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Uruguay's Trade Policy and Specialisation over Two Decades: a Gradual and Permanent Path to Trade Openness

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Abstract

This paper analyses the process of trade liberalization in Uruguay, for both goods and services, over a period of more than two decades (1990-2013). This process was a mix of unilateral liberalization strategies as well as reciprocal trade agreements, where MERCOSUR played an important role. This document examine such a role, finding that even when regional integration contributed to increase competition on importing goods, this opening was associated with a contractive adjustment in many manufacturing sectors where opportunities arising from expansion were outweigh by the imperfection of the integration process and by a large number of non-tariff barriers. The access to international markets is an important problem for Uruguay in the near future. As the process of preferential trade liberalization continues and Uruguay remains out of this agenda, it will lose not only absolute but also relative market access. This document also analyses Uruguay´s specialization pattern, finding a deepening in the traditional composition of it exports basket, with a strong presence of products which make intense use of natural resources, but also with an important diversification within this category. An expansion in services was also found, especially from more traditional sectors to global services. Finally, this paper focused on identifying the impact of changes in specialization patterns on labor market. An important finding here is that an increasing proportion of labor depends directly or indirectly on external demand. In addition to this, there has been an increase in the levels of qualifications required per unit of gross production value, which when combined with the growth in exports has led to a greater proportion of labor depending on exports.

Keywords: liberalization, specialization pattern, labor market.

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Resumen

El presente documento analiza el proceso de liberalización comercial en Uruguay, tanto para los bienes como para los servicios, a lo largo de un período de más de dos décadas (1990-2013). Este proceso fue el resultado de una combinación de estrategias de liberalización unilateral, así como de la firma de acuerdos comerciales recíprocos, donde el MERCOSUR jugó un rol importante. El documento examina ese rol encontrando que, incluso cuando la integración regional ha contribuido a aumentar la competencia en la importación de bienes, esta apertura se encuentra asociada con un ajuste contractivo en muchos sectores industriales en donde las oportunidades que surgen de la expansión son superadas por la imperfección del proceso de integración y por un elevado número de barreras no arancelarias. El acceso a los mercados internacionales es un problema importante para Uruguay en un futuro próximo. A medida que el proceso de liberalización del comercio preferencial avanza y Uruguay permanece fuera de esta agenda negociadora, va perdiendo no solo el acceso a mercado en términos absolutos, sino también en términos relativos. Este documento analiza también el patrón de especialización de Uruguay, identificando una profundización en la composición tradicional de su oferta exportable, con una fuerte presencia de productos que hacen un uso intensivo de recursos naturales, pero también con una importante diversificación al interior de esa categoría de productos. También se encontró una expansión de los servicios, especialmente desde los sectores más tradicionales hacia los servicios globales. Finalmente, el trabajo se centró en la identificación del impacto de los cambios en los patrones de especialización en el mercado laboral. Un hallazgo importante consiste en que una proporción creciente de la mano de obra depende directa o indirectamente de la demanda externa. Adicionalmente, se constata un aumento en los niveles de calificación requeridos por unidad de valor bruto de producción, lo que combinado con el crecimiento de las exportaciones ha llevado a una mayor proporción del trabajo dependiendo de las exportaciones.

Palabras clave: liberalización, patrón de especialización, mercado laboral.

JEL Classification: F13, F16, D57.

URUGUAY'S TRADE POLICY AND SPECIALISATION OVER TWO DECADES: A GRADUAL AND PERMANENT PATH TO TRADE OPENNESS

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I. INTRODUCTION

Small countries are one of the main protagonists of the globalization process. The increase in mobility of goods, services and factors relaxes one of the main constraints these countries face in terms of development: market size. Uruguay, like various other small countries in the international economy, deepened trade reforms in the nineties, combining unilateral and reciprocal trade liberalization strategies at the regional and multilateral level. This process was gradual in order to try and mitigate negative impacts on the most exposed sectors of the economy. Along with this increasing liberalization Uruguay developed an export-active trade policy.

The process was not linear. There are still many unilateral protectionist measures in place and the preferential trade agreements landscape is based on that of Uruguay's more protectionist neighbors Argentina and Brazil. However, some deep unilateral liberalization did occur, in particular associated with a new package of investment and trade conditions which adapted to new phenomena of specialization in the global economy.

The main objective of this paper is to characterize this process of trade liberalization in Uruguay over a period of more than two decades. This analysis will be divided in to three parts: a description of trade policy reform; a characterization of the trade specialization pattern; and finally an overview of the impact of these changes on the labour market. The analysis covers all economic sectors, for both goods and services, over the last 23 years (1990-2013).

Aside from the introduction and conclusion (sections one and five) the paper is organized in three sections. The second section is an account of unilateral policies which have been implemented domestically and an overview of multilateral policies across the preferential trade agreements to which Uruguay subscribes. The third section starts with an evolution

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of comparative advantage indicators applied to export and import data. Then, a more disaggregated perspective is presented at product level with the export space methodology. The fourth section, links changes in specialization with the labour market using input output techniques.

II. TRADE POLICY (1990-2013)

1. UNILATERAL POLICIES

1.1 Border policies

The unilateral process of tariff reduction gathered speed starting in April 1990, with the announcement of a reduction in the different rates of the national tariff (the custom global tax, or CGT). The decreases legislated in 1990 were implemented in April 1992 and 1993 and led to the Uruguayan economy becoming increasingly open.[7] These changes allowed for a decrease in the protection that some sectors had effectively benefited from until then as well as a decrease in tariff dispersion. In the last quarter of 1991 tariff reductions were announced for the following two years.

During the nineties, the evolution of tariffs showed a general decreasing tendency in the media but an increasing dispersion (see table II.1). In 2004 the average tariff in Uruguay was 9.1%. When analysing the evolution of tariffs from 1994 until now it is necessary to distinguish between the national tariff and the common external tariff (see II.2.2). The figures in table II.1 refer to the national tariff of Uruguay.

In the nineties during the Lacalle administration (1990-1994) a group of trade facilitation measures were undertaken, in order to simplify and facilitate foreign trade operations. This topic has become relevant again in recent years (Mujica administration 2010-2014). The development of a new National Custom Code which seeks to harmonize domestic practice with the Common Custom Code in MERCOSUR and with Kyoto Protocol of the World Custom Organization (WCO) represents the start of a new unilateral process of Custom reform.

The trade policy report of the Uruguayan government (2012) for the WTO states that:

[7] During the administration of President Lacalle n (1990-1994).

"*The reform of the National Customs Directorate (DNA) forms part of the strategy of international integration and improved conditions for greater competitiveness in the production of goods. In its turn, this presupposes adaptation to the trends in international trade, in the areas of trade agreements, security, cargo risks, sanitary and environmental conditions, and the trade supply chain. During the review period, Uruguayan customs legislation underwent certain changes which contributed to the simplification of customs documentation. As part of a project to modernize the DNA, work is currently being done on the digital Single Customs Document (DUA). Scheduled to be implemented in 2012, this is a platform of technology-based services whose aim is to dematerialize the DUA and support documents*."

Table II.1
Tariff evolution in Uruguay 1992-2012, selected years, average by type of good (in %)

	1992	**1997**	**2004**
Capital Goods	14.2	5.1	3.7
Intermediate goods	17.1	8.9	8.8
Fuels and lubricants	20.0	2.2	2.2
Parts of capital goods	18.7	8.7	8.1
Consumers goods	21.8	14.9	14.4
Cars	18.5	23.0	23
Rest	14.6	14.3	13.7
Numbers of aliquots	4	26	31
Simple average	**18.0**	**9.4**	9.1
Standard Deviation	5.7	7.0	7.0
Dispersion coefficient	0.3	0.7	0.8
Number of products with ceros	15	632	1366
Number of products	6943	9379	9750

Source: prepared by the authors.

In the case of goods, after the regional preferential trade agreements and the unilateral reforms initiated in the early 1990s, this reform process that facilitates trade could be one of the unilateral measures with the greatest impact in terms of trade liberalization in the period under study. In addition, as we shall see in the following section, there is an

equivalent process being considered in the agenda of trade agreements both multilateral and preferential.

Despite this generally open stance there are a number of sectors in Uruguay that are still protected by a series of non-tariff barriers. Using a methodology specifically designed for this task Duran and Ferreira (2010) identified the sectors that are still covered by these barriers and saw whether these measures were effective in terms of protection. Traditionally the problem with identifying non-tariff barriers to trade stems from the fact that the protectionist measures are hidden within an opaque system of norms and regulations. Therefore, in order to identify them one must try and create transparency where there is none. The sectors identified by Duran and Ferreira (2010) generally pertain to the agricultural and agro industrial area. They found that there are also a few sectors in chemical industry that benefit from protection. The paper also evaluated the impact these measures had on productivity. The authors concluded that despite these measures these sectors fare the same, or worse lag behind, those sectors which face competition in domestic and international markets.

These protective policies have their roots in questions of political economy associated with the type of firms affected and their geographic location. Uruguay should revise the design of these instruments which suffer from the following negative aspects:

i. Protection through non-tariff barriers does not fulfill the objective of improving the competitiveness of lagging sectors. These measures to improve competitiveness must be developed further, and they must be redesigned.
ii. If the objective of these policies is to sustain production in certain sectors for reasons that are not economic, the worst means to achieve this is through measures that have the same effect as a tariff.
iii. These measures generate a negative externality. The country's position in negotiations regarding sectors where there are offensive trade interests is weakened by its use of policies which are contrary to multilateral and regional trade agreements. This situation leaves the country vulnerable to future controversies. The only reason this has not generated problems thus far is because Uruguay's domestic market is not particularly relevant internationally.

Changing the current situation is not an easy task. It requires mobilizing many political resources for something which, in global terms, will have a limited impact in terms of gains in efficiency. The challenge lies in a designing a productive restructuring, using technology to create permanent gains in productivity in these sectors rather than condemning them to low productivity compensated only by protectionist trade policies.

1.2 Export promotion and sectors policies

The original aim of sectoral policies was to reduce the anti-export bias of domestic policies aimed at protecting the domestic market. The literature indicates that policies that seek to move towards greater unilateral trade openness from highly protectionist structures must be accompanied by packages that strongly promote the export sector. The asymmetry that often exists between the speed of the contractive and expansive adjustments in production among other reasons justifies this association[8].

In Uruguay, during the nineties, the adjustment in the production of tradable goods implied a contraction of import substitute activities and an expansion of export activities. The contraction of imports was reinforced by the increasing availability of external financing and the resultant appreciation of the real exchange rate. The contractive adjustment was fast and intense. Moreover, the unilateral opening was reinforced by preferential agreements with neighbouring countries (see subsection 2.2). The expansion of exports, on the other hand, was slower .The fact that the real exchange rate appreciated decreased the profitability of exports. At the same time, products that had strong comparative advantages faced difficulties accessing markets. Finally there was uncertainty about the sustainability of the trade policy orientation. All these factors act inhibited new export projects, reinforcing supply restrictions.

It was therefore rational to develop or maintain policies that promoted exports during the nineties and then subsequently adapt to changes in the global framework. The original package of measures was focused only on exports of goods. The policies that were implemented can be classified according to the type of instrument:

[8] Given the symmetry between taxes on imports and exports (Lerner symmetry), when you cannot fast forward the first reduction (typically for reasons of political economy) an analogous way to have the same result is to establish different mechanisms of subsidizing exports.

i. incentives related to credit- , basically aim to pre finance exports[9];

ii. fiscal incentives- meaning those directed to affect the burden of taxes as part of the cost of production. These policies clearly defined who was exempted and suspended [10].and who could obtain a refund for previous taxes. Subsequently, during the first decade of the present century, sectoral policies evolved to create a regulatory framework adapted to the internationalization of new economic activities (investment law, law on free trade zones, in addition to a set of laws specific to certain sectors). This means that although the policy was trade liberalization, the same was not done in the context of a general reduction in public policy interventions

Recently, a paper by the Ministry of Economics and Finance (MEF) estimated the magnitude of fiscal withdrawal and of direct subsidies oriented to supporting export activities. An important conclusion they found is that in the period between 2010 and 2012 subsidies on average compensated for taxes paid. It was found that the firms in the sample that was analyzed, which represented a large percentage of exports of goods, paid over 200 million dollars in taxes but that this was more than compensated by tax exemptions and refunds.

In the service sector a set of unilateral policies was developed gradually since the middle of the seventies. Public policies related to the service sectors have two different stances depending on the industries concerned, on the one hand they aim to promote internalization (in the case of the financial sector and of international transfers) and on the other they have a defensive orientation (in the case of public services)[11.] In other commercial services with export specialization (in particular business services), the unilateral policy aims to promote

[9] This instrument was created at the end of the seventies and has as objective to give credit assistance in foreign currency, through financial credits in foreign currency. Financing is applicable to the acquisition or production of merchandise for export, traditional or not.

[10] Among those which are exempted or suspended their application, the temporary admission instrument is highlighted. This exempts the pay of tariffs on imported inputs and raw materials that will be used in the elaboration of a product that will be exported. This mechanism can be considered as suspensive of imports, given that if there is not accomplished the time period provided for the export of the final product, or some other irregularity, tariffs would be collected without any kind of preference, and so the corresponding fines and charges.

[11] There are a set of public monopoly in several utilities: production and distribution potable water (by Constitution reform in the year 2005 by direct vote of the constituencies); distribution and transmission of electric power (Law Nº 16.832, June 17, 1997); petroleum refinery and distribution of refineries products (Law Nº 8.764, October 15, 1931).

liberalization through different instruments. This policy was sustained during more than two decades and various different administrations[12] without reversion.

In a long term perspective Uruguay has historically presented low investment rates (below 15 % of GDP in the nineties) lower even than those of other countries in the region and private investment represented approximately three quarters of total investment. Starting at the beginning of 2000, there was a strong increase in Foreign Direct Investment (FDI) in relation to the gross private capital formation, which went from 6% to 14% in the nineties and increased to more than 30 % in the second half of the current decade. This process has been happening in the context of a deep and early financial liberalization (in the seventies), a gradual commercial liberalization (eighties and nineties), and an increasing elimination of all discrimination towards foreign capital (intensified in the tens).

The Investment Law (1998) focused explicitly on the principle of national treatment, establishing a set of incentives to investment that did not discriminate by origin[13.]Additionally, since the mid-80s the country has applied different unilateral instruments for the promotion of investment which included public infrastructure concessions and different regimes to promote investment in various sectors (forestation, hotels and tourism, exploration and mining exploitation, duty-free zones, automobile regime). Since 2007 the benefits used to promote investment have been extended to other areas, they now reach all sectors and companies, big and small. This modification of the regime has meant an important increase in the amount and the quantity of investment projects presented. In spite of that difficulties persist both in terms of the scope of benefits and the mechanisms used to obtain them. For several decades the industrial promotion law has evolved to construct of a general framework to promote investment on the basis of international principles in this field (no discrimination to foreign investment through the rule of national treatment). The concessions are generous in fiscal matters, be it border taxes or domestic taxes. In addition, since 1996 there has been an investment and export promotion agency, named Uruguay XXI, whose fundamental aim is to facilitate the access to opportune information for potential new investments. In summary in Uruguay many mechanisms have been developed to incentivise exports which could be considered active trade policies. The policies changed from direct export promotion to a more general

[12] The laws and regulations are: Duty Free Trade Zones; Regulation framework for Offshore Banking; particulars regimens for the software and audiovisual services sectors.

[13] In Uruguay the domestic and foreign investments are ruled by the Law Nº 16.906 from January 7th 1998 or "Investment Law" and by the Decrees 59/998, 92/998 y 455/007.

regulatory framework that incentivises investment and trade in order to capture new sectors in line with the global changes in the international economy. Then the transformation capacity of trade instruments was been increased.

2. TRADE AGREEMENT

2.1 Multilateral: reciprocal and non discriminatory agreements

In December 1994, the Parliament approved the Marrakech Final Act through the incorporation of the Uruguay Round Agreements (URA) to the domestic law. In spite the fact that this round of negotiation began in Uruguay in 1986, issues concerning multilateral trade received little attention at the domestic debate during the nineties (Vaillant and Ventura Díaz, 2003).

In fact, the new multilateral rules contributed to the normalization of the domestic legal framework in trade policy issues. In 1996 rules were dictated in order to neutralize unfair trade practices. (dumping). In effect these new rules maintained the existing trade philosophy of previous administrations, although agencies in charge of judging unfair trade practices changed, and compensatory tariffs were established instead of traditional minimum export prices, which were gradually eliminated. The norms established are very detailed with respect to procedures for local producers to complain if they perceive that imports are being sold at dumping prices. The new regime did not yield to demands from the Cámara de Industrias to fix protection measures against imports based on only the presumption of dumping, nor did it transfer to importers the burden of proof that there were not unfair practices in an operation. On the contrary, it holds the criteria that the interested party must be the one that proves that an operation is the object of unfair trade and that it damages its business, in line with the commitments assumed by the country in the WTO framework.

The WTO framework highlights the GATS agreement (1994) and the posterior additional protocols (1997) in telecommunications and the financial sector. Uruguay established multilateral compromises with respect to the financial sector, taking advantage of the possibilities it had with a unilateral financial normative framework oriented to financial openness. However, Uruguay did not subscribe to any multilateral agreement in telecommunications services due to the low level of unilateral trade openness prevailing in

the middle of the nineties. In the Doha Round, the multilateral liberalization process in services was stopped. This issue was outside the Bali agenda. However, in 2012 the Trade International Services Agreement (TISA) a new plurilateral process outside the WTO was created. It is led by the US and EU and includes some developing countries in Asia and America Recently, Uruguay asked to be included inside TISA negotiations.

2.2 Preferential Trade Agreements

In the late eighties, before the MERCOSUR came into effect, Uruguay's trade with Argentina and Brazil had a very strong preferential component as a result of the bilateral agreements signed in the mid-seventies in the framework of the Latin-American Free Trade Association (LAFTA): the Argentine-Uruguayan Agreement of Economic Cooperation (CAUCE) and the Trade Expansion Protocol (PEC) with Brazil[14]. Both agreements were part of a policy of promoting non-traditional exports and were revised and deepened in the mid-eighties (see section 1.3 of this chapter).

The modern history of Uruguay's PTAs starts with an agreement that created a free trade area in goods, and had the more ambitious objective of evolving towards a custom union, and later a common market: the MERCOSUR[15] (Ons and Vaillant,2010) . Trade liberalization within the region was accompanied by resistance from the private sector, as well as governments that were susceptible to their political pressure. Nevertheless, in only ten years an almost universal free trade area was built. The unilateral and discriminatory trade opening led to enhanced competition in the tradable sector, and explains the production adjustment that occurred during the nineties.

The construction of the Customs Union started in 1994 when a Common External Tariff (CET) was created, and a path of convergence of the national commercial policies toward a common commercial policy for MERCOSUR was established. This convergence was based on two tools. First, on sectoral lists (the Capital Goods list and the Information

[14] The first through the Protocol of Colonia (1985) and the second through the Economic Cooperation Protocol (1986).

[15] Treaty of Asuncion (March 26, 1991) creation of the "Mércado Común del Sur" among Argentina, Brazil, Paraguay and Uruguay. In 1991 Uruguay embodied the Treaty of *Asunción* (Law Nº 16.196, July 22, 1991) to its national law and applied a trade liberalization schedule within the area (Trade Liberalization Program, Annex I Tratado de Asunción). In a first stage, Uruguay had a wide list of exceptions (960 items where outside the import tariff exemption in the intraregional trade). At the end of 1994, the *TA* was amended in the Ouro Preto (OP) meeting by the so called *Régimen de Adecuación del MERCOSUR (RAM).* Although a CET was settled, two types of bypass where allowed: by sectorial list (BK and BIT) and by national lists.

Technology and Telecommunications list) where the preferences of tariffs with third countries were different between countries and which established a path to convergence toward the CET. Secondly, national lists existed, including the products where member countries could deviate from the CET16. However, the process of convergence to the CET did not follow the deadline established originally (2006) and continues to be postponed until today. More than two decades after the CET was agreed on; the degree of compliance of national trade policies with the common trade policy is low. As a consequence, the aspired universal free circulation that should characterize a Customs Union has not been achieved, and the circulation rules are instead those of a free trade area. Even though progress was made in establishing the principle of free movement rule, the application of this principle has been restricted in its scope, because a common trade policy is lacking[17]. Beyond this unfinished convergence process, there are other aspects of the common trade policy that are far from being harmonized. The intense usage of special commercial regimes by all member countries stands out and amounts to another source of non compliance.

The national tariff in Uruguay is almost a percentage point under the CET. Uruguay follows the CET for 86% of items but the coverage in terms of imports with tariff greater than zero is much smaller. The CET structure is not the most fitting for a small and specialized economy like Uruguay's. It is reasonable to ask whether the CET meets the needs of some of the MERCOSUR's economies. The widespread use of special regimes for imports shows that the protection actually used is less than that which the CET reports. In facts the CET level is nowadays more closely related to international negotiations than to the domestic protection generated by tariff levels and structures. It has been said that this is the "exchange currency" that countries in the area have to obtain better terms of access to markets in developed countries.

[16] The definition of products is established in the Common Nomenclature of MERCOSUR (CNM) and comprises around 10,000 items.

[17] Articles 9 and 10 of the Treaty of Rome establishing the European Economic Community (EEC) define a general free movement rule *(Libre pratique* in French, *libre práctica* or *libre circulación* in Spanish). Pursuant to Article 10, Paragraph 1 of the EEC Treaty, "products coming from a third country shall be considered to be in free movement in a member state if the import formalities have been complied with and any customs duties or charges having equivalent effect which are payable have been levied in that member state, and if they have not benefited from a total or partial drawback of such duties or charges." This stipulates that goods move freely from third countries where import formalities have been complied with and all customs duties or charges with an equivalent effect have been levied in a member state, if the goods have not benefited from a total or partial drawback of duties or charges. Freely moving goods are treated like goods originating in the region.

Up to now, what has been achieved has been a free trade area (with some sectoral exceptions in the sugar and automotive sectors) and a series of policy harmonization in very isolated fields. However, the free trade area is currently affected by a high level of uncertainty. The proliferation of non-tariff barriers shows that the level of adherence to commercial discipline is low. This phenomenon acts effectively breaks with productive specialization and the development of intra-regional trade.

The preferential agreements reached with third countries "outside" MERCOSUR haven't been harmonized and the new "common" agreements have maintained a bilateral logic and are an additional source of divergence. In the second half of the nineties MERCOSUR signed the first common PTA with Chile (1996) and one year later with Bolivia (1997)[18]. The PTAs had a common structure and the liberalization path culminated after ten years with few exceptions at the end of the process. Both countries became associated members of MERCOSUR through signing of a set of additional protocols that exceeded the economic agreements. In 2005, eight years after the negotiations began in 1997 MERCOSUR established two set of PTAs with Andean countries[19]. However all of them have bilateral structures between each MERCOSUR member and each Andean member. The PTA agreements for goods in the LAIA framework (Treaty of Montevideo, 1980) allow each member to deposit its commitments within LAIA's institutions instead of sending them to parliament directly[20].

In 2009 after more than five years of negotiations the first PTA of MERCOSUR with an extra regional country (Israel) was established[21]. MERCOSUR negotiations with third countries have been taking place with great intensity since the second half of the nineties. However, the results obtained have been worse than expected and diverge from the broad "open regionalism" approach. An account of the agreements reached reveals that what was carried on was an inconsequential strategy of preferential negotiation of South-South

[18] "Acuerdo de Alcance Parcial de Complementación Económica No 35" (MERCOSUR-Chile) and "Acuerdo de Alcance Parcial de Complementación Económica No 35" (MERCOSUR-Bolivia). Both under the global umbrella of the Montevideo Treaty (1980) who creates LAIA.

[19] Acuerdo de Alcance Parcial de Complementación Económica No 58" (MERCOSUR-Perú) and "Acuerdo de Alcance Parcial de Complementación Económica No 59" (MERCOSUR-Ecuador-Colombia and Venezuela). Both under the global umbrella of the Montevideo Treaty (1980) who creates LAIA.

[20] Decreto N° 663 de 27/11/1985 (ACE 35 y ACE 36). Uruguay: Nota Nº 1095/05 de 16/12/2005 - Decreto 663/85 de 27/11/1985 (CR/di 2158) (ACE, 58). URUGUAY:Nota Nº 008/05 de 3/01/2005 - Decreto 663/85 de 27/11/1985 (CR/di 1932) (ACE, 59).

[21] Law Nº 18.339, August, 21, 2008, subscribed in Montevideo by MERCOSUR countries and Israel (December, 18, 2007). Until now Uruguay is the only member of MERCOSUR who subscribed and internalize the agreement under the domestic law.

agreements (between developing economies), restricted to goods and with a bilateral rather than regional format. The incentives for negotiation with third parties have been markedly different among MERCOSUR members. In the largest economy (Brazil) a more defensive vision has prevailed, which has found support in the current Argentinean government.

Based on the lack of success of common PTAs with third countries in the first decade of MERCOSUR, two sequential Uruguayan government administrations (Jorge Batlle 2000-2004 and Tabaré Vazquez 2005-2009) encouraged bilateral trade agreements with the rest of the world. First, a process of trade negotiations with the USA took place[22]. Then under the LAIA umbrella, Uruguay signed a FTA with Mexico (2004) that aimed at negotiating and establishing effective compromises for trade in services and other complementary areas[23]. From 2008 and 2009 a MERCOSUR plus status was created with Chile, characterized by the addition of the complementary matters, such as Government Procurement and Investment, and approaching the agreement of a standard FTA approach. This process with Chile was just finalized in 2012 when both agreements came in to effect.

When it comes to investment agreements Uruguay's regulatory framework allows agreements signed with third parties to come into effect without needing to change the existing domestic legislation. In 1994 Uruguay ratified the agreement signed at the World Organization of Trade (WTO) that contains regulations on investments measures related to trade (TRIMs)[24]. Of late there has been little progress in terms of multilateral agreements since this is considered a 'Singapore topic' and was therefore excluded from the Doha agenda (July 2004 package) Nevertheless, when considering multilateral agreements it is

[22] In February of 2002 the United States and Uruguay established a Joint Commission on Trade and (JCTI). In 2004 negotiations towards a Bilateral Investment Treaty (BIT) begun and during the second government of the present century (2005-2009) after some minor adjustment came into force on November, 2006. Finally on January 25th, 2007, a TIFA (Trade and Investment Framework Agreement) was signed in Montevideo. The agreement establishes the United States-Uruguay Council on Trade and Investment and sets up an agenda.

[23] Law Nº 17.766 May, 17, 2004, internalize to the domestic law in Uruguay the agreement signed with México November 15, 2003. This is the "Acuerdo de Alcance Parcial de Complementación Económica No 60" in the framework of LAIA agreement. As the agreement includes many topic different from trade liberalization in goods then it need to be ratified by the Parliament.

[24] The evaluation of Uruguayan commercial policies, made by the WTO (1998) criticizes only some aspects of the automobile regime, related to a reduction in import taxed for companies that export. The scope of this grant is limited. .

important to emphasize that Uruguay is a member of international organizations that promote the safety and protection of investments[25].

Since the nineties Uruguay has subscribed to numerous Bilateral Agreements for the Protection of Investments (APRIS, in Spanish). In recent years the country has also signed a new generation of investment agreements that emphasize the pre-establishment of investments and allow for possible disputes between firms and the State (see table II.2) The general domestic legal framework that the country adopted facilitated the subscription to new agreements in this area and allowed for greater maturity in the agreements reached. This serves as an example to illustrate how unilateralism can be relevant when it comes to enforcing policies for market liberalization. Agreements can crystalize norms and improve market access but alone they cannot modify domestic norms and legal frameworks.

As a summary, during the last two decades Uruguay subscribed to several different types of trade agreements (see table II.2). Seven PTAs in goods were implemented and two of them are part of more ambitious integration frameworks (MERCOSUR and the FTA with México). In services there are three PTAs, one was implemented with few new concessions (MERCOSUR), the second one was only partially implemented (FTA with México) and the last one has not yet been implemented (Chile). In terms of other complementary policies there are seven different agreements, but only two have been implemented (USA)[26].

If one considers the amount of issues involved in different agreements it is clear that Uruguay has a diversified trade agenda. However the set of PTAs is narrow. Furthermore if the trade agreements are compared with the effective level of fulfillment, it becomes clear that the reciprocal trade agenda is limited and it less deep than it may appear on paper. Overall, Uruguay is a small economy that increases its openness by combining the reciprocal agreements with a set of unilateral policies which play a fundamental role in integrating the country internationally.

When it comes to preferential trade agreements Uruguay's trade policy is difficult to manage. On the one hand Uruguay participates in a number of agreements with Mexico,

[25] Uruguay has 4 active projects and two inactive in the Multilateral Investment Guaranty Agency (MIGA). In 1992 it subscribed the agreement referred to activities in the ICSID, which entered into force in the year 2000, once the ratification conditions were accomplished.

[26] The agreement with the USA covers investment disciplines and trade facilitation (BIT and TIFA) and it has the same content than the investment chapter in a standard FTA, which includes the harmonization of rules and standards.

Chile and the United States that are similar to the Free Trade Agreements with the United States. It is also an observer in the Pacific Alliance between Mexico, Colombia, Peru and Chile. On the other hand, Uruguay is a full member of MERCOSUR and is subject to the protectionist stance led by Brazil which blocks negotiations with third-party countries that are outside the MERCOPLUS. Internally, political discussions of Uruguay's trade conundrum inevitably fall into a simplistic polarization which opposes regional integration to global integration. We must leave this simplistic debate behind and turn the discussion towards negotiations with third-party countries that are in line with the instruments of global integration that Uruguay currently deploys.

Table II.2

PTA implemented by Uruguay

CATEGORY	NAME	CONTENTS	DATA COMMITMENT	DATE STAR IMPLEMENTATION	PERIOD FROM COMMITMENT
SUB REGIONAL	Treaty of Asunción	Goods-	March 1991	July 1991	3 months
		Services	July, 1998	December 2005	At least 7 years
		Investment	1994	Not implemented yet	At least 16 years
		Government Procurement	2003	Not implemented yet	At least 7 years
		Competition Policy	1996/2002	Not implemented yet	At least 8 years
COMMON MERCOSUR WITH THIRDS COUNTRIES	Chile	Goods	June, 1996	October, 1996	3 months
		Services	May-09	Not implemented yet	At least 1 year
	Bolivia	Goods	December, 1996	February 1997	2 months
	Peru	Goods	1997	December 2005	Eight years
	Ecuador-Colombia-Venezuela	Goods	October, 2004	January, 2005	3 months
	Israel	Goods	2008	2008	Less than one year
BILATERAL	FTA with México	Goods, services and disciplines	2004	2004	Less than one year
	BIT/ TIFA USA	Investment, Trade Facilitation	November, 2005/October, 2006	November,2006 /January, 2007	One year/3 months
	FTA with Chile (MERCOSUR plus)	Government procurement/ Investment	2008/2009	2012	3 years

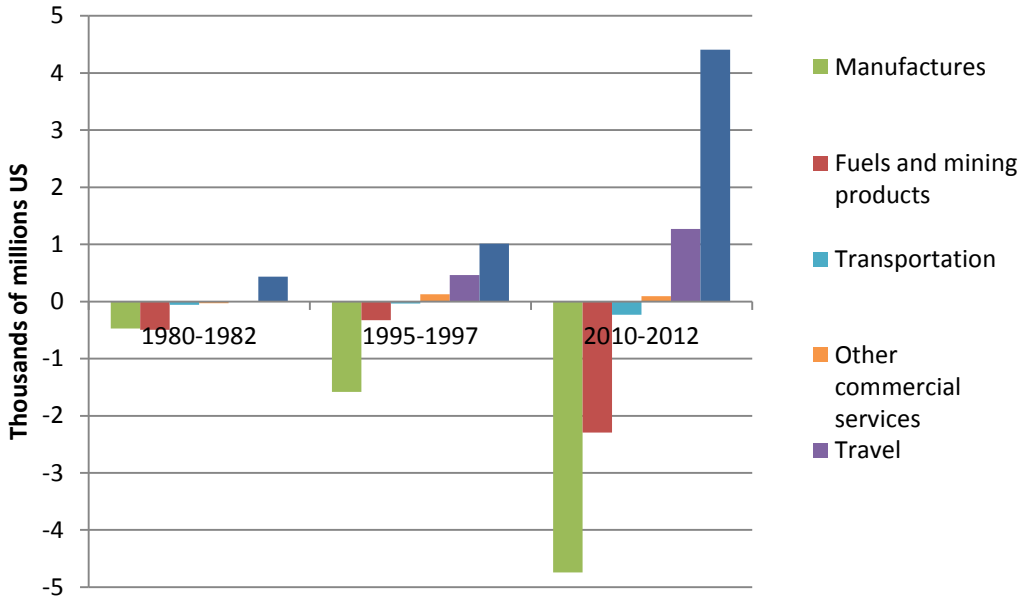
Source: prepared by the authors using several sources: LAIA, MERCOSUR and Uruguayan Foreign Affairs Ministry.

III. CHANGES IN TRADE PATTERNS

1. GLOBAL TRADE EVOLUTION (1980-2012)

The structure and evolution of trade accounts shows a clear pattern of specialization in Uruguay. Over a period of more than thirty years (1980-2012), Uruguay has consistently been a net exporter of agricultural products and services and a net importer of energy, mining and manufactures products (see graph III.1). This trend has been accentuated throughout the period (Graph III.1).

Graph III.1
Trade Current Account by large sectors, selected periods 1980-1982, 1995-1997, 2010-2012 (thousand millions US)



Source: prepared by the authors using WTO trade data.

In order to look at this trade specialization in greater depth, a set of indicators are measured. We have chosen to apply the indicators equally to both goods and services since they are comparable economic activities. This is s not the usual procedure for the calculation of these indicators mainly due to the fact that statistics are not available for both goods and services with a similar level of disaggregation. In this paper the Conventional Balassa Index of Relative Comparative Advantage (RCA[27]) is used with a standard correction for double counting. It is applied to export and import flows as follows:

[27] RCA are commonly used for exports. Following the tradition by Vollrath we also applied the term to imports. Obviously the interpretation is different in one or other case.

$$RCA^{t}_{g,c} = \frac{t_{g,c} \Big/ \sum_{h \neq g} t_{h,c}}{\sum_{d \neq c} t_{g,d} \Big/ \sum_{d \neq c} \sum_{h \neq g} t_{h,d}} \qquad \text{(III.1)}$$

Where: t=x(exports),m (imports); g- is the index of economic activities; c- is the index of country of origin (or destination). A log transformation is done so that any value greater than zero can be read as implying export (import) specialization in that sector. Then, both indexes are combined using Volrath (1991) measured of competitiviness:

$$VCI_{g,c} = \ln RCA^{x}_{g,c} - \ln RCA^{m}_{g,c} \qquad \text{(III.2)}$$

The values and the interpretation of Volrath index are:

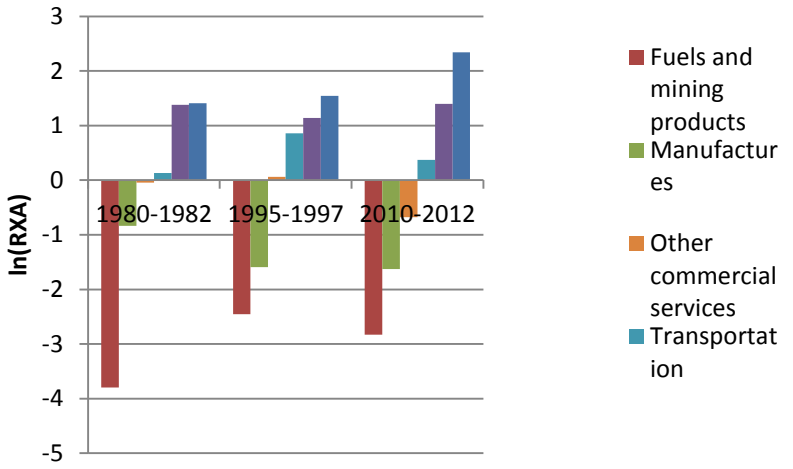
- if $VCI_{g,c} > 0$ we have a competitive sector with export specialization;
- if $VCI_{g,c} < 0$ the sector is not competitive but has import specialization;
- if $VCI_{g,c}$ is close to zero then there are two possibilities: if both RCAs are close to zero then we can say that the sector is not specialized , if both RCA indexes are greater than zero and are similar in size then there is intra-industry specialization.

In Graph III.2 the results are presented for six large sectors: agricultural products; fuels and mining; manufactures; travel; transportation; and other commercial services. Over the period analyzed, the main characteristics of Uruguay's pattern of trade specialization have not changed drastically (see table III.1).

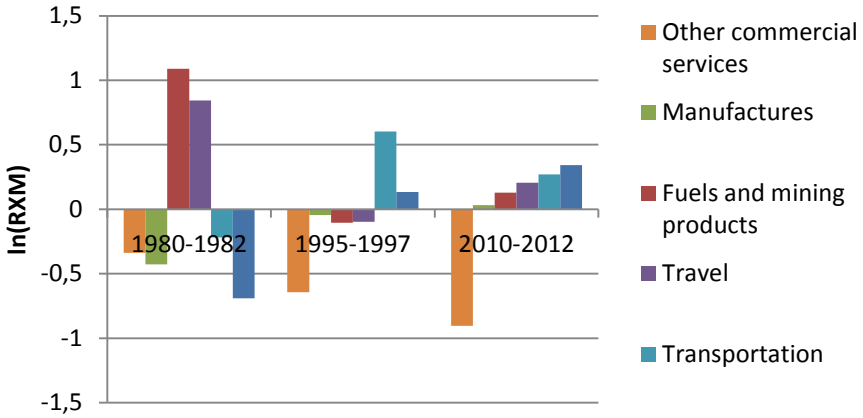
Graph III. 2

Trade specialization- large sectors with relative comparative advantages, 1980-1982, 1995-1997, 2010-2012

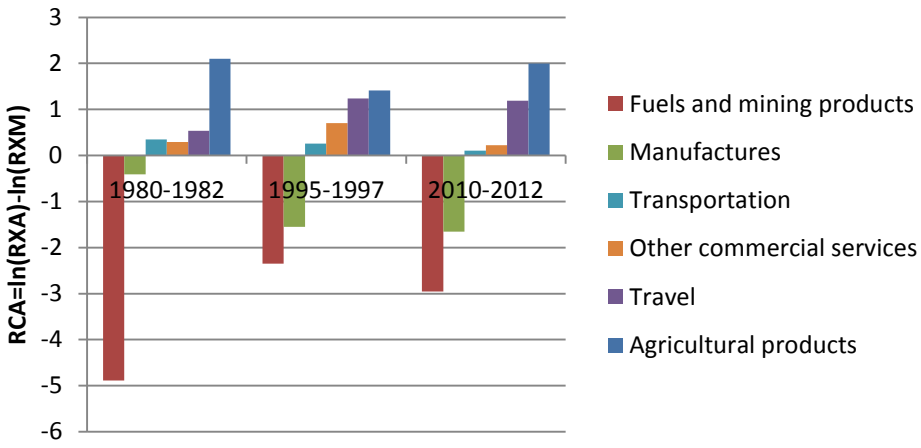
a) Exports (Balassa Index)



b) Imports (Balassa Index)



c) Exports and imports (Vollrath Index)



Source: prepared by the authors using WTO trade data**.**

A pattern emerges in inter-industry specialization: we have two sectors with export specialization (agricultural products and travel) and two sectors with imports specialization (manufactures and fuel and mining). In the case of transportation services Uruguay shows an intra-industry pattern with a RCA index of similar size in both flows (exports and imports). Positive values in Vollrath index for other commercial services arise mainly as a consequence of the low import specialization index (see graph III.2 b)). Moreover, in this sector trade statistics are misleading since there is no registry of exports in services in Uruguay, This problem is particularly relevant because in the last decade there has been a great development of these types of services. The revealed competitiveness index might actually be greater in this sector which includes global exports in services.

Table III.1

Competitiveness performance of large sectors revealed by trade data over period 1980-2012

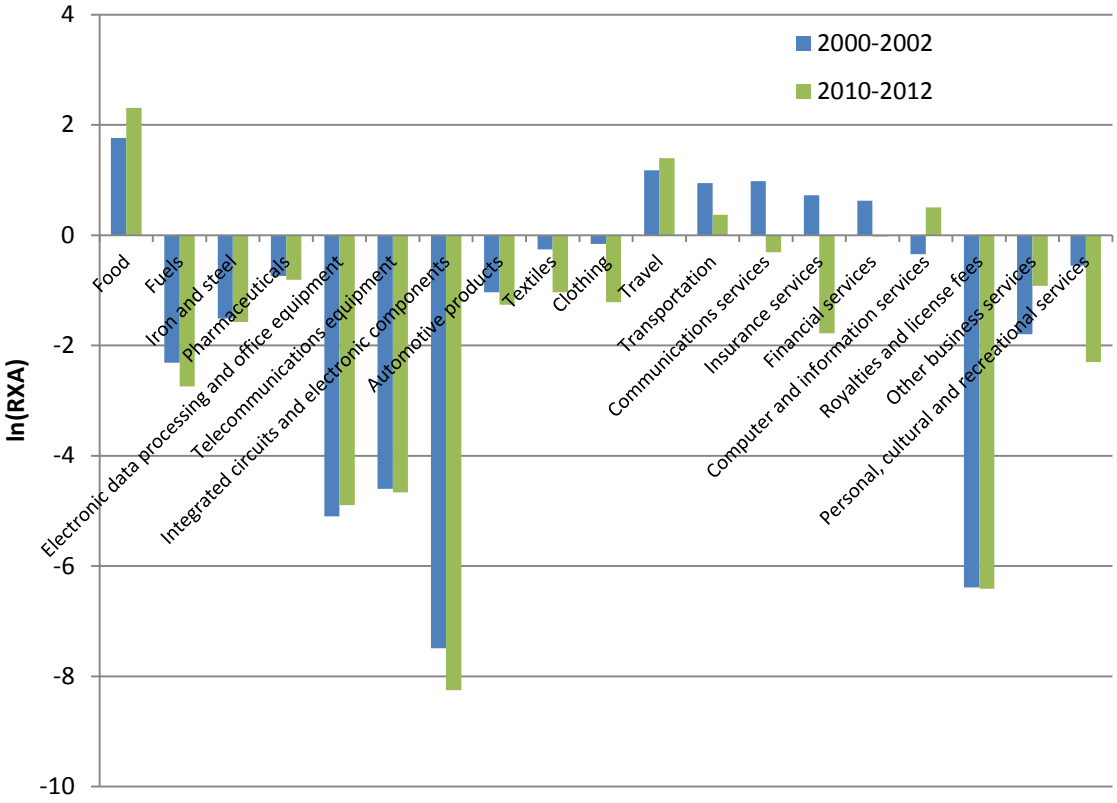
COMPETITIVINESS	LARGE SECTORS
NON COMPETITIVE SECTORS	• Manufactures • Fuel and Mining
COMPETITIVE SECTORS	• Agricultural Products • Travel • Other comercial services • Transportation

Source: prepared by the authors.

In order to have a more disaggregated view a set of graphs (III.3- III.5) were elaborated. Data that is more disaggregated with comparable information for both goods and services is only available starting in the year 2000. Furthermore, the data available for exports and imports does not correspond to exactly the same sectors and disaggregation. In the case of imports, there is no disaggregated data for other commercial services. Therefore, it is not possible to present the data with the same structure as was used at the aggregate level.

Graph III.3

Trade specialization- sectors with relative comparative advantages in exports (Balassa)**, 2000-2002 and 2010-2012**

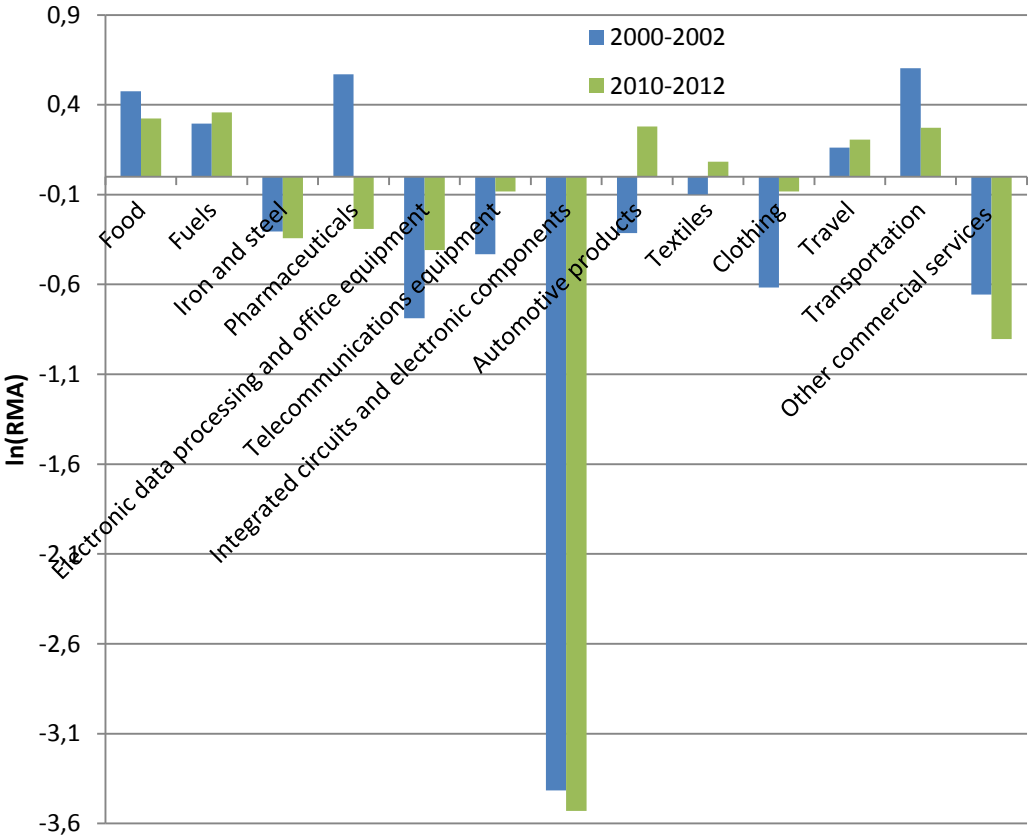


Source: prepared by the authors using WTO trade data

In graph III.3 an export RCA indicator is shown for each sector. At this level of aggregation no sector within manufacture has a revealed comparative advantage through trade in either three year period (2000-2002 and 2010-2012). In the case of global exports of services Uruguay stands out in the sector of computer and information services.

Graph III.4

Trade specialization- sectors with import relative comparative advantages (Balassa)**, 2000-2002 and 2010-2012**

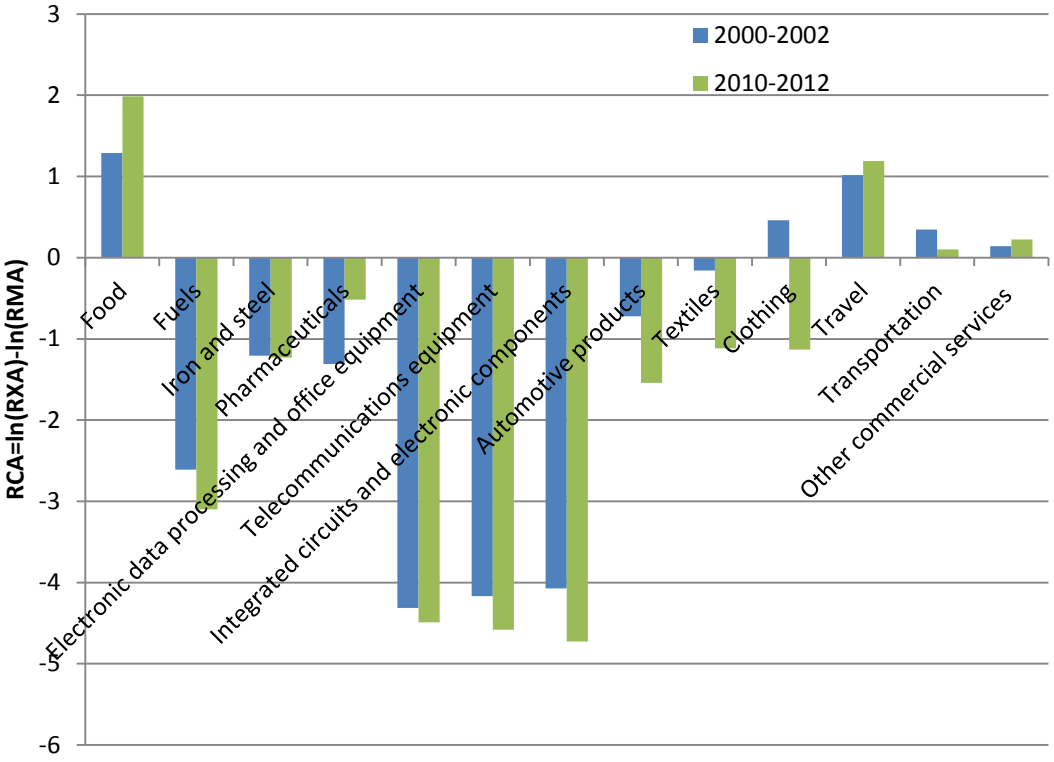


Source: prepared by the authors using WTO trade data.

A RCA of imports is presented in graph III.4. If the index is smaller than zero it indicates that the country buys relatively less than its share of the product in global trade. This is an indication of certain degree of competitive development in import substitution sectors. If the index is greater than zero it shows that the country buys relatively more than its own share of the global market and so its domestic production is not relevant. In the food sector Uruguay has a positive RCA value both in exports and in imports showing specialized flows in both directions. In the case of fuel and mining products Uruguay is a specialized importer. In manufacture it is important to highlight some changes over the period. In the pharmaceutical sector Uruguay was a specialized importer in the early 2000s (2000-2002) and changed to non-specialized importer in the last three years (2010-2012). The automotive sector recorded a change in the opposite direction with an increase in import specialization in recent years (2010-2012). The textile and clothing industries recorded a contractive adjustment associated with an increase in import specialization. In global services the main change has been a

reduction in purchases from the rest of the world which resulted in a fall in the value of the indicator. We can interpret this as a competitive development of the set of global export sectors

Graph III.5
Trade specialization- competitiveness index (Vollrath)**, 2000-2002 and 2010-2012**



Source: prepared by the authors using WTO trade data.

Figure III.5 presents the changes described with disaggregated figures using the Vollrath competitiveness indicator. The outcomes we saw in the aggregate analysis are reinforced here. Uruguay is not competitive in manufacturing sectors and this characteristic is exacerbated over the 2000s. In agriculture, food production is the key sector and its competitiveness is reinforced during the period. In services the travel sector has becoming increasingly competitive and, to a smaller extent, so have other commercial services (global export services). The international transport sector has Vollrath values that are greater than zero but that have decreased in the last decade.

Finally, Table III.2 and Table III.3 show products, by sector, for which Uruguay has comparative advantages in its exports, for goods and services respectively[28].

[28] The sector classification used is the one used by the Central Bank of Uruguay for the purposes of the preparation of the input-output matrix. We do not consider sectors for which the country does not have any products with comparative advantage.

Table III.2: Sectors and products with comparative advantages: Goods

Sector	% of sector in exported value[29]	Main products with RCA in the sector (% del producto en el sector)
Meat and products processing and preserving of meat	14.65%	Frozen boneless beef (58%) Fresh or chilled boneless bovine meat (18%)
Other crops	10.55%	Soybean seed and soybeans (68%) Wheat and muslin (28.54%)
Dairy products	5.76%	Concentrated milk and cream (34%) Cheese (31%) Powder milk (10%)
Wood products (except furniture)	4.73%	Wood in the rough (49%) Wood chips non-coniferous (29%)
Milled rice and other rice products	4.25%	Parboiled rice (75%) Husked rice (13%) Rice (7%)
Rubber and plastic	3.07%	Carboys, bottles, flasks and similar (44%) Compounded with carbon black (21%) Preparations based on chewing gum (7%)
Motor vehicles, parts and pieces made for them; ships, aircraft, bicycles and mopeds	2.26%	Motor vehicles (19%) Vehicles with displacement of more than 1.5 (17%) Suspension systems and parts thereof (16%) Axles with differential (14%) Road tractors for semi-trailers (12%)
Products of livestock, except dairy	2.24%	Cattle by crossing pure or pure source (61%) Shorn wool (18%) Natural honey (14%)
Washing products, yarns and fabrics	2.13%	Carded and combed wool excluding bulk (65%) Not carbonized wool, sheared (9%)
Processed leather; saddlery and harness	2.04%	Leather of bovine or equine animals (30%) Animal skins and hides chrome tanned (27%) Variety tanned hides and skins (19%) Cattle hides chrome tanned (wet-blue) (12%)
Products of fish	1.89%	Frozen fish excluding fillets (34%) Frozen tilapia, catfish and catfish fillets (22%) Frozen dogfish (15%) Frozen Hake (9%)
Products of iron and steel, aluminum and other nonferrous metals	1.88%	Forms of raw gold (31%) Games of cables used in transport (13%) Circular welded stainless steel (13%)
Malt and malt liquors	1.70%	Malt (barley or other cereals) unroasted (98%)
Basic chemicals, cleaning products, paints and coating, printing ink	1.55%	Organic surface (28%) Antimony sulfates, lithium, strontium, ferrous, neutral lead, chromium and zinc (7%)

[29] Total exported value= goods + services

Pharmaceuticals, medicinal chemical and botanical products, for human and animal use	1.06%	Drugs (43%) Antisera and immunological products (10%) Vaccines for veterinary medicine (8%)
Products of fruit trees, grapes, and plants used for making beverages or spices	0.96%	Oranges (36%) Tangerines (31%)
Furniture, jewelry, musical instruments, sports goods, toys	0.88%	Seat parts (90%)
Products of refined petroleum and nuclear fuel	0.85%	Petroleum oils and oils obtained from bituminous minerals (90%)
Chemicals for agricultural use	0.81%	Fungicides (45%) Chemical fertilizers (23%) Insecticides (9%)
Paper and board products	0.76%	Paper and paperboard for graphic purposes (22%) Handkerchiefs, cleaning tissues and towels (13%) Diapers, tampons and sanitary paper products (10%) Toilet paper (10%)
Vegetable oils and animal oils	0.53%	Refined oils in bottles of 5L or less (94%)
Sugar, cocoa, chocolate, confectionery and other food products	0.38%	Cocoa powder (28%) Mayonnaise (22%) Food preparations of flour, malt, starch or meal (15%) Other food preparations (13%)
Electricity, piped gas, potable water supply	0.36%	Electric power (100%)
Cigarettes, snuff and other products made from snuff	0.34%	Cigarettes containing snuff (84%) Snuff and substitutes (16%)
Clothing, dressing and dyeing of fur	0.32%	Tanned skins (30%) Garments for cattle, sheep and skin (10%) Coats of synthetic fibers for women and girls (8%)
Various textiles, woven and knitted garments	0.27%	Synthetic fiber blankets, except electrical (32%) Pillows, quilts and other bedding (18%)
Glassware, pottery and clay	0.21%	Portland cement (57%)
Crude oil and natural gas	0.14%	Precious stones, raw or processed (87%) Cutting granite blocks or slabs (8%)
Animal feed, corn oil and starch products	0.11%	Animal feed (81%)
Products from processing and preserving fruit and vegetables	0.09%	Citrus juice excluding orange and grapefruit (51%) Frozen orange juice (27%)
Bakery and pasta products	0.08%	Bread, biscuits and bakery products (58%) Pasta unprepared (32%)
Wines and sparkling wines	0.07%	Wine of fresh grapes (94%)
Newspapers, magazines and periodicals; overall impressions	0.06%	Printed books and pamphlets (44%)
Rice	0.04%	Paddy rice (100%)

Source: Prepared by the authors

Table III.3: Sectors with comparative advantages: Services

Sector	% of sector in exported value
Transport services of passenger and cargo vessels for coastal and airmail; auxiliary transport services; travel agency services	11.36%
Commercial activities	6.02%
Financial intermediation services	5.53%
Services of cargo and passengers by land, pipeline transportation service	3.26%
Renting services of machinery and services to companies	2.80%
Postal services and telecommunications	0.65%
Accommodation and supply of food-and beverage	0.15%
Real Estate Services	0.11%
Social security, government services except education and health	0.11%

Source: Prepared by the authors

2. PRODUCT SPACE

2.1 Product Space Methodology

When we analyze the pattern of trade specialization of an economy in terms of the Product Space methodology we consider the economy's position relative to the rest of the world. This methodology measures the level of sophistication or complexity of the pattern of specialization of the economy and takes the capabilities that result from said pattern (knowledge, physical and human capital, infrastructure) as an endogenous determinant of growth.

The Product and Country Space (P&CS) method was developed by Hausmann, Klinger, Barabasi and Hidalgo (HKBH, 2007). The authors argue that the probability of a country developing the ability to specialize in a good is related to the capacities it has already acquired in the production of other goods that are close to it in the Product Space (PS). In this sense, the advantage of a country that is revealed through trade also reveals various capabilities that can be useful in the production of *other* goods that are close in the Product Space and that could be commercialized under advantageous

circumstances. Thus the question becomes: "what is the likelihood of exporting a product with an advantage given that another product with an advantage is already being exported?" The answer lies in the concept of 'proximity' between products. The relations of proximity allow for a more dynamic analysis of the possibilities an economy has of transitioning towards more sophisticated patterns of specialization.

A number of studies analyze Uruguay's commercial specialization in terms of Product Space. Ferreira, Coimbra and Vaillant (FC&V, 2009) look at the structure of Uruguay's PS and its evolution between 1985 and 2007. Flores, Rovira and Vaillant (FR&V, 2011) construct both a Product Space and a Country Space, establishing the proximity of countries based on the products in which they are specialized and have an advantage. The idea is that the greater the probability of a country exporting a product with an advantage, given that another country exports it with an advantage, the greater the proximity between those two countries. At the same time, the number of countries that have an advantage in any given product can be used to determine how complex that product is. Thus, if many countries export a given product with an advantage we can conclude that the capacities required to produce it are not complex.

FR&V, 2011 also measure the ubiquity of products (the number of countries that specialize in a given product) and the diversification of markets (the number of products that a given country specializes in) using the method of reflections. This methodology constructs an order of products and an order of countries based on their level of sophistication. If a country exports a large variety of non-ubiquitous products then its export basket must be complex and it must be rich in expertise and capabilities, some of which are not common.

2.2 Uruguay in the Product Space

Using data from 2007[30] from the COMTRADE database FR&V, 2011 project the Product Space for goods and reveal a structure where products are highly connected and form three strongly interrelated but distinct nodes with a large number of peripheral products that have low connectivity (see Graph III.6 and Table III.4).

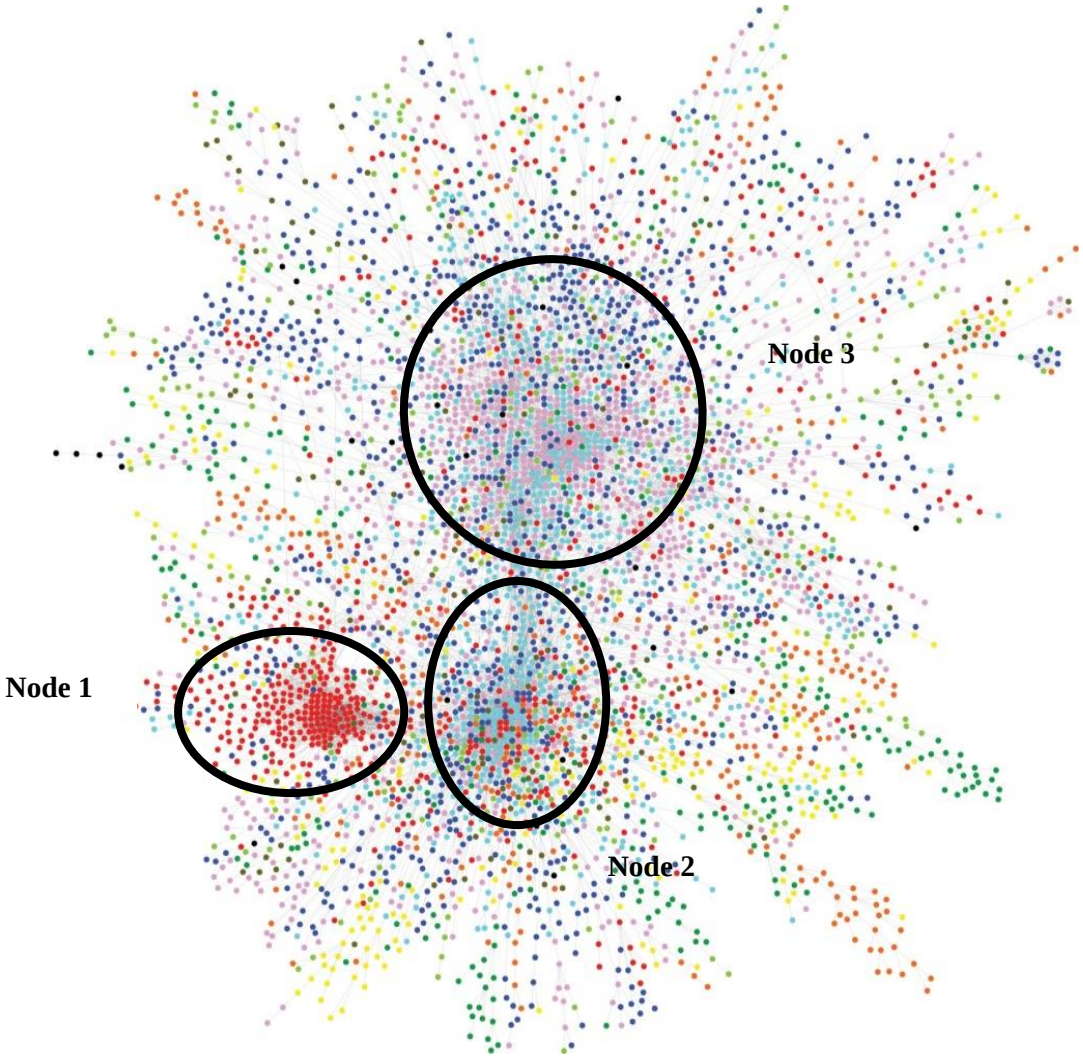
At the same time Graph III.7 projects Uruguay's pattern of export specialization in goods in the Product Space and shows a basket of goods that is dispersed and far from

[30] Exports from the Harmonized System (6 digits)

the third node (more sophisticated products). We see the same situation in the Country Space: Uruguay is in the South American node but has little connectivity to other countries in the node and has a productive specialization that is relatively unsophisticated.

Graph III. 8 shows Uruguay's position relative to other countries according to its level of product diversification and the average ubiquity of the products that it specializes in. Uruguay is in the upper left-hand corner of the graph, i.e., countries that are not very diversified in ubiquitous products (see FR&V, 2011)

Graph III.6: Product Space Projection in Goods According to Leamer Classification



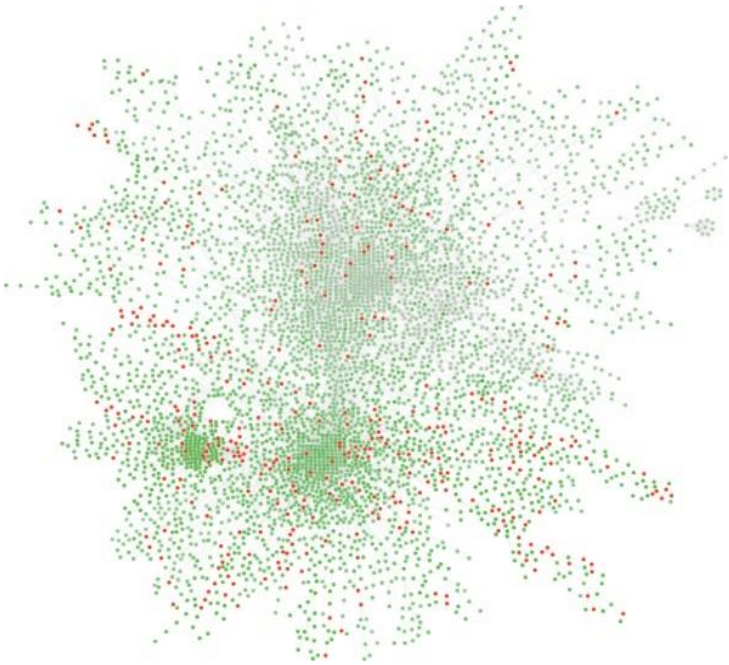
Source: FR&V, 2011

Table III.4: Features of Product Space Projections in goods

	Color of the points in the product space	Dominant Products (Learner classification)	Degree of sophistication
Periphery		Tropical Agriculture, Cereal crops, Raw Materials, Animal Products, Forestry products	Very Low
Node 1		Labor Intensive products	Low
Node 2		Capital intensive products, machinery and Labor intensive products	Medium
Node 3		Machinery and Chemical products	High

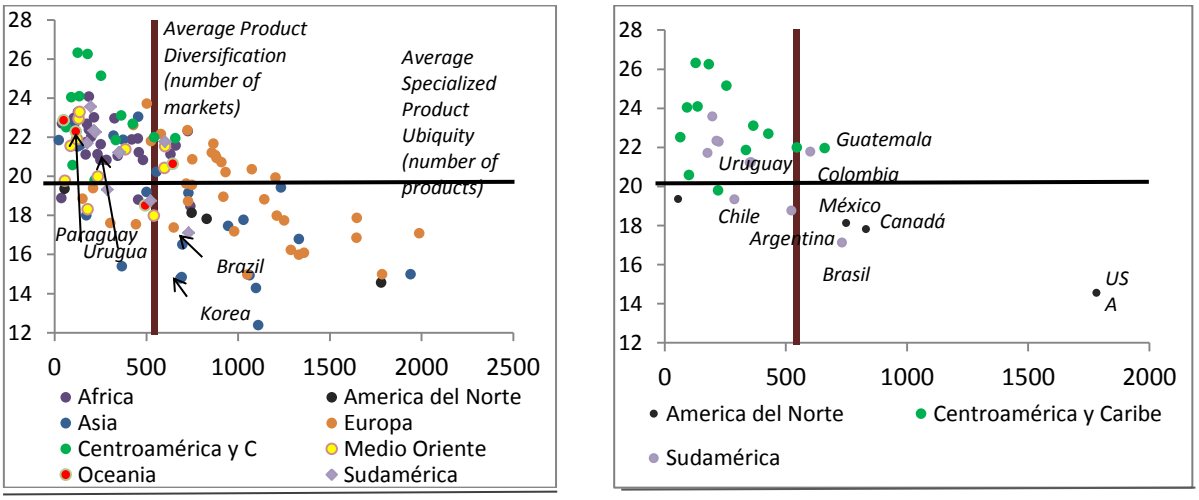
Source: Prepared by the authors based on FR&V, 2011

Graph III.7: Basket of goods with advantages of Uruguay



Source: FR&V, 2011

Graph III.8: Average market diversification and ubiquity of products in which the country specializes

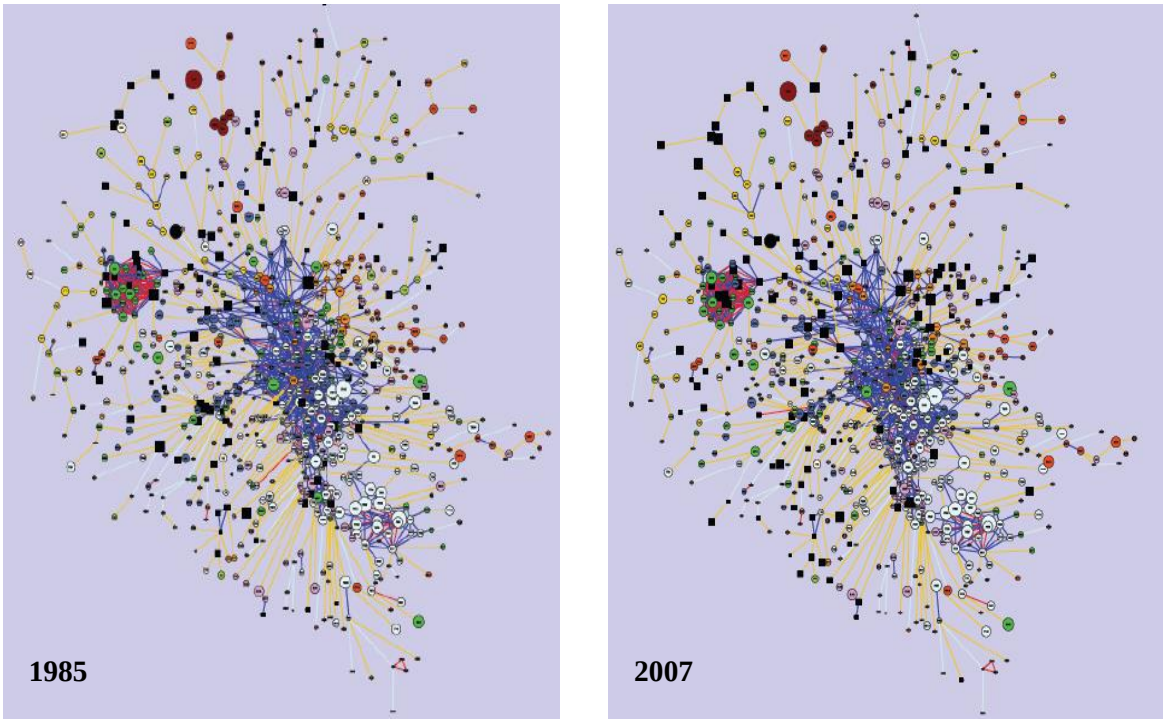


Source: FR&V, 2011

Nonetheless, when we look at the evolution of Uruguay's export specialization pattern over the last 25 years we can see a change related to the commercial opening of the economy and the process of deindustrialization that accompanied it. Over the years there was a decrease in the proportion of manufactured products in Uruguay's export specialization pattern (ESP) and the food and agricultural products became more diversified.

FC&V, 2009 studied the composition of Uruguay's Product Space in 1985 and in 2007 and found that the Uruguay's Product and Country Space has historically been composed of products that are relatively disconnected (see Graph III.9). The opening of the economy led to new specializations that took advantage of the abundance of factors of production. This led to a diversification of products in those sectors that make intensive use of natural resources (grains, raw materials, dairy and other animal products). However, there is not much proximity between these products in the PS. This situation helps explain why those products which could potentially have been developed three decades ago based on their proximity in the PS were never developed (for example machinery and textiles) while others that did not appear to have potential in that moment were (for example: pine wood, rubber materials, paper and cardboard and products derived from iron and steel) (see FC&V, 2009).

Graph III.9: Uruguay's Product and Country Space, 1985-2007



Source: FC&V, 2009

In short, the basket of commodities is diversified but not highly sophisticated and this pattern doesn't change substantially over the years. The commercial opening of the country led to the development of new products but these are all located in the periphery of the PS far from the nodes that contain the most complex products (Nodes 2 and 3).

In addition to the Product and Country Space projection we can look at export specialization in services in Uruguay in order to get a more global picture. This analysis reveals that Uruguay has advantages in travel, transportation and computer services. Computer Services is the only non-ubiquitous service where the country has an advantage[31].

Finally, we can use the same methodology that was used to determine Uruguay's position in the PS historically to understand where it might be located in the future. Based on an analysis of proximity we can identify which products will have the greatest potential in the future if Uruguay maintains its current trade policies. FR&V, 2011 conduct this analysis with different time frames and focusing only on scenarios in which

[31] Methodology used by FR&V, 2011 shows that computer services are classified in second place in the ranking of services sector by degree of sophistication

Uruguay transitions to greater export sophistication. They find that in the long run Uruguay could potentially specialize in 64 different products.[32].

IV. PATTERN OF SPECIALISATION AND EMPLOYMENT

1. METHODOLOGY

In this sub section, a method to measure the employment and labour remunerations content of exports is presented. First, we define an export column vector according to the sector definition of the Input Output Matrix (e_t is a column vector Sx1 and s=1,…,S). The gross value of production (x_t) is equal to intermediate demand (input-output matrix (A) multiplied by gross production) plus final demand (f_t). The final demand is composed of (f_t^d) plus domestic and foreign demand (e_t).

$$x_t = A^p x_t + f_t = Ax_t + f_t^d + e_t \quad \text{(IV.1)}$$

There are two different indexes for time. One is for the period (p) of the input-output matrix and the other for foreign final demand (t).

The level of gross production (x_t^e) required for the vector of final foreign demand e_t is:

$$x_t^e = (I - A^p)^{-1} e_t = F^p e_t \quad \text{(IV.2)}$$

Where: F is the inverse of the Leontieff matrix. The amount of total employment (b_L) per unit of gross production in each sector is given by:

$$b_L^p = \frac{L^p}{x^p} \quad \text{(IV.3)}$$

A diagonal matrix is constructed with the coefficients of this vector of technical ($D(b_L^p)$). Then, total employment (direct plus indirect) created by foreign demand is:

$$L_t^T = D(b_L^p) F^p e_t \quad \text{(IV.4)}$$

To obtain direct employment created by exports is necessary to multiply the technical coefficients of the diagonal matrix of employment by the export vector:

$$L_t^D = D(b_{Lt}) e_t \quad \text{(IV.5)}$$

Finally, indirect employment created by exports is:

[32] Products are identified at 6 digits of the HS classification. Product list is headed by the chemical industry (16 products), followed by metalworking (8) and machinery (8).

$$L_t^I = L_t^T - L_t^D = D\left(b_L^p\right)F^p e_t - D\left(b_L^p\right)e_t = D(b_L^p)(F^p - I)e_t \qquad \text{(IV.6)}$$

The exercise will be done with different technical coefficients (employment and remuneration) and also by type of workers (skilled and unskilled).

$$b_L, b_L^s, b_L^u$$

The exercise will be repeated with labor remuneration (R) measured in monetary values.

$$b_R, b_R^s, b_R^u$$

2. RESULTS

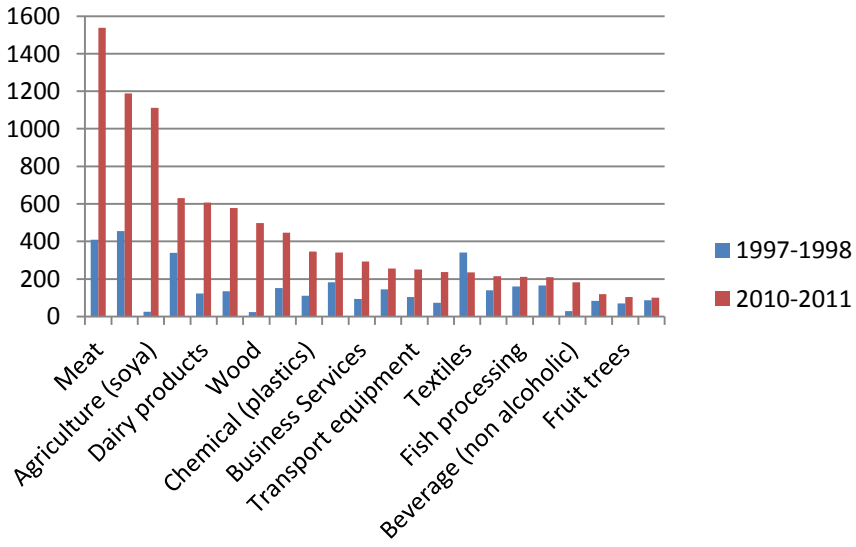
2.1 Exports expansion and employment coefficients

The statistical annex (see table A2) presents information on the most relevant export sectors and covers 99% of exports in the 2010-2011 period. However, in this section, for the purpose of the graphical representation, we have narrowed this list down to 22 sectors, which represent 95% of exports in 2010-2011. A brief description of these sectors will be presented with a focus on three dimensions: export performance, total labor requirements and intensity of labor use according to skill level.

Exports per sector are presented in graph IV.1. Here it is clear that Uruguay's exports, as we saw in the chapter III, are primarily agricultural and exports of services, although when we look at this level of aggregation we also see a few other manufacturing sectors (chemical, and transport equipment).

Graph IV.1

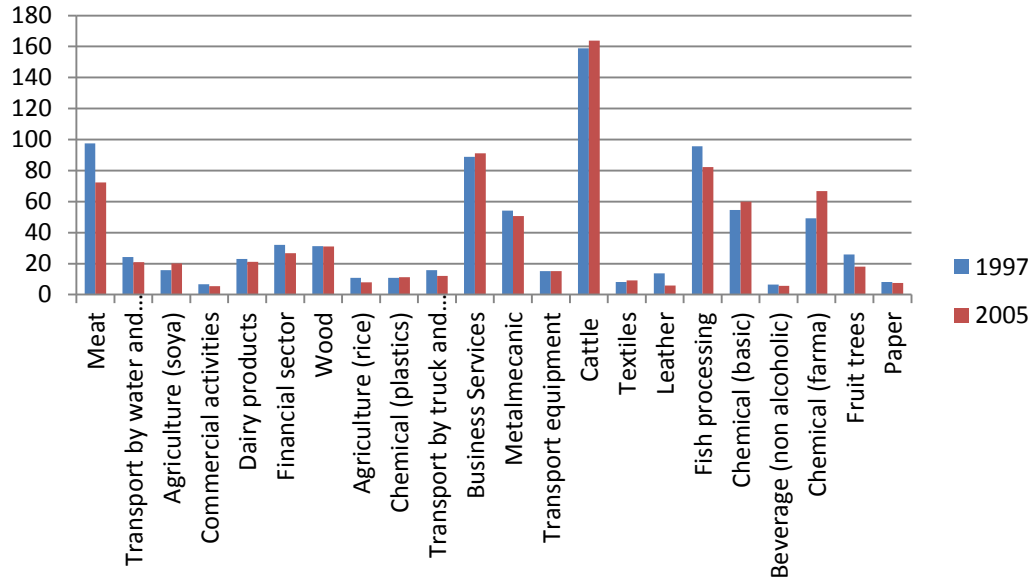
Exports for main exports sector for the years 1997-1998 and 2010-2011 (:US)



Source: prepared by the authors using table A.2 Annex A.

Graph IV.2 presents the labor required per sector per million dollars of gross production value. Technical coefficients range from 160 workers, in the case of cattle ranching, to the paper sector, which requires only 7. Some sectors have a two-fold nature when it comes to production technology in the domestic and export markets. For example, in the case of services rendered to firms the domestic market is labor-intensive (the technical coefficient was 91 workers in 2005) at the same time it seems logical that in the case of global service exports the labor requirements and inter-industry relations would be very different (particularly when it comes to the use of imports). As the export measuring system becomes better it will be necessary to develop a strategy to understand the characteristics of those sectors which have this type of production duality.

Graph IV.2
Labor coefficients, workers by 1 million dollar of gross production 1997 and 2005
(numbers of workers)



Source: prepared by the authors using table A.2 Annex A.

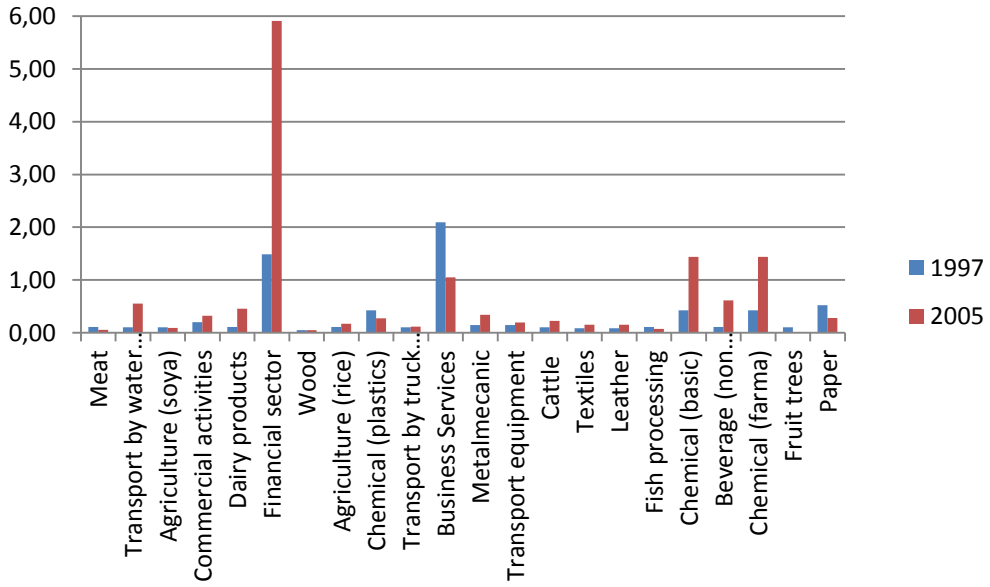
Thirdly, graph IV.3 presents an overview of skill level per sector by plotting the relationship between skilled labor and unskilled labor, and medium-skilled labor and unskilled labor in each sector. We see that in the decade under study the skill profile increases in virtually all sectors. This change is much more pronounced if we look at medium-skilled workers.

It is likely that the 2005 data is picking up on the employment structure of the 2002-2003 economic crisis. In those years (2001-2004) employment contracted and this effect was probably felt more strongly amongst unskilled workers who, in the last decade, have had a higher unemployment rate than average (Casacuberta y Vaillant, 2004).

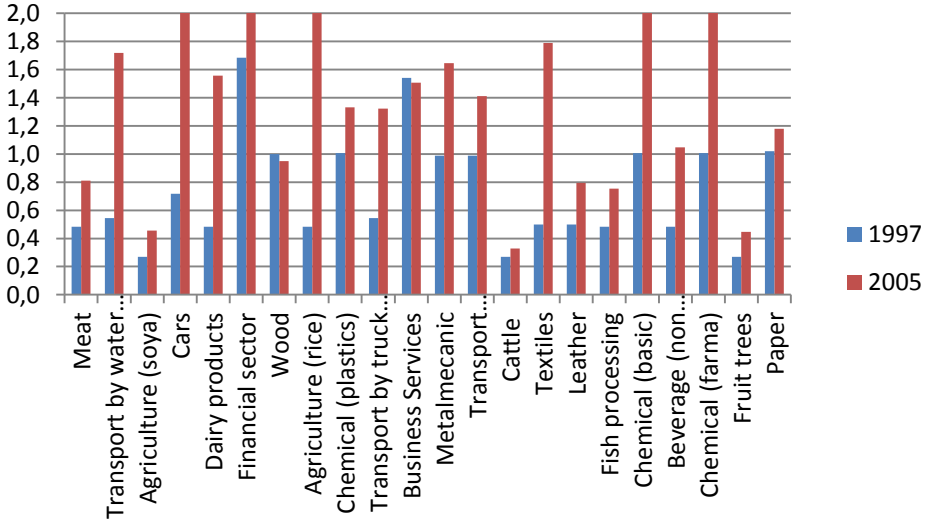
Graph IV.3

Labor by intensity in the use of skills for the years 1997 and 2005 (ratio)

a) Skill/Low



b) Medium/Low



Source: prepared by the authors using table A.2 Annex A.

The analysis of the labor content of exports is based on three factors that explain the changes that occurred in the period. The first has to do with the expansion of exports associated with the increasing openness of the economy. This change occurred in the context of a transformation in the structure of exports by product. The second effect is related to the changed in the labor required per unit of gross production value (b_L^p). Finally, a more complex change in inter-industrial relations may have occurred through changes in the input-output matrix (A^p).

Taking these three factors in to account, the breakdown of the labor content of exports is given by the following formula:

$$\Delta L = L_{00-01}^{05} - L_{97-98}^{97} = b_L^{05} F^{05} e_{00-01} - b_L^{97} F^{97} e_{97-98} = \Delta b_L F^{97} e_{97-98} + b_L^{97} F^{97} \Delta e + b_L^{97} \Delta F e_{97-98} + \Delta b_L \Delta F e_{97-98} + \Delta b_L F^{97} \Delta e + b_L^{97} \Delta F \Delta e + \Delta b_L \Delta F \Delta e \quad \text{(IV.7)}$$

A breakdown of these three sources of change goes beyond the scope of this paper. If we assume that there are no relevant changes in inter-industry relations then $F^{1997} = F^{2005} = F$ and we can show that:

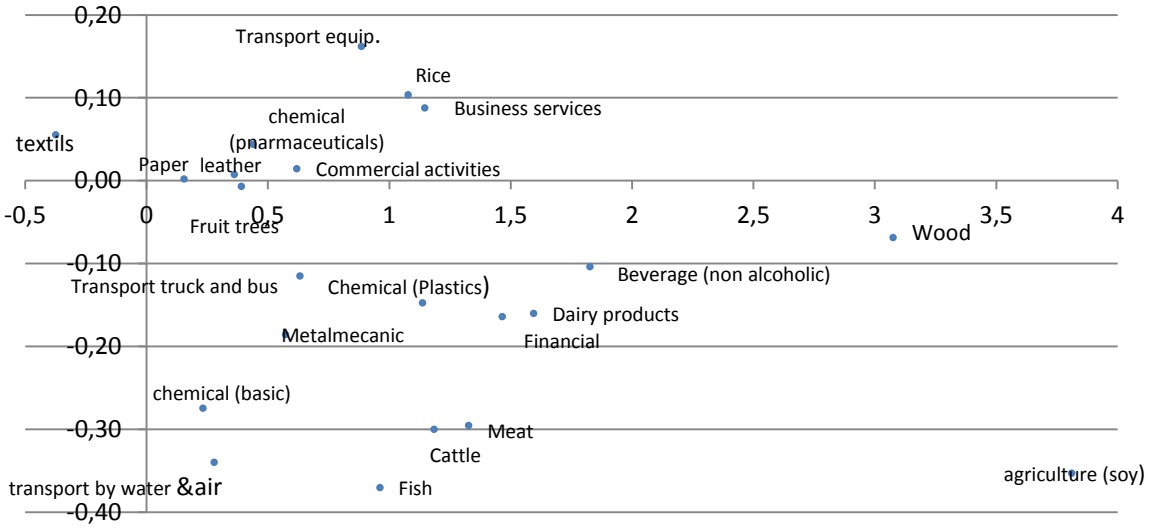
$$\Delta L = L_{00-01}^{05} - L_{97-98}^{97} = b_L^{05} F e_{00-01} - b_L^{97} F e_{97-98} = \Delta b_L F e_{97-98} + b_L^{97} F \Delta e + \Delta b_L F \Delta e \quad \text{(IV.8)}$$

Information on these types of changes is presented in Annex A (see table A.2) for the most relevant export sectors (99% of exports in the 2010-2011 period). Globally we observe an increase in the intensity of use of medium and high-skilled labor which increases by a factor of 2 and 1.21 in the period. This increase in the use of higher skilled labor has been accompanied by a decrease in the labor requirements per unit of gross production value.

Graph IV.4 presents the changes in total labor requirements. We narrowed down the original 54 sectors to twenty two, which explain almost all the variation in exports in the period. All of those sectors, except for textiles saw an increase in exports. A few sectors saw an increase in the labor requirements per unit produced. The sectors with the highest growth in exports were not necessarily the ones who experienced the highest growth in labor requirements per unit of output. This is the situation of agricultural production (led by soy beans production) or wood. Meanwhile export sectors leading the intensified use of labor seem to be the automotive industry (process favored by the regional integration that received significant investments in the last ten years with a view to supplying the expanded market), crops rice and the business services.

Graph IV.4

Change in export (2010-2011/1997-1998) by change in labor requirements, for selected sectors (2005/1997), (log ratios)

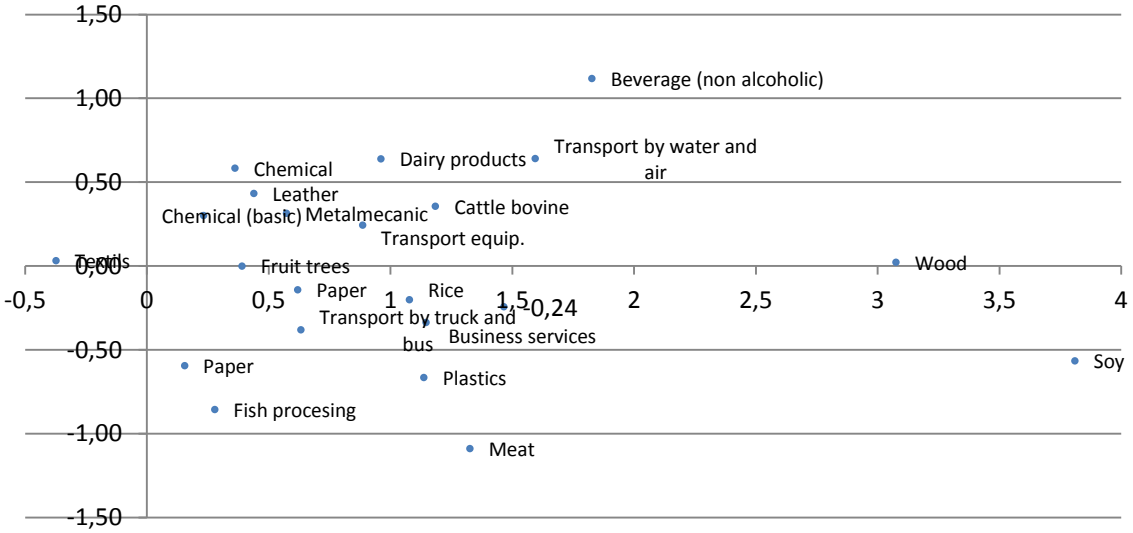


Source: prepared by the authors using table A.2 Annex A.

Figures IV.5 to IV.7 show how job requirements of exports by sectors have changed between 1997 and 2005 when we consider different levels of workforce skill levels. The pattern observed is one of a general increase in the intensity of use of semi-skilled labor (except for the sectors related to livestock, wood and basic chemicals) as well as a multisectoral reduction in the use of unskilled labor (see Graph IV.6 and IV.7 respectively).

Graph IV.5

Change in export (2010-2011/1997-1998) by change in skilled labor requirements, for selected sectors (2005/1997), (log ratios)

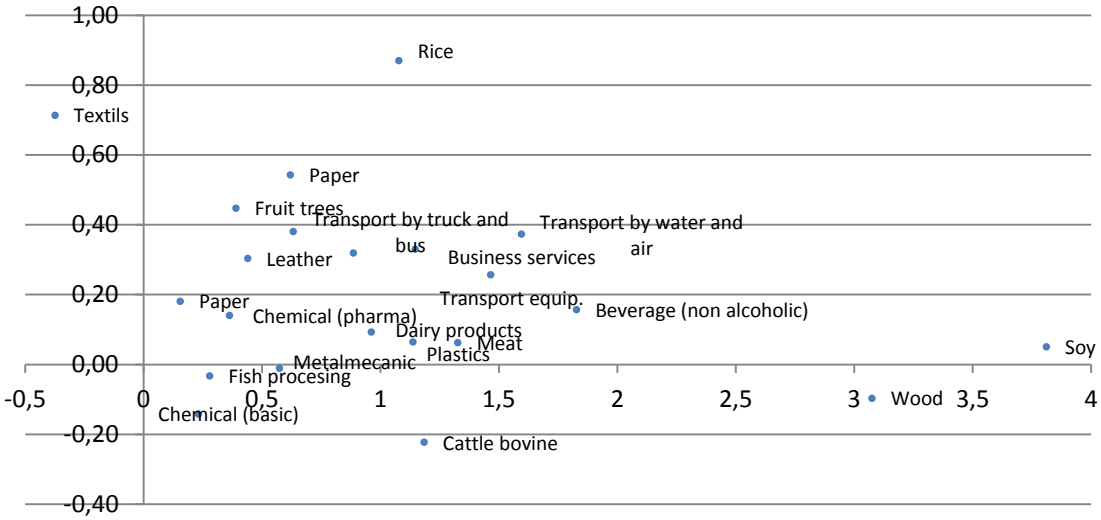


Source: prepared by the authors

On the other hand, the use of skilled labor intensified in non-alcoholic beverages, dairy products, chemicals, livestock production and metalworking, as well as in services of sea and air transport (see Graph IV.5). In contrast, products such as meat, soy beans, plastics, paper and cardboard, among others, saw decreased its use of skilled labor per unit of output.

Graph IV.6

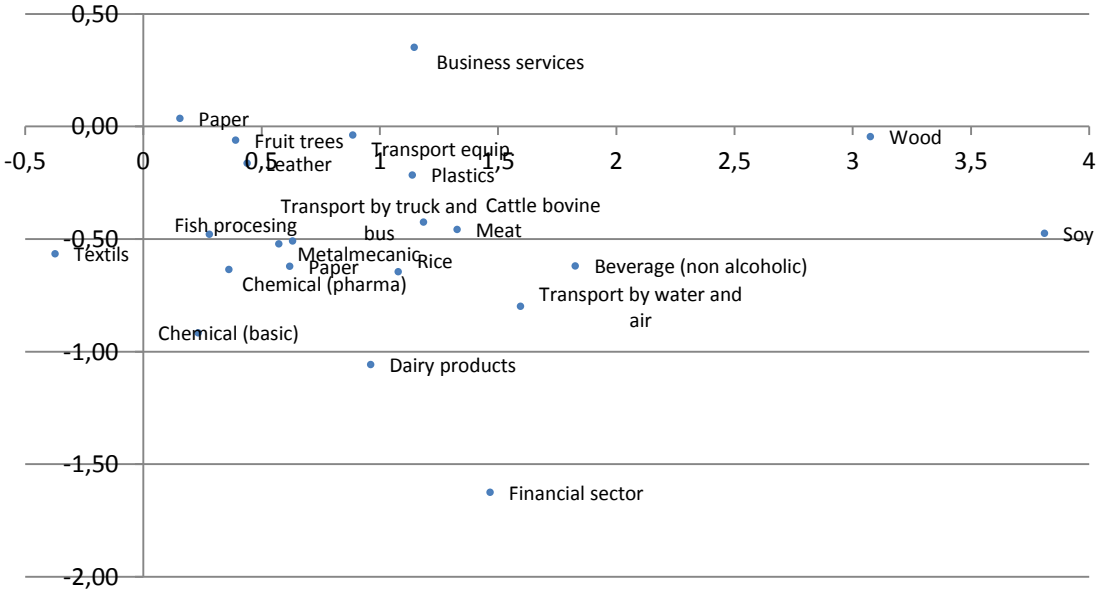
Change in export (2010-2011/1997-1998) by change in medium-skilled labor requirements, for selected sectors (2005/1997), (log ratios)



Source: prepared by the authors

Graph IV.7

Change in export (2010-2011/1997-1998) by change in low-skilled labor requirements, for selected sectors (2005/1997), (log ratios)



Source: prepared by the authors

2.2 Impacts on employment using IO table

The first table (see table IV.1) answers the following question: how large is the direct and indirect employment content of Uruguayan exports? Employment is differentiated according to three skills levels: skilled (15 or more years of education); medium-skilled (between 9 and 14 years); low-skilled (8 or less years of education).

Table IV.1
Employment contents of exports (places of occupation and %)

	1997-1998		2010-2011		2010-2011/1997-1998		Lx/L	
	Lx	L [a)]	Lx	L [b)]	Lx	L	1997-1998	2010-2011
SKILL	26916	257278	62395	391089	2,3	1,52	10,5	16,0
• Direct	13232		30164		2,3			
• Indirect	13685		32231		2,4			
MEDIUM	70936	468400	215236	743513	3,0	1,59	15,1	28,9
• Direct	42143		127518		3,0			
• Indirect	28793		87718		3,0			
LOW	130235	796821	214341	651217	1,6	0,82	16,3	32,9
• Direct	70087		107548		1,5			
• Indirect	60148		106793		1,8			
TOTAL	228087	1522499	491972	1785819	2,2	1,17	15,0	27,5
• Direct	125461		265230		2,1			
• Indirect	102626		226742		2,2			
DIR/TOTAL (%)	55,0		53,9					
SKILL/LOW	0,21	0,32	0,29	0,60	1,4	1,9		
MEDIUM/LOW	0,54	0,59	1,00	1,14	1,8	1,9		

[a)] IOT 1997

[b)] Household Income Survey 2010-2011.

Source: prepared by the authors using WTO trade data and IOM from the BCU.

Labor content of exports more than doubled in the period under study (1997-1998 and 2010-2011). This expansion occurred in the context of a 17% increase in total employment. Whereas towards the end of the 1990s only 15% of employment was associated to external demand today that figure is close to 30%. This change has consequences in terms of the productiveness and competitiveness that a larger part of the economy is subject to. At the same time it introduces new challenges – access to markets becomes crucial in order to maintain the levels of external demand that the economy increasingly depends on.

This increase in the labor content of exports occurred across all skill levels but was more pronounced for medium-skilled and skilled labor. This transformation occurred in the context of an increase in the share of skilled labor in total employment. In the period

under study skilled labor and medium-skilled labor increased 52% and 59% while total employment only increased 17% and unskilled labor decreased by 18%. The intensity of use of skilled labor with respect to medium-skilled or unskilled labor increased in export activities (see table IV.1). In the economy as a whole there were no changes of equal magnitude. This trend is especially clear for medium-skilled labor: whereas towards the end of the 90s only 15% of medium-skilled workers had jobs which depended on the export sector at the start of this decade this figure is 30%. In the case of skills workers was 10% at the end of the nineties and is more than 16% in 2010-2011.

The structure of direct and indirect employment has not changed in the period under study. Just under half of employment generated by exports is direct and this proportion has not undergone any significant changes.

Table IV.2 shows the employment content of exports for the five sectors where exports generated more jobs in 2010-2011. Cattle bovine exports employs more than 100 thousand people, meaning three additional percentage points of share in total employment and more than doubling the figures of 1997-1998. However, 80% of such employment is indirect and 64% is low-skilled (low-skilled labor in cattle bovine exports means more than 10% of economy low-skilled employment), even when skilled labor grew much more in this sector than in global economy (332% against 52%).

On the other hand, exports of commercial activities required more than 76,000 jobs in 2010-2011 (4.3% of total employment), which is more than the double of 1997-1998. Moreover, direct employment outweighs indirect one, though the latter grew at a higher rate during the period.

At the same time, the structure of employment by level of qualifications shows that in 1997-1998 more than half of the workers in this sector were unskilled, while in 2010-2011 two-thirds of them correspond to the stratum of "medium-skilled". Skilled labor, meanwhile, increases by almost 100% in this sector.

In the case of maritime and air transport, employment generated by exports grew 166% to fill more than 40 thousand workers in 2010-2011. It was first characterized by a leadership of direct employment in 1997-1998, which reverts to 2010-2011. It is also a sector with an intensive use of skilled and medium-skilled labor.

Exports of "woods" sector required more than 28,000 jobs in 2010-2011, which means more than 10 times what it was in 1997-1998. Over 90% of the jobs required belongs to direct employment and 50% of unskilled labor.

Finally, it should also highlight the case of soybean exports, where employment requirements have grown similar to the "woods" sector, employing 26 thousand workers in 2010-2011. The employment is basically direct and with a strong participation of unskilled workers.

Table IV.2

Employment contents of exports (places of occupation and %), selected sectors

		1997-1998			2010-2011			2010-2011/1997-1998
		Lx	L[(a)]	Lx/L	Lx	L[(a)]	Lx/L	Lx
Cattle bovine	Total	48.067	1.522.499	3,2%	107.847	1.785.819	6,0%	2,2
	direct	7.107			17.194			2,4
	indirect	40.959			90.653			2,2
	Skill	3.600	257.278	1,4%	15.555	391.089	4,0%	4,3
	Medium	9.438	468.400	2,0%	22.864	743.513	3,1%	2,4
	Low	35.028	796.821	4,4%	69.428	651.217	10,7%	2,0
Commercial activities	Total	34.387	1.522.499	2,3%	76.824	1.785.819	4,3%	2,2
	direct	21.425			40.422			1,9
	indirect	12.962			36.402			2,8
	Skill	3.574	257.278	1,4%	6.830	391.089	1,7%	1,9
	Medium	12.876	468.400	2,7%	48.767	743.513	6,6%	3,8
	Low	17.937	796.821	2,3%	21.227	651.217	3,3%	1,2
Transport by water and air	Total	15.693	1.522.499	1,0%	41.789	1.785.819	2,3%	2,7
	direct	6.325			21.936			3,5
	indirect	9.368			19.854			2,1
	Skill	7.086	257.278	2,8%	12.343	391.089	3,2%	1,7
	Medium	5.220	468.400	1,1%	17.702	743.513	2,4%	3,4
	Low	3.386	796.821	0,4%	11.744	651.217	1,8%	3,5
Wood	Total	2.186	1.522.499	0,1%	28.343	1.785.819	1,6%	13,0
	direct	1.282			26.766			20,9
	indirect	903			1.578			1,7
	Skill	51	257.278	0,0%	730	391.089	0,2%	14,2
	Medium	1.067	468.400	0,2%	13.450	743.513	1,8%	12,6
	Low	1.067	796.821	0,1%	14.163	651.217	2,2%	13,3
Agriculture (soybeans)	Total	2.257	1.522.499	0,1%	25.973	1.785.819	1,5%	11,5
	direct	772			22.477			29,1
	indirect	1.485			3.496			2,4
	Skill	169	257.278	0,1%	1.573	391.089	0,4%	9,3
	Medium	443	468.400	0,1%	7.634	743.513	1,0%	17,2
	Low	1.644	796.821	0,2%	16.766	651.217	2,6%	10,2

[(a)] Total Employment in the economy (not in the sector)

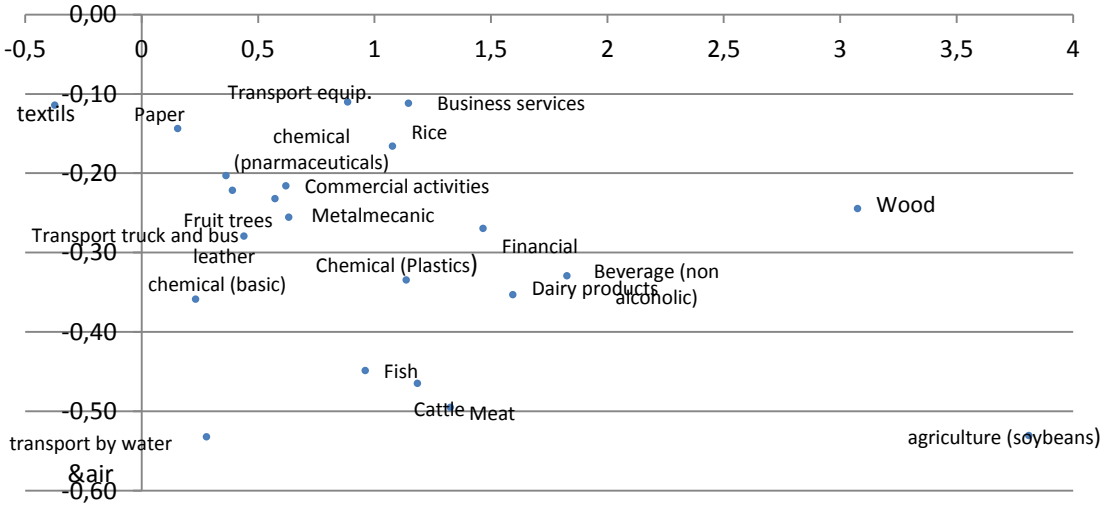
Source: prepared by the authors using WTO trade data and IOM from the BCU.

2.3 Remunerations and salaries

Graph IV.8 shows the changes in total wages requirements for the selected twenty two sectors. As already seen (see Graph IV.4) all of those sectors, except for textiles saw an increase in exports and few sectors saw an increase in labor requirements per unit produced. Moreover, none of them, according to figure IV.8, seem to have experienced growth in wages requirements per unit of output. However, this result is strongly conditioned by the available information. Salary requirements were estimated from input-output matrix form 1997 and 2005 and then incorporated into exports from 1997-1998 and 2010-2011 respectively. Considering the evolution of real GDP and the devaluation rate of the period, the result is affected by currency revaluation process that is not incorporated (2005-2011), as well as a strong growth of the economy occurred in the last years. That said, Graph IV.8 may be useful in assessing the relative positioning of exporting sectors in terms of their wage requirements per unit of product: while transportation equipment services and business services are the ones that experienced a larger increase (less decrease) in their wage requirements, agricultural production (soybeans, meat, fish, cattle breeding) behaves in the opposite direction.

Graph IV.8

Change in export (2010-2011/1997-1998) by change in remunerations requirements, for selected sectors (2005/1997), (log ratios)



Source: prepared by the authors

Table IV.3 shows wage content of exports for the five sectors where exports generated more wage requirements, discriminating by skill of labor. Period 2010-2011, as already explained, should be observed with caution and can only report information concerning the structure and not the absolute values. In particular, we observe, as expected, that

average wage of skilled workers is higher than average wage of any other worker. This result is also reproduced within selected sectors.

Financial sector is the one that leads the ranking of sectors in which exports generate higher wage amount. It is also the sector where the average salary is well above the global average of economics, at any level of qualification. At the same time, it is a sector in which worker skills seems to be an important issue (in 2010-2011 unskilled labor was only 6% of total workforce generated by exports of this sector).

The other selected sectors have a more traditional structure, with a large mass of unskilled workers appropriating of a lower wage amount, and earning a lower average salary than the average salary of the corresponding sector.

Table IV.3

Wage contents of exports, global and selected sectors

		1997-1998			2010-2011		
		Rx [a]	Lx [b]	Rx/Lx	Rx [a]	Lx [b]	Rx/Lx
Economy	Total	1.220.209	228.087	5,3	2.187.440	491.972	4,4
	Skill	265.549	26.916	9,9	375.549	62.395	6,0
	Medium	423.484	70.936	6,0	1.069.899	215.236	5,0
	Low	531.176	130.235	4,1	741.992	214.341	3,5
Financial sector	Total	150.386	5.791	26,0	295.751	12.657	23,4
	Skill	65.080	2.064	31,5	105.570	4.166	25,3
	Medium	54.190	2.339	23,2	176.209	7.786	22,6
	Low	31.116	1.388	22,4	13.973	705	19,8
Commercial activities	Total	128.718	34.387	3,7	228.439	76.824	3,0
	Skill	21.528	3.574	6,0	23.055	6.830	3,4
	Medium	49.365	12.876	3,8	145.536	48.767	3,0
	Low	57.824	17.937	3,2	59.848	21.227	2,8
Cattle bovine	Total	108.592	48.067	2,3	206.612	107.847	1,9
	Skill	19.051	3.600	5,3	29.693	15.555	1,9
	Medium	28.322	9.438	3,0	47.013	22.864	2,1
	Low	61.219	35.028	1,7	129.906	69.428	1,9
Transport by water and air	Total	111.960	14.657	7,6	181.491	25.697	7,1
	Skill	9.579	906	10,6	35.106	4.356	8,1
	Medium	38.271	4.847	7,9	94.057	13.489	7,0
	Low	64.110	8.905	7,2	52.328	7.853	6,7
Transport by truck and bus	Total	78.115	10.229	7,6	134.151	20.221	6,6
	Skill	6.684	632	10,6	7.107	957	7,4
	Medium	26.702	3.382	7,9	72.554	10.973	6,6
	Low	44.730	6.215	7,2	54.490	8.290	6,6

[a] Masa salarial generada por las exportaciones en miles de dólares

[b] Puestos de trabajo (directos e indirectos) generados por las exportaciones

Source: prepared by the authors

V. CONCLUSIONS

In the last 23 years Uruguay underwent a gradual but permanent process of commercial liberalization. This process was a mix of unilateral liberalization strategies as well as reciprocal commercial agreements. The unilateral policies played an important role and promoted exports based on horizontal and sectoral instruments. They compensated for the anti-export bias implicit in the gradual commercial liberalization that occurred and for the fact that many sectors remain protected even today. However, these strategies did not imply important fiscal expenditure. There were also advances in complementary areas. In particular, Uruguay stands out in its domestic legislation regarding foreign direct investment and the different multilateral and bilateral agreements it has subscribed to regarding this. Amongst other factors, this legislation helps explain why there was a boom in foreign direct investment in the last decade despite the fact that Uruguay does not represent an attractive market in terms of market size. Almost all of this investment was directly or indirectly linked to the export insertion that occurred.

In recent years there has been a new unilateral push towards commercial opening through an ambitious program that facilitates trade as well as efforts to crystalize bilateral agreements with the US and Brazil and in the Doha Rounds.

At the multilateral levels the Uruguay Round Agreements of the 1994 GATT helped modernize and perfect domestic policies related to trade defense as well harmonize domestic commercial policies with other regulations. They were not, however, particularly important in terms of improving access to markets.

When it comes to preferential commercial agreements with third parties the creation of MERCOSUR in 1991 stands out as the most important event. In the 90s, it had the effect of increasing competition for imported goods in the region and in this sense complemented the effect that was being sought out through unilateral opening. For a small market like Uruguay's to be in a free trade zone with its much larger neighbours implies an intense commercial opening. This opening was associated with a contractive adjustment in many manufacturing sectors that had previously been protected. The problem they faced was that the opportunities for expansion in those sectors that exported did not develop quickly enough. There was a problem due to the supply of complimentary goods by neighboring countries but even in cases where Uruguay's comparative advantage coincided with a comparative disadvantage on the part of its

neighbors the imperfections of the integration process and the uncountable non-tariff barriers did not allow Uruguayan exports to reach their potential.

The second problem with the MERCOSUR is that it manages the subscription to preferential trade agreements with third parties. Based on the idea of the creation of a Customs Union it was decided that all agreements would be negotiated together. There have been advances regarding the Customs Union but all other attempts to construct a common commercial policy have failed. Uruguay is tied to a policy of preferential trade agreements that are in line with the protectionist stance of its neighbors (Argentina and Brazil). There have been repeated efforts to negotiate new agreements but few have been subscribed to and none are particularly relevant.

The Access to international markets is an important problem for Uruguay in the near future and will become increasingly so in the coming years. As the process of preferential trade liberalization continues Uruguay will be faced with the fact that it must pay the Most Favored Nation (MFN) duty in those markets where it exports and where its main competitors pay no tariff at all.

Uruguay's commercial specialziation has very marked characteristics. In the period under study (1990-2012) these characteristics became even more accentuated. The sectors that have a revealed comparative advantage in exports are those which make extensive use of natural resources (especially food and agriculture) and the three important commercial service sectors (travel and tourism, international transport and other commercial services). Uruguay is a specialized importer of manufactured goods, fuels and minerals. In terms of both goods and services there was an increase in diversification in the period under study. The food and agriculture basket became more diverse in agriculture. The same is true for raw materials derived from agriculture and livestock, especially wood. Services also expanded. It started from the more conventional (tourism and transport) but now Uruguay is developing an important export specialization in global services. Despite the fact that these services are under registered in the balance of payments the importance of this phenomenon in Uruguay is already clear.

When it comes to the impact of these changes on the labor market, a very important result is that an increasing proportion of labor depends directly or indirectly on external demand. The labor content of exports more than doubled in the period under study (1997-1998 and 2010-2011). This expansion occurred in the context of a 17% increase

in total employment. Whereas towards the end of the 1990s only 15% of employment was associated to external demand today that figure is close to 30%. This change has consequences in terms of the productiveness and competitiveness that a larger part of the economy is subject to. At the same time it introduces new challenges – access to markets becomes crucial in order to maintain the levels of external demand that the economy increasingly depends on.

In addition to this there has been an increase in the levels of qualification required per unit of gross production value, which when combined with the growth in exports has led to a greater proportion labor depending on demand from exports. This effect is particularly important for low-skilled (33%) and medium-skilled labor (29%).

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ANNEX A

Table A.1

Sector	Detailed Structure
2	Growing of other cereals, and other crops; market gardening; horticulture, agricultural services pertaining to these crops
4	Growing of fruit, nuts, beverage and spice crops
5	Production of butter, cheese, other dairy products as secondary activity does not change the classification of the unit. farming of domestic animals, such as beef cattle, sheep, goats, horses, asses, mules or hinnies. Stud farming and the provision of feed lot services for such animals.
9	Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction excluding surveying
10	Production, processing and preserving of meat and meat products
11	Processing and preserving of fish and fish products
13	Manufacture of vegetable and animal oils and fats
14	Manufacture of dairy products
15	Manufacture of rice, and products derived from rice. Manufacture of grain mill products from grains other than rice.
16	Manufacture of animal feed, corn oil and starches
18	Manufacture of cocoa, chocolate and sugar confectionery
20	Manufacture of malt liquors and malt
22	Manufacture of tobacco products
23	Preparation and spinning of textile fibers; weaving of textiles, finishing of textiles
24	Textiles, manufacture of knitted and crocheted fabrics and articles
25	Manufacture of wearing apparel; dressing and dyeing of fur
26	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery and harness
28	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
29	Manufacture of paper, cardboard and paper products
30	Publishing, printing and reproduction of recorded media
31	Manufacture of coke, refined petroleum products and nuclear fuel
32	Manufacture of pesticides and other agro-chemical products
33	Manufacture of pharmaceuticals, medicinal chemicals and botanical products
34	Manufacture of other chemical products, excluding agro-chemical products, pharmaceuticals, cleaning products, paints and varnishes,
35	Manufacture of rubber and plastics products
36	Manufacture of glass and glass products, ceramics and acrylic
37	Metalmecanic. Products cast iron and steel, aluminum and other nonferrous metals, medical, precision and optical instruments, watches and spare parts, office machinery, accounting and computing, and spare parts, electrical machinery and equipment for radio, television and communication equipment and repairs, parts and pieces
38	Transport equipment. Motor vehicles, trailers, semitrailers and containers, parts and pieces made for them; ships, railway rolling stock, aircraft repairs, bicycles and mopeds, other transport equipment.
39	Manufacture of furniture; industries n.c.p.
40	Electricity, gas and water supply
42	Commercial activities
43	Hotels; camping sites and other provision of short-stay accommodation, restaurants bars and canteens
44	Land transport of passengers and freight; transport via pipelines
45	Air transport, water transport, Supporting and auxiliary transport activities; activities of travel agencies
46	Post and telecommunications
47	Financial intermediation
48	Real estate activities
49	Renting of machinery and equipment without operator and of personal and household goods
50	Public administration (excluding health and education) and defense, compulsory social security

Source: IOM-BCU and United Nations ISIC Rev3

Table A.2 **Exports and labor coefficient, sectors ratio intensities** (: US and ratio)

	Exports			IOT bL [a]		IOT 1997 [b]		IOT 2005		2005/1997		
Sector	1997-1998	2010-2011	Ratio	1997	2005	S/L	M/L	S/L	M/L	bl	S/L	M/L
2	25	1111	45,2	26	18	0,10	0,27	0,09	0,46	0,70	0,9	1,7
4	70	103	1,5	70	69	0,10	0,27	0,00	0,45	0,99	0,0	1,7
5	72	236	3,3	98	72	0,10	0,27	0,22	0,33	0,74	2,2	1,2
9	7	15	2,1	23	21	0,20	0,45	0,09	0,26	0,93	0,5	0,6
10	408	1538	3,8	11	8	0,11	0,48	0,06	0,81	0,74	0,5	1,7
11	160	211	1,3	31	22	0,11	0,48	0,07	0,75	0,71	0,7	1,6
13	2	58	29,4	7	6	0,11	0,48	0,00	0,25	0,87	0,0	0,5
14	123	607	4,9	14	12	0,11	0,48	0,46	1,56	0,85	4,2	3,2
15	152	447	2,9	8	9	0,11	0,48	0,17	2,19	1,11	1,6	4,5
16	2	14	8,1	11	9	0,11	0,48	0,22	1,20	0,83	2,0	2,5
18	13	44	3,3	14	6	0,11	0,48	0,06	1,13	0,42	0,6	2,3
20	29	182	6,2	8	7	0,11	0,48	0,61	1,05	0,90	5,7	2,2
22	29	36	1,2	4	6	0,11	0,48	4,03	3,69	1,28	37,2	7,7
23	341	235	0,7	12	13	0,08	0,50	0,15	1,79	1,06	1,8	3,6
24	31	46	1,5	49	67	0,08	0,50	0,21	1,43	1,36	2,5	2,9
25	209	56	0,3	55	60	0,08	0,50	0,19	1,66	1,10	2,3	3,3
26	139	215	1,6	11	11	0,08	0,50	0,15	0,79	1,05	1,8	1,6
28	23	497	21,7	54	51	0,05	1,00	0,05	0,95	0,93	1,1	0,9
29	86	100	1,2	15	15	0,52	1,02	0,28	1,18	1,00	0,5	1,2
30	14	14	1,0	31	32	0,52	1,02	0,77	2,48	1,03	1,5	2,4
31	5	92	17,3	5	2	0,43	1,01	3,28	13,32	0,38	7,7	13,2
32	31	94	3,0	7	5	0,43	1,01	1,44	2,18	0,79	3,4	2,2
33	83	120	1,4	18	18	0,43	1,01	1,44	2,18	1,01	3,4	2,2
34	166	209	1,3	16	12	0,43	1,01	1,44	2,18	0,76	3,4	2,2
35	111	346	3,1	24	21	0,43	1,01	0,27	1,33	0,86	0,6	1,3
36	42	34	0,8	38	33	0,19	0,53	0,07	0,27	0,87	0,4	0,5
37	144	256	1,8	32	27	0,15	0,99	0,34	1,64	0,83	2,3	1,7
38	103	251	2,4	19	23	0,15	0,99	0,20	1,41	1,18	1,3	1,4
39	23	79	3,4	89	91	0,05	0,88	0,18	1,73	1,03	3,7	2,0
40	7	38	5,2	11	7	0,43	0,90	0,75	1,51	0,63	1,7	1,7
42	339	630	1,9	60	61	0,20	0,72	0,32	2,30	1,01	1,6	3,2
43	8	16	2,0	50	48	0,11	0,53	0,20	1,87	0,96	1,9	3,5
44	181	341	1,9	37	33	0,10	0,54	0,12	1,32	0,89	1,1	2,4
45	455	1189	2,6	26	18	0,10	0,54	0,55	1,72	0,69	5,5	3,2
46	87	68	0,8	17	17	0,42	0,89	1,78	4,51	1,02	4,2	5,1
47	134	578	4,3	14	12	1,49	1,68	5,91	11,04	0,85	4,0	6,6
48	1	12	9,4	2	2	2,09	1,54	5,78	12,81	1,31	2,8	8,3
49	93	293	3,1	62	67	2,09	1,54	1,05	1,51	1,09	0,5	1,0
50	5	11	2,2	68	73	0,44	0,69	0,78	1,67	1,08	1,8	2,4
Total	4051	10464	2,6	43	43	0,35	0,67	0,92	2,04	1,01	2,7	3,1

[a] Numbers of workers by 1 million of gross production.

[b] S/L-Skill workers per unit of Low Skill workers; M/L-Medium Skill workers per unit of Low Skill workers.

Source: prepared by the authors using IOM BCU 1997 and 2005.