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Full Length Research Paper

Unintended Consequences of Governmental Legislation in Export Restriction; the Case of Ecuador, 2005-2010

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This study analyzes specific events between the years of 2005-2010 that led to the rice export prohibition in Ecuador by the government of President Rafael Correa. This particular decision to ban an export item was based on a unilateral governmental decision whose main goal was to protect local producers and consumers during a time when global food price had increased and were continuing to increase exponentially. Included is an overview of the issues, causes, effects, recommendations and direction for further research. The methodology includes financial information and statistical data taken directly from members of the rice exporters and rice producers industry in Ecuador, thus offering a quan/qual analysis on governmental intervention and profitability within a small segment of the South American rice industry. The methodology includes a combination of financial analysis, ANOVA analysis and surveys to evaluate the alternative hypothesis presented *...current legislation limiting exports has negatively affected the Ecuadorian (farm or non-farm) revenue regarding rice exports between the years 2005-2010*. The theoretical approach is based on Smith's Protectionism Theory, Bouet's Theory of Export Taxation and Harberger's Theory of deadweight Loss. The results illustrate the impact of salient influence, primarily governmental decree or legislation, did achieve its primary objective, but left in its wake a series of negative influences or unintended consequences. Although local price for rice was stabilized, the unintended consequences included loss of employment, loss of revenue for producers, and the loss of Colombia as a consistent trading partner. In light of the findings, the following are offered as immediate goals for stakeholders in the Ecuadorian rice industry: the recovery of market share in the Colombian market; the search for new potential markets to export; a better approach from the government with exporting firms, improvement of seed's technology, innovative water systems solutions and crop zonification.

Keywords: Governmental Legislation in Export Restriction

INTRODUCTION

The rice industry in Ecuador has been involved in many

changes during the past five years; each year more dynamic than the year before. In this short period of time rice exports, production and processing trends have been concurrently dynamic and traumatic – examples include

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output shortages, inflation, a rise in global commodity and food prices, global external financial crises, unfavorable weather conditions, price ceilings, government-imposed export bans and other legislation and regulation regarding the importing and exporting of rice.

The affected parties of these scenarios of permanent government legislation and intervention have included consumers and businesses alike. Although local consumers have benefited from an artificially created, subsidized lower price, however, exporters have seen their revenues drastically decreased as much of the processing workforce shrinks while external market options become severely reduced, adversely being affected by unilateral government policy.

The export bans started by the Ecuadorian government of President Rafael Correa in 2007, triggered most of the problematic issues that this study is going to review. The existence of this problematic is based on *Smith's Protectionism Theory* regarding legislation that tends to damage the internal economy and *Harberger's Theory* of how government interventionism acts as a market imperfection and that an export tax forms deadweight losses.

Moreover, *Bouet's Export Taxation Theory* might go as far in explaining why the export ban is artificially decreasing the price and concurrently lowering business profits (increasing unemployment) while no government revenue is truly created – which is the basic purpose of any tax. To emphasize this point, the government is subsidizing the cost by having to buy the exporters oversupply with resources which could be better allocated to civil services, including aid to the poor and educational programs for the general population instead of supporting an inefficient socialistic-based policy.

This research will analyze the causes and effects derived from the problematic of governmental intervention within the sphere of rice exports. The background situation that has led to these events will be described, depicting the world and local situation with rice prices, legislation and other key issues.

The data collections will take place through a structured survey with the majority of the Ecuadorian rice-exporting business affected representing an industry sample. The association known as CORPCOM will be the cornerstone of this sample since it gathers most of the exporting businesses in the Ecuadorian rice sector.

The analysis will involve a financial aspect where revenues levels and other financial indexes will be compared throughout the years 2005 to 2010 (before, during and after the export ban) in order to support the hypotheses of this study. A statistical analysis will also take place in order to compare and correlate how exports levels influence the profitability of these businesses.

In addition, a more qualitative-oriented analysis will examine and perceptions and attitudes of the exporting sector towards the level of effectiveness of the ban

legislation and policies. Finally, after the analysis conclusions will be carried and for this situation to stop feasible options which can serve as solutions will be presented in the recommendations sections.

The research question that guides this study is: Are factors limiting Ecuadorian (farm or non-farm) revenue regarding rice exports based on current governmental legislation, policy and negotiated agreement?

1. *Ha1: Current legislation limiting exports has negatively affected the Ecuadorian (farm or non-farm) revenue regarding rice exports between the years 2005-2010.*

2. *Ho: Current legislation limiting exports did not affect the Ecuadorian (farm or non-farm) revenue regarding rice exports between the years 2005-2010.*

3. *Ha2: Current legislation limiting exports has increased Ecuadorian (farm or non-farm) revenue regarding rice exports between the years 2005-2010.*

This study is going to first describe the troublesome circumstances and its effects derived from the aforementioned 2007 prohibition of rice exports. Concurrently, this work will create a financial/statistical analysis of the functioning and performance of this trade restriction in the exporters' side. This study will analyze the initial and consequent government policies with the intent to determine the main issues, effects and possible solutions to the underdevelopment of rice industry. This research will attempt to determine if particular legislation has had an effect in the revenues of the local industry and consequently if it had an impact in profitability, labor force levels, and competitiveness in general.

This work will focus on CORPCOM's organizational performance (as an industry sample) about the food-security policies and laws proposed by the Government, its future consequences and long-term effects in the industry by statistically analyzing in the sales and profits and other financial ratios from 2007 to 2009 of the key CORPCOM members' businesses.

Finally, the ultimate objective of this research is to identify feasible solutions and recommendations to the adverse effects a governmental ban might bring. The food prices are in this day and age constantly edging upward with the global financial crisis not nearing an end. For instance Otaviano Canuto (World Bank, 2012), the World's Bank vice-president for

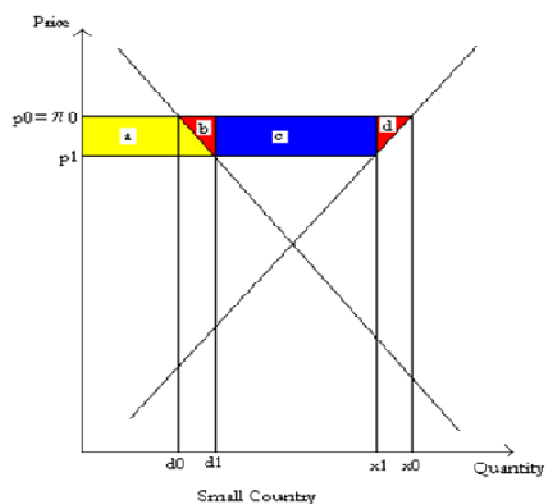
poverty reduction and economic management in April 2012 statement claimed that: "After four months of consecutive price declines, food prices are on the rise again, threatening the food security of millions of people".

Furthermore, according the Food and Agriculture Organization of the UN and its FAO index, which measure monthly price changes for a basket of cereals, oilseeds, dairy, meat and sugar, averaged 215.9 points in March 2012, up from a revised 215.4 points in February of 2012. Even below the February 2011 peak of 237.9, the index is still higher than the 2007-2008 crisis this study

TABLE A.1

2007-2008 Housing-financial crisis	The late-2000s financial crisis contributed to the failure of key business around the world, a significant decline in economic activity, bailout of several banks and massive evictions and foreclosures because of the derived housing market meltdown. It led to a severe global economic recession in 2008, affecting global food prices and existing stock prices.
Bio-fuels	Fuels which are produced from organic matter and renewable natural resources. These resources include plant biomass, vegetables oils and treated municipal and industrial wastes
CORPCOM	Leading rice-trading association comprising fifty five of the most important rice exporting/producing/processing businesses in Ecuador formed in order to promote rice trading
Emerging markets	Countries which their opening to global capital, technology, and talent over the past two decades has changed their economic environments. The GDP growth rates of these countries have dramatically outpaced those of more developed economies, lifting millions out of poverty and creating new middle classes and vast new markets for consumer products and services. Examples include: China, Russia, Pakistan, India, Brazil, among others
Export prohibition/embargo/ban	An extreme form of export restriction in which the local government completely forbids any export activity of a determined product or products
Export restriction	A levy imposed by local governments to exports of a certain product. Some reasons can be increasing government revenue, securing internal supplies or stabilizing prices of the product in question. Types of export restrictions include: taxes, tariffs quotas, or bans
Rice Industry Underdevelopment	For decades, the rice industry have stalled in the same old cropping methods, labor-intensive procedures, deficient and weather-over-dependent water systems; which have not allowed to compete in the international arena.

Table 1.1. Deadweight losses after an export tax



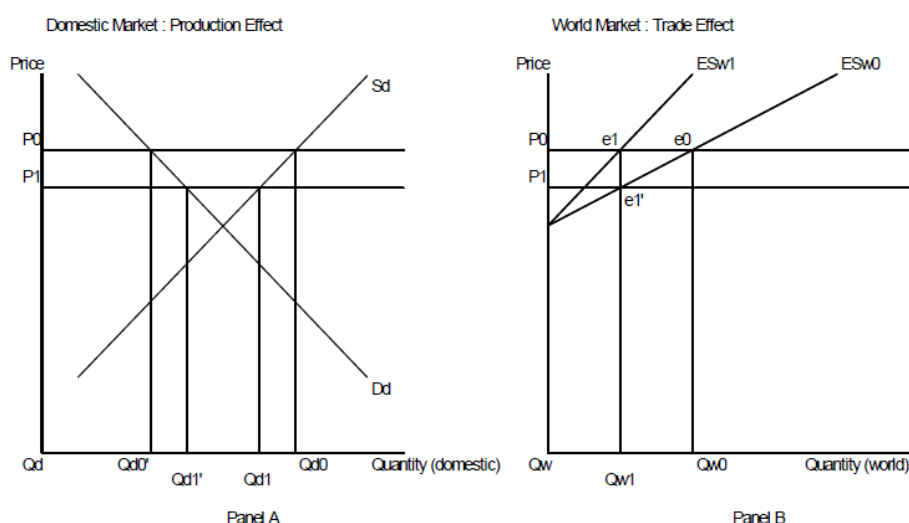
Source: Bouet, A. & Laborde D., 2011, The economics of export taxation: a theoretical and CGE-approach contribution. International Food Policy Research Institute (IFPRI)

is analyzing a triggered of global and local alarm. Emilia Casella, spokeswoman for the U.N. World Food program said: "The food crisis has not gone away since then...Prices are a big concern and have remained a large reason why people are food insecure." (FAO, 2012)

Therefore, this research intends to provide information and data regarding the effects of a governmental prescribed export ban as an artificial and unilateral way to protect the local, internal economy. Historically, similar

export restrictions (as export bans) have taken place motivated by the diverse political interests of the government. However, the intention of this current research is to evaluate alternative ways to increase productivity, efficiency and technology in general to help the consolidation of the rice industry as one of the leading industries and employment generators in our country.

The current research is validated and justified by the relevance and significance of the rice sector within Ecuador social, cultural and economic reality. Rice as a

Table 1.2: Economic effects of an ad valorem export tax without world price effects**TEXTBOX 1:** Economic effects of an ad valorem export tax without world price effects

Source: Bonarriva J., 2009, "Export controls: an overview of their use, economic effects, and treatment in the global trading system"

foodstuff is highly nutritious and healthy (USDA, 2009). It's by far the most frequently consumed food within the Ecuadorian diet (Lema, 2010). The rice industry is a major employment engine. It is a big portion of the Ecuadorian Agricultural Gross Domestic Product which conversely is a big portion of the Total Gross Domestic Product. Rice is one the most sensitive commodities in Ecuador's agricultural market of Ecuador due to the fact it has a status granting it a vast social incidence in virtually every Ecuadorian household. Rough estimates from the Agriculture and Fishing Ministry suggest approximately 300,000 people economically depend on rice for their daily nutritional needs per day. In addition, it gives employment to roughly 50,000 families and contributes 13.5% to the agricultural Gross Domestic Product. (MAGAP, 2011).

Introduction

Causes of the rise in international rice prices

In 2010 the Journal of Agrarian Change names the causes of rise in international prices as "new fundamentals" in the agricultural production chain (Lang, 2010). These include the U.S. based housing financial crisis of 2007 as one of the catalyst for the inflation of global commodity and food prices. In addition, the ongoing growing population and the forward momentum of emerging markets, e.g., increasing world demand for

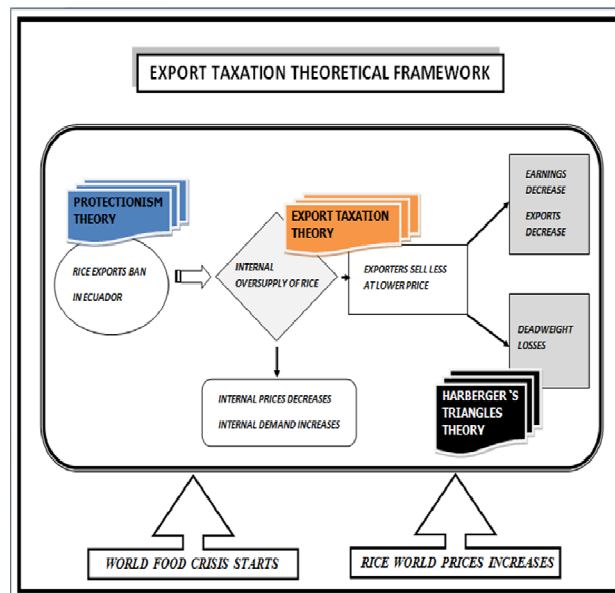
food and more sophisticated food products is also a significant part of this study's problem.

In fact, the current world population is roughly 6.5 billion and is projected to rise over 25 per cent by 2050. This increase of 2.5 billion is equivalent to the total size of the world population in 1950, and it will occur mostly in less developed regions, whose population is projected to rise from 5.4 billion in 2007 to 7.9 billion in 2050 (UNFPA, 2007).

In contrast, the population of the more developed regions is expected to remain largely unchanged at 1.2 billion, and would have declined, were it not for the projected net migration from developing to developed countries, which is expected to average 2.3 million persons annually (FAO, 2007). A looming gap between food production capacity and global population is widely anticipated (Lang, 2010, pp. 3).

Because there is not a global generalized methodology of sustainable agriculture, the natural resources and fields to produce become more limited as time progresses. According to Sarah Murray (Murray, 2010) from the Financial Times 2010 Sustainability Report:

Food producers and agribusinesses are at the receiving end of criticism of their impact on natural resources, whether that is the pollution caused by the run-off of fertilizer chemicals into the water supply or emissions of carbon dioxide and methane – a powerful greenhouse gas produced by livestock. In addition, agricultural companies are under enormous pressure to find ways to reduce waste and conserving supplies

Table 2.1: Export Taxation Theoretical Framework

Sources: Bouet, A. & Laborde D., 2011, The economics of export taxation: a theoretical and CGE-approach contribution. International Food Policy Research Institute (IFPRI). Hines, James. 1998. Three sides of Harberger Triangles .National Bureau of Economic Research.

(Financial Times, 2010, p.2)

The concept of sustainable agriculture which began as a social movement in the last decade has morphed into a consumer-based methodology where producers efficiently grow and process foods that the consumer believes are both healthy and cost efficient (Feenstra, et al., 2006). This parallels the basic economic concept of supply and demand; consumers will purchase items that they believe are relevant and important in their daily lives, thus producers continue to supply the products that are profitable and important while discontinuing to produce those that are not.

There is a growing body of evidence that suggests that climatic changes will continue to affect global growing and distribution patterns of foodstuffs. However, the implications for food capability and sustainability are questionable (IPCC, 2007). The unexpected and unfavorable weather changes around the world have had an impact on the quantity and quality of rice being produced.

For rice producing countries, including Thailand which produces 30% of the world's production (American Journal of Agricultural Economics, 2001), Vietnam which accounts for 18% (Asian Economic Journal, 2003), and Indonesia with 8% (The Economist, 2011) climate has been one salient factor that has caused low-yield harvest periods.

According to one report from the Thai Department of Water Resources as cited in the Asian Times (2008), Thailand and Vietnam, the world's two largest rice exporters, have faced severe drought conditions within the past 4-years which threaten to severely undermine global rice production. Climate change and the *El Nino* phenomenon are being blamed for the unusually hot weather and lack of rainfall.

As recently as 2008, poor weather and low rice stocks contributed to a regional food shortage scare. During this time prices spiraled to more than \$1,000 USD per ton (Brahmbhatt, 2008) and many exporting countries put in place restrictions on overseas sales to guard domestic supplies (Bouet, 2010). According to the Asian Times:

"For the Thai example, which accounts for about one-third of global rice exports, analysts are provisionally predicting a drop of at least one million tons. On June 4, 2008 Thai officials declared 53 provinces as disaster areas because of severe water shortages. The Thai Ministry of Interior's disaster prevention and mitigation department said nearly 6.5 million people had been adversely impacted by drought."

At the end, the dry season's second rice crop to be harvested in August 2008 and which accounts for 25% of Thailand's annual rice output (consequently affecting their exports) dropped from 8.4 million tons in 2008 to 7 million tons in 2009 (American Economic Review, 2009).

Table A.2: Main CORPCOM Members and Directors

BOARD OF DIRECTORS	PRINCIPAL ASSOCIATES	SECONDARY ASSOCIATES
Rosa Lema Rodríguez (CHAIRMAN)	Jose Orellana A.	Jacobo Flores Valero
Ing. Tullio Reyes M. (VICEPRESIDENT)	Calin. Andres Arata	Ing. Juan Pablo Zúñiga
Ing. Raquel Jurado (SECRETARY)	Ldo. Javier Chon	Humberto Portilla
	Carlos Yumez	José Peña Ledesma
	Ing. Javier García	Alexander Rey
	Kerry Cavallos	Henry Bameo Ramos
	Carlos Vargas Guevara	

Source: Lema. R, 2011, Miembros, CORPCOM website
<http://www.corpcom-ec.com/socios/index.htm>

Finally, food production is fuel-intensive and energy-intensive industry. According to Tim Lang, analyst from the Journal of Agrarian Change: “*The availability of cheap and plentiful petroleum has been a key factor in the twentieth century rise of productivity in food systems*” (Lang, 2010, pp. 4). Resources going from fertilizers to machinery fuels to processing transportation have to do with oil. However, with the more recent rise in oil and energy prices, food commodities have followed suit.

In the case of bio-fuels, many industrialized countries like the U.S. have an extensive network of subsidies for producers to develop bio-fuels. This has put a burden on the food industry since many of the fields and resources are now used to grow crops for bio-fuels exclusively and not for human consumption (Foresight Institute, 2011). Consequently, part of the production which was previously expected to satisfy world population is no longer available, lowering the international supply and increasing the prices once again. (Poveda, 2010)

Each of the scenarios above has played key roles in affecting rice production and distribution on a global scale. However, after all of these external causes have been described, the largest contributing factor of inefficient of rice production and distribution and the thesis of this study is that governments around the world have instituted policies and legislation for banning many exports and in the case of Ecuador, rice. Although the short-term upside for consumers is the sufficient supply for internal consumption and a subsidized low price, in the long-run it presents and creates bigger problems because legislation and governmental interference supports the lack of competitiveness and the lack of productivity in an efficient market design.

Effects of the rise in international food (rice) prices

People around the world have awakened to of the potential scarcity of food commodities and consequently started to speculate with prices, thus governments have begun to impose trade restrictions on a large scale (OECD, 2009). Meanwhile, many consumers and supermarkets began to store many quintals of rice as a precautionary measure in case there was not enough supply (Kabel, 2008).

There's another adverse effect within the sphere of governmental influence and legislative activity. Although the countries with enough supply of product can sustain their own internal consumption, there's a rising tendency where countries have been overbuying production of key crops for its internal storage. Thus, instead of efficient market pricing, purchasing and distribution, countries have begun to hoard their foodstuffs. This situation worsens due to the aforementioned restrictions some countries have imposed in the exports of rice and several other products. This trend has been noticed by international organizations such as CIAT and FAO and it has been predicted for what they called “TRADE WAR” for the decades to come (Creamer, 2011).

Globally, rice and other commodities were already suffering from export restrictions such as bans or sales quotas, or both. The scarcity of several types of foodstuffs, especially cereals has starting to become noticeable. In the U.S. during the late 2008 (in the midst of the financial crisis), according to a report of *Diario el Pais* of Spain (2008) there were some buying quotas for customers who purchased rice. It happened in two of the largest supermarkets chains: Costco Wholesale and

Sam's Club. This is a major warning for the consistency in the shortage of rice in the world, especially if we take in account that US is the third largest rice exporter in the world with 12.19% of the world total exports (Reuters, 2008).

Ecuadorians have struggled with this alimentary crisis for some time now and emerging economies such as Ecuador are the ones which are being affected the most with this trend. In the year 2009, Thailand; the largest rice exporter in the world, announced that it was reducing its exports by 14% (Foreign Agricultural Service, 2011). The main reason for this was the aforementioned drought affecting the Asian continent at the time.

Another relevant global example is China. As one of the largest emerging markets it has also imposed some quotas and has increased the tariffs for rice exports. China exported 16.929 MT in 2007, while in 2008 it just exported 1,762.12 MT in an effort to provoke entrepreneurs to focus their business practices into the local markets. Thus, China could guarantee barely a little more the adequate stock for the population (China Country Review, 2011).

In the above examples suggest massive reductions in exports levels; several tens of thousands of metric tons of rice not being exported. These types of governmental antics inevitably will affect the markets and consequently the rise in international rice prices, which for the time being will continue to grow.

Brazil is a rice exporter that, in a lesser measure, supplies the international markets. However, it also announced the temporary prohibition in the rice exports. Brazil kept 1.6 million tons during 2008 in government warehouses (CNBC, 2008). Brazil's measure affects specially Latin America and Africa which depended of Brazilian supplies. As we can observe, hoarding foodstuffs creates a domino effect in which the policies and restrictions spread very quickly among countries, which ultimately creates a bubble leading to ultimate collapse in international trade.

Another example in South American is President Cristina Fernandez from Argentina reelected in November of 2011 have "*vowed to deepen the model*" of interventionist governmental policies (Reuters, 2012) In fact during 2008 Argentina banned all its rice exports, except to neighboring country Brazil.

Some other examples are included in the Table A.1 in the appendix section. According to the United States Department of Agriculture, rice is one of the most consumed crops in the world with 432,039 MT consumed in 2008 (2009). Given its significance as a staple food; it makes sense that governments try to guarantee sufficient amounts for internal consumption rather than external (Banville, 2007).

Consequences of the rise in international rice prices in Ecuador

Ecuador and its local industry were not indifferent to the effect of the world financial crisis. Soon, the alarms of scarcity, high prices and speculation started sounding around the major producers in the supply chain of the rice internal markets. The local rice industry having such an important role in the internal consumption was one of the industries which the government deemed salient and necessary for population survival and governmental stability.

Due to this condition, the Ecuadorian government believed that the rice industry needed to be protected with political and economic measures. Loyal to its socialist ideology the government of President Rafael Correa launched a series of presidential decrees, ministerial agreements and other types of interventionist legislation procuring the "*protection*" of the rice industry.

Historically, the rice in Ecuador has been repeatedly under political scrutiny through price controls due to its social importance for the nation. In Ecuador, the agricultural sector has always played a significant role in the country's Gross Domestic Product (GDP).

According to the World Factbook and the Ecuadorian Central Bank in 2010, the agricultural sector accounted for the 10.8% of the total Ecuadorian GDP for the year and 8.3% of the labor force was involved in the agricultural sector (Factbook, 2011). Rice is one of the key components of this sector since it is one of the most extended crops in hectares terms with 363,119 hectares in 2010 (MAGAP, 2011).

From 2006 to 2011, several challenges have arisen for the industrialization of rice. One of the reasons of this sustained crisis has been the complete prohibition in its exports. The primary motives behind the drastic measure were "primarily to maintain a proper reserve and sufficient strategic reserve for the local markets, with the final intention of keeping the internal prices under control" (Vallejo, 2007, p.11).

Another issue along derived from the actual prohibition is the lack of massive storage projects (or the existence of some, but of low-quality facilities) for the new (not exported) reserves. By March 2010, there were 100,000 tons already stored in governmental storage units. However, by mid-2010 the new production of 900,000 tons was ready for harvest, but obviously logistics problems arose because of this lack of capacity and delays in the shipment to export to Venezuela (FLAR, 2010). There was simply nowhere to store the new harvest.

Moreover, Colombia being practically our unique rice trade partner represents the majority of our external

market. There have been problems with the Colombian government by imposing new phytosanitary measures with the resolution 1035 Colombia presented in the Andean Community of Nations and with the same resolution it has required better cropping methods for the Ecuadorian markets (Tizon, 2006).

Across this outlook, most of the Ecuadorian rice industry looks uncertain. According to Rosa Lema:

"It is imperative the government clearly determines policies within the rice industry, which these policies have to be aligning the official needs with the needs of producers, entrepreneurs, and exports so that it can benefit the entire common production chain structure of rice" (Lema, 2010, pp.1).

Legislation, policy and negotiated agreement: The Beginning

The particular circumstances in which this study is going to focus goes back to the year 2007. To be more specific, it starts in September 26, 2007; the day a disposition banning all Ecuadorian rice exports was released. It was by ministerial agreement number 313 included in the official record number 178 (Vallejo, 2007).

This particular piece of legislation was approved through the Ministry of Agriculture which based its decision mainly on the supposed duty the government has, consisting of safeguarding the internal rice supply. In the same vein, it was originally proposed based on the duty of the government to ensure and guarantee the food security policies and price stability (Vallejo, 2007).

The government also considered this decision based on the *"substantial investment"* in the local rice industry intended to strengthen the agricultural sector in Ecuador especially the sale of fertilizers to small and medium scale producers at low costs through the National Fomentation Bank, a central-government agency in charge of the promotion of productivity in local businesses (Vallejo, 2007).

According to the Ecuadorian government, the investment was in this case needed; *"in order to compensate in favor of the Ecuadorian people; safeguarding the general interest of the people and the economy of the local consumer"* (Ecuadorian National Congress, 2004).

The key resolutions were initially to temporarily suspend the rice exports for 90 days, with the aforementioned objective of protecting the food security state policy and foment price stabilization. However, in the long-term such a unilateral control measure would most likely bring severe consequences to the Ecuadorian rice exporters.

Legislation, policy and negotiated agreement: Extension

By December 4th, 2007 the initial 90 days ban decreed by the government had expired. However, the Ecuadorian government considered that since prices were still high in neighbor countries, a strong demand for Ecuadorian rice existed which could potentially increase internal prices and destabilize the internal supply. Therefore, providing that the government was in charge of the food security policies and the normal supply of this cereal a new resolution was created.

Thus, in the Ministerial Agreement number two, official record number 259 from January 24th, 2008 it was agreed that the export ban would be extended for 90 additional days (Vallejo, 2008).

Legislation, policy and negotiated agreement: 2nd Extension

The first extension ended on March 31st, 2008. The Minister of Agriculture was changed from Carlos Vallejo to Walter Poveda. On May 7th, 2008 the Ecuadorian government deemed necessary to further intervene in the export market. This time, it considered that climate conditions have been adverse for the April 2008 harvest, which consequently would not allow having a sufficient supply for internal consumption and in order to keep local prices *"reasonable"*; decided to extend the ban for 30 additional days (Poveda, 2008).

Legislation, policy and negotiated agreement: 3rd Extension

A few weeks later on May 23rd of the same year further evaluations from the Ministry of Agriculture concluded that through the Ministerial Agreement #077 (official record #334) it was necessary to extend the ban 30 days more. This time the main reason was vaguer and less detailed and includes: *"to guarantee the normal supply for the population at reasonable prices"* (Poveda, 2008).

Legislation, policy and negotiated agreement: Indefinite Extension

During this new phase, the governments considered the Agricultural Development Act (Ecuadorian National Congress, 2004) in order to indefinitely ban any rice exports. The aforementioned law when talking about agricultural policies in its article number three

establishes:

"...to promote a local and foreign trading system of the agricultural production which eliminate the market distortions that jeopardized the small producers and that allow to satisfy the requirements of the local and foreign demand" and also "to protect the short-cycle producer who harvest internal consumption crops, for incentivizing the trust and security in the investment return, rewarding the countryman efforts..." (Ecuadorian National Congress, 2004, p. 4)

The law put some more emphasis on the same point of the duty the government has to control the prices of key products and to adopt any measure necessary to prevent the fled of any crops outside of national borders, which could provoke an internal shortage.

Therefore, from June 20th of 2008 the ban was extended without any ending date. The ministerial agreement number ninety one makes a exception for 20,000 MT that were agreed between the government of Ecuador and the government of Bolivia, prior to the indefinite extension of the ban.

Legislation, policy and negotiated agreement: Government Purchases

Under this new agreement the government began to actively intervene in the rice market in Ecuador. The reasons: safeguard the food security, keep the internal prices stable and to secure the internal supply, same motives for which previous measures took place. However, under this new decree the duty of the government to perform these actions turns into an obligation the government has, in fact, to intervene in the local rice markets.

Thus, governmental interference takes a much more active role. Firstly, it authorizes the National Fomentation Bank to purchase 40,000 metric tons of paddy rice as a strategic reserve, to supply the internal demand. It releases the operative capital to cover the production costs and related expenses of the aforementioned purchase. These funds came from for the State General Budget. Furthermore, the logistics and handling the 40,000 tons of rice will go to the National Fomentation Bank, which will also be in charge of its sale and distribution.

Finally, under this decree (number 107) the Ministry of Agriculture foresees the establishment of an official sale fixed price for local rice products, *"...in order to avoid speculation"* (Poveda, 2008, pp.4)

Legislation, policy and negotiated agreement: Fixed Price

Following the same rationale of food security, equality for

the chain of production, keep prices low for general population, etc., the Ecuadorian government through the decree number 52 in April, 23rd of 2009 finally establishes a fixed price for the sale of the not-milled rice (205 pounds) of \$26.00. Meanwhile, the 100 pounds of milled rice will be sold for \$28.00 in order to protect all the chain of production and the general population (Poveda, 2009).

It is relevant to mention there was a meeting with Rice Consulting Council on March, 13th of 2009 in order to satisfy the needs of the producers and sellers in the chain of production and that for each of them an appropriate profit is gained, derived from their investment.

Legislation, policy and negotiated agreement: Ban Expires

At the end with the decree number 68 on April 6th of 2010, the Ministry of Agriculture with a new Secretary (Ramon Espinel was appointed when this happened) considered that the conditions which required to impose a ban in the rice exports no longer existed and the internal supply and the price was stable enough to remove the ban (Espinel, 2010).

Theoretical Framework

Definition of Terms

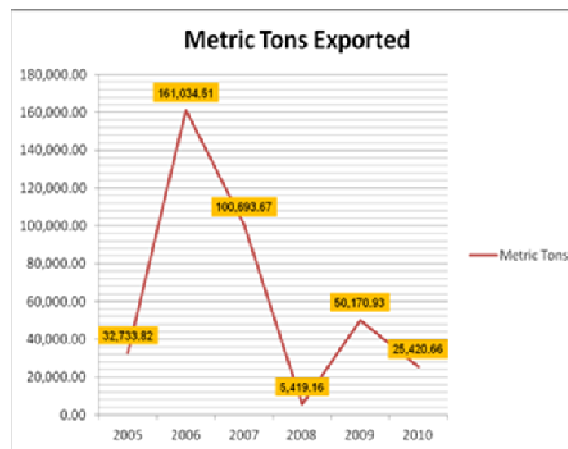
Theoretical Framework

Mercantilism and "free-market" policies have dominated the world's trading system. Therefore, policymakers have usually aimed at increasing exports levels while lowering imports. Governments are accustomed to applying import taxes and exports subsidies. Exports prohibitions and restrictions, conversely, are two legislation tools that appear to be more difficult to comprehend (Bouet, 2011).

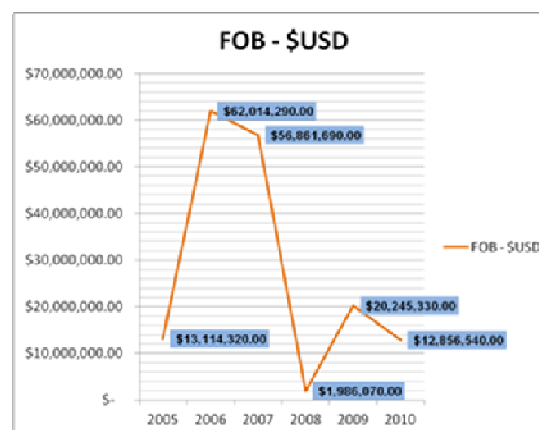
Protectionism theory

Government restraints and other interference with domestic and foreign commerce are dangerous and unwise. The protectionist theory (Smith, 1778) reinforces this with the view that every individual can judge much better than any statesman or lawgiver on how to employ capital. Furthermore, what is evident is that the individual, in his local situation; it is more likely to produce the combination of the greatest value.

Paul Krugman found out the comparative advantage theory (firstly described by David Ricardo, 1817) is not only an idea both simple and profound, but also an idea that "conflicts directly with stubborn popular prejudices

Table 3.1.1: Metric Tons Exported (November, 2011)

Source: Ecuadorian Central Bank, 2012

Table 3.1.2: Exports in US\$

Source: Ecuadorian Central Bank, 2012

and powerful interests" (1987). Krugman explains: If there were an economist's creed, it would surely contain the affirmations "*I understand the principle of Comparative Advantage*" and "*I advocate Free Trade...*" (Krugman, 1987).

All too frequently, administered policies are in reality efforts to promote personal interests above national interests. Competitive markets even with competitive conditions that are far from perfect easily achieve results superior to the most elaborate administered alternatives (Krugman, 1987).

The current literature on exports limitations indicates that governmental prohibitions are rather frequent. For instance, many developing countries implemented exports restrictions, as shown in table A.1 in the appendix, during the recent food crisis (2006-2008)

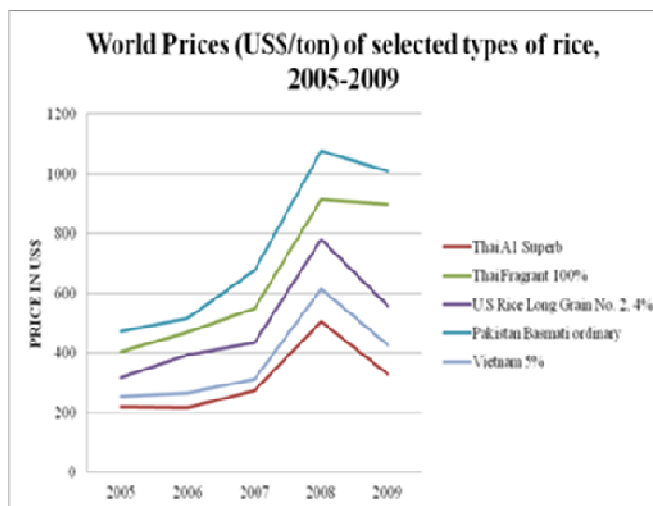
particularly on cereals, and for the matter of this study, rice.

Smith (1778) further indicates the negative effect such restriction can have in a country:

"The statesman who should attempt to direct private people in what manner they ought to employ their capitals would assume an authority which could safely be trusted, not only to no single person, but to no council, and which would nowhere be so dangerous as in the hands of a man who had folly and presumption enough to fancy himself fit to exercise it."

Export Taxations Theories

Bouet and Laborde from the International Food Policy

Table 3.1.3: Rice World Prices in US\$

Source: FAO Committee on Commodity Problem, 2010 Report

Table 4.1.1: Test of Homogeneity of Variances

Test of Homogeneity of Variances			
REVENUE			
Levene Statistic	df1	df2	Sig.
2,449	2	15	,120

Research Institute indicate that one of the reasons governments decide to embrace exports restrictions is to stabilize domestic prices: *“By creating a wedge between the world price and the domestic price, government lowers the latter by re-orientating domestics supply towards domestic market”* (Bouet, 2010,12).

This was in fact the rationale behind the rice exports banning in Ecuador during 2008. Also, it appears that countries have a relatively large freedom to apply such policies since they are not prohibited by the World Trade Organization in restricting exports. In addition, this form of trade policy does not receive a great attention from the academic establishment (Bouet, 2010).

The theory of export taxations provides an understanding of the effects of exports restrictions. In their study, Bouet and Laborde present an export taxation theory based on the Harberger triangles theory analyzing the effects of legislation such as exports taxes, tariffs or quotas in the internal market, which this current research has it focus on. The below economic model summarizes their theory:

In Table 1.1 applied to the Ecuadorian rice industry and the problem in question where domestic price (before the

prohibition imposed by the government) is p_0 , while initial world price (before the world food crisis of 2008) is π_0 .

At these initial prices, the domestic demand for rice is d_0 and is less than the domestic supply being x_0 , the difference being exported on the world market. As these exports are taxed, at initial prices domestic producers prefer offering their supply on local market (untaxed/unbanned) than on world markets (taxed/banned).

In the extreme case of a total ban, the producers/exporters (represented by CORPCOM) in Ecuador have no other choice than to only sell within the local market. On the domestic market supply is increased reducing domestic price until $p_0(1+t) = \pi_0$. The world prices are not affected by Ecuador's banning. Since Ecuador is not a major exporter in the worldwide industry of rice, it does not play a significant role in the change of the world prices.

In the Ecuadorian case, the production that was intended to be exported was banned to do so, therefore augmenting the internal supply of rice. Most of this oversupply was bought by the Ecuador government and then store for later consumption. Moreover, even if the

Table 4.1.2: ANOVA

ANOVA					
REVENUE					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1246019,444	2	623009,722	4,686	,026
Within Groups	1994141,667	15	132942,778		
Total	3240161,111	17			

natural market forces would decrease the internal price of rice, a fixed lower price was set at \$28 the quintal of rice. To sum up, the government intervention in Ecuador had more extreme role within the rice industry.

The export taxation theory from Bouet explains that domestic consumers are benefiting from this policy as they consume more ($d1 > d0$) at a lower price ($p1 < p0$). (Bouet, 2010) Their surplus (benefit) is increased by the yellow area denoted as a . The model applied to the Ecuadorian local industry explains that more involvement by the government at setting the price in \$28 the quintal enhance these effects aligning social needs and food security as the primary objective.

On the other hand, domestic producers/exporters are hurt by this policy as they produce and sell less ($x1 < x0$) at a lower price ($p1 < p0$) reducing their competitiveness. Their surplus (profit/revenue) is reduced by ($a+b+c+d$). Finally, the model explains the export tax increases public revenues by the blue area, denoted c as post-tax level of exports are the difference between $x1$ and $d1$ and as the unit tax is ($\pi0 - p1$) (Bouet, 2010).

Bonarriva, Koscielski and Wilson of the Office of Industries from the U.S. International Trade Commission claim that raising government revenue can often be seen as a valid reason to create an export tax (2009). In Ecuador, politically speaking, the move made sense. Lowering the price for the general population, while achieving popularity in the polls was a win-win scenario for the government (at least in the short-term)

However, from a fiscal sense, it was unsound move. The government of President Rafael Correa has constantly been criticized for having a strained relationship with the private sector often minimizing or simply neglecting their needs in favor of massive social government-funded programs. This case of rice appears to be no different. Whereas companies are losing money, firing people and losing long-term competitiveness, the government has supported and in many ways continues to support an inefficient and ineffective plan in order to artificially stabilize the internal prices.

Piermartini (2004) explains that an export tax is often simpler to administer and collect than other more

complicated forms of taxation such as land tax or income tax. Desee and Reeder further explain that another benefit for the government in the form of raising foreign exchange, and that an export tax can be also more tenable politically (Desee and Reeder, 2007). Furthermore, Bonarriva, Koscielski and Wilson explain this theory with a similar model (Table 1.2) which explains more closely and in detail what happens to a particular economy when an export tax is created. In the case of an export ban, the decision is economically inefficient. With such a ban, the c area which is supposed to be public revenues generated from the export tax doesn't exist. By banning exports, the government is not generating any additional revenue. However, the c area in the model still remains a levy on the surplus (earnings) to the producers/exporters.

In sum, Bouet and Laborde in their theory further explain that: a tax policy is detrimental to a small country like Ecuador as the loss of producers' surplus is larger than the gain in consumers' surplus and in public revenues which the latter for the Ecuadorian scenario when taxes are not collected. All these effects sum up in a loss of domestic welfare which are equivalent to the Harberger triangles (deadweight losses) in the theory of protectionism (Harberger, 1964).

TherAccordingly, Bouet and Laborde state:

"If policy makers have a food security objective which implies a decrease of domestic price, tax exports are efficient in the sense that they augment domestic consumption and reduce local consumer price. They increase the surplus of food consumers that is overweighed in the government function in this case. A consumption subsidy will be a first order instrument (more efficient) but it will have a cost for the government..." (p.23).

The Harberger Triangles

The Harberger triangles theory (1964) is used to calculate the efficiency cost of taxes, government policies, monopolistic regulations and other market

Table 4.1.3: Multiple Comparisons

Multiple Comparisons						
REVENUE Tukey HSD						
(I) METHODS	(J) METHODS	Mean Difference (I- J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
TRADITIONAL METHOD	SEMITECHNIFIED METHOD	-339,16667	210,50952	,272	-885,9589	207,6256
	TECHNIFIED METHOD	-644,16667*	210,50952	,020	-1190,9589	-97,3744
SEMITECHNIFIED METHOD	TRADITIONAL METHOD	339,16667	210,50952	,272	-207,6256	885,9589
	TECHNIFIED METHOD	-305,00000	210,50952	,342	-851,7922	241,7922
TECHNIFIED METHOD	TRADITIONAL METHOD	644,16667*	210,50952	,020	97,3744	1190,9589
	SEMITECHNIFIED METHOD	305,00000	210,50952	,342	-241,7922	851,7922

*, The mean difference is significant at the 0.05 level.

distortions. It is a perfect fit in supporting this study's theoretical base due to the fact this study is directed to pinpoint the possible flaws and weaknesses denoted in the loss of revenue from businesses.

The Harberger triangles theory analyzes the deadweight losses arising from market imperfections, the current research will direct the theory towards the impact of the export ban in the local Ecuadorian rice industry. These deadweight losses represent the lower level in annual revenue in the quantitative analysis. Also, from a qualitative standpoint they represent the discontent and discomfort the exporters have experienced from the lack of cooperation and interventionism the government have had from this inefficient practice. Prevailing economic wisdom is highly critical of injudicious tax policies or government regulations, uncorrected externalities, unchecked monopolistic practices, and various other market failures (Hines, 1998).

D. Conceptual Framework

Assumptions and Limitations

The purpose of this study is to illustrate how governmental influences work against both the producer and consumer of an agrarian staple food, in this case rice. This study has made several assumptions regarding both rice and its export. First, it is assumed that producers would continue to show healthy profits over time and after the legislation ended. Secondly, it is assumed that Ecuador's main trading partner, Colombia, will continue to import the quantity of rice that it has historically shown to import from Ecuador. Additional assumptions allow that secondary forces would continue to act against the production and sales of rice including the weather, market price, and consumer demand.

Historically and in many cases, all of these external

events can be shown to be a positive driver in the production and exporting of rice rather than a negative one as this paper has illustrated. For instance, the El Nino phenomenon with its unpredictably heavy rains have shown in the past that excessive rainfall is not detrimental to the production, processing, and exportation of rice, quite the opposite.

It is also assumed that market price would continue to appreciate over time. Historically, free-market prices fluctuate depending on a wide variety of factors. New market entrants and surplus crops on a global level will reduce market price – this study assumes that global rice producers remain constant while consumer demand increases. Finally, this paper argues that legislation is a negative driver to competitive and increasing revenues among producers. Many times local and federal legislation assists in protecting the local producer while raising price and satisfying consumer demand.

Limitations to this study primarily relate to the legislative effects on one singular agricultural product-rice. Rice is but one of the agricultural exports of Ecuador that was affected negatively due to a governmental ban on exportation. There are many other instances where governmental influence has been a positive driver to both producer and consumer. Additionally, this study does not take into account various production factors including manpower shortages, wage and labor disputes and strikes that could affect the production and exportation of rice.

The descriptive methodology is another limiting area. The *n* size of the returned surveys does not necessarily reflect an accurate sample of Ecuadorian rice producers or exporters. Additionally, those who returned the surveys were executive officers, i.e., CEO's of various organizations; the surveys do not reflect the interests of mid or low-level producers at a local or national level. These individuals were not given a voice, thus the results may have turned out differently if they had been allowed

Table 5.1. Data Extrapolation by the authors, 2012.

TRADITIONAL	2005	2006	2007	2008	2009	2010
Total Costs	\$ 536.45	\$ 578.28	\$ 695.56	\$ 913.75	\$ 884.11	\$ 872.08
NET INCOME	\$ 103.55	\$ 61.72	\$ 304.44	\$ 206.25	\$ 235.89	\$ 247.92

SEMI-TECHNIFIED	2005	2006	2007	2008	2009	2010
Total Costs	\$ 767.95	\$ 828.42	\$ 929.03	\$ 1,275.33	\$ 1,191.95	\$ 1,169.49
NET INCOME	\$ 32.85	\$ 51.58	\$ 445.97	\$ 264.67	\$ 348.85	\$ 370.51

TECHNIFIED	2005	2006	2007	2008	2009	2010
Total Costs	\$925.23	\$935.52	\$1,005.17	\$1,605.24	\$1,466.51	\$1,445.41
NET INCOME	\$ 34.77	\$ 104.48	\$ 619.83	\$ 354.76	\$ 493.49	\$ 514.59

to participate.

Another relevant limitation is the aversion most Ecuadorian companies have to reveal financial information. This reluctance from the firms avoided making a deeper financial analysis using multiples ratios. This attitude seems to be generalized and shared by government agencies like Superintendence of Companies, which does not make all financial statistics fully public.

The final limitation to this study is time. From start to finish, this research paper spent some 8-months taking a snapshot of legislative influence between a small timeframe of a couple of years, between 2005 and 2010. A longitudinal study looking at least two or three decades would have been more efficient in identifying trends in production and exportation with or without the governmental ban.

Finally, and as is common with all descriptive research elements, the researcher's focus was on practices and not meanings. This research looks at a small window in time, governmental legislation, one singular product, and its effects, primarily on revenue. This research failed to look at potential possibilities, meanings and reasons nor did it project a probability of various scenarios with and without the legislation.

METHODOLOGY

The study will use non-probability sampling. Unlike probability sampling, the non-probability sampling does not involve random selection. Furthermore, Purposive Sampling will be selected as a subcategory of non-probability sampling. According to Trochim (2006) the

purposive sampling the study will research and collect data from a specific sample with a purpose in mind.

Purposive sampling can be very useful for situations where one needs to reach a targeted sample quickly and where sampling for proportionality is not the primary concern or purpose. This type of sampling applies perfectly to suit this study's needs. This will mean that in order to apply this methodology a group of volunteers will be brought together out of a more specific pool of informational sources. Based on the study needs, it has been determined that the sample which is going to respond to the survey will have a direct relationship with the rice issue as described here. Thus, the survey instrument has been validated through Trochim's purposive sampling vehicle.

It is important to mention that since this is such a specific and technical topic, the sample cannot be randomly selected and whoever is selected has to be directly connected with the national outlook and principal producers of the rice industry in Ecuador.

Corporación de Industriales Arroceros del Ecuador (CORPCOM) is an official producer's association formed in March 30th, 1995. The key members of this organization embody more than 75% of the total rice exports industries and businesses in Ecuador. Their mission is to technologically strengthen the industry by attracting foreign investment through sustainable projects, which guarantee the high quality of the Ecuadorian rice.

Expert sampling involves the assembling of a sample of persons with known or demonstrable experience and expertise in some area (Trochim, 2006). Twenty five CORPCOM members fulfill this requirement. There are two reasons the study has selected on CORPCOM

Table 6.1: Average Net Income Comparison

	05/06	06/07	07/08	08/09	09/10
<i>Traditional</i>	(40.40%)	393.26%	(32.25%)	14.37%	5.10%
<i>Semitechnified</i>	60.94%	764.62%	(40.65%)	31.50%	6.45%
<i>Technified</i>	200.49%	493.25%	(42.76%)	39.11%	4.28%

Source: Data Extrapolation by the authors, 2012.

associates as the sample. The first reason is because it would be the best way to obtain the perspectives of people and institutions that have a specific expertise in the rice industry. The other reason is that by using these experts the study can provide evidence for the validity of the data.

This restricted sample will provide the thesis with a better approach on to how the prohibition has affected the crops, what kind of losses has it created, what they expect about the future and possible solutions on to how to deal with the worldwide food crisis and the policies imposed by the local government.

Financial Analysis

Regarding financials, this research will present more of a micro-analysis consisting of the analysis of financial statements from a representative sample of rice export companies in Ecuador. Company-wide financial statements will be analyzed and average income statements will be produced for the three different methods of production. Idealistically, it will be completed to evaluate the financial strength of the industry at a given point in time which will be before and after the crisis of 2008. This approach will be especially important in trying to get the objective of suggesting proposals to possible solutions in the main problematical thesis.

Respondents

For the statistical analysis the following members and their respective businesses given their importance in the industry within CORPCOM are the ones selected as the representative sample

ANALYSIS OF RESULTS

The rice exports have been in fluctuation due to the many

reasons mentioned before in this study. The lack of compliance in trading agreements, lack of proper export-quality rice among other contributed to a low amount of rice being exported. Table 3.1.1 shows the metric tons exported between the years 2005 to 2010. These critical periods comprehend pre-ban, ban and after ban years; where we can see the big fluctuations from one year to the next. The years 2005 and 2006 are pre-bans years. In 2005 in particular, 32,733.82 MT were exported, while in 2006 right before the food crisis unleashed Ecuador exported 161,034.51 MT being the strongest year before the ban.

The next two years 2007 and 2008 were ban years, for much of 2007 the ban was not executed, that's why it dropped to 100,693.67 MT, a 37.5% drop compared to the previous year. The year 2008 the ban was completely executed all-year around. Therefore, the data illustrates a massive drop in rice exports. During 2008, only 5,419.16 MT were exported, this amount was allowed by the government of President Rafael Correa for prior-food crisis agreements made with the government of Hugo Chavez from Venezuela. It was a 95.4% drop from the year 2007. After the ban was lifted by year 2009 and 2010, exports have not yet recovered to pre-ban years' levels, having 50,170.93 MT in 2009 and 25,420.66 MT in 2010.

Table 3.1.2 is a continuation of Table 3.1.1 as it shows the experts levels this time not in metric tons, but in real monetary value; in this particular case in U.S. dollars. Using these statistics from the Ecuadorian National Bank we can see in more realistic terms the losses the ban caused to rice exporters in Ecuador.

During 2005 a pre-ban year, Ecuador made only \$13,114,320 in rice exports. By the next years, the exporting supply grew significantly and by that year Ecuador had export revenue of \$62,014,290 for rice exports. In 2007, there a slight drop to \$56,861,690. The major drop happened in 2008, the year of the full-blown prohibition of exporting rice from Ecuador. In 2008, only \$1,986,070 was collected for the receipt of rice exports. By the year 2009, there was a small recovery and rice

Table 7.1: Average Income Statement of Local Exporters 2005-2010 by Method of Cropping

TRADITIONAL	2005	2006	2007	2008	2009	2010
Average Yield ¹	40	40	40	40	40	40
Average Sale Price ²	\$ 16.00	\$ 16.00	\$ 25.00	\$ 28.00	\$ 28.00	\$ 28.00
TOTAL REVENUE ³	\$ 640.00	\$ 640.00	\$ 1,000.00	\$ 1,120.00	\$ 1,120.00	\$ 1,120.00
Total Costs per Hectare ⁴	\$ 536.45	\$ 578.28	\$ 695.56	\$ 913.75	\$ 884.11	\$ 872.08
NET INCOME ⁵	\$ 103.55	\$ 61.72	\$ 304.44	\$ 206.25	\$ 235.89	\$ 247.92

SEMI-TECHNIFIED	2005	2006	2007	2008	2009	2010
Average Yield ¹	50	55	55	55	55	55
Average Sale Price ²	\$ 16.00	\$ 16.00	\$ 25.00	\$ 28.00	\$ 28.00	\$ 28.00
TOTAL REVENUE ³	\$ 800.00	\$ 880.00	\$ 1,375.00	\$ 1,540.00	\$ 1,540.00	\$ 1,540.00
Total Costs per Hectare ⁴	\$ 767.95	\$ 828.42	\$ 929.03	\$ 1,275.33	\$ 1,191.95	\$ 1,169.49
NET INCOME ⁵	\$ 32.05	\$ 51.58	\$ 445.97	\$ 264.67	\$ 348.05	\$ 370.51

TECHNIFIED	2005	2006	2007	2008	2009	2010
Average Yield ¹	60	65	65	70	70.00	70.00
Average Sale Price ²	\$ 16.00	\$ 16.00	\$ 25.00	\$ 28.00	\$ 28.00	\$ 28.00
TOTAL REVENUE ³	\$ 960.00	\$ 1,040.00	\$ 1,625.00	\$ 1,960.00	\$ 1,960.00	\$ 1,960.00
Total Costs per Hectare ⁴	925.23	935.52	1,005.17	1,605.24	1,466.51	1,445.41
NET INCOME ⁵	\$ 34.77	\$ 104.48	\$ 619.83	\$ 354.76	\$ 493.49	\$ 514.59

Source: MAGAP, Direccion Provincial del Guayas

Notes: Average Yield per Hectare Harvested: The number is denominated in "SACAS" units. Each "SACA" weights two hundred and five pounds of paddy rice.

1. The average sale price per "SACA" in U.S. Dollars: The price was fixed in \$28.00 by the government of President Rafael Correa during 2008.

2. Total revenue per hectare (average number of sacas produced in one hectare X average price per saca)

3. Total Costs to produce one hectare: It varies depending upon the crop-system which it's used.

4. Net Income per hectare: (TOTAL REVENUE - TOTAL COSTS)

exports grew to \$20,245,330 having a drop in 2010 to \$12,856,540, showing us again the exports levels never really recovered their pre-ban levels.

The next Table 3.1.3 reflects the international prices rising during the food crisis which contributed to internal speculations and was the main trigger for the government of President Rafael Correa to impose the ban in all rice exports during part of the year 2007 and all of 2008.

Table 3.1.3 considers the five most relevant and majorly-traded types of rice in the world to reflect the rise in prices during the food crisis years. The types of rice selected are the following: Thai AI Superb and Thai Fragrant 100% from Thailand', U.S. Rice Long Grain 2.4% from the United States, Pakistan Basmati Ordinary from Pakistan and Vietnam 5% from Vietnam. The metric tons of the five types during 2005 were ranging from around US\$200 to \$450. Gradually, the prices started to rise and by year 2008 they were ranging from \$450 the

lowest (Thai AI Superb) to near \$1,200 the highest (Pakistan Basmati Ordinary).

ANOVA RESULTS

Table 4.1.1 illustrates the homogeneity of variances, Ho says the variances are equal and H1 states variances are different. Since the P-value (0.120) is greater than the 5% significant level, we do not reject Ho. We do not have enough statistical evidence to demonstrate that the variances are different. Thus, the equal variance assumption has been met.

Table 4.1.2 illustrates the degrees of freedom, f value, and probability (P value) of Group A, B and C consisting on whether or not there are significant differences between the three cultivation methods. Ho claims all 3 methods are the same, H1 claims there will be at least

one difference among the methods. Since the P-value (0.026) is lower than 5% significant level, we reject H_0 in favor of H_1 . We do have enough statistical evidence to demonstrate that there will be at least one difference among the methods.

Table 4.1.3 shows the analysis of the differences, with ANOVA we know there are differences; the following analysis refers to the 3 possible comparisons:

- Traditional Method VS Semitechnified Method
- Traditional Method VS Technified Method
- Semitechnified Method VS Technified Method

For the current sample the average income is greater for the Technified Method. Since the p-value (0.020) is lower than the 5% significant level. There is a significant difference in favor of the Technified method. For the remaining comparisons, there was no evidence to differentiate between the traditional methods VS the semitechnified method and the same when we compare technified method VS semitechnified method.

In conclusion, there are no differences between the Traditional Method VS Semitechnified Method & Technified Method VS Semitechnified Method. However, ANOVA found differences; the only difference that exists between methods is between Traditional Method VS Technified Method, in favor of the technified method whose average income is greater than the Traditional Method.

Pre-Ban vs. Ban vs. After Ban Total Revenues

This study is attempting to show that financially and statistically, the ban in rice exports imposed in 2008 by the government of Rafael Correa did, in fact, affect negatively the revenues of the local exporters.

Table 7.1 has summarized an average income based on financial statements of the rice exporters' firms during the pre-ban, ban and after-ban years using several variables and classifying the data by three methods of cultivating rice which are traditional, semi-technified and technified. Furthermore, several financial variables were used to form the average income statement. As previously mentioned, the income statement was used in this study since it provides both variables total revenues and total profits and from a financial standpoint it serves the purpose of actual data.

In order to form this average income statement the study used the following categories of data:

- Average Yield per Hectare Harvested: The data is denominated in "SACAS" units. Each "SACA" weights two hundred and five pounds of paddy rice. In Ecuador, it is a common measure of the yield of a hectare (the most common unit to measure agricultural land in Ecuador, one hectare is 10,000 square meters). The yield of rice a hectare could provide depends largely on the method

used. In the traditional method, the average has been kept from 2005 to 2010 in 40 SACAS per hectare. Meanwhile in the semi-technified method there has been a slight improvement throughout the years. In 2005, the average yield for the semi-technified method was 50 SACAS. From 2006 and on, the average yield has been 55 SACAS.

Finally, the most improvement experienced has been in the technified method. In 2005, it started in 60 SACAS per hectare. Then, in 2006 and 2007 it grew to 65 SACAS and 70 SACAS was the average in 2008, 2009 and 2010.

The next data this study used is the average price per SACA in US dollars. This price normally was determined by market forces, until the government of Rafael Correa imposed the \$28.00 per SACA in 2008.

For 2005 and 2006, for the three methods the price stayed the same in \$16.00. However, by the year 2007 internal prices for rice started to rise dramatically. The average price for the three methods increased to \$25.00 in 2007 due to the food international crisis and other reasons mentioned in this study. By 2008, the government of President Correa imposed the export and fixed the price of the SACA in \$28.00 in order to avoid speculation and protect local consumers, in a time when the price was skyrocketing upwards of \$30.00 per SACA internationally. This price was kept constant in the years of 2009 and 2010.

- Total revenue per hectare: This set of data is the average number of sacas produced in one hectare by the price of the saca in the market at the moment. These sets of data differ from year to year and also differ by type of cultivation. This data is one the variables determined before and that this research has used to statistically prove our hypothesis. This is our first variable used in the ANOVA analysis in the next section in order to determine differences between cropping methods.

In the traditional system, table 7.1 it shows that during 2005 and 2006 average revenue of \$640.00 per hectare, in 2007 it increased to \$1,000 and in 2008, 2009 and 2010 it grew to \$1,120. In the semi-technified in 2005 and 2006 the average revenue per hectare was \$880 and then it went to \$1,325 by year 2007 and then a 16% rise to \$1540 in 2008, 2009 and 2010.

Average Total Costs

In the previous section, the study statistically rejected the idea that current legislation and the ban did not affect the revenues of the local exporting firms. Under this premise, the next analysis will be based on next hypothesis were revenues were negatively affected by the ban; in this case harming producer profitability. In this financial analysis, the other dependant variable will

be used: the average net income of the exporting firms.

Table 5.1 illustrates the total costs and net income of the three cropping methods from 2005 to 2010. The total costs for the traditional method were \$536.45 per hectare in 2005 and \$578.28 in 2006. By the year 2007, the costs rose in 20.28% to \$695.56. The next year in 2008 the year of the peak in the export prohibition, the costs went up 31.4% to reach \$913.75 per hectare in the traditional system. By the year 2009, when the ban was lifted the costs gradually decrease to \$884.11 in 2009 and \$872.08 in 2010.

In the Semitechnified and Technified method, costs rose in an equal pattern. For instance, in the Semitechnified method the total costs of producing one hectare of rice in Ecuador were \$767.95 in 2005, \$828.42 in 2006 and 929.03 in 2007.

By the year of the ban in 2008 a 37% rise went up to \$1,275.33, gradually decreasing to \$1,191.95 in 2009 and \$1,169.49 in 2010. In the third method the technified method, the total cost were \$925.33 in 2005 and \$935.52 in 2006, going up to \$1,005.17 in 2007 and then a 59.7% increase to 2008, gradually going to \$1,466.51 in 2009 and \$1,445.41 in 2010.

The government intervention of reducing the supply available to export and start acting a source of demand for rice, started to destabilize the market, increasing the costs of fertilizers, seeds, water supply and other elements to produce rice, thus an unintended consequence of the interference. Additionally, climate and other reasons made the fields less productive. The rising costs of producing rice caused by the government intervention also affected net income. The net income is the total revenues minus the total costs. This is the variable used for the financial analysis the study is using to validate our hypothesis that the legislations (subsequently the export ban) affected negatively to the profitability of the exporting companies from 2005 to 2010.

Average Net Income Analysis

As a variable for a financial analysis, net income is a reliable one in the way that it's affected by costs, which in the case of Ecuador has been the variable which has suffered the most because of the ban in rice exports. The sudden oversupply and the even more sudden involvement of the government of purchasing local production created such destabilization that influenced the average net income of the rice exporting firms greatly. The following observations are significant:

- In the period 06/07 there's a spike in the wealth local exporting firms accumulated. In addition, local firms experienced an enormous increase in their net income due to the high international markets. There were increases of 393.26%, 764.62% and 493.25% in the

traditional, semitechnified and technified method respectively.

- The Average Net Income Comparison to the 07/08 shows a the average net revenue falling by 32.35% in Traditional, a 40.65% drop in Semitechnified and 42.76% decrease in Technified demonstrating the ban definitely had a negative financial impact on the exporting firms in Ecuador. Total costs were artificially augmented by government intervention and its artificial demand in purchasing rice production for storage.

- Without the government intervention for the period 07/08, local rice exporting firms would have expected even more profitable yields to their investments; the government ban prevented this from happening, with the consumer's sentiment as their first priority.

- When the ban was finally lifted, net income levels were notably inferior to the ones experimented during 06/07 and what could have been during 07/08. Steadily, by period 09/10 there were small increases in profitability of 5.10%, 6.45% and 4.28% in traditional, semitechnified and technified methods respectively.

CONCLUSIONS

1. Based on *Smith's Theory of Protectionism* which claims the restriction of international trade is harmful for an economy, the export ban for rice in Ecuador during 2007 and 2008 as a trade restriction in fact is correlated to a lower competitiveness, lower profitability and revenues. The majority of rice exporters and producers agreed in their perception that the export ban was unhelpful and it affected Ecuadorian balance of trade negatively. Particularly, it damaged relations and decreased market share in Colombia, which historically has been our main trade partner. Having politically-bound agreements to countries like Venezuela and Iran was not helpful neither, as with the former a very small amount was exported and with the latter no exports were finally completed.

Extreme forms of trade barriers such as bans have deep impacts in the industry they take place. The Ecuadorian industry was no different. Measures like these are likely to be established again and government officials need to reevaluate, before implementing them again.

2. The interventionism of the government of President Rafael Correa into the internal rice market during 2007 and 2008 created a market imperfection founded on the *Harberger's theory of Deadweight Losses*.

An export tax taken to the extreme was converted to an export ban in Ecuador. In an export tax scenario according to *Bouet's export tax theory*, in Ecuador the deadweight losses were created in the rice industry due

to a larger loss in producers' surplus (revenues & profitability) than the gain in consumers' surplus (reflected in the consumers' higher purchasing power and their guarantee of low rice prices). In the case of the latter export ban, there was a financial toll for the government having to purchase all production which was originally intended to export. This toll represents another part of the deadweight losses created by interventionist policy. By the intervention in the local rice market, the government of President Rafael Correa artificially decreased the price of rice and consequently by doing so, it creates a price-ceiling while production costs remain the same or increase. The combinations create a financial burden as it's less profitable to produce rice and often times during the ban producers could barely break-even on their investment. The main rice industries then had a lower incentive to but from producers since the possibility of export are not present. Thus, rice export companies had to offset increasing cost by firing personnel as output also decreased. Consequently, it increased unemployment in many rice exporting firms and making it less competitive. These consequences affected the lifestyle of those families whose income and survival depend on the rice production/export.

3. The cause behind the export ban was mainly the rapid increase in international rice prices threatening to quickly increase local prices in Ecuador harming a socially relevant commodity in Ecuadorian society. The main reasons behind the rise in international prices include adverse weather conditions in key regions of rice crops, the US financial crisis during 2007 and 2008, the rise in the production of bio-fuels, lack of sustainable practices and ongoing growing world population. Among the effects the export ban brought, this research has shown a reduced profitability in several rice exporting and rice producing companies, decrease in employment by these same firms, loss of competitiveness and key markets and a decrease in the internal price of rice by fixation. In addition, many tons were stored for future use by the government of Rafael Correa as precaution for internal consumption. At the end, many of these tons of rice were wasted due to inefficient storage; basically the rice rotted in their containers or was eaten by rodents or a combination of both.

4. This research has shown statistically that the legislation which triggered the export ban and consequently decrease the exports between the years 2005 and 2010 significantly affected the revenues of the exporting firms in Ecuador. Financially speaking, the ban harmed and negatively affected the average net income of this study's sample of exporting/producing firms. Without the ban, business would have benefit from better income levels, higher productivity; expansion plans would have taken place, hiring more personnel, improving small farmers and their families' standard of living.

5. Most exporters and producers were totally or

partially against the ban, and are reluctant to agree to a similar measure in the near future. Most exporters agreed the compensatory measures were not sufficient and the unilateral governmental strategy was not acceptable. Finally, the study has rejected the null hypothesis concluding that legislation did not have any effect on revenues of exporting firms. This study has shown that current legislation limiting exports has negatively affected the Ecuadorian (farm or non-farm) revenue regarding rice exports between the years 2005-2010.

RECOMMENDATIONS

Historically, Colombia has been Ecuador's primary trading partner in rice. Since 1993, Ecuador has developed the infrastructure, networking and logistics needed to make Colombia our main destination in regards of rice exports. As a priority suggestion, the study recommends strengthening the trade agreements with Colombia.

The political relationship between Ecuador and Colombia has improved after some tensions rose a couple years ago due to a military intervention from Colombia in Ecuadorian soil. The government of President Rafael Correa along with local producers/exporters could approach the Colombian authorities and their local rice association to further strengthen their rice trading with less trade restriction and free trade agreements benefited to both parties.

It is important that these types of agreements go a long way in helping to solve the dispute between countries in terms of phytosanitary measures, in which Colombia has at times unilaterally prohibit Ecuadorian rice exports based on a apparent deficiency in Ecuadorian cropping methods deteriorating the quality of the grain. Therefore, commercial agreements are necessary to be expanded to new areas of rice trading like the phytosanitary measures and also complying with the clauses and jurisdiction of existing agreements such as the Andean Pact. Nowadays, the Colombia economy is growing at a great pace demanding higher quality rice. If Ecuador intends to remain competitive in the Colombian rice market, new cropping methods need to establish in order to comply also with Colombian requirements.

The search for new potential markets to export and better approach to exporting firms

In the end, the two new proposed rice markets appointed by the government of President Rafael Correa were a failure. Venezuela only bought a minimal portion of the oversupply to export due to politically-motivated agreements and the agreement with Iran was never reached. Therefore, it is a necessity trying to look for

new markets in order to export Ecuadorian rice.

These agreements have to be defined considering both the government and exporting firms' agendas. It is true the government had a duty to protect consumers, however the exporting firms also have a preponderant role in the rice industry in Ecuador and the government should approach them also before measures like banning exports with consensus, clear ideas and objectives and proper compensatory measures seeking more and deeper advice from with the Rice Consulting Council, an institution created by the government formed of public servants and private representatives. The government intention was valid and they indeed kept a partial dialogue with the Rice Consulting Council in order to compensate exporters. Nevertheless, in practice bigger issues like not purchased production (by the government of President Rafael Correa) brought losses to exporters.

Alternatives policies and improvement of storage facilities

The Export Ban Policy and all its Presidential decrees were intended to protect the local from high prices in rice by government intervention into the local rice market. Also, these policies were implemented with the objective of having a sufficient supply for internal consumption. The government of President Rafael Correa bought many tons of rice intended for exports. These amounts bought were in many cases unnecessary (since most of them are until this day stored) and projections of how much to buy were miscalculated.

However, even the price were kept low at first, the government do not have the capacity to buy the whole rice production in Ecuador which is around \$820 millions every cycle. Therefore, consumers still were partially hit by high prices and fiscal resources were wasted in buying an oversupply which wasn't stored appropriately.

Thus, in order to keep a supply of rice on hand to prevent any shortages and protect food security policies; storage facilities needs to be improved and modernized. If the government of President Rafael Correa or any other in the future believes export ban for rice or any other commodity is deemed necessary for the well-being of the general population, and if a massive storage plan is created; the silos have to be of top-quality as whatever product is bought and stored serve as an emergency contingency. This is necessary to avoid losses and to guarantee the highest quality of the food staple being stored.

Rise in productivity, yields, improvement of seed's technology, water systems and crop zonification

One very relevant recommendation the research suggest is to develop the rice productivity levels. Ecuador is

behind neighboring countries like Colombia and Peru, in terms of how much MT of rice from a hectare could produce in a given cycle. By increasing rice yields, Ecuadorian producers and exporters would have a larger production enough to satisfy internal market and also to increase exports. Also, by having larger margins, profitability would increase and the population would have access to better prices since there's higher competition, lower costs and exporters/producers would have a better return on their investments. With enough volumes, some portion of it could be stored for future and exports should not have to be banned if international prices start to rise again.

In order to get better yields, it is necessary to invest in bio-technology with the objective of creating or buying a higher quality seed for rice, better varieties would allow small producers to generate more crops and industrial to process more rice and thus export it. Along with better seeds, the water systems are a priority to rice cultivation. In Ecuador, even today many producers have very difficult access to water systems which further complicates a better yield.

Finally, if there's going to be government intervention in the rice market, it should be directed to crop zonification and its regulation. This is the process to regulate how many people produce rice, how much of it and also in what locations. From a free-market perspective, producers have the right to produce any crop they want; however, some sort of government regulation in terms of how much rice and where according to local and international demands are required. This will help prevent further problems down the road such as shortages and oversupply also, keeping a price balance and satisfactory profits in the rice industry.

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