 10,231 | 0.21 |
| 11 | 5204 | Cotton sewing thread | 0.27 | 0.17 | 10,574 | 12,224 | 0.21 |
| 12 | 8544 | Insulated wire, cable, other insulate | 34.71 | 55.51 | 11,167 | 14,343 | 0.21 |
| 13 | 6208 | Women's or girls' slips, petticoats | 1.81 | 2.24 | 6,767 | 9,933 | 0.21 |
| 14 | 6202 | Woman's or girls' overcoats, and si | 2.10 | 6.82 | 9,164 | 13,303 | 0.21 |
| 15 | 4105 | Sheep or lamb skin leather, without | 0.01 | 1.03 | 5,581 | 10,365 | 0.21 |
| 16 | 4101 | Raw hides and skins of bovine or eq | 0.79 | 3.96 | 5,974 | 11,795 | 0.21 |
| 17 | 5205 | Cotton yarn, with >=85% cotton, not | 8.11 | 6.59 | 7,928 | 10,872 | 0.21 |
| 18 | 4415 | Packing cases... of wood; cable-dru | 1.31 | 2.03 | 13,484 | 14,749 | 0.21 |
| 19 | 6207 | Men's or boys' underpants, briefs, | 0.79 | 1.13 | 8,145 | 10,637 | 0.21 |
| 20 | 6101 | Men's or boys' overcoats... and sim | 0.53 | 0.70 | 7,068 | 13,375 | 0.21 |
| 21 | 6111 | Babies' garments and clothing acces | 7.82 | 4.12 | 8,524 | 11,558 | 0.21 |
| 22 | 6809 | Articles of plaster or of compositi | 0.23 | 1.27 | 11,670 | 14,184 | 0.21 |
| 23 | 6102 | Woman's or girls' overcoats and sim | 0.71 | 0.96 | 9,390 | 14,528 | 0.21 |
| 24 | 6405 | Other footwear, nes | 0.44 | 2.30 | 7,149 | 11,252 | 0.20 |
| 25 | 6205 | Men's or boys' shirts | 19.49 | 9.31 | 7,869 | 12,427 | 0.20 |

Source: Author's calculations using dataset prepared by Hausmann and Klinger (2007). Product codes are HS 1988/1992 4-digit. Products with HS \geq 2500 not exported by Colombia with revealed comparative advantage (RCA $<$ 1) in 2005, sorted by density.

Table A10
THE 50 NEAREST PRODUCTS IN NON AGRICULTURE, COLOMBIA 2005 - LLINAS

| Product (HS 6-digits) | Product Name | PRODY (PPP) | Strategic Value | Density |
|--------------------------|---|----------------|--------------------|---------|
| 1 | 720310 Ferrous products obtained by direct reduction of iron ore, in lumps, pellets or similar forms "ECS" | 7,880 | 1,697 | 0.14 |
| 2 | 381720 Mixed alkylnaphthalenes, nes | 5,842 | 1,498 | 0.13 |
| 3 | 860620 Railway or tramway insulated or refrigerated goods vans and wagons (excl. tank wagons and the like of subheading 8606.10) | 5,842 | 1,498 | 0.13 |
| 4 | 530521 Abaca "Manila hemp or Musa textilis Nee", raw | 4,166 | 1,511 | 0.12 |
| 5 | 440723 Tropical wood sawn etc, baboen, mahogany (swietenia spp.), imbuia and balsa, sliced or peeled | 4,330 | 4,179 | 0.12 |
| 6 | 440799 Wood, sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, of a thickness of > 6 mm (excl. tropical wood specified in Subheading Note 1 to this chapter, coniferous wood, oak "Quercus spp." and beech "Fagus spp.") | 7,505 | 6,308 | 0.11 |
| 7 | 610610 Women's or girls' blouses, shirts and shirt-blouses of cotton, knitted or crocheted (excl. T-shirts and vests) | 4,183 | 6,702 | 0.11 |
| 8 | 620630 Women's or girls' blouses, shirts and shirt-blouses of cotton (excl. knitted or crocheted and vests) | 5,297 | 7,956 | 0.10 |
| 9 | 440722 Tropical wood sawn etc., okoume, obeche, sapelli, sipo, acajou d'afrique, makore, iroko, tiama | 1,535 | 7,113 | 0.10 |
| 10 | 611020 Jerseys, pullovers, cardigans, waistcoats and similar articles, of cotton, knitted or crocheted (excl. wadded waistcoats) | 4,656 | 7,584 | 0.10 |
| 11 | 610990 T-shirts, singlets and other vests of textile materials, knitted or crocheted (excl. cotton) | 8,544 | 9,184 | 0.10 |
| 12 | 691090 Ceramic sinks, wash basins, wash basin pedestals, baths, bidets, water closet pans, flushing cisterns, urinals and similar sanitary fixtures (excl. of porcelain or china, soap dishes, sponge holders, tooth-brush holders, towel hooks and toilet paper holders) | 5,593 | 10,258 | 0.10 |
| 13 | 610620 Women's or girls' blouses, shirts and shirt-blouses of man-made fibres, knitted or crocheted (excl. T-shirts and vests) | 5,687 | 9,523 | 0.10 |
| 14 | 620690 Women's or girls' blouses, shirts and shirt-blouses of textile materials (excl. of silk, silk waste, wool, fine animal hair, cotton or man-made fibres, knitted or crocheted and vests) | 4,244 | 7,400 | 0.10 |
| 15 | 410511 Sheep or lamb skin leather, vegetable pre-tanned | 4,401 | 1,092 | 0.10 |
| 16 | 620463 Women's or girls' trousers, bib and brace overalls, breeches and shorts of synthetic fibres (excl. knitted or crocheted, panties and swimwear) | 5,695 | 9,236 | 0.10 |
| 17 | 610510 Men's or boys' shirts of cotton, knitted or crocheted (excl. nightshirts, T-shirts, singlets and other vests) | 4,687 | 8,185 | 0.10 |
| 18 | 620469 Women's or girls' trousers, bib and brace overalls, breeches and shorts of textile materials (excl. of wool, fine animal hair, cotton or synthetic fibres, knitted or crocheted, panties and swimwear) | 5,195 | 8,145 | 0.10 |
| 19 | 610831 Women's or girls' nightdresses and pyjamas of cotton, knitted or crocheted (excl. T-shirts, vests and negligés) | 6,210 | 9,078 | 0.09 |
| 20 | 760200 Waste and scrap, of aluminium (excl. slags, scale and the like from iron and steel production, containing recoverable aluminium in the form of silicates, ingots or other similar unwrought shapes, of remelted waste and scrap, of aluminium, ashes and residues from aluminium production) | 6,885 | 9,464 | 0.09 |
| 21 | 610462 Women's or girls' trousers, bib and brace overalls, breeches and shorts of cotton, knitted or crocheted (excl. panties and swimwear) | 5,773 | 9,578 | 0.09 |
| 22 | 620791 Men's or boys' singlets and other vests, bathrobes, dressing gowns and similar articles of cotton (excl. knitted or crocheted, underpants, nightshirts and pyjamas) | 4,433 | 9,353 | 0.09 |
| 23 | 610342 Men's or boys' trousers, bib and brace overalls, breeches and shorts of cotton, knitted or crocheted (excl. swimwear and underpants) | 3,737 | 8,877 | 0.09 |
| 24 | 560730 Twine, cordage, ropes and cables, of abaca etc | 5,342 | 1,532 | 0.09 |
| 25 | 740400 Waste and scrap, of copper (excl. ingots or other similar unwrought shapes, of remelted copper waste and scrap, ashes and residues containing copper, and waste and scrap of primary cells, primary batteries and electric accumulators) | 5,096 | 9,350 | 0.09 |

Source: Author's calculations using dataset at HS 6 digit level for Colombia. Products with HS=250000 not exported by Colombia with revealed comparative advantage (RCA<1) in 2005, sorted by density.

Table A10 (Continued)
THE 50 NEAREST PRODUCTS IN NON AGRICULTURE, COLOMBIA 2005 - LLINAS

| Product (HS 6-digits) | Product Name | PRODY (PPP) | Strategic Value | Density |
|--------------------------|---|----------------|--------------------|---------|
| 26 | Women's or girls' skirts and divided skirts of cotton (excl. knitted or crocheted and petticoats) | 4,983 | 9,223 | 0.09 |
| 27 | Women's or girls' jackets and blazers of cotton (excl. knitted or crocheted, wind-jackets and similar articles) | 6,527 | 9,401 | 0.09 |
| 28 | Men's or boys' trousers, bib and brace overalls, breeches and shorts of wool or fine animal hair, knitted or crocheted (excl. swimwear and underpants) | 7,327 | 7,817 | 0.09 |
| 29 | Women's or girls' jackets and blazers of cotton, knitted or crocheted (excl. wind-jackets and similar articles) | 6,137 | 9,652 | 0.09 |
| 30 | Men's or boys' singlets and other vests, bathrobes, dressing gowns and similar articles of man-made fibres (excl. knitted or crocheted, underpants, nightshirts and pyjamas) | 4,522 | 9,136 | 0.09 |
| 31 | Articles of jewellery and parts thereof, of precious metal other than silver, whether or not plated or clad with precious metal (excl. articles > 100 years old) | 7,729 | 10,025 | 0.09 |
| 32 | Doors and their frames and thresholds, of wood | 5,886 | 10,496 | 0.09 |
| 33 | Sacks and bags, incl. cones, of plastics (excl. those of polymers of ethylene) | 9,375 | 11,588 | 0.09 |
| 34 | Women's or girls' skirts and divided skirts of cotton, knitted or crocheted (excl. petticoats) | 5,820 | 10,043 | 0.09 |
| 35 | Women's or girls' nightdresses and pyjamas of cotton (excl. knitted or crocheted, vests and negligés) | 4,742 | 10,456 | 0.09 |
| 36 | Women's or girls' overcoats, raincoats, car-coats, capes, cloaks and similar articles, of cotton (excl. knitted or crocheted) | 6,454 | 10,946 | 0.09 |
| 37 | Men's or boys' shirts of textile materials, knitted or crocheted (excl. of cotton or man-made fibres, nightshirts, T-shirts, singlets and other vests) | 2,376 | 7,240 | 0.09 |
| 38 | Men's or boys' trousers, bib and brace overalls, breeches and shorts of textile materials (excl. of wool, fine animal hair, cotton or synthetic fibres, knitted or crocheted, underpants and swimwear) | 4,498 | 9,339 | 0.09 |
| 39 | Women's or girls' skirts and divided skirts of synthetic fibres (excl. knitted or crocheted and petticoats) | 5,271 | 11,245 | 0.09 |
| 40 | Women's or girls' jackets and blazers of synthetic fibres (excl. knitted or crocheted, wind-jackets and similar articles) | 5,582 | 9,933 | 0.09 |
| 41 | Men's or boys' underpants and briefs of cotton (excl. knitted or crocheted) | 7,528 | 7,894 | 0.09 |
| 42 | Babies' garments and clothing accessories of cotton, knitted or crocheted (excl. hats) | 6,833 | 9,330 | 0.09 |
| 43 | Women's or girls' overcoats, car-coats, capes, cloaks, anoraks, incl. ski-jackets, wind-cheaters, wind-jackets and similar articles of cotton, knitted or crocheted (excl. suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, bib and brace overalls) | 9,598 | 9,578 | 0.09 |
| 44 | Sacks and bags, of a kind used for the packing of goods; of manmade textile materials | 6,499 | 11,487 | 0.09 |
| 45 | Men's or boys' shirts of cotton (excl. knitted or crocheted, nightshirts, singlets and other vests) | 8,397 | 10,584 | 0.09 |
| 46 | Men's or boys' shirts of textile materials (excl. of wool, fine animal hair, cotton or man-made fibres, knitted or crocheted, nightshirts, singlets and other vests) | 2,233 | 9,759 | 0.09 |
| 47 | Women's or girls' skirts and divided skirts of synthetic fibres, knitted or crocheted (excl. petticoats) | 5,383 | 13,002 | 0.09 |
| 48 | Statuettes and other ornaments, of wood (excl. wood marquetry and inlaid wood) | 4,853 | 7,344 | 0.09 |
| 49 | Special garments for professional, sporting or other purposes, n.e.s., of cotton, knitted or crocheted | 4,127 | 9,886 | 0.09 |
| 50 | Natural rubber in primary forms or in plates, sheets or strip (excl. smoked sheets, technically specified natural rubber "TSNR" and natural rubber latex, whether or not prevulcanised) | 7,340 | 2,640 | 0.09 |

Source: Author's calculations using dataset at HS 6 digit level for Colombia. Products with HS=250000 not exported by Colombia with revealed comparative advantage (RCA=1) in 2005, sorted by density.

Table A11
THE 25 "BEST" PRODUCTS IN NON AGRICULTURE,
COLOMBIA 2005 - HAUSMANN AND KLINGER

| | Product (HS 1992 4-digits) | Product Name | Exports (US\$ M) | World Market (US\$ B) | PRODY (PPP) | Strategic Value | Density |
|----|---|-------------------------------------|-----------------------------------|--|------------------------------|----------------------------------|----------------|
| 1 | 7301 | Sheet piling or iron or steel modif | 0.00 | 1.17 | 59,594 | 10,041 | 0.14 |
| 2 | 3918 | Floor, wall or ceiling coverings of | 1.05 | 2.94 | 44,740 | 17,119 | 0.14 |
| 3 | 7227 | Bars and rods,hot-rolled,in irregul | 0.00 | 1.70 | 38,676 | 19,762 | 0.13 |
| 4 | 7216 | Angles,shapes and sections of iron | 3.59 | 10.64 | 31,607 | 13,814 | 0.20 |
| 5 | 5603 | Nonwovens | 12.27 | 7.98 | 33,496 | 19,530 | 0.14 |
| 6 | 4811 | Paper, paperboard, etc, coated..., | 27.18 | 12.95 | 34,673 | 19,922 | 0.13 |
| 7 | 8416 | Furnace burners...,mechanical stock | 0.03 | 1.89 | 39,837 | 18,530 | 0.11 |
| 8 | 8113 | Cermets and article thereof,includi | | 0.24 | 49,822 | 13,971 | 0.11 |
| 9 | 8417 | Indutrial or lab furnaces and ovens | 1.90 | 3.29 | 35,699 | 18,219 | 0.13 |
| 10 | 8481 | Tapes,valves,for pipes pressure red | 5.37 | 40.68 | 22,622 | 20,682 | 0.15 |
| 11 | 8523 | Prepared unrecorded media for sound | 4.26 | 20.11 | 39,360 | 16,800 | 0.11 |
| 12 | 7302 | Rail,tramway tracks,other accessory | 0.01 | 2.22 | 33,252 | 15,667 | 0.14 |
| 13 | 3922 | Baths, shower-baths... and similar | 2.23 | 2.68 | 20,227 | 17,636 | 0.18 |
| 14 | 7607 | Aluminium foil,of a thickness not e | 11.72 | 8.19 | 25,747 | 17,674 | 0.15 |
| 15 | 4410 | Particle board and similar board of | 10.49 | 7.49 | 20,345 | 15,160 | 0.20 |
| 16 | 7326 | Other articles of iron or steel | 8.79 | 25.28 | 17,809 | 17,737 | 0.19 |
| 17 | 6810 | Articles of cement,of concrete/arti | 0.82 | 3.42 | 19,623 | 16,206 | 0.19 |
| 18 | 7009 | Glass mirrors,whether or not framed | 1.76 | 3.01 | 21,885 | 19,347 | 0.15 |
| 19 | 8485 | Machinery parts,non-electrical conn | 2.22 | 7.27 | 36,000 | 16,549 | 0.11 |
| 20 | 3004 | Medicaments of mixed or unmixed pro | 228.43 | 199.03 | 23,349 | 16,836 | 0.17 |
| 21 | 3925 | Builders' ware of plastics, nes | 4.66 | 6.00 | 18,387 | 15,537 | 0.20 |
| 22 | 4008 | Plates, sheets, strip, rods, etc, o | 0.77 | 2.78 | 22,864 | 18,407 | 0.15 |
| 23 | 7217 | Wire of iron or non-alloy steel | 2.34 | 4.47 | 19,709 | 15,058 | 0.20 |
| 24 | 3307 | Shaving preparations, personal deod | 4.80 | 6.88 | 19,687 | 16,451 | 0.18 |
| 25 | 3215 | Printing ink, writing or drawing in | 9.93 | 8.25 | 24,482 | 19,051 | 0.14 |

Source: Author's calculations using dataset prepared by Hausmann and Klinger (2007). Product codes are HS 1988/1992 4-digit. Products with HS \geq 2500 not exported by Colombia with revealed comparative advantage (RCA $<$ 1) in 2005, sorted by standardized score. Standardized score is calculated combining standardized scores for PRODY, density, and strategic value, with 1/3 weight on each.

Table A12
THE 50 "BEST" PRODUCTS IN NON AGRICULTURE, COLOMBIA 2005 - LLINAS

| Product (HS 6-digits) | Product Name | PRODY (PPP) | Strategic Value | Density |
|-----------------------|---|-------------|-----------------|---------|
| 1 | 841790 Parts of industrial or laboratory furnaces, non-electric, incl. incinerators, n.e.s. | 55,935 | 24,621 | 0.06 |
| 2 | 847710 Injection-moulding machines for working rubber or plastics | 63,780 | 25,416 | 0.04 |
| 3 | 721060 Flat rlld prod, i/nas, plated or coated | 61,834 | 14,672 | 0.06 |
| 4 | 900390 Parts of frames and mountings for spectacles; goggles or the like, n.e.s. | 54,553 | 21,674 | 0.06 |
| 5 | 721039 Flat rlld prod, i/nas, electro pltd or c | 62,533 | 16,540 | 0.06 |
| 6 | 560300 Nonwovens (of textile materials), whether or not impregnated, coated, covered or laminated | 48,728 | 21,525 | 0.06 |
| 7 | 853340 Electrical variable resistors, incl. rheostats and potentiometers (excl. wirewound variable resistors and heating resistors) | 52,973 | 17,079 | 0.06 |
| 8 | 760711 Aluminium foil, not backed, rolled but not further worked, of a thickness of <= 0.2 mm (excl. stamping foils of heading 3212, and foil made-up as christmas tree decorating material) | 47,512 | 20,179 | 0.06 |
| 9 | 392062 Plates, sheets, film, foil and strip, of non-cellular poly(ethylene terephthalate), not reinforced, laminated, supported or similarly combined with other materials, without backing, unworked or merely surface-worked or merely cut into squares or rectangles (excl. those of poly(methyl methacrylate), self-adhesive products, and floor, wall and ceiling coverings of heading 3918) | 54,139 | 20,377 | 0.05 |
| 10 | 721633 H sections of iron or non-alloy steel, not further worked than hot-rolled, hot-drawn or hot-extruded, of a height >= 80 mm "ECSC" | 64,805 | 9,075 | 0.06 |
| 11 | 590290 Tyre cord fabric of high tenacity viscose rayon yarn, whether or not dipped in rubber or plastic | 63,932 | 14,620 | 0.05 |
| 12 | 381519 Supported catalysts, n.e.s. (excl. with precious metal, a precious metal compound, nickel or a nickel compound as the active substance) | 51,794 | 23,000 | 0.04 |
| 13 | 721650 Sections of iron or non-alloy steel, not further worked than hot-rolled, hot-drawn or hot-extruded "ECSC" (excl. U, L, H, L or T sections) | 52,684 | 17,722 | 0.06 |
| 14 | 741021 Refined copper foil, backed, of a thickness "excl. any backing" of <= 0.15 mm (excl. stamping foils of heading 3212, metal yarns and metallized yarns and foil made-up as christmas tree decorating material) | 50,704 | 18,992 | 0.05 |
| 15 | 841370 Centrifugal pumps, power-driven (excl. those of subheading 8413.11 and 8413.19, fuel, lubricating or cooling medium pumps for internal combustion piston engine and concrete pumps) | 48,029 | 21,083 | 0.05 |
| 16 | 711810 Coin (excl. legal tender, gold coins, medals, jewellery made from coins, collectors' items of numismatic value, waste and scrap) | 48,685 | 16,800 | 0.06 |
| 17 | 722870 Angles, shapes and sections of alloy steel other than stainless, n.e.s. | 56,097 | 16,920 | 0.04 |
| 18 | 710510 Dust and powder of diamonds, incl. synthetic diamonds | 41,702 | 21,523 | 0.05 |
| 19 | 720823 Flat rlld prod, i/nas, in coil, hr, => 600mm | 40,851 | 18,061 | 0.06 |
| 20 | 848590 Parts of machinery of chapter 84, not intended for a specific purpose, n.e.s. | 34,563 | 24,544 | 0.05 |
| 21 | 730110 Sheet piling of iron or steel, whether or not drilled, punched or made from assembled elements "ECSC" | 66,628 | 5,006 | 0.05 |
| 22 | 841690 Parts of furnace burners such as mechanical stokers, incl. their mechanical grates, mechanical ash dischargers and similar appliances, n.e.s. | 30,784 | 24,439 | 0.05 |
| 23 | 321490 Non-refractory surfacing preparations for facades, inside walls, floors, ceilings and the like | 24,730 | 27,806 | 0.05 |
| 24 | 845522 Cold-rolling mills for metal (excl. tube mills) | 28,575 | 28,193 | 0.04 |
| 25 | 340213 Non-ionic organic surface-active agents, whether or not put up for retail sale (excl. soap) | 25,948 | 27,783 | 0.05 |

Source: Author's calculations using dataset at HS 6 digit level for Colombia. Products with HS=250000 not exported by Colombia with revealed comparative advantage (RCA<1) in 2005, sorted by standardized score. Standardized score is calculated combining standardized scores for PRODY, density, and strategic value, with 1/3 weight on each.

Table A12 (Continued)
THE 50 "BEST" PRODUCTS IN NON AGRICULTURE, COLOMBIA 2005 - LLINAS

| Product (HS 6-digits) | Product Name | PRODY (PPP) | Strategic Value | Density |
|-----------------------|--|-------------|-----------------|---------|
| 26 | 680421 Millstones, grindstones, grinding wheels and the like, without frameworks, for sharpening, polishing, trueing or cutting, of agglomerated synthetic or natural diamond (excl. hand sharpening or polishing stones, and grinding wheels etc. specifically for dental drill engines) | 36,570 | 16,799 | 0.06 |
| 27 | 841981 Machinery, plant and equipment for making hot drinks or for cooking or heating food (excl. domestic appliances) | 26,371 | 26,636 | 0.05 |
| 28 | 741011 Refined copper foil, not backed, of a thickness of ≤ 0.15 mm (excl. stamping foils of heading 3212, metal yarns and metallized yarns and foil made-up as christmas tree decorating material) | 59,907 | 11,118 | 0.04 |
| 29 | 848130 Check "non-return" valves for pipes, boiler shells, tanks, vats or the like | 28,064 | 21,637 | 0.06 |
| 30 | 262100 Ash and slag nesoi, including seaweed ash (kelp) | 30,347 | 24,044 | 0.05 |
| 31 | 911290 Parts of clock and watch cases, n.e.s. (excl. for wrist-watches, pocket-watches and other watches of heading 9101 or 9102) | 27,978 | 24,798 | 0.05 |
| 32 | 843699 Parts of agricultural, horticultural, forestry or bee-keeping machinery, n.e.s. | 27,224 | 24,569 | 0.05 |
| 33 | 848180 Appliances for pipes, boiler shells, tanks, vats or the like (excl. pressure-reducing valves, valves for the control of pneumatic power transmission, check "nonreturn" valves and safety or relief valves) | 29,239 | 19,544 | 0.06 |
| 34 | 846390 Machine-tools for working metal, sintered metal carbides or cermets, without removing metal (excl. forging, bending, folding, straightening and flattening presses, shearing machines, punching or notching machines, presses, draw-benches, thread rolling machines, machines for working metal wire and machines for working in the hand) | 27,044 | 25,299 | 0.05 |
| 35 | 844240 Parts of machinery, apparatus and equipment for preparing or making printing blocks, plates, cylinders or other printing components, n.e.s. | 25,740 | 26,187 | 0.05 |
| 36 | 551229 Woven fabrics containing $\geq 85\%$ acrylic or modacrylic staple fibres by weight, dyed, made of yarn of different colours or printed | 23,451 | 26,389 | 0.06 |
| 37 | 842541 Built-in jacking systems of a type used in garages | 26,777 | 27,390 | 0.05 |
| 38 | 700600 Sheets or profiles of glass, whether or not having an absorbent, reflecting or non-reflecting layer, bent, edge-worked, engraved, enamelled or otherwise worked, but not framed or fitted with other materials (excl. safety glass, multiple-walled insulating units of glass, glass in the form of a mirror) | 25,443 | 25,076 | 0.05 |
| 39 | 390810 Polyamides-6, -11, -12, -6,6-, -6,9-, -6,10 or -6,12, in primary forms | 22,848 | 26,023 | 0.06 |
| 40 | 291560 Butanoic acids, pentanoic acids, their salts and esters | 25,151 | 26,298 | 0.05 |
| 41 | 720521 Powders, of alloy steel (excl. powders of ferro-alloys and radioactive iron powders "isotopes") | 42,762 | 18,282 | 0.04 |
| 42 | 842490 Parts of fire extinguishers, spray guns and similar appliances, steam or sand blasting machines and similar jet projecting machines and machinery and apparatus for projecting, dispersing or spraying liquids or powders, n.e.s. | 26,917 | 24,534 | 0.05 |
| 43 | 292690 Nitrile-function compounds (excl. acrylonitrile, 1-cyanoguanidine "dicyandiamide", ferroporex "INN" and its salts, and methadone "INN"-intermediate "4-cyano-2-dimethylamino-4,4-diphenylbutane") | 25,235 | 27,167 | 0.05 |
| 44 | 843850 Machinery for the industrial preparation of meat or poultry (excl. cooking and other heating appliances and refrigerating or freezing equipment) | 30,154 | 23,617 | 0.05 |
| 45 | 844360 Machines for uses ancillary to printing, for the feeding, carriage or further processing of sheets or webs of paper | 27,547 | 26,026 | 0.05 |
| 46 | 830520 Staples in strips, of base metal | 23,885 | 27,301 | 0.05 |
| 47 | 291430 Aromatic ketones without oxygen function | 24,209 | 29,009 | 0.05 |
| 48 | 551439 Woven fabrics containing predominantly, but $< 85\%$ synthetic staple fibres by weight, mixed principally or solely with cotton and weighing > 170 g/m ² , made of yarn of different colours (excl. those of polyester staple fibres) | 23,878 | 26,480 | 0.05 |
| 49 | 844832 Parts and accessories of machines for preparing textile fibres, n.e.s. (other than card clothing) | 27,134 | 25,786 | 0.05 |
| 50 | 330410 Lip make-up preparations | 26,373 | 24,384 | 0.05 |

Source: Author's calculations using dataset at HS 6 digit level for Colombia. Products with HS ≥ 250000 not exported by Colombia with revealed comparative advantage (RCA < 1) in 2005, sorted by standardized score. Standardized score is calculated combining standardized scores for PRODY, density, and strategic value, with 1/3 weight on each.

Table A13
PRINCIPLES FOR THE DESIGN OF AN INDUSTRIAL POLICY
RODRIK (2007)*

| | Principle | Summary |
|----|--|--|
| 1 | Incentives should be provided only to "new activities" | As Rodrik puts it: "the main purpose of industrial policy is to diversify the economy". Therefore, incentives should focus on new activities. It is important to clarify that "new" can also include fostering new technologies for the production of current goods. |
| 2 | There should be clear benchmarks or criteria for success and failure | This is critical in order to avoid cronyism. If clear criteria are set, this will facilitate detaching from unsuccessful experiments and a carrot-and-stick policy would be more easily enforced. One straightforward benchmark could be the performance in international markets. |
| 3 | There must be a built-in sunset clause | Incentives cannot be permanent. In order to guarantee that public and private proximity will not end up in the capture of public resources, there should be an automatic sunset clause previously defined. |
| 4 | Public support must target activities, not sectors | It is common that promotion policy is specified in terms of sectors. However, in order to address distortions more directly and avoid negative second-best interactions, support should be given to particular activities involved in sectors. Moreover, emphasis should be given to activities that are shared by several sectors so as to increase the potential impact of the support. |
| 5 | Activities that are subsidized must have the clear potential of providing spillover and demonstration effects | Support should be given to activities that have the potential to incentivize complementary investments or generate informational or technological spillovers. |
| 6 | The authority for carrying out industrial policies must be vested in agencies with demonstrated competence | In order to avoid incompetence and corruption, industrial policy should be undertaken by technocratic agencies. Rodrik points out that this principle might conflict with targeting distortions as closely as possible given that one would prefer undertaking this type of policy with an agency that –although not being related to the distortion- is competent, rather than with an agency that is close to the distortion but not competent. |
| 7 | The agencies must be monitored closely by a principal with a clear stake in the outcomes and with political authority at the highest level | Given the transversal character of competitiveness-related issues (often times involving several Ministries and agencies), public officials are seldom held accountable for their industrial-type of policies, leading to the failure of this type of policies. Thus, as Rodrik suggests, monitoring should be led by someone who has internalized the agenda and with the highest political clout –a cabinet level minister, a vice president, or even the president. |
| 8 | The agencies carrying out promotion must maintain channels of communication with the private sector | Eliciting information and harnessing jointly the distortions imply a close work between private and public agents. Thus, while avoiding political capture, the government should provide spaces of interaction between these two. |
| 9 | Mistakes that result in "picking the losers" will occur | Given its experimental nature, industrial policy will certainly entail incurring in some mistakes. Namely, it is possible that some products will be supported that will result in failures. Under this context, the policy objective shouldn't be minimizing the number of failures –probably, the absence of failures might be a signal that the government is not trying hard enough- but letting them go as soon as one recognizes them as failures. |
| 10 | Activities need to have the capacity to renew themselves, so that the cycle of discovery becomes an ongoing one | Given that the needs and circumstances will be constantly changing, agencies involved in undertaking industrial policy should be flexible and should have the capacity of remaking themselves. |

* Rodrik, D., "Industrial Policy for the Twenty-First Century", One Economics Many Recipes, Princeton University Press, 2007. Rodrik (2007).

Table A14
COMBINED LIST OF "BEST" PRODUCTS IN BROAD AGRICULTURE USING DIFFERENT SETS OF WEIGHTS

| Product | Product Name | PRODY (PPP) | Strategic Value | Density |
|---------|---|-------------|-----------------|---------|
| 1 | 30375 Frozen dogfish and other sharks | 7,073 | 1,220 | 0.16 |
| 2 | 80430 Fresh or dried pineapples | 7,489 | 3,224 | 0.14 |
| 3 | 71410 Fresh, chilled, frozen or dried roots and tubers of manioc "cassava", whether or not sliced or in the form of pellets | 8,083 | 3,478 | 0.14 |
| 4 | 80110 #N/A | 4,833 | 4,306 | 0.12 |
| 5 | 30490 Frozen fish meat, whether or not minced (excl. fillets) | 9,678 | 5,840 | 0.11 |
| 6 | 10600 #N/A | 11,147 | 8,562 | 0.12 |
| 7 | 70990 Fresh or chilled vegetables (excl. potatoes, tomatoes, vegetables of the Allium spp., cabbages of the genus Brassica, lettuces of the species Lactuca sativa and Cichorium, carrots, turnips, salad beetroot, salsify, celeriac, radishes and similar edible roots, cucumbers and gherkins, leguminous vegetables, artichokes, asparagus, aubergines, mushrooms, truffles, fruits of the genus Capsicum or of the genus Pimenta, spinach, New Zealand spinach and orache spinach) | 6,871 | 7,487 | 0.11 |
| 8 | 30233 Fresh or chilled skipjack or stripe-bellied bonito | 10,560 | 2,671 | 0.11 |
| 9 | 30410 Fresh or chilled filets and other fish meat, whether or not minced | 10,031 | 7,186 | 0.10 |
| 10 | 70810 Fresh or chilled peas "Pisum sativum", shelled or unshelled | 4,334 | 1,694 | 0.11 |
| 11 | 71333 Dried, shelled kidney beans "Phaseolus vulgaris", whether or not skinned or split | 7,148 | 9,383 | 0.10 |
| 12 | 30232 Fresh or chilled yellowfin tunas "Thunnus albacares" | 6,733 | 7,571 | 0.10 |
| 13 | 30239 Fresh or chilled tunas of the genus "Thunnus" (excl. Thunnus alalunga, Thunnus albacares, Thunnus obesus, Thunnus thynnus and maccoyii) | 6,198 | 8,331 | 0.10 |
| 14 | 30342 Frozen yellowfin tunas "Thunnus albacares" | 7,012 | 5,116 | 0.10 |
| 15 | 80450 Fresh or dried guavas, mangoes and mangosteens | 4,757 | 10,172 | 0.10 |
| 16 | 30219 Fresh or chilled salmonidae (excl. trout "Salmo trutta, Oncorhynchus mykiss, Oncorhynchus clarki, Oncorhynchus aguiloni, Oncorhynchus gilae, Oncorhynchus apache and Oncorhynchus chrysogaster", Pacific salmon "Oncorhynchus nerka, Oncorhynchus gorbuscha, Oncorhynchus keta, Oncorhynchus tshawytscha, Oncorhynchus kisutch, Oncorhynchus masou and Oncorhynchus rhodurus", Atlantic salmon "Salmo salar" and Danube salmon "Hucho hucho") | 7,099 | 2,507 | 0.10 |
| 17 | 30559 Dried fish, salted, not smoked (excl. cod and other filets) | 7,742 | 7,554 | 0.10 |
| 18 | 30420 Frozen fish filets | 19,627 | 8,979 | 0.09 |
| 19 | 70820 Fresh or chilled beans "Vigna spp., Phaseolus spp.", shelled or unshelled | 5,771 | 5,485 | 0.09 |
| 20 | 80290 Nuts, fresh or dried, whether or not shelled or peeled (excl. coconuts, Brazil nuts, cashew nuts, almonds, hazelnuts, walnuts, chestnuts "Castania spp." and pistachios) | 2,033 | 8,338 | 0.09 |
| 21 | 51191 Products of fish or crustaceans, molluscs or other aquatic invertebrates; dead fish, crustaceans, mollusks or other aquatic invertebrates, unfit for human consumption | 2,963 | 10,537 | 0.09 |
| 22 | 60499 Foliage, branches and other parts of plants, without flowers or flower buds, grasses, for bouquets or ornamental purposes, dried, dyed, bleached, impregnated or otherwise prepared | 4,602 | 9,690 | 0.09 |
| 23 | 30379 Frozen freshwater and saltwater fish (excl. salmonidae, flat fish, tunas, skipjack or stripe-bellied bonito, herrings, cod, sardines, sardinella, brisling or sprats, haddock, coalfish, mackerel, dogfish and other sharks, eels, sea bass and hake) | 8,499 | 9,691 | 0.09 |
| 24 | 71420 Sweet potatoes, fresh, chilled, frozen or dried, whether or not sliced or in the form of pellets | 2,866 | 9,735 | 0.09 |
| 25 | 30265 Fresh or chilled dogfish and other sharks | 7,333 | 12,335 | 0.08 |

Source: Author's calculations using dataset at HS 6 digit level for Colombia. Products with HS-250000 not exported by Colombia with revealed comparative advantage (RCA<1) in 2005, sorted by standardized score. Standardized score is calculated combining standardized scores for PRODY, density, and strategic value, with the following sets of weights: (80-10-10), (70-15-15), (60-20-20), (50-25-25), and (1/3-1/3-1/3). Combined list eliminates repeated goods in the lists originated from different sets of weights.

Table A14 (Continued)
COMBINED LIST OF "BEST" PRODUCTS IN BROAD AGRICULTURE USING DIFFERENT SETS OF WEIGHTS

| Product | Product Name | PRODY (PPP) | Strategic Value | Density |
|---------|--|-------------|-----------------|---------|
| 26 | Natural honey | 8,696 | 11,608 | 0.08 |
| 27 | Fresh or dried figs | 16,330 | 9,453 | 0.08 |
| 28 | Dried vegetables and mixtures of vegetables, whole, cut, sliced, broken or in powder, but not further prepared (excl. onions, mushrooms and truffles, not mixed) | 9,769 | 9,898 | 0.08 |
| 29 | Frozen tunas of the genus "Thunnus" (excl. Thunnus alalunga, Thunnus albacares, Thunnus thynnus and Thunnus maccoyii) | 5,585 | 6,584 | 0.08 |
| 30 | Frozen, boneless meat of bovine animals | 12,805 | 6,366 | 0.08 |
| 31 | Fresh or chilled onions and shallots | 7,659 | 6,879 | 0.08 |
| 32 | Buttermilk, curdled milk and cream, kephir and other fermented or acidified milk and cream, whether or not concentrated or flavoured or containing added sugar or other sweetening matter, fruits, nuts or cocoa (excl. yogurt) | 14,551 | 13,634 | 0.08 |
| 33 | Live fish (excl. ornamental fish, trout [Salmo trutta, Oncorhynchus mykiss, Oncorhynchus clarki, Oncorhynchus agatbonita, Oncorhynchus gilae, Oncorhynchus apache and Oncorhynchus chrysogaster], eels [Anguilla spp.] and carp) | 4,863 | 11,568 | 0.08 |
| 34 | Fresh or chilled flat fish "Pleuronectidae, Bothidae, Cynoglossidae, Soleidae, Scophthalmidae and Cathartidae" (excl. halibut "Reinhardtius hippoglossoides, Hippoglossus hippoglossus and Hippoglossus stenolepis", plaice "Pleuronectes platessa" and sole "Solea spp.") | 8,554 | 10,037 | 0.08 |
| 35 | Fresh or chilled leguminous vegetables, shelled or unshelled (excl. peas "Pisum sativum" and beans "Vigna spp., Phaseolus spp.") | 2,331 | 5,815 | 0.08 |
| 36 | Fresh or chilled cauliflowers and headed broccoli | 4,105 | 5,448 | 0.08 |
| 37 | Products of animal origin, n.e.s., dead animals, unfit for human consumption (excl. fish, crustaceans, molluscs or other aquatic invertebrates) | 4,090 | 13,207 | 0.08 |
| 38 | Dried, shelled broad beans "Vicia faba var. major" and horse beans "Vicia faba var. equina and Vicia faba var. minor", whether or not skinned or split | 8,493 | 14,910 | 0.08 |
| 39 | Rock lobster and other sea crawfish "Palinurus spp., Panulirus spp. and Jasus spp.", whether in shell or not, live, dried, salted or in brine, incl. in shell, cooked by steaming or by boiling in water | 5,904 | 9,876 | 0.08 |
| 40 | Cheese (excl. fresh cheese, incl. whey cheese, not fermented, curd, processed cheese, blue-veined cheese, and grated or powdered cheese) | 17,268 | 12,876 | 0.07 |
| 41 | Frozen skipjack or stripe-bellied bonito "Euthynnus -Katsuwonus- pelamis" | 6,546 | 9,236 | 0.08 |
| 42 | Fish, salted or in brine only (excl. herrings, cod, anchovies and fillets in general) | 10,783 | 11,162 | 0.08 |
| 43 | Frozen salmonidae (excl. Pacific salmon, Atlantic salmon, Danube salmon and trout) | 6,350 | 9,751 | 0.08 |
| 44 | Vegetables, uncooked or cooked by steaming or by boiling in water, frozen (excl. potatoes, leguminous vegetables, spinach, New Zealand spinach, orache spinach, and sweetcorn) | 9,303 | 12,799 | 0.08 |
| 45 | Smoked fish, incl. fillets (excl. Pacific salmon, Atlantic salmon, Danube salmon and herrings) | 1,884 | 8,091 | 0.08 |
| 46 | #N/A | 6,490 | 11,047 | 0.08 |
| 47 | Fresh or chilled bovine meat, boneless | 11,066 | 12,442 | 0.07 |
| 48 | #N/A | 17,231 | 14,625 | 0.07 |
| 49 | #N/A | 9,883 | 6,007 | 0.08 |
| 50 | #N/A | 16,268 | 16,097 | 0.07 |

Source: Author's calculations using dataset at HS 6 digit level for Colombia. Products with HS-250000 not exported by Colombia with revealed comparative advantage (RCA<1) in 2005, sorted by standardized score. Standardized score is calculated combining standardized scores for PRODY, density, and strategic value, with the following sets of weights: (80-10-10), (70-15-15), (60-20-20), (50-25-25), and (1/3-1/3-1/3). Combined list eliminates repeated goods in the lists originated from different sets of weights.

Table A14 (Continued)
COMBINED LIST OF "BEST" PRODUCTS IN BROAD AGRICULTURE USING DIFFERENT SETS OF WEIGHTS

| Product | Product Name | PRODY (PPP) | Strategic Value | Density |
|---------|--|-------------|-----------------|---------|
| 51 | Frozen fish livers and roes | 30,550 | 12,295 | 0.07 |
| 52 | Frozen mackerel "Scomber scombrus, Scomber australasicus, Scomber japonicus" | 33,414 | 17,414 | 0.06 |
| 53 | Sausages and similar products, of meat, offal or blood; food preparations based on these products | 24,591 | 20,265 | 0.06 |
| 54 | Frozen herrings "Clupea harengus, Clupea pallasi" | 33,196 | 11,087 | 0.07 |
| 55 | Fresh or dried pistachios, whether or not shelled or peeled | 35,815 | 19,228 | 0.06 |
| 56 | Flours, meals and pellets of fish or crustaceans, molluscs or other aquatic invertebrates, unfit for human consumption | 28,405 | 7,725 | 0.08 |
| 57 | Frozen sardines "Sardina pilchardus, Sardines spp.", sardinella "Sardinella spp." and brising or sprats "Sprattus sprattus" | 17,533 | 10,809 | 0.07 |
| 58 | Protein concentrates and textured protein substances | 19,386 | 20,158 | 0.06 |
| 59 | Beeswax, other insect waxes and spermaceti, whether or not refined or coloured | 17,880 | 25,977 | 0.05 |
| 60 | Frozen fruit and nuts, uncooked or cooked by steaming or boiling in water, whether or not sweetened (excl. strawberries, raspberries, blackberries, mulberries, loganberries, black, white or red currants and gooseberries) | 10,309 | 9,996 | 0.10 |
| 61 | Fish-liver oils and their fractions, whether or not refined (excl. chemically modified) | 33,498 | 14,079 | 0.05 |
| 62 | Uncooked pasta, not stuffed or otherwise prepared, not containing eggs | 16,983 | 11,163 | 0.09 |
| 63 | Fixed vegetable fats and oils and their fractions, whether or not refined, but not chemically modified (excl. soya-bean, ground-nut, olive, palm, sunflower-seed, safflower, cotton-seed, coconut, palm kernel, babassu, rape, colza and mustard, linseed, maize, castor, tung and sesame oil) | 22,837 | 15,858 | 0.07 |
| 64 | Wine of fresh grapes, incl. fortified wines, and grape must whose fermentation has been arrested by the addition of alcohol, in containers of > 2 l (excl. sparkling wine) | 21,010 | 12,017 | 0.08 |
| 65 | Bread, pastry, cakes, biscuits and other bakers' wares, whether or not containing cocoa; communion wafers, empty cachets of a kind suitable for pharmaceutical use, sealing wafers, rice paper and similar products (excl. crispbread, gingerbread and the like, sweet biscuits, waffles and wafers with water content of <= 10%, rusks, toasted bread and similar toasted products) | 14,946 | 15,685 | 0.08 |
| 66 | Vegetables, fruit, nuts and other edible parts of plants, prepared or preserved by vinegar or acetic acid (excl. cucumbers and gherkins) | 13,760 | 8,736 | 0.10 |
| 67 | Crude maize oil | 23,409 | 23,650 | 0.04 |
| 68 | Frozen trout "Salmo trutta, Oncorhynchus mykiss, Oncorhynchus clarki, Oncorhynchus aguabonita, Oncorhynchus gilae, Oncorhynchus apache and Oncorhynchus chrysogaster" | 31,565 | 14,032 | 0.06 |
| 69 | Birds' eggs, in shell, fresh, preserved or cooked | 22,494 | 22,610 | 0.05 |
| 70 | Blue-veined cheese | 29,710 | 24,539 | 0.05 |

Source: Author's calculations using dataset at HS 6 digit level for Colombia. Products with HS-250000 not exported by Colombia with revealed comparative advantage (RCA<1) in 2005, sorted by standardized score. Standardized score is calculated combining standardized scores for PRODY, density, and strategic value, with the following sets of weights: (80-10-10), (70-15-15), (60-20-20), (50-25-25), and (1/3-1/3-1/3). Combined list eliminates repeated goods in the lists originated from different sets of weights.