



The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

Documentos CEDE

ISSN 1657-7191 Edición electrónica

Tobacco Cultivation in Latin America

Jorge Tovar

12

MARZO DE 2014

Serie Documentos CEDE, 2014-12

ISSN 1657-7191 Edición electrónica

Título original: El Cultivo del Tabaco en América Latina

Documento CEDE 2013-36

Marzo de 2014

© 2012, Universidad de los Andes–Facultad de Economía–CEDE

Calle 19A No. 1 – 37 Este, Bloque W.

Bogotá, D. C., Colombia

Teléfonos: 3394949- 3394999, extensiones 2400, 2049, 3233

infocede@uniandes.edu.co

<http://economia.uniandes.edu.co>

Ediciones Uniandes

Carrera 1ª Este No. 19 – 27, edificio Aulas 6, A. A. 4976

Bogotá, D. C., Colombia

Teléfonos: 3394949- 3394999, extensión 2133, Fax: extensión 2158

infeduni@uniandes.edu.co

Edición y prensa digital:

Cadena S.A. • Bogotá

Calle 17 A N° 68 - 92

Tel: 57(4) 405 02 00 Ext. 307

Bogotá, D. C., Colombia

www.cadena.com.co

Impreso en Colombia – *Printed in Colombia*

El contenido de la presente publicación se encuentra protegido por las normas internacionales y nacionales vigentes sobre propiedad intelectual, por tanto su utilización, reproducción, comunicación pública, transformación, distribución, alquiler, préstamo público e importación, total o parcial, en todo o en parte, en formato impreso, digital o en cualquier formato conocido o por conocer, se encuentran prohibidos, y sólo serán lícitos en la medida en que se cuente con la autorización previa y expresa por escrito del autor o titular. Las limitaciones y excepciones al Derecho de Autor, sólo serán aplicables en la medida en que se den dentro de los denominados Usos Honrados (Fair use), estén previa y expresamente establecidas, no causen un grave e injustificado perjuicio a los intereses legítimos del autor o titular, y no atenten contra la normal explotación de la obra.

Tobacco Cultivation in Latin America[†]

Jorge Tovar*

Summary

This paper evaluates the importance of tobacco cultivation in Latin America. To this end the main variables of the sector will be analyzed, such as the quantity and value of production, the number of cultivated hectares and crop yields. The value of the sector as export strength is also studied. In addition, a comparison of direct employment generated by tobacco cultivation in tobacco countries of Latin America is created based on different sources. The results show that the production of Latin-American countries as a whole has been increasing in recent years, making the share of production of this continent close to 16% of world production. Argentina and Brazil stand out for their production to be placed among the ten largest producers in the world. The extension of cultivated area in the region reaches 13.55% of the area dedicated to tobacco in the world. The increase in production has driven a growth in the productivity of the product with a growing trend for the past several lustrums. This positive trend has been accompanied by an increase in prices paid to the grower, particularly since 2007. It is then a sector with a significant impact on the region. Tobacco cultivation has the capacity of generating 650,000 direct jobs and exporting U.S. \$ 3,788 million annually. Considering the analysis only involves direct employment, these figures are very significant.

Keywords: Tobacco Cultivation, Direct Employment in Tobacco

JEL: Q10, Q18, O54

[†] Projec financed by Phillip Morris International. We thank the collaboration in different stages of the collection of data to Nathaly Stephania Andreade (Ecuador), Gualberto Benitez (Paraguay), Victor Hugo Bucheli Leon (Argentina), Juan Francisco Caraballo (Dominican Rep.), Manuel Cota (Mexico), Enrique Diaz (Mexico), Antonia Duran (Dominican Rep.), Juan Carlos Gilbert Ulloa (Ecuador), Julia Musco (Argentina), Alexandra Navarrete (Mexico), Agr. Eng. Edgardo Nuñez (Paraguay), Matias OFarrell (USA), Mabel Orellana (Argentina) Lorena Prieto (Colombia), Gustavo Serrano Casillas (Mexico), Lic. Yolanda Suarez Amezquita (Dominican Rep.), Valerio Tineo (Dominican Rep.), Mercedes Vazquez and Edmundo Zamudio (Mexico)

Document originally written in Spanish. Traslation by Phillip Morris International

*Associate Professor, School of Economics – Universidad de los Andes – Bogota.
<http://economia.uniandes.edu.co/tovar>

El Cultivo del Tabaco en América Latina[†]

Jorge Tovar*

Resumen

Este trabajo evalúa la importancia que tiene el cultivo del tabaco en América Latina. Con este fin se analizan las principales variables del sector como son la cantidad y el valor de la producción, el número de hectáreas cultivadas y el rendimiento de los cultivos. También se estudia el valor del sector como fuerza exportadora. Se construye además, a partir de diferentes fuentes, un comparativo del empleo directo que genera el cultivo del tabaco en los países tabacaleros de América Latina. Los resultados muestran que la producción de los países latinoamericanos en conjunto ha venido aumentando en los últimos años, haciendo que la participación de la producción de este continente sea cercana al 16% de la producción mundial. Argentina y Brasil destacan por su producción al situarse entre los diez mayores productores del mundo. La extensión de área cultivada en la región alcanza el 13,55% del área dedicada de tabaco en el mundo. El incremento en la producción ha impulsado un crecimiento en la productividad del mismo con una tendencia creciente desde hace ya varios lustros. Este comportamiento positivo se ha visto acompañado de un aumento en los precios al productor, particularmente desde 2007. Es pues un sector con impacto significativo en la región. El cultivo de tabaco tiene la capacidad de generar 650.000 empleos directos y exportar US\$ 3.788 millones de dólares anuales. Considerando que sólo se involucra empleos directos en el análisis estas cifras son muy significativas.

Palabras clave: Cultivo de tabaco, Empleo directo en tabaco

JEL: Q10, Q18, O54

[†] Se agradece la excelente asistencia de Germán Romero en la realización de este trabajo. Proyecto financiado por Phillip Morris International. Agradecemos la colaboración en diferentes instancias de la consecución de datos a Nathaly Stephania Andreade (Ecuador), Gualberto Benítez (Paraguay), Víctor Hugo Bucheli León (Argentina), Juan Francisco Caraballo (Rep. Dominicana), Manuel Cota (México), Enrique Díaz (México), Antonia Duran (Rep. Dominicana), Juan Carlos Gilbert Ulloa (Ecuador), Julia Musco (Argentina), Alexandra Navarrete (México), Ing. Agr. Edgardo Nuñez (Paraguay), Matias O'Farrell (América Latina), Mabel Orellana (Argentina) Lorena Prieto (Colombia), Gustavo Serrano Casillas (México), Lic. Yolanda Suárez Amézquita (Rep. Dominicana), Valerio Tineo (Rep. Dominicana), Mercedes Vázquez y Edmundo Zamudio (México).

* Profesor Asociado, Facultad de Economía – Universidad de Los Andes – Bogotá.
jtovar@uniandes.edu.co. <http://economia.uniandes.edu.co/tovar>.

Content

Introduction	5
Context of Tobacco	6
International Context of Tobacco.....	6
Latin America.....	10
Cultivated Area.....	11
Production.....	14
Prices	16
Performances.....	18
External Sector	20
Employment.....	24
Brazil	25
Colombia.....	26
Dominican Republic.....	27
Honduras	28
Argentina, Ecuador, Guatemala, Mexico, Nicaragua and Paraguay	28
Final Discussion	31
Bibliography.....	33
Annex I Information and data sources.....	35
Annex II	38

Index of charts and graphs

Graph 1 Global production of tobacco (Tn.).....	7
Graph 2 Main tobacco producers.....	8
Graph 3 Participation of Tobacco Production in Latin America with respect to the Total Produce in the World (Tn.)	9
Graph 4 Value of tobacco production in the world and Latin America	10
Graph 5 Participation of agricultural production on the national GDP	11
Graph 6 Thousands of Hectares Cultivated of tobacco.....	14
Graph 7 Tobacco production in time (Tons)	16
Graph 8 Behavior of the Index Prices	17
Graph 9 Producer price index for reference countries/ ¹	17
Graph 10 Evolution of the main agricultural products in Latin America.....	18
Graph 11 Price per ton of tobacco (dollars of 2011).....	19
Graph 12 Tobacco Trade Balance in Latin America.....	21
Graph 13 Tobacco exports value	22
Graph 14 Export concerning quantity produced (T.) of tobacco	24
Graph 15 Number of employment generated by tobacco cultivation in Latin America/ ¹ ..	30
Graph 16 Employment Intensity in Tobacco Cultivation/ ¹	31
Chart 1 Characterization of tobacco crop for selected countries (2011)	12
Chart 2 Tobacco Production (Tons)	15
Chart 3 Performance (Kg/Ha) Five-year periods.....	20
Chart 4 Main destinations of the tobacco cultivations exports (2000-2011)	23
Chart 5 Employment in tobacco cultivations in Brazil	25
Chart 6 Direct employment of tobacco cultivation in Colombia	26
Chart 7 Employment of tobacco cultivation in Dominican Republic	27
Chart 8 Employment of tobacco cultivation in Honduras	28
Map 1 Tobacco production on county basis (Tn) - 2011.....	6

Introduction

Tobacco production chain is defined as the set of links comprising the production process that includes from raw materials to the distribution of finished products. The chain in Colombia consists of four main stages. It starts with tobacco leaf cultivation and ends with the distribution and marketing of tobacco derivatives. The stages can be added as follows: (i) primary production, (ii) industrialization, (iii) preparation of final products, and (iv) distribution.

Traditionally primary production (growing, harvesting and curing) is carried out by farmers. Subsequently, cured tobacco passes to the first stage of industrialization (deveining), which will be sold either for export or for the preparation of tobacco products (second stage of industrialization), among which there are snuff¹, extracts and essences, cigars and cigarettes. Finally the goods obtained in the second industrial stage of the chain are distributed and marketed to end consumers. For the above, marketing channels are used such as supermarkets, grocery stores, restaurants, cafeterias and bars, kiosks and liquor stores.

This work focuses on the first stage, the one that includes tobacco cultivation. The segment is particularly important from the social point of view because it is mostly performed by peasant farmers. The general purpose of this paper is to review the relative importance of the tobacco cultivation in Latin America. In order to contextualize the product, a specific tracking of the production levels of the sector is performed.

The living conditions of tobacco workers are correlated with product prices, reason why the price trend is evaluated and there is an effort to collect information of the number of workers employed in the sector. Furthermore, given the global nature of the product, its export orientation is also assessed. The characterization of the sector, its productivity and its evolution is performed for top ten Latin American tobacco producing countries: Argentina, Brazil, Colombia, Ecuador, Guatemala, Honduras, Mexico, Nicaragua, Paraguay and the Dominican Republic².

The paper is organized in five chapters beginning with this introduction. The second chapter contextualizes the tobacco production chain and provides an international context on the production and trade of tobacco cultivation. The core of the paper is the third chapter. This chapter analyzes in detail the cultivated area, production, prices, yield per hectare, the external sector and the employment situation in the tobacco cultivation sector. The fourth corresponds to the final discussion. The last chapter describes sources of information.

¹ Milled and usually flavored tobacco for being nasally consumed.

² Throughout the text, unless specifically noted otherwise, these are the tobacco countries of Latin America.

Tobacco Context

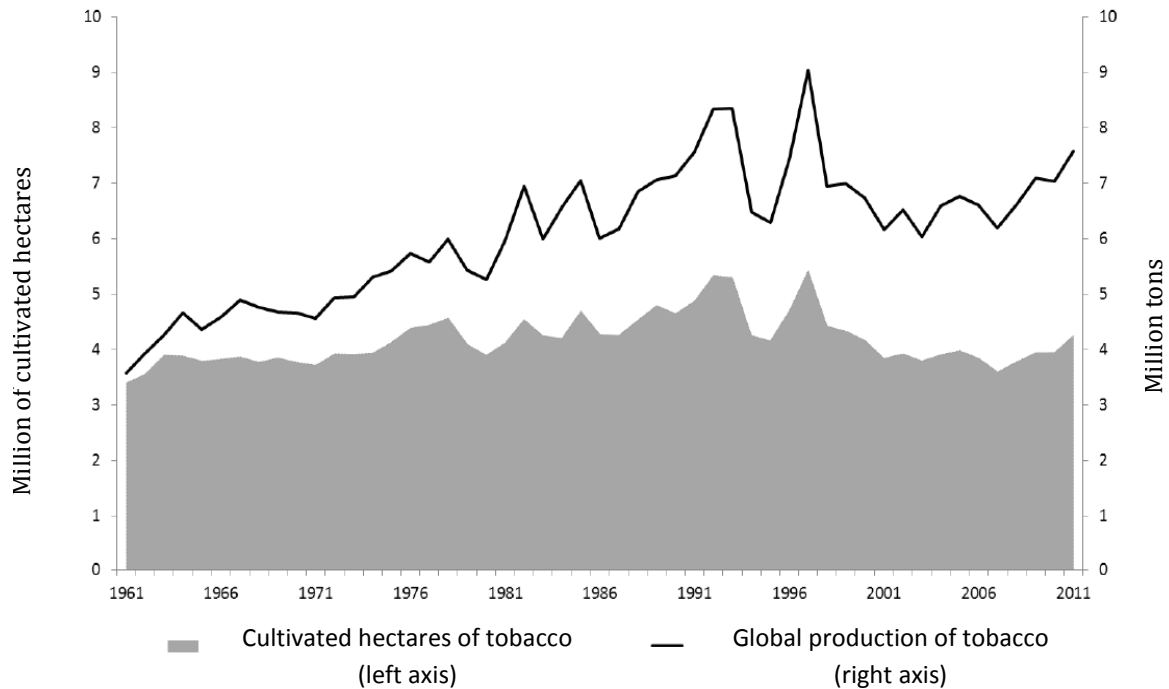
International Context of Tobacco

Tobacco cultivation in the world, according to FAO data, occupies about 3.8 million hectares of agricultural land. This product has the feature of being relatively easy to grow because it has great adaptability to different temperatures allowing it to be present in at least 124 countries (EOI, 2004).

The most intensive country in tobacco cultivation in the world is Malawi, where 4.31% of the cultivation area is dedicated to tobacco (Graph A1). The weighted global average per amount of tobacco is 0.81%. The average in Latin America is 0.58%. This is 72% of the average area used in the world. That is, although it is below the world average in terms of cultivated area, the percentage is less than a standard deviation of the average. In other words, it does not differ significantly from the global average. Of the ten reference countries, the Dominican Republic stands out, where 0.78% of the cultivated area is dedicated to tobacco. The contrast between the ten countries of reference is Mexico where only 0.03% of cultivated area is destined to tobacco.

Graph 1 shows the evolution of global production of tobacco and the cultivated area. World production, measured in tons, grew between 1961 and late 20th century almost constantly. In the 21st century production remained constant until 2007, year from which there is a trend that continues to 2011 when 7.56 million tons were produced. Meanwhile, the cultivated area never grew at strong rhythms and even in the 21st century it has fallen slightly. The growing gap between production and cultivated area suggests an increase in crop yields.

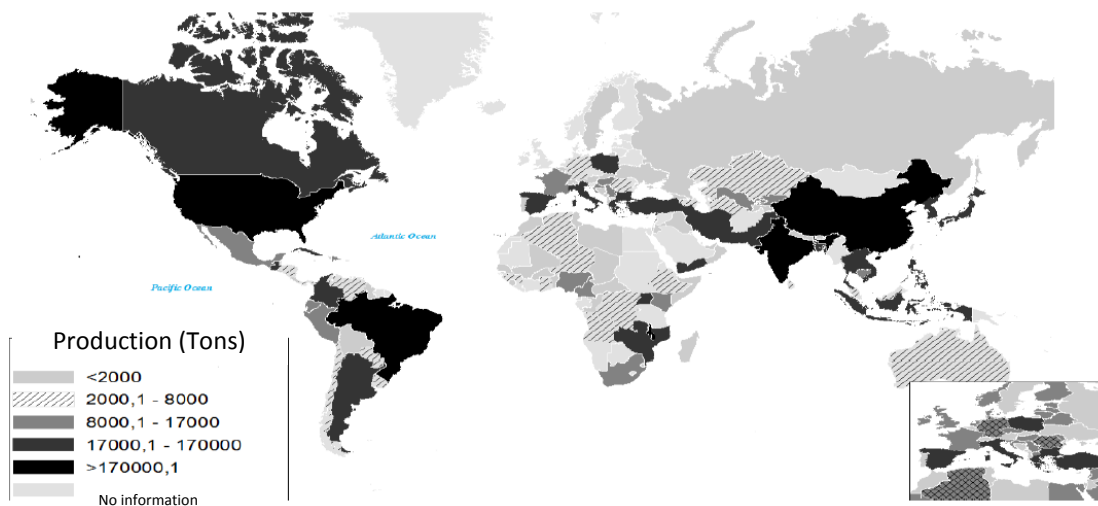
Graph 1 Global production of tobacco (Tn.)
1961-2011



Source: FAO(2012). Author calculations.

Map 1 shows the distribution of tobacco production in the world. Brazil, China and India stand out at global level, and Argentina and Colombia at Latin America level.

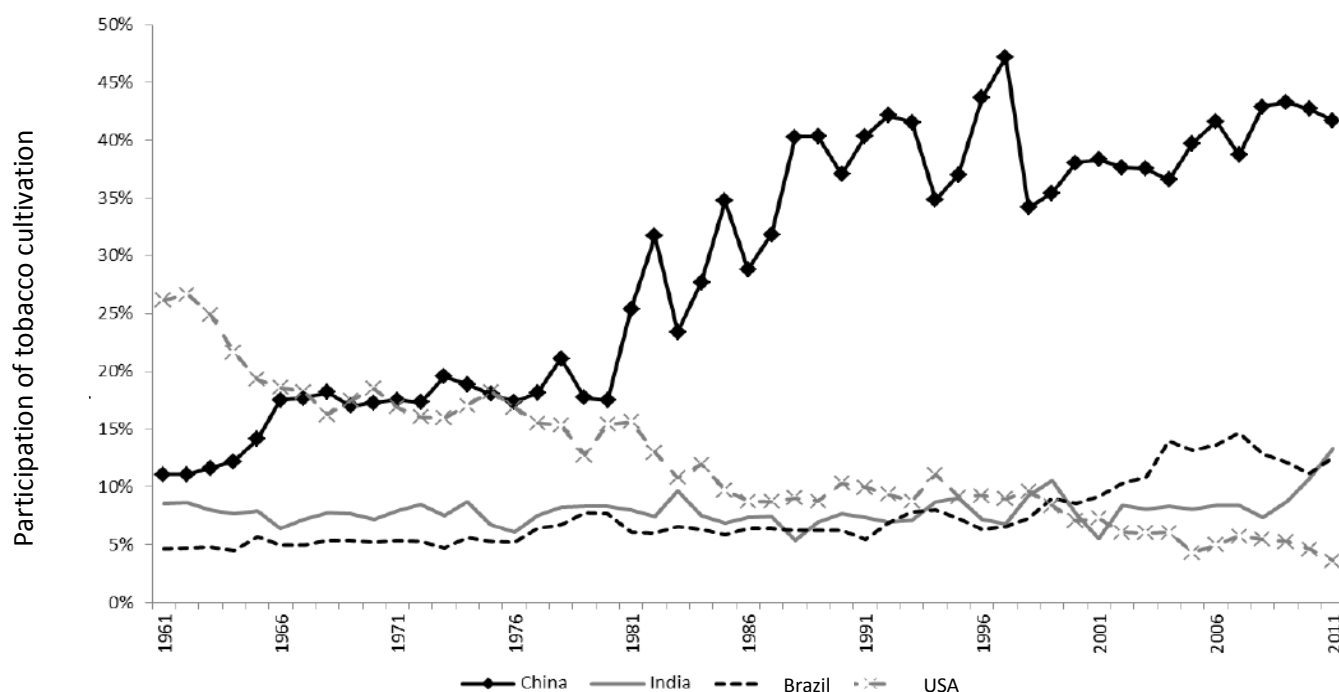
Map 1 Tobacco production per country (Tn.)- 2011



Source: FAO(2012). Author calculations.

The 75.7% of tobacco production worldwide in 2011 was concentrated in 6 countries. The list is led by China with total production of 41.7%. Followed in order by India (13.34%), Brazil (12.57%), United States (3.6%), Malawi (2.3%) and Argentina (2.2%). This implies that China's production exceeds the aggregate production of the following top five producers. The evolution of global production reported in Graph 2 shows that the Chinese domain was founded in the sixties and seventies but was consolidated in the eighties. That decade also coincided with the fall in production of the United States. It also shows the rise in 2010-2011 of tobacco production in India, exceeding the production in Brazil in 2011.

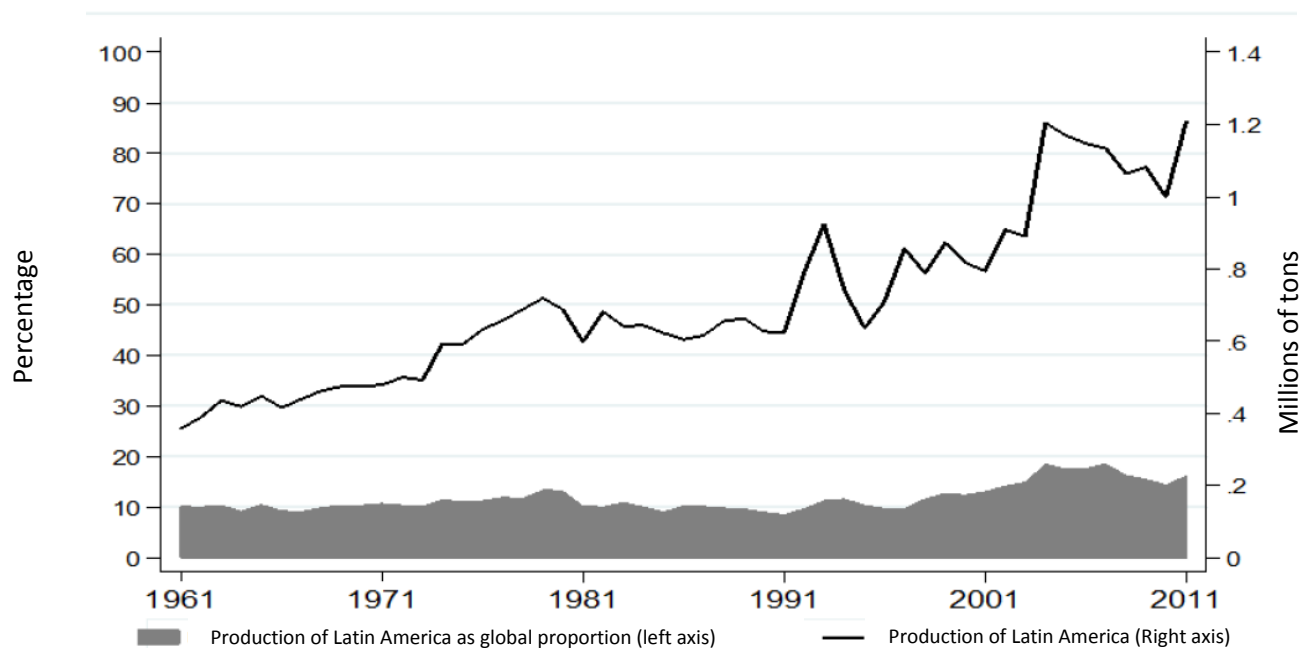
Graph 2 Main tobacco producers
Participation with respect to the total tons produced in the world
(1960-2011)



Source: FAO(2012). Author calculations.

The contribution of the ten countries of reference in terms of tobacco quantity produced in the world, as illustrated in Graph 3 has particularly increased in the last decade. This is mainly due to production growth in Brazil and Argentina as detailed below. Thus, in 2000 the production of the reference countries reached 813 thousand tons representing 12.04% of world production. In 2007 reached its production peak with 1,124,000 tons, i.e. 18.17% of world production. In 2011, the last year with consolidated data, the production of the reference countries amounted to 1,197,964 tons representing 15.83% of world production.

Graph 3 Participation of Tobacco Production in Latin America with respect to the Total Produced in the World (Tn.) (1961-2011)

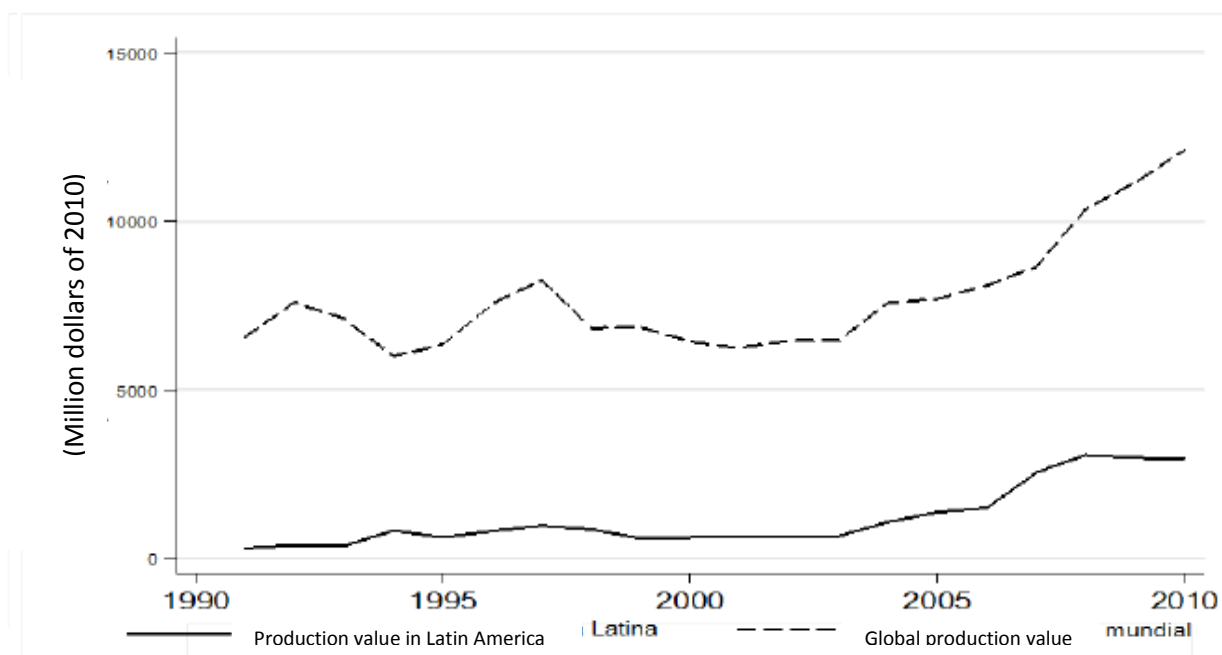


Source: FAO(2012). Author calculations.

Graph 4 presents the real value of production per tobacco sales for Latin America and the World³. Here the increasing relative trend is evident in the value of production in the rest of the world. In the region the income for tobacco production has stabilized in recent years.

³ Here and in other graphs where Latin America is compared with the world, Latin American values are excluded from the calculation of the World. In other words, in this case the value of world production excludes Latin America.

Graph 4 Value of tobacco production in the world and Latin America
(1990-2010)



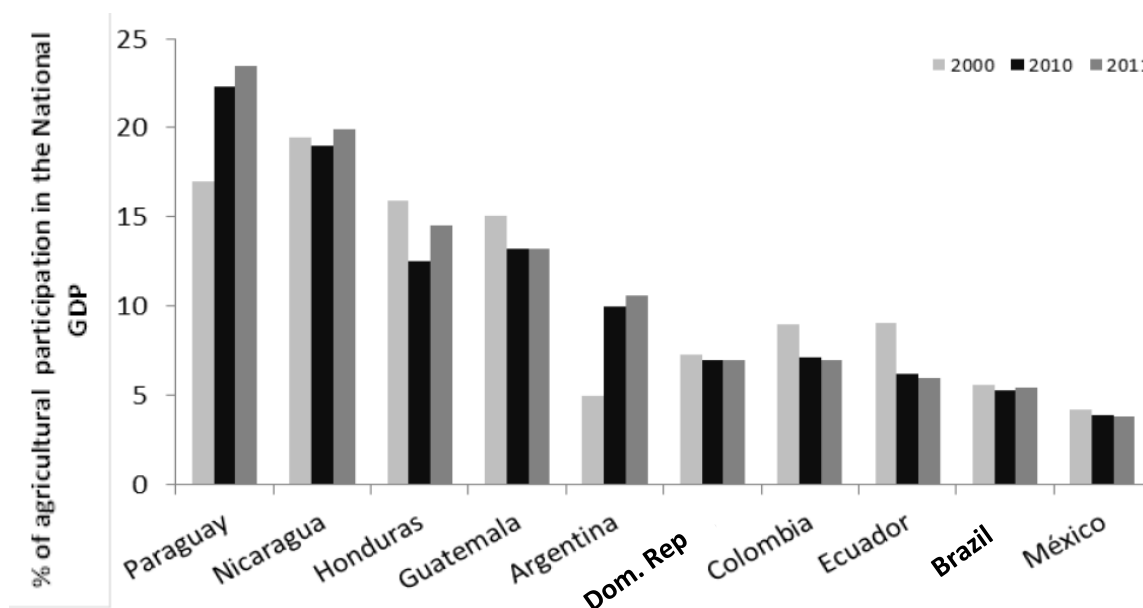
Source: FAO(2012). Author calculations.

Latin America

As mentioned above, the reference countries are Argentina, Brazil, Colombia, Ecuador, Guatemala, Honduras, Mexico, Nicaragua, Paraguay and the Dominican Republic. These are the main producers of tobacco in Latin America. In 2011, for example, the joint production of these countries represented 96.9% of total production in Latin America and 16.0% of the world production.

Despite being regionally comparable, they are countries in different stages of development. This implies that the importance of agriculture in the economy of each country is very unequal. In Paraguay, for example, Graph 5 reveals that agricultural GDP in 2011 represented 23%. At the opposite extreme there is Mexico where the agricultural sector barely reaches 3% of GDP, a figure that has not changed significantly in the last thirteen years.

Graph 5 Participation of agricultural production in the national GDP
(2010-2011 relative to the year 2000)



Source: World Bank (2012) Banco Central de Guatemala (2012). Author calculations.

Tobacco cultivation is also a significant employment generator. As noted by Corrandini *et al* (2005), related to other crops, tobacco is particularly intensive in labor. Thus, while other crops such as cotton require 28 daily wages per hectare in its growth phase, tobacco requires about 130 daily wages per hectare. In Colombia after the flowers and honey and brown sugar cane, tobacco is the product with higher daily wages per hectare (177).

The remainder of this section illustrates the weight of tobacco cultivation in Latin America. The purpose is achieved by analyzing the principal variables, among others: cultivated area, production, external sector, productivity and employment.

Cultivated Area

On average, as seen in Chart 1, the cultivated area of tobacco with respect to the total cultivated agricultural area represents 0.58%. In the world, as already noted, 0.81% of the cultivated agricultural area is destined to tobacco. Tobacco is not a crop that uses large areas of land, neither in Latin America nor the world. On average tobacco is the thirtieth most important crop in terms of land extension in the world. Only in eight countries of the world it is placed among the 10 crops with largest cultivated area.

Table 1 shows that in the Dominican Republic tobacco has a relative importance (ranked in position 21 of crops with the largest extension). It also outlines the case of Brazil since, being the leading producer of tobacco in the region with 951,933 tons; it destines to its cultivation 1.90% of its area, with respect to the crop with the largest area (soybean). Such extension of

cultivated land in Brazil represents about 11% of total cultivated area of tobacco in the world. For its part, Argentina, the ninth world largest producer assigns 0.22% of the cultivable area to tobacco. This represents 0.41% with respect to soybean crops, the most extensive in the country.

In terms of evolution of tobacco cultivation, it is outlined that although the intensity thereof in Dominican Republic remains the largest in the region, between 2001 and 2011 it fell by half compared to what had been cultivated in the nineties. This is paradoxical since the Dominican Republic cigar is desired in world markets. Currently, however, imported inputs are important since the cultivated area has fallen. This is related to the boom lived in the nineties that is mentioned later. Declines in cropping intensity of tobacco are also registered in Mexico and Paraguay. In the case of Mexico an effort has been made to modernize tobacco cultivation changing from small farms to cultivations in larger extensions (Pacheco and Cayeros, 2011).

Brazil reports increases in cultivation area but at much lower levels than those of Ecuador. In Brazil, much of the increase is due to the good time for exports of tobacco crops in the country (DESER, 2012)⁴. Between 2000 and 2011 tobacco cultivated area in proportion to the total cultivated area in Ecuador grew by 124% compared to 1991-1999. Argentina, Colombia and Guatemala do not show significant average variations.

The behavior of the number of cultivated hectares of tobacco in the Latin-American region is clearly driven by Brazil and Argentina, the most important producers. In Brazil, as noted in Graph 6, the cultivated area increased from 274 thousand cultivated hectares in 1990 to 454 thousand hectares in 2011. In the same period the cultivated area also increased in Ecuador, although growth has slowed in the Andean country practically since 2000. In Mexico, Honduras and Paraguay tobacco cultivated area has fallen consistently. The decline in the cultivated area of Mexico starts after a period of high volatility in 1998. From then, until 2011, the cultivated area has dropped to an annual average of 17.8%. The current level is the lowest one recorded since comparative data are available, i.e. since 1990.

Table 1 Characterization of tobacco crop for selected countries (2011)

Country	Cultivated area of tobacco (Ha)	Cultivated area of tobacco		Cultivated area of tobacco with respect to cultivated area of tobacco in the world		Main agricultural product of each country (% of total cultivated area)
		% with respect to the total cultivated area	Relative importance with respect to other crops (extension) ¹	Percentage	Global position	
Argentina	76,395	0.22%	16 of 74	1.79%	10	Soybean (54.72%)
Brazil	454,635	0.66%	16 of 69	10.69%	3	Soybean (35.14%)

⁴ Exports are illustrated in Graph 13

Colombia	13,132	0.35%	27 of 69	0.30%	31	Coffee (20.10%)
Dominican Republic	7,398	0.78%	21 of 49	0.17%	42	Rice (18.60%)
Ecuador	4,052	0.16%	35 of 79	0.09%	59	Corn (22.61%)
Honduras	4,350	0.347%	15 of 50	0.10%	55	Corn (38.45%)
Guatemala	8,707	0.39%	23 of 59	0.20%	40	Corn (38.47%)
Mexico	4,525	0.031%	69 of 108	0.10%	52	Corn (42.80%)
Nicaragua	1,870	0.188%	22 of 28	0.043%	72	Corn (35.80%)
Paraguay	2,300	0.059%	29 of 51	0.07%	64	Soybean (54.75%)
Total	577,364	-	-	13.55%	-	-

Source: FAO(2012). Author calculations.

/1 The number of products is defined as those that are produced in the country of a list of 169 agricultural products identified with HS at six digits.

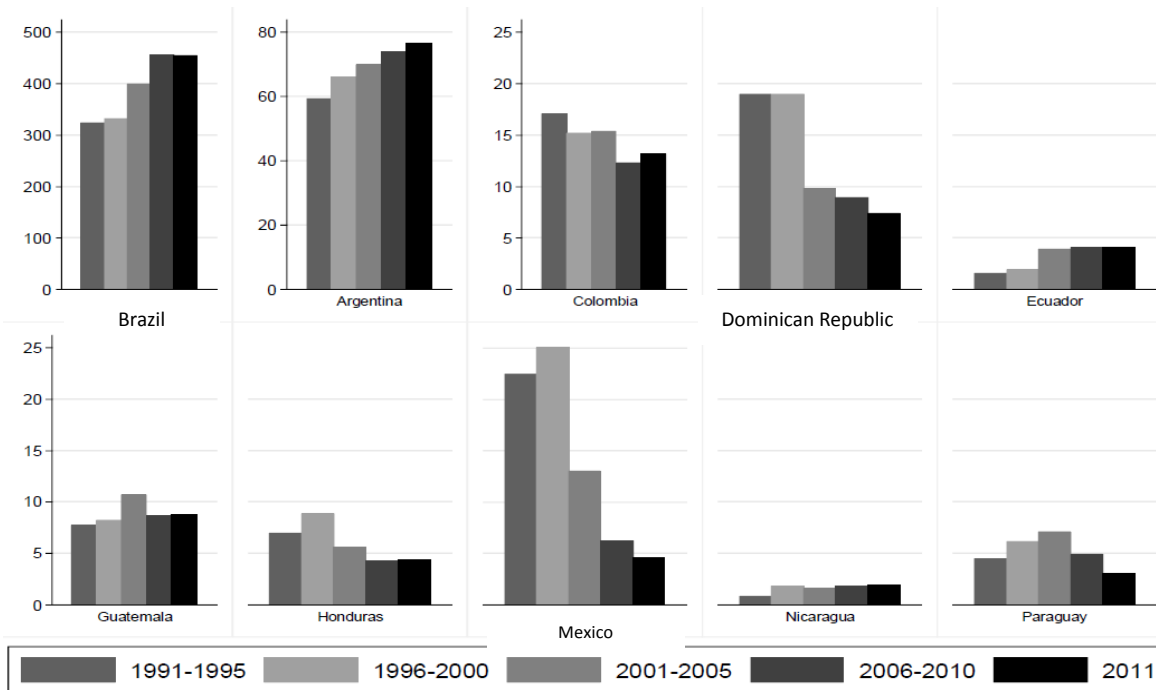
The decrease of production in Paraguay began in 2008. In the last three years the area for tobacco crops in Paraguay has been the lowest in the last 20 years. This is in part because as noted by Rodriguez et al. (2004) almost all the inputs and raw materials for cigarette production are imported. Another factor that may have influenced is that in Paraguay there has been a significant increase in the cultivated area of cotton, soybean and corn that may be replacing part of hectares destined for tobacco.⁵

In the Dominican Republic there was a decrease in the number of hectares cultivated in the first five-year period of the 21st century explained by the end of the boom lived by the sector since the mid-nineties, as we will explain when we talk about production.

In Argentina, Colombia, Nicaragua and Guatemala, the cultivation area has remained relatively stable in the last few years. Although in Colombia, the area cultivated remained particularly stable until 2005. A subsequent decline was recorded which during the last few years has recovered.

⁵ Growth rates of cotton crops have been 80% in the last year, increasing from 7 thousand in 2010 to 10 thousand in 2011. Soybean growth in the last year was 5%, equivalent to 134 thousand hectares. Finally corn generated a growth of 7% increase in the cultivated area making this crop have an area of 853 thousand hectares.

Graph 6 Thousands of Hectares of tobacco Cultivated
1990-2011



Source: FAO (2012). Author calculations.

Production

As was previously mentioned, the disaggregated production information by the different types of tobacco is limited. However, we briefly review the types of tobacco that are grown in Latin America.⁶ In Brazil, for example, according to the FAO (2003) more than three quarters of the total internal production in 2003 correspond to blond tobacco. According to figures of the tobacco growers' association (Afubra for its words in Portuguese) the south region, especially the states of Paraná, Santa Carina and Rio Grande do Sul concentrate 96% of production.

On the other hand, in Argentina, according to the information of the Ministry of Livestock, Agriculture and Fishing (MAGPN for its words in Spanish), the production of tobacco is concentrated in three provinces: Jujuy with 37.2%, Salta with 34.5%, Misiones with 22.1%. 98% of the types of tobacco produced in these regions correspond to blond tobacco. (MAGPN, 2011).

⁶ It must remember that a basic classification of tobacco includes in blond tobacco three varieties: Virginia (or *flue cured*), Burley and the air dried Virginia (VICA). Black tobacco includes García, Cubita and Capa.

The predominance of blond tobacco in Colombia is not the exception gathering more than three quarters of this type of production. In the country, the crop is present in 6 departments of the 32 in the country. Also, in the Dominican Republic, according to the figures of INTABACO, blond tobacco production has decreased concentrating in black tobacco. In 2012 this represents around 94% of crops.

Growing of tobacco in Nicaragua is focused on the production of blond tobacco in the departments of Estelí and Nueva Segovia. According to the Central Bank of Nicaragua, around 80% of the national total production is produced there. In Honduras, 80% of tobacco production is concentrated in the department of Paraíso, where dark or black tobacco is grown.

In Guatemala basically blond tobacco is grown, concentrating its production in two departments: Escuintla (55.3%) and San Marcos (24.9%) (Colindres, 2003). In Mexico three states have the main production of tobacco: Nayarit is the main producer (90%), and blond and black tobacco is grown there. Black tobacco is produced in Veracruz and Chiapas (Comisión veracruzana de comercialización agropecuaria, 2010). In Paraguay 80% of tobacco grown is blond tobacco.

Brazil, as you may expect from its huge cultivated area, is the main producer of the region (Table 2) and the third after China and India, which in 2011 produced 3,158,737 and 1,009,910 tons respectively. In the last 25 years, production increased almost 3.5% annual. Argentina, with 165,145 tons is the second producer of the region and together with Brazil has 14.68% of the world production.

The production of the rest of the countries analyzed represents altogether 1.22% of the entire world production. Of all the 146 countries that produce tobacco in the world, the countries of Latin America are among the first 69 producers worldwide.

Table 2 Tobacco Production (Tons)
2011

	Production (Tons)	% of world production	World position
Brazil	951,933	12.58%	3
Argentina	165,145	2.18%	6
Colombia	23,283	0.31%	30
Guatemala	22,378	0.30%	31
Dominican Republic	10,176	0.13%	47
Ecuador	9,648	0.13%	50
Mexico	8,960	0.12%	51
Honduras	6,871	0.10%	56
Paraguay	6,441	0.09%	58
Nicaragua	3,615	0.06%	68
Total	1,208,450	15.99%	

Source: FAO (2012). Author calculations.

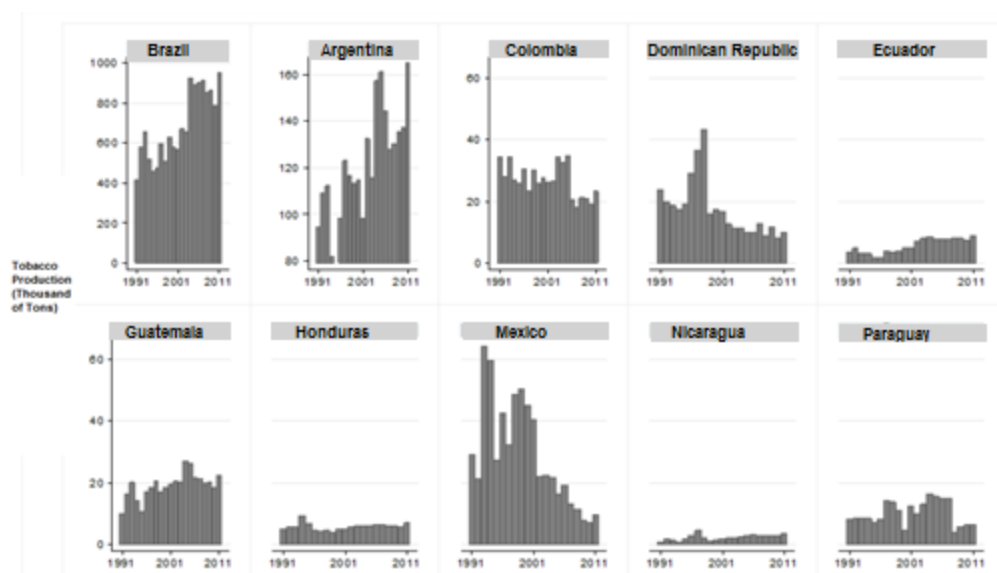
The evolution of the tons of tobacco produced in 2011 is shown in Graph 7. As has been reiterated, Brazil and Argentina are big producers compared to the other countries. In Mexico, the decrease in the aforementioned cultivated area has as a consequence an important drop in

production. Paraguay has the lowest production levels due to the drop registered in 2007. Ecuador and Guatemala show the opposite. While production of Ecuador exceeded the production of Mexico in 2009, the production of Guatemala did it a decade ago, more precisely in 2004. The production in Colombia and the Dominican Republic is lower than some years ago but it has stabilized recently and even, in the case of Colombia, tends to catch up, a case similar to Honduras.

In the Dominican Republic the boom that existed in the sector in the 90's is registered due to the importance acquired by the Dominican cigar in the United States. Once the boom ended, the production dropped and in addition, it faces the growing competition of Honduras and Nicaragua by the cigarettes market in the United States. This also explains the growth of production in Nicaragua. Table 1 of Annex II shows the same information by five-year periods from 1975⁷.

Graph 7 Tobacco production in time (Tons)

1990-2011



Source: FAO (2012). Author calculations.

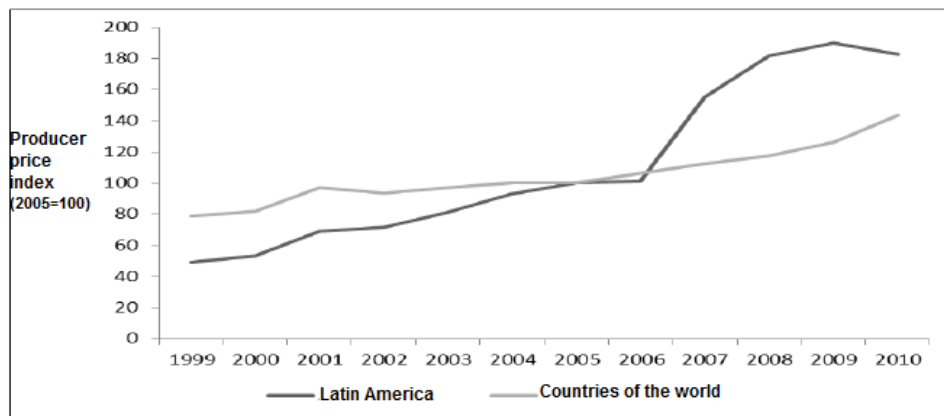
Prices

In the last two decades, between 1991 and 2010, the world prices of tobacco production have increased on average of 7% annually (Graph 8). In Latin America, between 1991 and 2001 the prices increased 6% annually. From 2002 the growth of prices continued until 2009, inclusive such that between 2002 and 2010 the prices increased a 17% annually. The growth of prices in Latin America is explained in good way by the behavior of Brazil. In 2000, for example, the price per ton of tobacco was 963 dollars. In 2010 after an annual growth of 15.1%, the price reached, in prices of 2011, 3,265 dollars per ton (Graph 9).

⁷ Graph A 2 of Annex II shows the variation in production in time for the different countries of Latin America.

Graph 8 Behavior of the Price Index

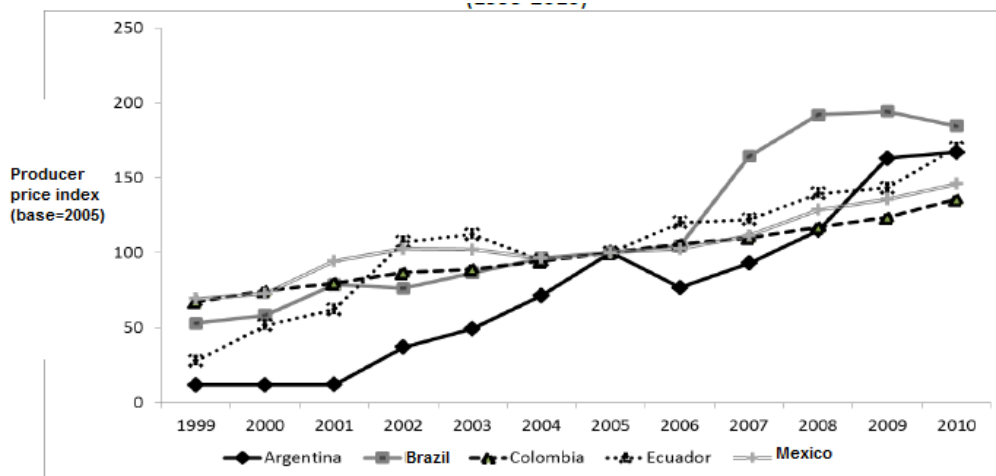
(Weighted Average per Production of Each Country)
1999-2010/¹



¹ The average calculation of the world index excluding the countries of Latin America.
Source: FAO (2012). Author calculations.

The evolution of the price index for each country of Latin America is showed in Graph 9. Brazil and Argentina register an important increase recorded from 2007. Between 2007 and 2010 the prices of Brazilian tobacco increased 15.0% annual average. This figure is comparable to the 13.2% of Argentina but is higher than the recorded in Ecuador (11.2%), Mexico (7.9%) and Colombia (6.3%). The price of tobacco in several countries, Brazil and Colombia for example, are tied to the negotiations or the agreements signed between growers and their associations and the tobacco companies.

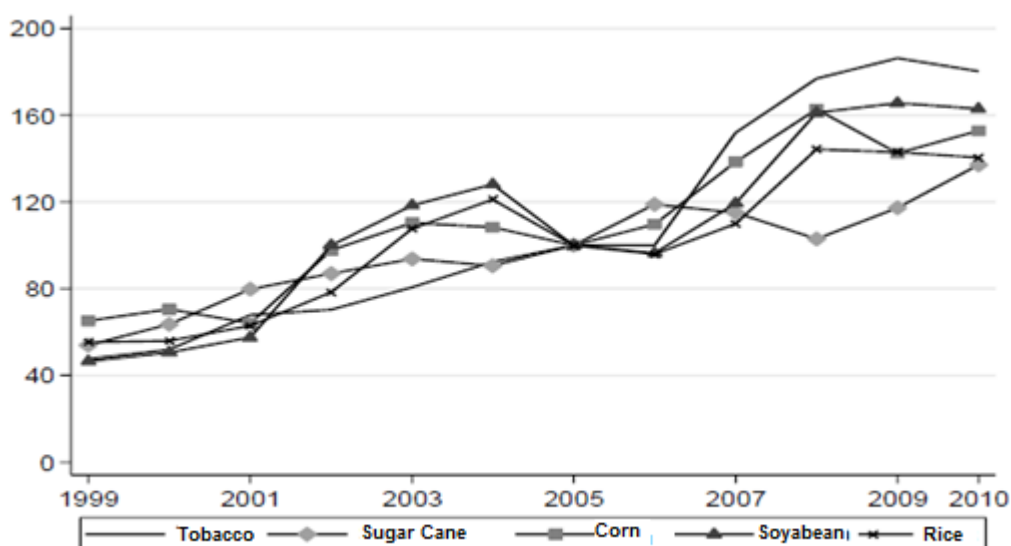
Graph 9 Producer price index for reference countries/¹ (1999-2010)



¹ The information of comparable producer price index is not available for the Dominican Republic, Guatemala, Honduras, Nicaragua and Paraguay.
Source: FAO (2012). Author calculations.

The price of tobacco in the region has had a more accelerated growth than other *commodities* in the last years (Graph 10).

Graph 10 Price evolution of the main agricultural products in Latin America



Source: FAO. Author calculations.

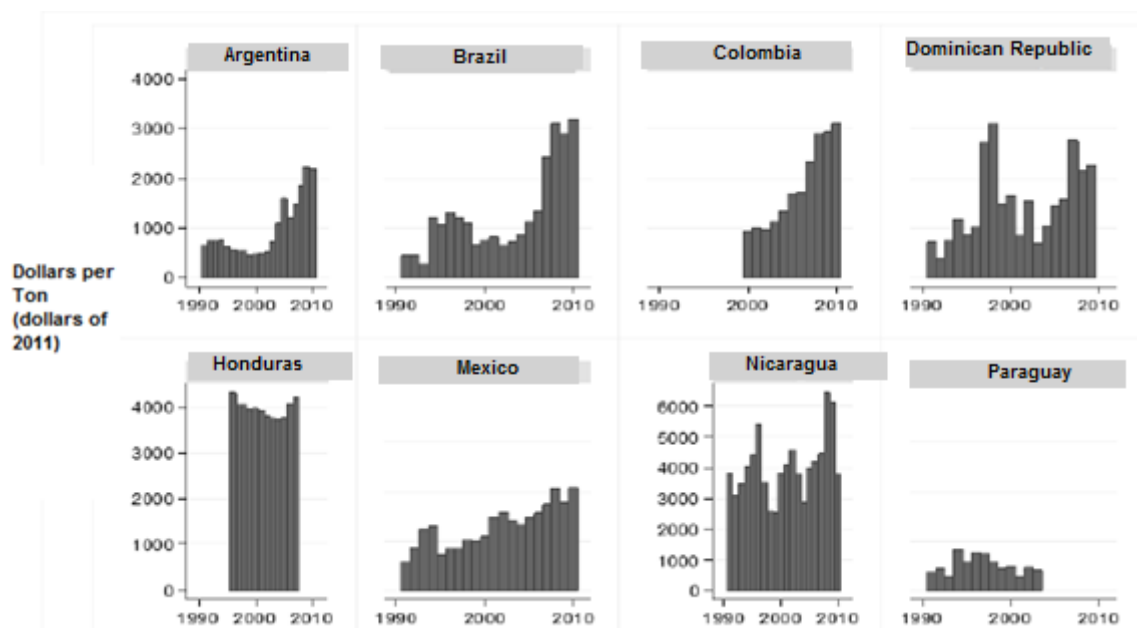
The price per ton in constant 2011 dollars is showed in Graph 11⁸. The higher price per ton in 2010 is paid in Brazil at US\$3,265 significantly higher than the average in America which reaches US\$2,956 in 2010. It is also highlighted that the prices of Honduras and Nicaragua are significantly higher between 2000-2009. In general, Brazil, Colombia, Nicaragua, Honduras and Dominican Republic are above this average, while Mexico and Argentina are below. In Brazil, according to the report of the socio-economic rural studies department (DESER, for its words in Portuguese) published in 2011 is related to the increase of tobacco prices in dollars with the revaluation of the real against the currency of the United States. This revaluation process, in part, also explains the phenomenon in Colombia. The foregoing, however, does not prevent from affirming that the behavior in the domestic currency of tobacco has been more favorable than other agricultural products (Graph 10).

China, main world producer pays its farmers US\$2,127. In general, the world average excluding Latin America was US\$1722 per ton in 2010⁹

⁸ The nominal prices are shown in Graph A 3 of Annex II

⁹ Paraguay registers values especially lower when compared to the rest of Latin America. However, the information available is only until 2003. In dollars of 2010, the value per ton in Paraguay was US\$412.

**Graph 11 Price per ton of tobacco (dollars of 2011)
(1990-2010)**



Source: FAO (2012). Author calculations.

Yields

We measure productivity of the sector as the relation between production and number of hectares cropped. The strategy of Tovar and Uribe (2008) is therefore followed, who also measure it as yield per hectare.

Table 3 records the increases in productivity of Brazil, Ecuador, Honduras and Guatemala in the last five-year period. It highlights that productivity of Colombia in the five-year period 2006-2010 is the lowest in its recent history although a recovery is observed in 2011. In relative terms, in Guatemala the productivity levels are higher in all the quintiles to the world average, the only of the countries of Latin America highlighted by this aspect¹⁰. This is due to the good weather conditions that are around the area where it is cultivated (Deloitte, 2011a). Finally, in Mexico both the cultivated area and the quantity produced notably dropped. Notwithstanding, this drop has not been reflected in productivity losses. In conclusion, the average performance of Latin America in 2011 was above the world average, which is a consequence of the growing trend in the last four five-year periods.

¹⁰ In accordance with the information, in Guatemala the tobacco cultivations benefit from the weather conditions of the region causing that the productivity is especially higher on average.

Table 3 Yield (Kg/Ha) Five-year periods

	1991-1995	1996-2000	2001-2005	2006-2010	2011
Argentina	1,612	1,724	1,892	1,830	2,162
Brazil	1,609	1,682	1,859	1,893	2,094
Colombia	1,775	1,817	2,011	1,643	1,773
Dominican Republic	1,053	1,483	1,276	1,213	1,376
Ecuador	2,209	2,384	1,837	1,926	2,211
Guatemala	1,838	2,227	2,130	2,340	2,570
Honduras	1,003	557	1,248	1,441	1,580
Mexico	1,745	1,760	1,873	1,872	2,132
Nicaragua	1,608	1,407	1,488	1,604	1,933
Paraguay	1,809	1,629	1,901	1,868	2,147
Weighted Average Latin America	1,626	1,667	1,751	1,763	1,998
Weighted Average International	1,703	1,819	1,842	1,919	1,935

^{/1}The weighting was made by the participation of the quantity produced in each country.
Source: FAO (2012). Author calculations.

External Sector

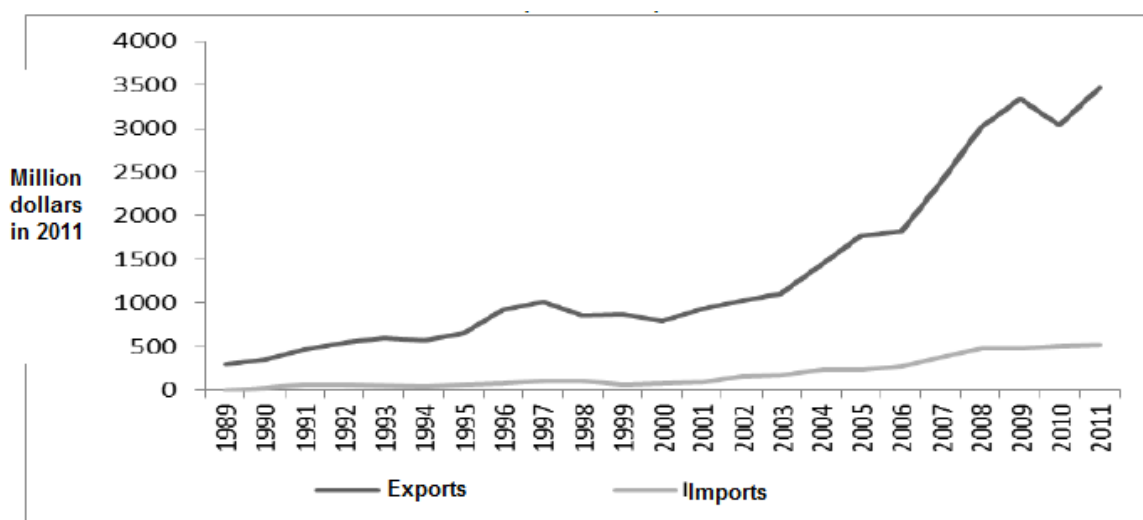
In the aspects related to international trade of non-manufactured tobacco, the exports of the ten reference countries correspond to 28.9% of all tobacco exports registered in the world. That is to say, in total in 2011 Latin America exported US\$3,788 million of non-manufactured tobacco (Graph 13). Brazil represents 24% of the total of world exports and Argentina the 3.2%. The main commercial partner of non-manufactured tobacco of the region is Belgium,¹¹ which buys all the manufactured tobacco for a value of US\$488 million dollars, that means, 14.1% of the total exports of the region.

¹¹ The imports of non-manufactured tobacco made by Belgium have maintained a constant growth since 2000.

The tobacco imports of Latin America in 2011 were equal to US\$511 million dollars. The main commercial partner in this case is the United States which sold to the region US\$176 million dollars. That means, in 2011 34.5% of the total imports came from the United States. The main importer of the region is Brazil which imports US\$83 million dollars.

The export growth of the reference countries has been motivated by Brazil whose exports represent 83.6% of total exports of the reference countries. The exports of Brazil, between 2005 and 2011 have increased 10% annually. The increase in the aforementioned production of Ecuador has been reflected in an annual increase of its exports of 12% annually between 2005 and 2011. This has lead the participation of exports of Ecuador, a portion of the total regional exports, to change from representing 0.18% in 2003 to 0.74% in 2011.

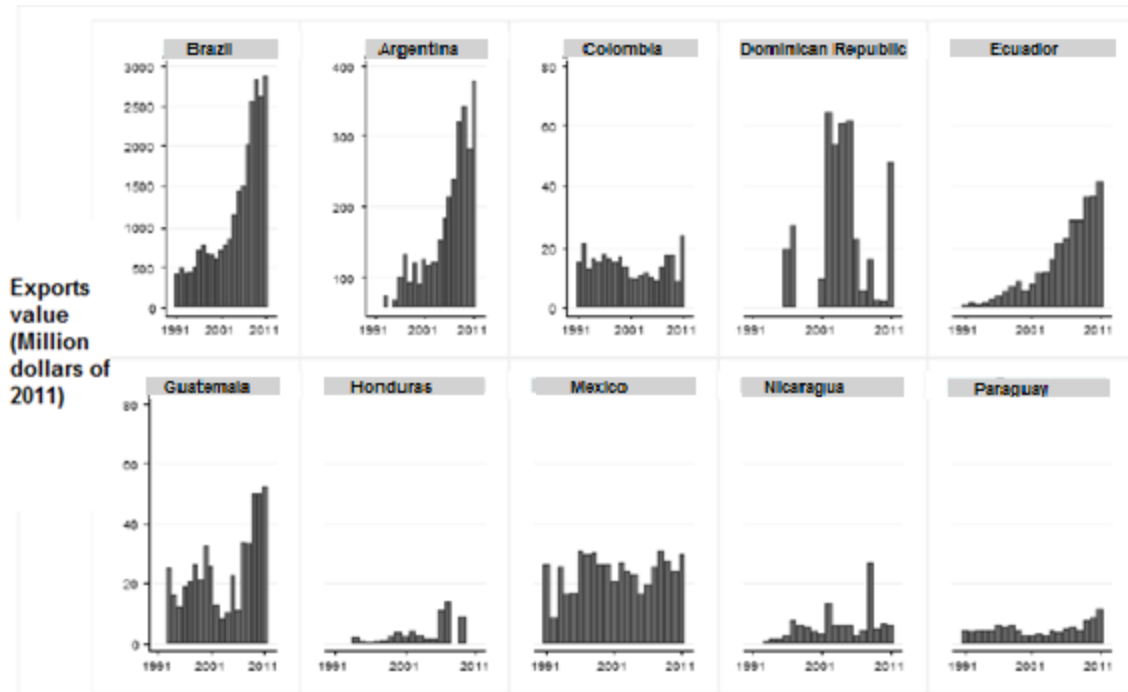
Graph 12 Tobacco Balance of Trade in Latin America
(1989-2011)



Source: WITS World Bank (2012). Calculations of the author

In addition, Brazil, Argentina, Guatemala, Ecuador and, in 2011 the Dominican Republic have had an increase in the export values. The other countries maintain their production values relatively stable.

**Graph 13 Tobacco exports value
(1991-2011)**



Source: WITS World Bank (2012), Author calculations.

In 2011, Brazil exported 2,878 million dollars of non-manufactured tobacco, Argentina 377 million and Colombia 24 million. The figures of Mexico and Guatemala are 29 million and 52 million. Paraguay and the Dominican Republic reached exports of 11 and 48 million dollars respectively. Among the countries, the case of Ecuador must be highlighted, it broadly exceeds Colombia, is the fourth exporter of the region and sells non-manufactured tobacco for US\$41 million.

The main destinations of exports of the region are Belgium, China and United States. Table 4 shows the main destination of exports of tobacco cultivations according to the origin country. As was mentioned above, the main destination of the region is Belgium, whose imports of the reference countries are equal to 14.1% of total tobacco exports of these countries. The second commercial partner in importance is China, which imports 476 million dollars annual, which represent 13.7% of tobacco exports.

The concentration of the exporter market is relatively high. Between 2000 and 2004 the 3 main destinations represented on average the 38.2% of the total of the tobacco exported. The country with lower capacity of diversifying its exports in 2011 was Dominican Republic, because 76.9% of its exports go to three countries, being USA the destination of 44.93% of its exports. Brazil is the most diversified country in terms of the destination of its exports considering its three main commercial partners represented 35.2% of its total exports.

A case that stands out is the exports made by Ecuador to the Dominican Republic. This is supported by the CEI-RD (2008) by saying that Ecuador is the main raw materials provider for the production of tobacco cigars produced by the Dominican Republic.

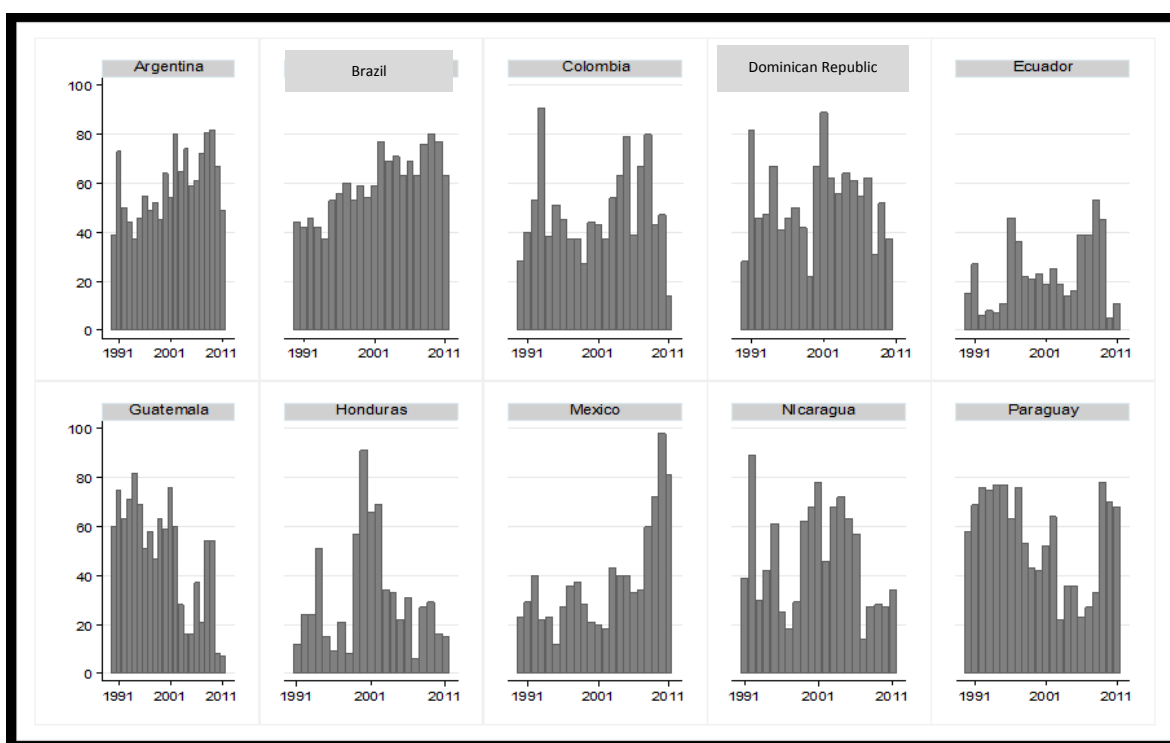
Table 4 Main destinations of the tobacco cultivations exports (2000-2011)

	2000-2004	2005-2010	2011
Argentina	USA 21.7% Belgium 17.2% Germany 12.0%	Belgium 28.5% USA 11.36% China 11.35%	Belgium 28.02% China 26.67% USA 7.95%
Brazil	USA 14.7% Germany 11.07% China 8.88%	Belgium 17.5% China 11.61% USA 11.33%	China 13.20% Belgium 12.5% USA 9.55%
Colombia	Germany 19.09% USA 16.6% Spain 7.71%	Germany 19.17% Brazil 13.29% Venezuela 10.45%	Belgium 33.58% Germany 17.58% Ecuador 8.22%
Dominican Republic	USA 71.7% Honduras 6.12% Sri Lanka 4.37%	USA 60.55% Honduras 19.9% Holland 5.13%	USA 44.97% Philippines 23.63% Nicaragua 8.41%
Ecuador	Dom. Rep. 34.07% USA 16.46% Holland 13.9%	Dom. Rep. 36.20% Nicaragua 22.88% Belgium 9.97%	Dom. Rep. 31.24% Nicaragua 22.03% Germany 17.23%
Guatemala	Germany 26.09% USA 22.08% Switzerland 19.68%	USA 35.92% Germany 33.92% Holland 5.76%	USA 31.57% Germany 25.24% Belgium 12.84%
Honduras	USA 74.47% Nicaragua 19.50% Dom. Rep. 2.39%	USA 42.27% Dom. Rep. 39.66% Nicaragua 17.31%	N.D.
Mexico	USA 49.45% Germany 22.2% Denmark 7.54%	USA 38.09% Dom. Rep. 10.09% Germany 9.53%	USA 45.01% Belgium 9.09% Honduras 8.69%
Nicaragua	Honduras 65.49% Dom. Rep. 16.81% USA 3.35%	Dom. Rep. 32.89% Honduras 30.97% USA 3.76%	Honduras 60.69% Dom. Rep. 32.15% USA 4.58%
Paraguay	Germany 20.89% Holland 16.9% France 13.78%	Germany 18.35% Spain 13.72% Holland 13.57%	South Africa 18.63% Brazil 18.40% Uruguay 10.46%

Source: Wits. World Bank (2012), Author calculations.

Latin America is a non-manufactured tobacco net exporter. In countries such as Brazil and Argentina, around 80% of production has been exported more than one decade ago. In 2011, however, those levels are relatively lower. In 2011 Argentina exported 49% of its production. The figure in Brazil reached 63%. The decrease in the relative weight of exports was related mainly to an increase in the purchase of tobacco leaves by manufacturing companies in such country. (IES, 2011) In general, in 2011 Latin America exported 51.12% of its production (Graph 14). For their part, Mexico and Paraguay are increasing the proportion of exports in recent years. Notable exceptions are Colombia and Dominican Republic whose domestic markets seem to gain momentum. Guatemala and Ecuador had in recent years little production exported.

Graph 14 Export concerning quantity produced (Tn.) of tobacco
(1991-2011)



Source: WITS. World Bank (2012) FAO (2012), Author calculations.

Employment

As mentioned in the sources of information chapter, the origins of employment data for each country are different. This, naturally, obstructs the comparability of the data. However, a gathering exercise was carried out allowing having a general idea of employment behavior in the tobacco cultivation sector.

Figures of direct employment in the tobacco cultivation sector are relative to economically active population. They are figures below 1%, giving the feeling that it is a relatively non-important sector. But it must be emphasized that the exercise in this document

was made only with direct employments generated by agricultural segment of the chain. By considering the indirect employment that generates the segment plus the direct and indirect employment that generates the rest of the chain; we are talking about a sector that is very significant in terms of employment. Therefore, they are only indicative figures.

Brazil

Brazil is one of those cases where there is good employment information in the sector. Afubra records the number of families producing tobacco. If in 2000, 134,000 families were involved in this type of cultivation, the figure in 2010 reached 185,000 families. Considering the number of hectares cultivated, the last column of Table 5 shows an increase in the efficiency in the use of labor factor. It is worth pointing out, however, that such last column of Table 5 references individuals and not families. Several studies seem to support the hypothesis that a typical household is composed of 4 members (Corradini et al, 2005; MAGPN, 2011). It is not obvious, however, how to establish with precision the number of workers dedicated to the cultivation directly. An approximation would be to suppose that 2.5 members¹² of the household cultivate tobacco. From this assumption the information of the last column is generated and it allows comparing the data with other countries from the region.

**Table 5 Employment in tobacco cultivations in Brazil
(2000-2010)**

	Producing Families	Economically active population (in thousands)	Estimate of employments of tobacco cultivation on PEA	Number of employed persons	Employees per each 1,000 hectares cultivated
2000	134,850	83,387	0.40%	337,125	1,088
2001	134,930	84,784	0.40%	337,325	1,115
2002	153,130	87,112	0.44%	382,825	1,113
2003	170,830	89,579	0.48%	427,075	1,088
2004	190,270	89,910	0.53%	475,675	1,029
2005	198,949	91,377	0.54%	497,373	1,007
2006	193,310	92,810	0.52%	483,275	975
2007	193,650	94,207	0.51%	484,125	1,054
2008	180,520	95,572	0.47%	451,300	1,044
2009	186,580	96,880	0.48%	466,450	1,054
2010	185,160	98,150	0.47%	462,900	1,030

Source: AFUBRA, CEPAL. (2012), Author calculations.

¹² In accordance with the study carried out by the FAO (2003) this assumption is used for Turkey, Brazil and China

Colombia

Information of employment in Colombia is generated by the Ministry of Agriculture and Rural Development discriminated by blond and black tobacco and dividing the latter in that intended for domestic consumption or export. Table 6 summarizes the evolution of employment since 2002 to 2012. It has gone from employing more than 14,500 direct jobs in 2002 to 12,400 in 2012. Figures suggest a recovery of rural employment dedicated to tobacco after a drop that began in 2006 and ended in 2009. This recent increase in employment is explained in part by plans for increasing tobacco cultivation driven by Coltabaco¹³ in 2009 and 2010.

As mentioned above, tobacco is the fourth more intensive cultivation in labor, only surpassed by flowers, honey cane, and *panela* cane. In 2012, employment in the sector represented 0.5% of total agricultural employment in the country.¹⁴ Finally, the index of employed people per each thousand hectares was 1,077 in 2011.

Chart 6 Direct employment of tobacco cultivation in Colombia
(2002-2012)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Blond tobacco	6,553	7,758	10,107	10,945	9,164	8,801	7,590	5,219	5,327	5,812	6,343
Black tobacco (domestic consumption)	3,565	4,189	4,075	6,050	5,840	4,173	2,521	2,591	3,874	3,809	3,745
Black tobacco (export)	4,515	5,317	2,947	2,617	2,102	2,324	1,459	1,558	2,809	2,570	2,351
Total employment	14,633	17,264	17,129	19,612	17,106	15,298	11,570	9,368	12,010	12,191	12,439
Tobacco employment regarding total agricultural employment	0.71%	0.79%	0.76%	0.88%	0.76%	0.66%	0.49%	0.40%	0.49%	0.50%	0.50%
People employed per each 1,000 hectares cultivated	923	934	941	896	624	707	1,238	1,363	1,074	1,077	N.D
Tobacco cultivation employment on PEA	0.07%	0.08%	0.08%	0.09%	0.07%	0.07%	0.05%	0.04%	0.05%	0.05%	0.05%

Source: Ministry of Agriculture, CEPAL. (2012), Author calculations.

¹³ Compañía Colombiana de Tabaco S.A.

¹⁴ Available information allows comparing 41 products to those traced on employment generation. These include coffee, cane and corn.

Dominican Republic

Intabaco provides the information for the Dominican Republic. Unlike Brazil or Colombia, reports direct employment data for each of the segments of the tobacco chain. According to these data, the segment of tobacco cultivation reaches 44.5% of employment generated for the total tobacco industry.

As seen on Table 7, the number of employees in the first segment of the chain is quite significant in relative terms. It has passed from employing more than 14,300 in 2000 to 50,200 in 2010. That is, labor hired has multiplied by 3.5 in this period, which implies growing 16% annually. This is no obstacle for the number of employees having decreased in 9,000 people from its peak in 2007. Last column of the Table is a reflection of increase in the relative importance of tobacco as generator of employment in the Dominican Republic.

**Table 7 Employment of tobacco cultivation in the Dominican Republic
(2000-2010)**

Year	Direct employment in tobacco production and cultivation ¹⁵	Direct employment quantity (tobacco industry)	% Employment in tobacco cultivation on Total Employment of the Tobacco Chain	People employed per each 1,000 hectares cultivated	Employment of tobacco cultivation on PEA
2000	14,300	40,970	34.90%	1,079	0.42%
2001	23,100	58,770	39.31%	1,777	0.67%
2002	25,850	61,315	42.16%	2,585	0.73%
2003	39,000	78,935	49.41%	4,333	1.07%
2004	42,350	86,750	48.82%	4,706	1.13%
2005	52,800	106,055	49.79%	6,597	1.37%
2006	45,650	106,795	42.75%	6,596	1.16%
2007	59,335	123,068	48.21%	6,153	1.47%
2008	50,200	115,610	43.42%	6,746	1.21%
2009	55,000	118,000	46.61%	6,838	1.29%
2010	50,200	108,148	46.42%	6,786	1.15%

Source: Intabaco (2012), Author calculations.

¹⁵ Intabaco reports for the first segment employment dedicated to tobacco cultivation and production. Direct sources of Intabaco confirm that it is proper to consider this first segment as the process of non-manufactured tobacco.

Honduras

In Honduras, the company Deloitte gathered information on employment generated in the tobacco sector between 2007 and 2011. The report was based on primary sources of main gathering points and tobacco processing companies.

Table 8 evidences that the number of workers has maintained relatively stable in the last five years in a close value to 10,000 workers. It is important to emphasize that Honduran tobacco cultivations are intensive, as they require about 2,400 workers per 1,000 hectares being this value one of the highest in the region.

Table 8 Employment in tobacco cultivation in Honduras
(2007-2011)

Year	Direct tobacco employment	Indirect quantity	Direct employment on PEA	People employed per each 1,000 hectares cultivated
2007	10,726	3,231	0.387%	2,438
2008	10,716	3,212	0.369%	2,602
2009	10,700	3,389	0.341%	2,554
2010	10,693	3,411	0.329%	2,487
2011	10,696	3,272	0.332%	2,459

Source: Deloitte (2012a)

Argentina, Ecuador, Guatemala, Mexico, Nicaragua and Paraguay

Argentina, Ecuador, Guatemala and Mexico are grouped because, as already mentioned in the information sources chapter, in those countries information is not systematized as in Brazil, Colombia and Dominican Republic and therefore the level of detail is less.

In Argentina, Corrandi *et al.* (2005) estimate that taking into account the seasonality of cultivation, in 2005, 25,575 producers generated 61,998 employments. This value is deduced from the 130 daily wages estimated as required in the tobacco cultivation. In 2010, the Ministry of Agriculture, Livestock and Fishing of the Nation financed another study carried out by them. In 2009-2010 period with a similar methodology was found that 49,518 were employed by tobacco producers.

Figures in Ecuador have a less formal origin. Direct contact with the Ministry of Production of such country and the Tobacco Farmers Association confirmed that there is no systematic tracking of tobacco production figures in the country. However, eventually, there are some figures which they denied to report but there are available from secondary sources. Thus, in *Diario Hoy Ecuador* newspaper, Alexandra Navarrete's (president of the Tobacco Farmers Association) statements are recorded, affirming that in 2012 there were around 800

tobacco producers¹⁶. Navarrete affirms that given that each of them generates at least four stable jobs; this would imply that the tobacco cultivation generates employment for around 3,200 people. This value represents around 0.05% of PEA.

In Mexico, information is even more segmented¹⁷. Waters *et al.* (2010) shows in their work information of employment for 2007. It affirms that tobacco cultivation employs between 3,830 and 6,077 people full time. This, according to the drop in production already reported in Table A 1, it is a significant decline of 19,977 full time employment as existed in 1993.

Information on Guatemala comes from Deloitte study (2012b) called “Economic and social impact in the tobacco industry in Guatemala.” It affirms that the quantity of employment generated by the agricultural activity corresponds to 31,500 people equivalent to 0.98% of PEA. Such estimate is achieved from surveys to companies and state organizations of the sector. Therefore, they fail to build a series of employment behavior for that country.

Employment in Nicaragua is obtained from press information¹⁸ which affirms according to Nicaraguan Tobacco Association that the number of direct employments is close to 10,000 in 2011. This number of employees represents in relative terms about 0.38% of PEA of this country¹⁹.

In Paraguay, according to data from Rodríguez et al (2004) almost 7,350 families dedicated to tobacco cultivation in 2003. At 2.5 rate of family members employed, this would result in 18,375 employees, 0.73% of PEA. 6,894 hectares cultivated of tobacco in 2003 employ around 2,660 workers per 1,000 hectares.

Graph 15 summarizes the findings of the exercise. Tobacco cultivation in Latin America generates almost 650,000 direct employments. At 2.5 rate of family members employed directly, this represents around 260,000 families. Assuming that a family has on average four members 1,040,000 people depend directly on tobacco cultivation. This, it should be noted, are conservative estimates. If we assume that 1.5 members of each family are employed directly in tobacco, then, 430,000 families depend directly on tobacco cultivation. In this case, around 1,720,000 people depend directly on tobacco cultivation as means of subsistence.

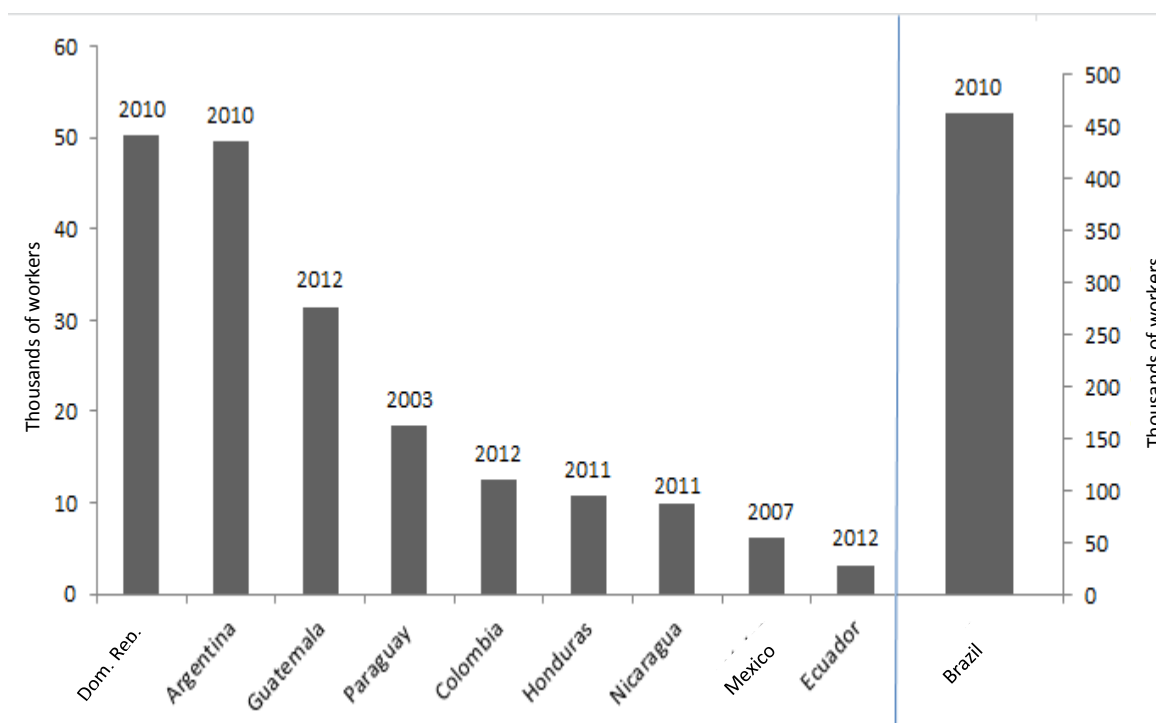
¹⁶ Diario Hoy Ecuador, September 24, 2010. http://www.youtube.com/watch?feature=player_embedded&v=3IJKxbLrOul#!. Consulted on February 8, 2013.

¹⁷ There is information provided by the International Labor Organization until 2005, but for all tobacco industrial chain. See http://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/publication/wcms_161972.pdf. Consulted on February 1, 2013

¹⁸ Statements by an officer of the Nicaraguan Tobacco Association released on October 15, 2012. <http://www.trincheraonline.com/2012/10/15/tabaco-nicaraguense-busca-cima-mundial/> recovered on April 28, 2013,

¹⁹ Lack of official statistics do not allow establishing certainly the number of direct employments that are generated. Figure of 10,000 direct employments seems to be the most quoted. This does not obviate that other estimates suggest larger numbers, perhaps 12,000. Bearing this data of 1997 from daily wages per year reported in Incae and Sidesa (97) figures close to 15,000 direct employments are obtained.

Graph 15 Number of jobs generated by tobacco cultivation in Latin America/¹
(Last year available)

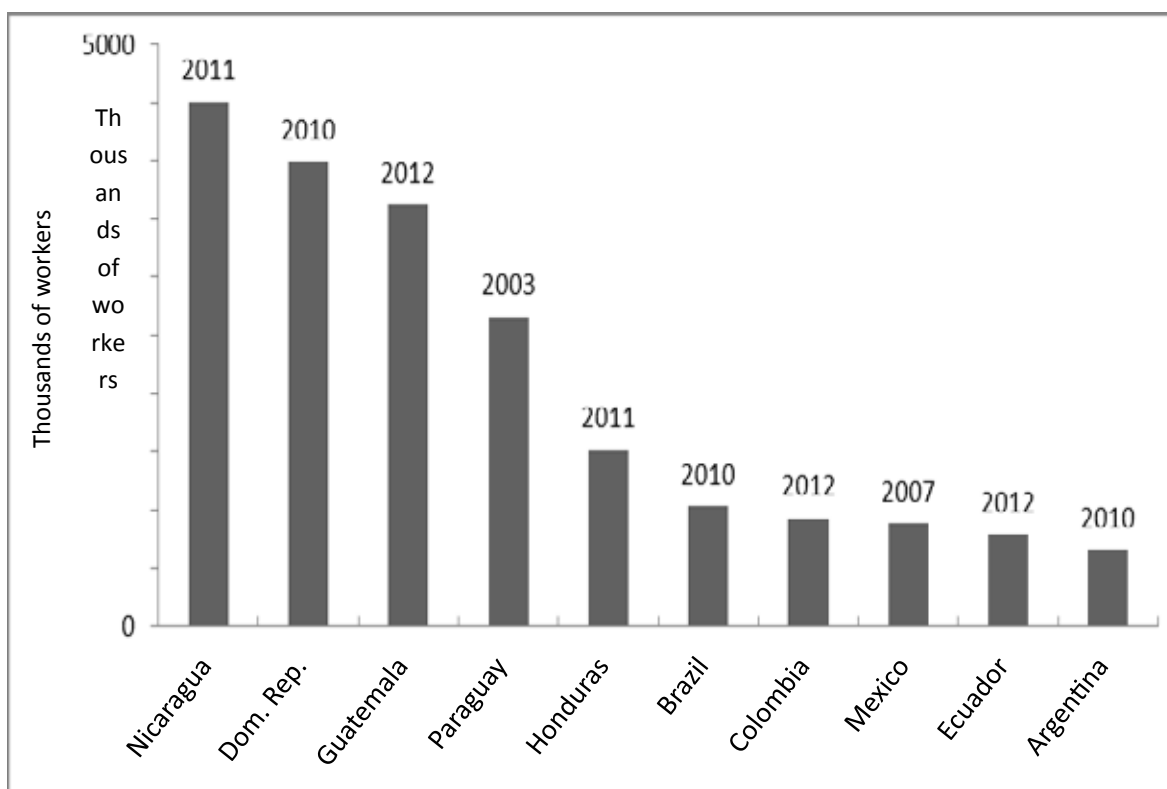


¹ Brazil in the right axis. Rest of Latin America is in the left axis.

Source: Argentina, MAGPN (2011). Brazil, consultations with AFUBRA. Colombia. Communication with Ministry of Agriculture and Rural Development. Ecuador, press report; Tobacco Farmers Association. Dominican Republic, Communication INTABACO. Guatemala, Deloitte (2012b). Honduras, Deloitte (2012a). Mexico, Water *et al* (2010). Nicaragua, press report; Nicaraguan Tobacco Association. Paraguay, Rodríguez et al (2004). Estimations of the author

Graph 16 shows the employment intensity in tobacco cultivation. On average, per hectare, in Latin America 1.4 people are required between 4 workers in Nicaragua and 0.7 in Argentina.

Graph 16 Employment Intensity in Tobacco Cultivation/¹
(Last year available)



/1 In Ecuador the number of employees in 2012 is divided over the number of hectares of 2011 due to the lack of data in the same year for both variables.

Source: Argentina, MAGPN (2011). Brazil, consulted from AFUBRA. Colombia. Communication with Ministry of Agriculture and Rural Development. Ecuador, press report; Tobacco Farmers Association. Dominican Republic, Communication INTABACO. Guatemala, Deloitte (2012b). Honduras, Deloitte (2012a). Mexico, Water *et al* (2010). Nicaragua, press report; Nicaraguan Tobacco Association. Paraguay, Rodríguez *et al* (2004). Estimations of the author

Final Discussion

This work has shown that tobacco cultivation has a significant importance in Latin America's economy. Brazil, for instance, is a major global player because it produces something less than 13% of world production. Combined, the ten tobacco countries of Latin America produce around 16% of total tobacco cultivation worldwide. This production is valued price paid to the grower in 2010 in 2.969 billion dollars of 2011. It is, therefore, a relevant currency generator sector as Latin America is a net exporter of the product. Thus, exporting 51.1% of its production recorded the non-negligible amount of USD\$3.788 billion²⁰ by way of sales abroad in 2011. As Brazil exported 64% of its production in 2011, the largest relative exporter of Latin America is Mexico exporting 80% of its production.

The most sensitive aspect of tobacco cultivation is such close relation with peasants, farmers who in Latin America are often associated with the most vulnerable groups of the population. In Brazil, around 460,000 workers are employed in tobacco cultivation; while in Colombia that figure is near 12,000. In total we have identified 650,000 workers who are directly linked to the tobacco cultivation sector. This may represent 430,000 families and up to 1,720,000 people who depend directly on cultivation. This figure does not consider the labor impact downstream in the chain, aspect outside the scope of this study.

Gathered evidence suggests, in addition, that tobacco cultivation is relatively more profitable than others. Between 2005 and 2010 the price paid to growers increased more than that of sugar, soybean, corn or rice. During this period, tobacco price increased on average 14.04% annual. During the same period, soybean price increased 11.3%, corn price 9.6%, rice price 7.3% and sugar cane price 7.21%. Relative profitability of product during the last few years becomes evident.

It is concluded that tobacco cultivation is still an important product in the economic context of the region, as well as in most of the countries analyzed. Its social importance is significant and its economic importance is evident.

²⁰ Note that prices at which production is valued are not the same to those at which exports are valued. Hence, the value of exports may be greater than production.

Bibliography

Centro de Exportación e Inversión - CEI-(2008) Perfil Económico de Tabacos y Cigarros en República Dominicana. Gerencia Inteligencia de Mercados.

Comisión veracruzana de comercialización agropecuaria (2010) Monografía del Tabaco. State Government.

Colindres, M.A (2003) Evaluación de cuatro fertilizantes hidrosolubles para producción de pilon de tabaco (*Nicotiana Tabacum*) en el sistema de floating en la tabacalera dimon de Guatemala; zacapa. Universidad de San Carlos de Guatemala.

Corrandini, E. Cuesta, R, Merello, P. Segesso, R. Gimenez M. Zilocchi, H. Molfesa, S. & Musco, J. (2005) Caracterización del sector productor tabacalero en la República de Argentina. Universidad Católica de Argentina. Ministry of Livestock, Agriculture and Fisheries of the Nation.

Deloitte (2012a) Impacto económico y social de la Industria del Tabaco en Honduras.

Deloitte (2012b) Impacto económico y social de la Industria del Tabaco en Guatemala.

Departamento de estudos sócio-econômicos rurais –DESER- (2012) Conjuntura do fumo.

Escuela de Negocios - EOI – (2004) El sector tabacalero extremeño y las repercusiones en el empleo, tras la reforma agraria de la U.E. Consulted at:
http://api.eoi.es/api_v1_dev.php/fedora/asset/eoi:48984/componente48982.pdf on January 15, 2013.

FAO (2003) Issues in the global tobacco economy. Rome.

Incae and Sidesa (1997) La industria de puros en Nicaragua: Condiciones de competitividad. Mimeo

Investigaciones Económicas Sectoriales –IES- (2011) Análisis del tabaco.

Jaramillo, C. y Tovar, J. (2010) Análisis de las contribuciones productivas del tabaco y caracterización de las condiciones socioeconómicas de los productores tabacaleros. Mimeo.

Ministry of Livestock, Agriculture and Fisheries of the Nation -MAGPN – (2011) Impacto regional del convenio marco para el control del tabaco. Buenos Aires, Argentina 36

World Health Organization WHO (2004) Tobacco and poverty. A vicious circle.
http://www.who.int/tobacco/communications/events/wntd/2004/en/wntd2004_brochure_en.pdf. Consulted in January, 2013.

Pacheco Ladrón de Guevara, Lourdes and Cayeros López, Laura Isabel (2011) Modernización de la agroindustria del tabaco y desarrollo regional. Revista Fuente Year 3 No. 9 October.

Rodríguez, R.; Puggina, E.; Sapena, S. and Cabello, C. (2004) La economía del control de tabaco en Paraguay. Mimeo.

Tovar, J. and Uribe, E. (2008) "Reflexiones sobre el crecimiento de largo plazo del sector agrícola en Colombia" in CEDE Documents CEDE No. 10 July.

Waters, H Sáenz de Miera, B, Ross, H, & Reynales, L. (2010) La economía del tabaco y los impuestos al tabaco en México. Paris: International Union Against Tuberculosis and Lung Disease (IUATLD)

Annex I

Information and data sources

This document uses sources of the production value, the amount produced, cultivated areas and prices of tobacco cultivations in Latin America. It also analyzes foreign trade data, basically export and imports. Additionally, there is an original compilation of direct employment data in the cultivation of tobacco from which it is possible to establish the number of families directly depending on cultivation.

The sources of information used in this report originate mainly in the food and agriculture organization of the UN (FAO). FAO information contains standardized production data (in dollars and tons), cultivated area and production prices of 169 agricultural products including tobacco²¹. Production data allow evaluating both the production in amounts and the value thereof year after year. The value of production is defined as such “price paid to grower or in the first point of sale”²². The information of the cultivated area allows making yield estimations per hectare by dividing the amount produced (in kilograms) by the number of cultivated hectares. This is a basic indicator of the cultivation productivity. The previous data are mostly available for the period 1960 – 2011 except for the production value which is only available until 2010.

The information of prices, meanwhile, has two components. One is based on the so-called *producer price index*. This corresponds to an index, 2004-2006 base, based on the available prices of the different agricultural products. The index is basically the prices comparison in a given period *i* regarding the price in the base period²³. The index is available for the period 1991-2010 although not for Guatemala, Honduras, Nicaragua and Paraguay.

The second component in the FAO information of prices is an indicator of prices collected from data provided by local authorities in each country. The price reported is the annual average value in dollars of the tobacco crop “price paid to growers or in the first point of sale” and it is available for the period 1991-2010. These price data are not available for Dominican Republic, Colombia, Ecuador and Paraguay. It is not evident why price index data exist for a country but there is no corresponding number of prices in a nominal value. The reason is the origin of data. In the case of Colombia, for example, it is the Banco de la República (the Colombian Central Bank) who reports the data directly to the FAO. The information is originated in the National Administrative Department of Statistics (DANE), which generates an index based on the price of what they call raw dry leaves in the construction of the producer price index. DANE refers directly to the Banco de la Republica the series of this index and this is the one directly reported to the FAO.

²¹ Non-manufactured tobacco corresponds to the non-weighted group of production of the various types of tobacco.

²² Since downstream uses in the agricultural sector (seeds and feeds) have not been deducted from the production data, this value of all production makes reference to the notion of “gross production”.

²³ Given that in some countries the data for the index construction are not complete in the base period, alternatives are taken such as setting the base in 2005.

The gaps in the information of prices have been covered, at least partly with data of prices locally originated. This, however, has the problem of hindering comparability. But on the other hand, it does analyze trends. For the Dominican Republic the prices data were supplemented with the price paid to growers coming from the joint information of the Ministry of Agriculture and Information of the Tobacco Institute of the Dominican Republic (INTABACO) whose series are available for the period 2010-2012. In the case of Colombia it was supplemented with those available for years 2000 to 2011 and whose original source is Coltabaco.

The exports and imports data of the non-manufactured tobacco cultivation come from the information system *World Integrated Trade Solution* (WITS) of the World Bank. In this database the most disaggregated information corresponds to the product called non-manufactured tobacco that groups the different types of tobacco exported²⁴. The data are available generally for all the countries during the period 1991 to 2011.

The sources of information used in the employment chapter come from various sources given the absence of standardized information of direct employment in the tobacco cultivation sector. The employment data were collected by contacting different government organizations or tobacco associations in order to collect the employment information available in each country²⁵. The result of the exercise was successful because it was possible to collect information in the ten countries of Latin America with different quality levels.

In the cases of Brazil, Colombia, Dominican Republic and Honduras it was possible to collect complete series of direct employment dedicated to tobacco cultivation. In Brazil the Association of tobacco growers of Brazil²⁶ (AFUBRA) collects the information of the families directly employed in tobacco cultivations between 2000 and 2011. Colombia data come from the Ministry of Agriculture and Rural Development that produces direct and indirect jobs data in the tobacco cultivations since 2000. The information is available until 2012. For its part, the information in Dominican Republic is produced by Intabaco who collected the information of direct employment for each of the segments of tobacco production, since 2000 and until 2010. This first segment is defined as the tobacco cultivation and production. According to the clarifications of this association, in both cases it is referred to “farm workers in the field”. Lastly, Honduras information comes from the consultancy report made by Deloitte of 2012 titled “Economic and social impact of the tobacco industry in Honduras”. These data were obtained by primary information collected in the region and it is complemented with secondary information of tobacco companies.

There are incomplete partial employment series for Mexico, Argentina, Ecuador, Guatemala and Nicaragua. The information gives an idea of the number of direct jobs in each of these countries even though it does not allow establishing trends. The data come mainly from census or agricultural case studies. In the case of Mexico, the information comes from the information registered in the study of Water *et al* (2010). The difficulty in collecting information in Mexico comes from the inexistence of disaggregated data by cultivation such as the Secretary of Economy of Mexico notified us by direct communication.

²⁴ The disaggregation of products corresponds to the six first digits in the standardized products classification of the UN known as Harmonized System. (Further details <http://unstats.un.org/unsd/tradekb/Knowledgebase/HS-Classification-by-Section>)

²⁵ Annex III contains the directory of the persons contacted for this study.

²⁶ The name corresponds to *Associação Dos Fumicultores Do Brasil*.

The information of Argentina is collected from two sources that allow generating two points in time. The Ministry of Agriculture, Livestock and Fishing of Argentina conducted a study in 2005 that allows inferring the population used in 2004 in the agricultural crops (Corradini et al, 2005). This job infers the direct employment from the number of wages required per hectare. This is possible by combining the information provided by the Secretary of Agriculture, Livestock, Fishing and Food of the Nation (SAGPyA)²⁷ and annual information on the demand of wages in each stage of the cultivation in the Pampean region of Argentina²⁸. Subsequently the study conducted by the Ministry of Agriculture, Livestock, and Fishing of Argentina (2010) confirms the absence of information and it uses the same strategy of the previous document to identify the number of employees. That is, it takes the number of wages per hectare and it estimates the number of employees in the tobacco cultivations²⁹, therefore this allows having a second employment data for 2010.

The sources of Ecuador and Guatemala are less formal. About Ecuador, press information was obtained that quoted figures of the Tobacco Farmers Association. The information from Guatemala comes from the study made by the firm Deloitte for *British American Tobacco*. Both data are from 2012.

Finally, the information available of Nicaragua comes from the statements registered in the press report of 2011 of the Nicaraguan Tobacco Association.

In summary, there is relatively reliable information of employment for Brazil, Colombia, Dominican Republic, Honduras and Guatemala. There is formal but accurate information for Argentina, Mexico. The information available for Ecuador and Nicaragua is less accurate. Paraguay contacted the Ministry of Agriculture Directorate of Censuses and Agricultural Statistics (DCEA) to collect employment information but they informed us that it does not exist. The information that was collected is the most recent information for all countries.

²⁷ This secretary belongs to the Ministry of Agriculture, Livestock, and Fishing of Argentina.

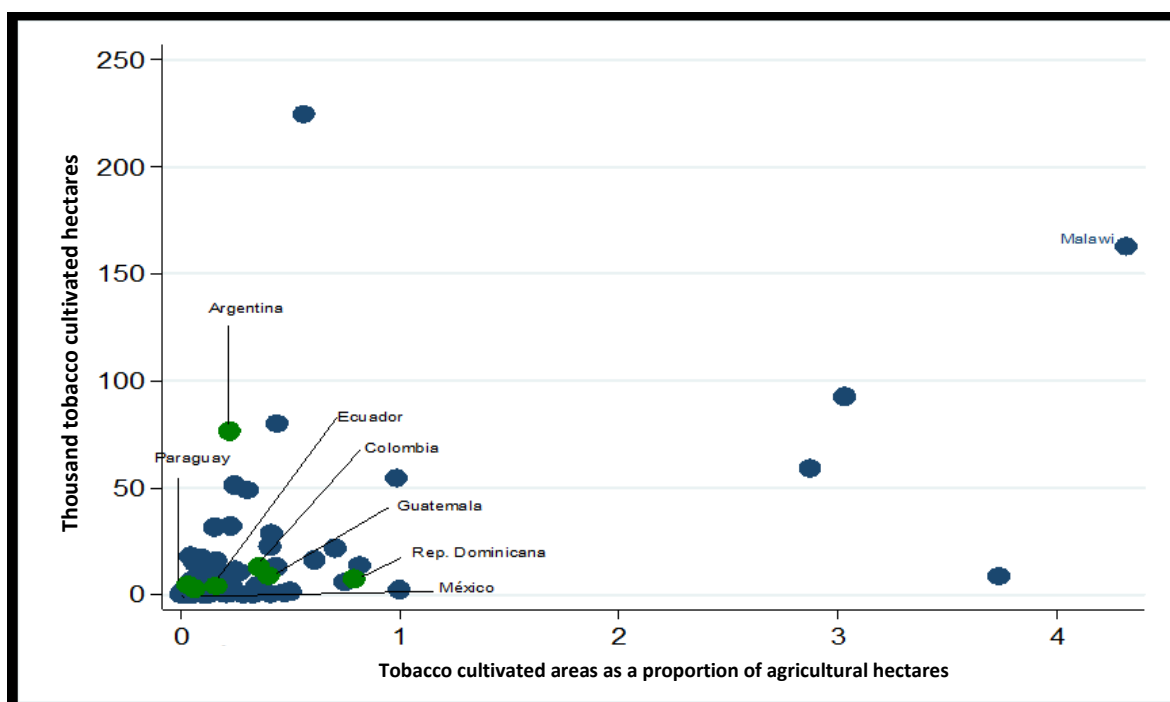
²⁸ The authors state that the estimation of wages per hectare comes from the Ministry of Agriculture, Livestock, and Fishing. The document has no details on the methodology used for the calculation of the employed population.

²⁹ This study estimates the number of employees in the cultivations like the multiplication of hectares planted for each type of tobacco by the amount of wages required per hectare cultivated. This value is divided by the average amount of days that the harvest lasts considering the different times each type of tobacco has. The value of wages per hectare is taken as given.

Annex II

Graph A 1

Tobacco cultivated area as a proportion of tobacco on the total agricultural hectares cultivated and its relation with the number of cultivated hectares. (2011)



Note: Those countries with more than 300,000 cultivated hectares are excluded from the graph not to distort the scales. This is the case of China whose tobacco cultivated area as a proportion of the number of agricultural hectares is 0.83%, of India (0.274%) and Brazil (0.66%).

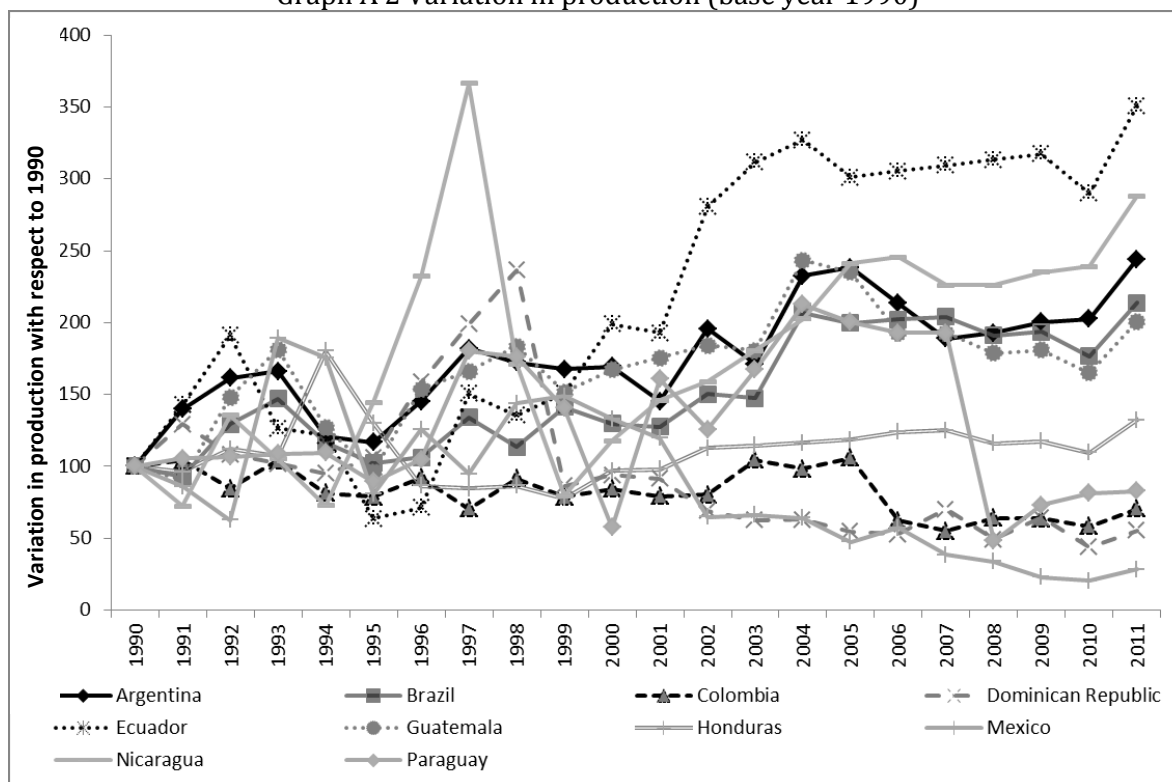
Source: FAO (2012). Author calculations

Table A 1 Average five-year tobacco production per country
(Tons)

	1975-1979	1980-1984	1985-1990	1991-1994	1995-1999	2000-2004	2005-2009	2010-2011
Argentina	83,080	66,833	69,813	93,111	106,066	123,637	139,812	151,073
Brazil	353,695	399,421	412,605	522,050	532,111	678,949	882,525	869,775
Colombia	57,740	45,380	32,018	31,292	27,205	29,469	23,166	21,242
Dominican Republic	42,738	34,659	28,74	19,607	28,816	13,958	10,698	9,121
Ecuador	2,433	3,260	3,290	3,479	2,921	6,695	7,897	8,180
Nicaragua	9,634	9,277	9,898	14,442	16,748	21,198	21,859	20,389
Guatemala	6,437	6,970	4,530	6,194	4,837	5,597	6,245	6,286
Honduras	66,407	63,626	55,002	41,655	40,313	30,372	13,555	8,316
Mexico	3,150	3,325	2,562	1,218	2,495	2,024	2,947	3,307
Paraguay	32,225	17,506	13,450	8,256	10,749	11,261	11,010	6,391
Latin American Production	657,540	650,256	631,909	741,305	772,259	923,161	1,119,715	1,104,077

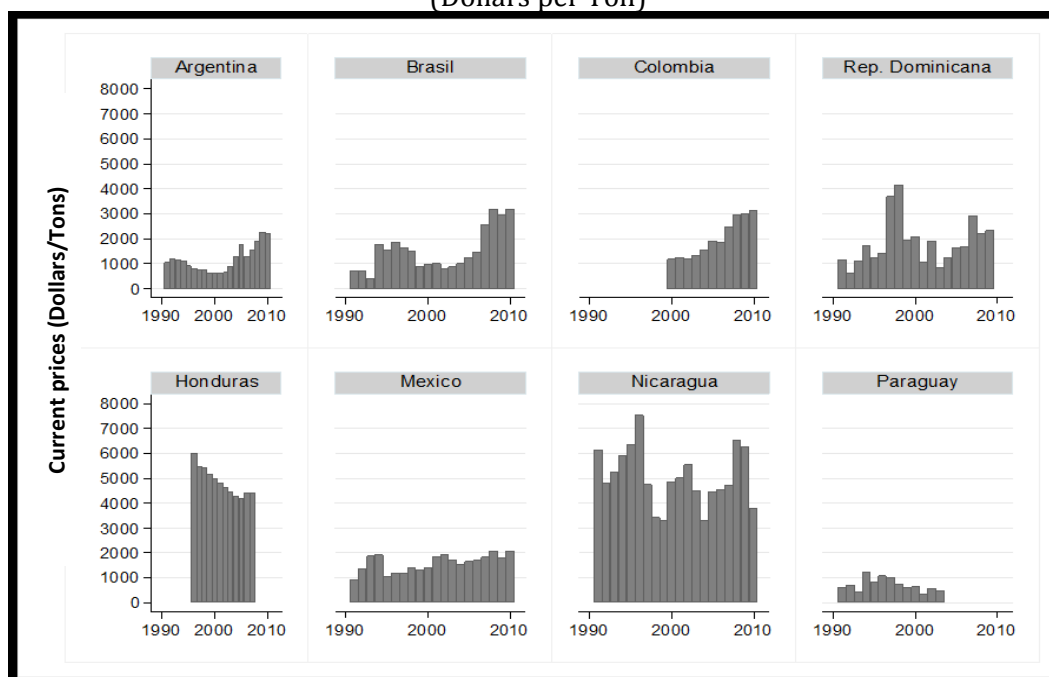
Source: FAO (2012). Author calculations.

Graph A 2 Variation in production (base year 1990)



Source: FAO (2012). Author calculations.

Graph A 3 Nominal Prices to the Producer
(Dollars per Ton)



Source: FAO (2012). Author calculations.