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In Number 9th presented in Section of Economy an article *The impact of agricultural policy in Mexico 1910-2012 and the effect of high food prices in the Mexican economy* by Sanchez- Julieta & Moreno-Maria with adscription in the Universidad Juarez del Estado de Durango, in Section of Computing an article *Implementation of VoIP services through the Integration of technologies Call Manager Express and Asterisk Server* by Huerta-E.,Cano-M.,Herrera-J, Barron-J, Quintanilla-J, Aguirre-J, Rodriguez-M, Mata-R, with adscription in the Universidad Tecnológica de Guanajuato and Universidad de Guanajuato, respectively , in Section of Optimization an article *User satisfaction through "plural-comprehensive" primary health model* by Jaime- Jose & Vargas- Jose with adscription in the Universidad de Zacatecas and Universidad de Guadalajara, respectively , in Section of Risks an article *Migration and remittances on Mexican economic growth* by Figueroa- Esther, Perez- Francisco and Godinez- Lucila with adscription in the Universidad Autonoma del Estado de Mexico and Universidad Autonoma de Chapingo, respectively , in Section of Finance an article *Modeling stock index of Colombia, Peru, Mexico, Chile and United States between 2001 and 2011: Evidence against of informal efficiency* by Nieva- Jefferson with adscription in the Universidad Autonoma de Occidente in Section of Administration an article *Appreciative Inquiry: new form to generate change in education organizations. Case: PUZ* by Sandoval- Maria & Campos- Rosa with adscription in the Universidad Politecnica de Zacatecas, in Section of Net Business an article *The family-owned company and its implications in the attitude steward with the performance of the company* by Pelayo- Jorge & Camarena-Margarita, with adscription in the Universidad de Guadalajara and Universidad Nacional Autonoma de Mexico, respectively.

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Article **ECORFAN Journal-Mexico**
ECONOMY April 2013 Vol.4 No.9 679-699

The impact of agricultural policy in Mexico 1910-2012 and the effect of high food prices in the Mexican economy

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This paper presents an evaluation of the Mexican agricultural sector at different stages, marked by certain structural reforms such as the stabilization and liberalization, and not for the real needs of the sector. So, this has turned Mexico into a net importer of food unable to meet domestic demand, to develop markets, to increase productivity and as a consequence has generated low income levels for most producers. Hence, Mexico has a high dependence on food imports from abroad and it has adversely affected the Mexican economy and has influenced the highest food prices in the international market since 2008, compared to those 30 years ago. This has increased the vulnerability of Net Food Importing Countries (NFIC´s) as Mexico. It is also important to note that Mexico at present has no programs grains storage and better policies for productive development. It is therefore necessary to implement medium and long term government policies to promote food sovereignty and raise the character of national security.

Liberalization, structural reforms, trade balance, self-sufficiency.

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Introduction

Between 1910 and 2012, agricultural production and rural population have played an important role in the Mexican economy; however, the proportion of share of the agriculture sector has been shrinking. From the end of the Mexican Revolution, was developed and designed an institutional framework with specific reference to the rights of rural land ownership. Emerged the *ejido* and the smallholding[1] .The smallholder property is usually so small that the producer has barely enough to live in a land area of 5 hectares on average. Since then Mexico is still characterized by a marked fragmentation of land and a large number of subsistence farming. The fragmentation of land called smallholding remains the most common form among farms whose production cannot meet the basic needs of the unit who works it, and administrate it, which are indispensable for goods or money earned outside the farm to survive and, added to the problem of smallholdings, another problem is the aging of the rural population.

Added to the fragmentation of land, unfortunately most of the land is rain fed and does not generate enough income for the subsistence of a peasant family. More than 40 percent of Mexican farmers live in extreme poverty and from the 50 million poor people in Mexico; 30 million live in rural areas.

The share of production in the agricultural sector in the Mexican economy over the last century, was the following: in 1900 had a direct agricultural product of 30 percent, 35 percent if it is added up the value-added from agribusiness. At the end of this century the direct added value was a little more than 5 percent of the total. The agricultural sector declined while the rest of the Mexican economy was still growing and diversifying.

Agricultural production grew eightfold between 1900 and 1990. The rural per capita output grew 3.3 times in the same time period and the population grew 2.4 more (Warman, 2001: 113). In addition, to over a century, about half of the population shifted from the rural to urban residence, the rural population was always an average below the national average in terms of per capita GDP, while the urban population had a higher average to national average. In 1990, inequality was very marked between urban and rural population, since 51 percent of the rural population was poor, and 24 percent were in extreme poverty (Alain de Janvry, 1995).

In the last century the Mexican economy was multiplied by 30 in constant values and the population multiplied six fold, and output per person increased fivefold. These data should be counted as given after the Revolution and the reconstruction of the Mexican economy, ie from 1930 (Warman, 2001). Noting that during the so-called economic miracle of 1938-1971, Mexico achieved self-sufficiency in the food sector. However, it is noteworthy that from 1960 this was reversed and the country began to import more and more, becoming gradually into a net importer of food (NFIDCs), a situation that has prevailed until today. It was left behind the system of import substitution and in the early nineties; Mexico chose to liberalize their markets unilaterally.

There were strong government measures that involved reductions to agricultural support and deregulation of agricultural food sector, the institutions to support agricultural policy were reduced and restructured. Gradually state enterprises were sold; the storage, purchases and sales were pulled out from the government; and the sector was left to the impact of the market.

[1]In Mexico, *ejidos*, are known as rural properties for public use.

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During the last two and a half decades, the Mexican agricultural sector has suffered the most dramatic changes in its history.

It faced the most aggressive structural reforms to trade liberalization promoted by the GATT and NAFTA. The agricultural sector is characterized by stagnation, lack of production and bid that supplies domestic markets; as well as lack of competition in the sector, increased migration and poverty in rural areas. Furthermore, there are no public policy goals of food sovereignty to ensure food self-sufficiency[2], so Mexico is currently a country NFIDCs. For decades public policies have promoted cheap food imports heavily subsidized by developed countries. This has discouraged many Mexican producers to continue to produce for the market. Now, the economic, physical and productive wastage is a peculiarity of the Mexican countryside.

Nowadays, the economic conditions of the global food industry have changed. Rising food prices, is a crucial concern for governments and organizations around the world due to the high risk of triggering a global food crisis. From the year 2008 the world has faced high food prices, which have meant the highest prices for 30 years, so it has a direct impact on the economy and increases the vulnerability of countries like Mexico NFIDCs. In response, the Mexican government should take steps to encourage investments that increase productivity in food production and take advantage of the situation of high prices to encourage its farmers to produce and thus help increase global food supply and reduce their vulnerability to food imports.

Characteristics of the Mexican agricultural sector and assessment of the future of agricultural policy

To understand the background of the situation of the Mexican countryside today we will do a retrospective analysis. In 1910 with the outbreak of the Mexican Revolution, a social mobilization and a large-scale uprising was created, who was seeking freedom from oppression in the rural sector by landowners to most of an exploited and poor population. When the conflict period was finished, negotiations were generated. One of results of the Revolution was the Constitution of 1917 that started a new social order and a new hegemony and thus, was the beginning for the restoration of peace in 1920, a pact that allowed the destruction of the large estates.

Land reform generated the fragmentation of land that was divided among the peasants who worked it, thereby creating the unique characteristics of the Mexican countryside. With Article 27 of the Constitution of 1917 the President had the power to divide the land, which was worth as a powerful instrument of social control. But an important question we ask ourselves is whether this distribution was really an effective tool of economic progress. Or, whether or not, this atomization of the land was the trigger for the prolongation of a life of poverty and subsistence for the farmers.

It was during the 1930s when the recovery began after the devastation left by the revolution, with a production growth at an annual rate of 2.3 percent exceeding the increase in rural population and the national population which was 1.5 and 1.7 percent respectively.

[2] In food self-sufficiency, the consumed food in the country are produced domestically, there is no need to be imported. Food sovereignty is a positive agricultural trade balance between what we sell and what we buy from abroad.

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This growth was promoted by increasing the international prices and that Mexico knew how to insert in reviving global markets.

The country was characterized by sustained growth for the whole economy including the field from 1938 which was called as the Mexican miracle stage .Agricultural production grew by 5.1 percent, surpassing the national growth of the population and exports of agricultural sector increased 75 percent. This miracle was because they took advantage of opportunities, to good agricultural policy led by the government that got the land distributed during the Cardenas period and was incorporated into the accelerated production of the agricultural sector. Agricultural prices rose and demand widened, and when agricultural exports of cattle which provided half the value of exports were curtailed by FMD in the 40s, exports diversified into the export of cotton, which came to represent half the value of exports to the 1950s, and the cotton sector growth of around 9 percent per year for 1960, accounting for 15 percent of production in the agricultural sector (Warman, 2001:118).

Unfortunately for the decade of the sixties the rise producer and exporter of agricultural sector finished, to the extent that the results of that decade were deplorable. It grew the duality in the field, duality that persists today.

On one hand, we have the rain fed peasant with subsistence production, without support or with support and drabs of government and, on the other hand, the production of business type, with irrigation system that deals with the supply of the domestic market and export, and get great benefits and government support.

But government support did not translate into improvements since growth of agricultural production started descending steeply to the extent that it recognized a serious production crisis. By 1965 the population grew above agricultural production.

Rural Mexico was being impoverished due to the undercapitalized agricultural production and its increasing dependence on public resources, in fact, already beginning to display the growing external dependence of food resources from abroad to supply the growing Mexican population, also stagnation and impoverishment of the population's income rural producer.

For the decade of the seventies the crisis was even much higher for the Mexican countryside, massive food imports continued and was increasing both with the undercapitalized and the lack of production. Corn as staple for Mexican families remained and continues to be imported in masse, fact, which has showed the ineffectiveness of the agricultural sector and the terrible dependency on foreign imports to feed the Mexican people. Since then the country plunged into a spiral of dependence on outside food staples, it was cheaper to import what brought serious consequences for producers and the Mexican rural itself. The balance tipped toward cheap imports from abroad, rather than a goal of food sovereignty accompanied by appropriate policies to follow.

For Mexico, according to statistics "in the 1970s, output growth had an average annual rate of 3.9%, half a percentage point above the national average population. There were no year of decline in agricultural output and the last three years of the decade, the annual increase was greater than 5%.

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With these solid and encouraging numbers, it is a little disturbing that in 1981 the National Food System was launched to rescue a prostrate sector of the national economy with substantial and unsustainable subsides. Therefore bonanza marking the statistics was marked by suspicion and mistrust "(Ibid, 2001: 121).

For the decade of the eighties agricultural production decreased to 6 percent of national production, with growth of only 0.3 percent per year, quite below the national population at about 2 percent. The presidential term was certainly characterized by a severe crisis compounded by a terrible earthquake that struck Mexico City and elsewhere in the State of Jalisco.

The 1990s conceived changes for the transition to an economy embedded in globalization. The agricultural sector growth remained below the national population growth, reaching approximately between 1.3 and 1.5 percent. Sector exports grew to reach about 10 percent. Maquiladoras of animal production swine and poultry have grown strongly and with them the import of cheap grain for animal feed. Another important event happened in 1992, Article 27 of the Constitution of 1917, which regulates the land, was amended. An important fact, since this reform, gives the certainty of legal ownership of the land in all its forms. It granted to *ejidos* and communities ownership of the land that was granted and recognized and that before this legal modification *ejidatarios* were only beneficial owners of lands owned by the nation. Through this law *ejidos* and communities are recognized as owners of the land and rules were established so that partners were able to circulate their endowments. Size limits of private property were kept but allowed that it may be exercised from corporations.

Mexico has remained constant in terms of length of about 200 million hectares or a little less than two million km ^{2} devoted to agriculture. In the last decade of the twentieth century, the land use is 2 0 and 30 million hectares eligible for agricultural use, ie between 10 and 15 percent of the land area of Mexico is arable with large variation in take risks and returns that can be expected.

In the agricultural census of 1991 listed 31 million hectares, indicating that there is no open land planted permanently, which initiates the importance of shifting cultivation or land with long rest periods. Also according to the census mentioned, the agricultural area will not exceed 25 million hectares, ie 12.5 percent of the national territory. This states that the agricultural frontier is closed (Ibid, 2001:12).

It is noted that the Mexican agricultural sector has grown discontinuous and irregular and this has different explanatory factors:

1) The government's agricultural policy was not continued or been directed to the optimization of economic and productive regions of the country,

2) The swing of resources, with an agricultural policy without long-term goals,

3) The instability and lack of market efficiency

4) The economic and social conditions, as well as the lack of opportunities and

5) The sector has suffered from lack of resources and funding for production and lack of investment.

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The impact of neoliberal policies in Mexico

The proposed reforms to the global agricultural policies are located within the context of influence of neoliberal policies that are characterized, although with many national facets, to the macroeconomic policies in the international arena since the eighties.

Mexico is not the exception, since its agricultural policy is strongly influenced by neoliberal policies.

It is noteworthy that in Mexico the agricultural sector reforms have been driven by the stabilization and structural reform of the economy and not by the real needs of the agricultural sector. In the last four decades Mexican agriculture has been characterized by low supply capacity to meet domestic demand, poor market development and income levels for most producers. Adding to low productivity of agriculture and the lack of a true plan to achieve food self-sufficiency, which has been rather unfortunate, and the abandonment of the field, has helped Mexico to become a dependent country on imports of food from outside and a net importer of food. Since the country has been flooded with highly subsidized imports of agricultural production against which most producers cannot compete, causing widespread bankruptcy and migration and displacement of many producers, which shows the lack of vision of governments in question of sound policies in the medium and long term strategies to self-sufficiency and food security.

We have to recall that this implementation of neoliberal programs of stabilization and structural change were given to Latin America for prescriptions that were prescribed by the World Bank and the International Monetary Fund.

In the case of Mexico in 1983 there was a neoliberal economic orientation, which transferred to the private agents and the market the role previously assigned to the State. The market was seen as a mechanism for optimal allocation of resources, maximizing production, correcting economic imbalances, attracting investment and promoting economic development. All this triggered the reduction of state interference, liberalization of domestic prices, external trade liberalization, liberalization of the financial system, and privatization of most state enterprises.

This opened to cause the formation of monopolies and oligopolies and reduced or canceled economic development programs in various sectors such as agriculture and manufacturing, among others.

In 1984, the first steps towards trade liberalization with a decrease of permits up to 83 percent of the value of total imports were taken. In that year, economic growth returned, but with high inflation. In 1985 and 1986, the earthquake in Mexico City required emergency spending, in 1986, when oil prices were halved; all complicated adjustment processes and caused higher inflation. The increased import prices and real incomes fell. GDP fell nearly 4 percent in 1986. In 1987, cumulative inflation was 159 percent for a single year, so the stabilization program called Solidarity Pact was launched. It was based on the assumption that competition that would represent the cheapest imports would lead to establish a ceiling on inflation, according to the pact, whose aim was to stabilize the main economic variables and support growth. So controls were established in 1988 for both the exchange rate, and wages and the prices of a basic basket of goods. Maximum duties were reduced by 20 percent in 1989 and GDP grew by 2 percent in 1987 and 1 percent in 1988.

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In the years prior to 1982, Mexico's trade balance became negative due to currency appreciation. But later due to the devaluation of the currency in 1982, the decline in domestic demand and a better exchange rate, the sign of the trade balance was reversed, getting a surplus until 1989.In the mid-eighties, Mexico was oriented towards an open economy and in 1986 Mexico joined the GATT (General Agreement on Tariffs and Trade) to try to achieve greater trade in different sectors of the economy. However, in 1987, Mexico reduced tariff rate by 20 percent because of the commitments demanded by the GATT.

In 1988, 62 percent of the value of crop production and 60 percent of animal production were subject to export licensing.

These licensing requirements were eliminated, namely cotton in 1984, cattle in 1987, wheat, rice, fruits and vegetables in 1990, cocoa in 1992, tobacco in 1992, and coffee in 1993. The rest of the licenses were eliminated with the entry of the NAFTA (North American Free Trade Agreement with the U.S. North America and Canada).

In 1994, all import permits were converted into tariffs or tariff quotas. In the same year NAFTA took effect. This treaty had strong impact on trade and agricultural policy in Mexico, as it promoted trade without modifying domestic support policies and export subsidies.

All tariffs will be abolished according to different schedules to complete disposal in 2008. And it must be said that Mexico's commitments under NAFTA are stiffer than those acquired in the Agreement on Agriculture of the WTO (OECD, 1997: 16-27).

From the opening of markets in the mid-eighties, Mexican imports and exports began to increase for other sectors. Industry managed to increase its exports by 68 percent during 1988-1994.

Imports mainly intermediate and capital goods promoted the modernization of Mexican companies to fight international competition. In 1994, Mexico had a negative trade balance with strong current account deficits, but the capital that financed the deficit left the country, so there was a sharp devaluation of the peso, improving Mexico's competitiveness internationally and in 1995 the balance was close to balance.

In 1995, the agreement prices established in 1989 were removed, and instead they were replaced by the indifference prices with reference to international prices[3] so that the buyer will be indifferent between buying an imported or national product. For corn prices, guarantee prices were replaced by minimum prices or price per floor, supported also in international prices.

Mexico has had several major economic crises and changes in the orientation of its agricultural policy, which has impacted their agricultural and rural sectors, also strongly influenced by changes made over time as trade liberalization and world market-oriented policies. One feature until 1995 was the high rates of inflation and low rates of domestic savings. The deepest crisis, in 1994, was characterized by large capital outflows and high debt. Agricultural production had a total value of $ 28 billion dollars in 1994.

[3] These prices are calculated based on each consumer area in Mexico and it is equivalent to the border price (CIF) plus import duty and transport costs between the border and the main consumer, less the domestic cost of mobilization between different areas of production and consumption OECD, 1997.

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Vegetable products accounted for three-fifths of production and animal products the other two fifths. Grains, fruits and vegetables represent the major production in Mexico while vegetable production is very diversified. Also crops such as sugar cane, coffee and fodder are important. Besides, animal products such as beef, milk, pork, poultry and eggs account for 29 percent of the total animal production. Cereal production has had ups and downs depending on prices, weather and droughts. The cultivated area in agriculture is mainly devoted to corn production. In 1994, the area under perennial crops was 18.9 million hectares, corn representing 43 percent of it, followed by 11 percent bean, sorghum with 7 percent and fruits and vegetables 8 percent.

Livestock production has increased in response to the greater elasticity of demand due to economic growth since 1990. Maize yields are variable depending on weather, input use and management of agricultural structures. The most productive State, in the corn crop, is Sinaloa where average yields are between 7 and 8 tons per hectare, while rain fed lands harvested from 0.4 to 3 tons per hectare.

In 2001, external liabilities were 371,999.9 million dollars. All this created as a result that the evolution of poverty were diametrically opposed both in the Keynesian, as in the neoliberal model. In the first model, according to Boltnivik, the percentage of poor population declined from 77 percent in 1963 to 48.5 percent in 1981. In the second model, poor people rose from 69.8 percent in 1984 to 75.8 percent in 1994 and to 81 percent, after the economic crisis, in 1995 and fell to 76.9 in 2000.

The allocating productive values were left to market forces and private actors.

It was thought that all this would lead to increase private investment in agriculture, would increase efficiency and develop the production of raw materials and food. However the results were not as expected. The value per capita, in 2001, GDP agriculture and forestry were found to be 14.3 percent less than in 1981. In 2001, the production of the eight major grains was 21.8 percent less than in 1981. Food imports have soared to 1.790 million in 1982, to 7.274 in 1994, and to11.077 in 2001 (Schwentesius, 2004: 23-25).

The Free Trade Agreement (NAFTA)

In 1992, Mexico agreed to North America Free Trade Agreement (NAFTA) formed by Canada, the U.S. and Mexico, which entered into force on January 1, 1994.

The country granted duty-free access to their markets and agreed to 36 percent of agricultural imports from the United States of America and 41 percent of agricultural imports from Canada. Also, duty-free import quotas were established for most agricultural products previously subject to the system of import permits, based on trade flows from 1989 to 1991.

Quotas were increased every year by three percent and five percent for certain products. In addition, the tariff was reduced, for corn, beans, barley and milk, by 24 percent in the first six years of NAFTA, and the remaining 76 percent over the next 2-9 years depending on the product. Furthermore, tariffs on products such as sorghum, coffee, cattle and beef were eliminated at 57 percent of imports made between Mexico and the U.S. in 1993.

Moreover, tariffs were gradually eliminated by the year 1998 to products that meant 6 percent of the weights based in 1994, 32 percent by 2003 and 5 percent in 2008 (sugar, corn, beans, milk powder).

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As Mexican exports agreed NAFTA, ie access to 61 percent of food products in U.S. and 89 percent in Canada. It was also established tax-free contributions to most Mexican products requiring import permits and quota levels were set above the levels of trade in the period 1989 - 1991 for the two countries.

Since the entry into force of NAFTA, Mexican exports have tripled, going from 52.000 million dollars in 1993 to 161.000 million in 2002, implying a growth of 12 percent per year with a trade balance growing surplus each year (CATO INSTITUTE, 2003). NAFTA has achieved its objectives of increasing trade, investment and strengthen international competitiveness.

Agricultural exports have grown by 8 percent annually since the entry into force of NAFTA and in 2006 the Mexican agricultural imports reached 10.2 billion dollars. U.S. investment, 1.7 billion dollars, in Mexican processed food companies arrived in 2003. In 2005 and 2006, the private sector and universities made an investment of nearly $ 20 million in over 120 projects to support agricultural issues and Mexican agribusiness. With more than 96,000 million dollars in foreign direct investment from 1994 to 2001, trade in general, is a strong component of the Mexican economy. This represents 60 percent of GDP. Mexican consumers have benefited from the trade that has generated a wider variety of products and services.

Agricultural food exports, including processed products with higher value added, increased by 9.4 percent annually from 1994 to 2002. Total food exports had an increase by 150 per cent, of which 78 percent is absorbed by the U.S. market in the same period. U.S. investment in Mexican food industry was 6,000 million dollars and Mexican investment in U.S. for Mexican food marketing was more than 1.000 million.

Agricultural imports in Mexico increased 6.9 percent annually, which has an impact on price declines as rice 37 percent; beans 34 percent; corn 43 percent; wheat 26 percent; cotton 79 percent; soybean 53 percent; cattle 36 percent; and dairy 32 percent. This drop in prices have discouraged Mexican producers and aggravated their situation. But we should not blame the backwardness of Mexican agricultural sector to NAFTA as this is prior to NAFTA, due to low productivity, wrong policies, misdirected and poorly implemented, as well as the rural abandonment by the government of Mexico.

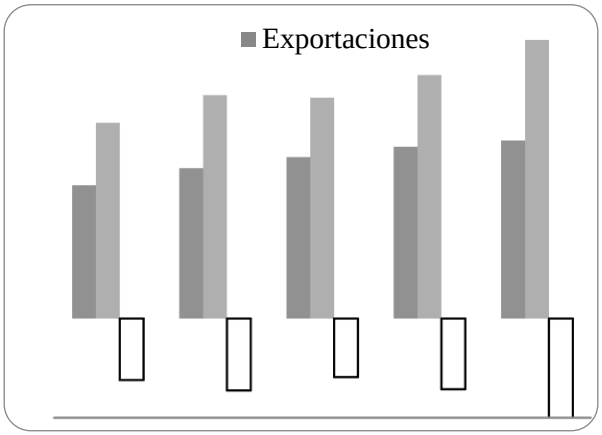

Figure 1

In the NAFTA area there are profound asymmetries in productivity, natural resources and technology resources. From 1997 to 2001, 2.4 tons of maize per hectare, were harvested in Mexico against 08.04 tons in the U.S. and 7.3 in Canada.

In the production of beans, Mexico gained 606 kg per hectare, U.S. and Canada scored 1.846 1.849; Mexico obtained a production of 4.4 tons per hectare of rice, against 6.8 in the U.S.

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It further increases the gap when the comparison is made per worker, in which the gross value of agricultural output per worker in Mexico ranged from $ 3,758.9 in 2001, while in the U.S. was $ 67,871.3 and $ 54,081.6 in Canada. All US databases regarding NAFTA begin in the years 1989, 1990 and 1991, the years that were the basis for the negotiation of NAFTA.

Import quotas and safeguard measures were set, although the Mexican government takes as base the year 1993. Mexican deficit agribusiness increased by 92 percent from 1989 to 2002, with an increasing loss of self-sufficiency in grains and oilseeds.

In 2001, the following imports: 3.775 percent soy; rice 227 percent; cottonseed 204 percent; wheat 91 percent; sorghum 83 percent; corn 31 percent; chicken 31 percent; meat bovine 24 percent; pork 35 percent were increased. [4]

In Mexico, the president presented a new program called Special Concurrent Program (PEC) for Sustainable Rural Development 2007-2012, which spent 204 million pesos to the Mexican countryside by 2008.It was also committed to provide the supports more directly as possible to avoid corruption and bureaucracy. With the imminent opening of the grains sector in NAFTA, the government was forced to make new programs and forms of coordination among the three levels of government (Bravo, 2007).

The World Bank acknowledged at the time that the Mexican agricultural sector was not prepared for the competition that posed NAFTA (World Bank in Schwentesius, 2004).

Besides, during the last two and a half decades the Mexican agricultural sector has suffered the most dramatic changes in its history. It faced the most aggressive structural reforms no only with the trade liberalization promoted by the GATT and NAFTA, but also with the removal of price controls, the government sector retreat, leaving to the impact of markets; as the reform of tenure earth. All this with disappointing results, according to the World Bank, since has been triggered the stagnation of growth in the rural field, the lack of competition in the sector and the increase of poverty in rural areas.

Among the products most affected to 2003 by NAFTA include: the poultry, pigs, potatoes, animal fat, barley, apples and fresh cheeses. All these products had tariff protection by 25 and 50 percent and / or import quotas until December 31, 2002. In 2003, also chicken and pork were liberalized as temperate fruits, rice, wheat, and edible offal, roasted and processed coffee, with the exception of dairy milk powder, grape wine, food preparations, tobacco, liquor, copra, vegetable oils, sheep and mutton.

Importantly, there is a wrong view of both the government and NAFTA which states: 1) there is no crisis in the rural field, 2) Mexico is a winner with the NAFTA because it has trade surplus with the U.S.; 3) there is no increase in the trade deficit of the agricultural sector and 4) Cheap food benefit consumers.

[4] Schwentesius (2004) indicates that the data are underestimated due to smuggling and lack of control in customs.

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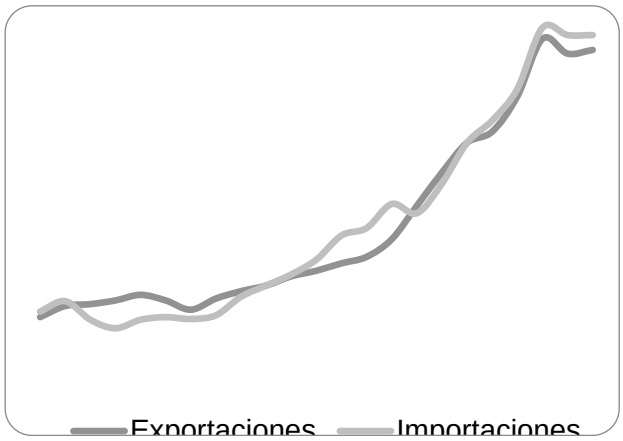

Figure 2

Indeed, Mexico had a trade surplus with the U.S which was $ 26.422 million in 2001 and in 2002, and has exceeded the amount of $ 30.484 billion in October 2002. This behavior includes maquiladoras and the oil sector, which are outside the NAFTA package. But when excluding maquila trade, oil and oil products reached a deficit of 8.705 million dollars. Only one percent of trade in the two countries is related to the grain trade.

Food imports into Mexico were $ 11.077 billion in 2001. Besides, the food deficit was $ 2.946 million dollars which represents 29 percent of Mexico's total trade deficit and is generated by food imports. In 2002, was $ 11.400 million, with a deficit of 3,232 million representing almost 40 percent of the total trade balance (Schwentesius, 2004). However, at present, NAFTA has successfully benefited Mexican exports of fruits and vegetables, which have been inserted competitively in international trade. Today, these exports represent 119 percent more than accounted for over 10 years. In addition, the 72 percent of tomato consumption in the U.S. is of Mexican origin as 89 of cucumbers, 99 percent of the peppers, 95 percent of the pumpkin, 90 percent of lemons, 98 percent of strawberries and 67 percent of the avocado (Hernandez, 2007).

The rural sector crisis has been deepening since most crops and livestock and forestry products are no longer profitable. Farming and forestry undercapitalized, production is reduced, food dependency increases, the productive plant is destroyed, and production chains are disarticulated. In the rural sector is becoming increasingly the expulsion of the population, the jobs are reduced, natural resources are degraded, the foreign exchange needed for development are used to pay for imports of food, income of farm families have fallen, poverty and marginalization in the rural sector are increased.

This would have occurred by the state's withdrawal of its functions of planning, development and regulation of agricultural and rural economy, the decline of the country's budget, the state investment withdrawal, neglect of maintenance and creation of infrastructure and services, privatization of public enterprises, reduction of subsidies.

The little protection to domestic production and the domestic market, the lack of credit for millions of farmers, lack of research, technological innovation, training and technical assistance.

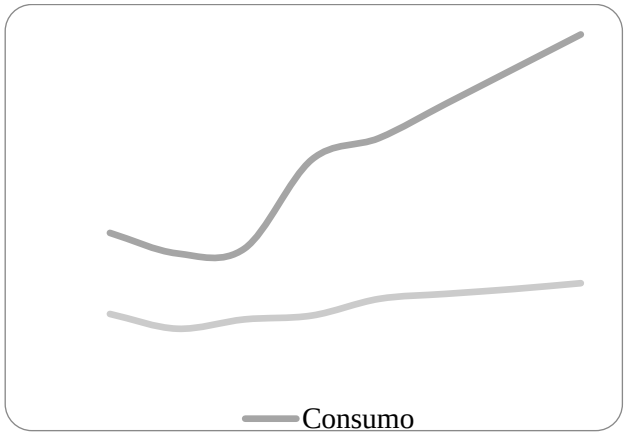

Figure 3

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Mexico currently ranks first worldwide as importer of maize, sorghum and milk powder. Just, in the case of maize, purchases abroad have increased at 119 percent according to the National Institute of Statistics, Geography and Informatics (INEGI); due to lack of appropriate policies for the rural field.

The abandonment of the sector has resulted in the inability to produce and to meet domestic demand, which puts Mexico in a highly vulnerable situation due to rising international food prices.

Also in the case of rice, Mexico has become the largest importer of rice from the U.S; in the 80s Mexico imported 17 percent of consumption and currently imports 80 percent of rice consumption, due to domestic markets have been flooded with paddy *rice* at low prices, so that Mexican producers have been replaced by U.S. *dumping* prices (Hernandez, 2007).

Situating between 2001 and 2006, the GDP of the agricultural sector in Mexico, including the activities of agriculture, livestock, forestry and fisheries, increased at an average real rate of 2.1 percent annually. The contribution of agriculture to total GDP declined from 5.2 percent in 2001 to 5.0 percent in 2006 (Bank of Mexico and the National Institute of Statistics, Geography and Informatics WTO, 2008:101)

From 2001 to 2006, employment in this sector fell from 17.5 percent of the total employed population to 14.3 percent due to the result of the rural exodus and the increase in non-farm activities in the rural population. Mexico remains a net importer of agricultural products, and the total value of imports of these products was at $ 16.261 million dollars in 2006.

The main agricultural imports include corn, soybeans, beef, wheat, cotton, oilseeds, pork and milk powder. The National Development Plan 2007-2012 establishes new objectives, including improving the income of farmers by increasing exports, value-added processes and production of bioenergy.

The low productivity of rural Mexico is due to many reasons: the low productivity of rural and agriculture activity; a weak investment; the fragmentation of production that prevents capture economies of scale; supports that are not linked to productivity, uncontrolled rural population growth and still too high; little economic orientation in agricultural production (inputs whose price does not reflect their true opportunity costs and price supports that subsidize inefficient production) corporatist approach in channeling resources; communal properties where there is no individual responsability for efficient use; and uses and customs that are not geared to the economic development of the individuals.

In addition, low agricultural productivity growth is concentrated in crops that have been the most "tapped" by agricultural policies (e.g., corn and beans), which contrasts with little government support to other crops with which Mexico has comparative advantages, and they have attracted enough investment, reaching productivities that can dominate the U.S. market.

Agricultural trade balance

Concept	**2007**	**2008**	**2009**	**2010 P**	**2010**	**2012**	**2012 P**
Exports	**1973.9**	**2194.9**	**2087**	**1212**	**513.7**	**565.7**	**759.7**
Cattle	475.2	311.9	395.9	208.7	7.23	1.21	48.8
Red beans	8.20	3.30	7.28	6.14	1.7.	2.6	2.4.
Green coffee beans	305.9	288.2	310.4	196.6	21.2	45.1	63.1
Wheat	149.3	589.6	276.3	7.17	4.20	48.1	70.1
Corn	71.3	8.23	87.9	62.5	52.7	0.6	49

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Tobacco	8.27	32.2	29	7.6.	2.5	4.8	1.2
Cotton	65.1	78.6	46.7	9.3.	0.3	2.5	0.8
Other fresh vegetables	858.5	840.3	912.1	695	37.9	42.3	40.4
Imports	**6958**	**9187.4**	**6267.9**	**3019.4**	**744.8**	**1031.6**	**945.4**
Cattle	89.5	134.8	30.7	3.19	2.3	2.5	0.1
Milk and milk products	950.6	773.7	598	290.3	56.6	57.8	9.
Egg	8.25	22.1	4.23	9.9	1.5	4.5	3
Red beans	67.3	91.6	170.9	52.7	7.6.	6.1.	21.5
Wheat	856	1246.9	727.9	328.2	84.3	79.4	76.3
Corn	1554.3	2391.4	1436.8	759.1	101.3	248.6	215.7
Rice	247.8	370.8	245.4	149.8	20	40.3	40
Sorghum	347.1	364.1	442.2	230.4	9.23	68.1	41.8
Soybeans	1177	1800.9	1419.1	632.1	116.2	162.5	129.3
Tobacco	144.1	154	144.5	61.9	5.3	2.8.	3.7
Cotton	461.9	539	11.9	29	53.8	72.5	35.4
Other seeds and oleaginous fruits	413	546.3	436.5	191.6	7.29	35.7	29
Other cereals	75.5	154.4	77	31.5	0.8	2.5	8.14
Other agricultural products	548.1	597.4	503.6	233.6	42.9	49	48.3
Balance	**(-) 4984.1**	**(-) 6992.5**	**(-) 4180.9**	**(-) 1807.4**	**(-) 231.1**	**(-) 465.8**	**(-) 185.7**

Table 1

Table 1 shows the balance of agricultural trade which is heavily in deficit for Mexico for the tested products, and in 2010, 2011 and 2012 the deficit decreased substantially. The products that have greater weight in imports are corn and soybeans, followed by milk and its derivatives. It shows, once again, that the agricultural sector presents that this deficit still exists because it has been the most heavily punished and also indicates Mexico's heavy dependence on foreign food products.

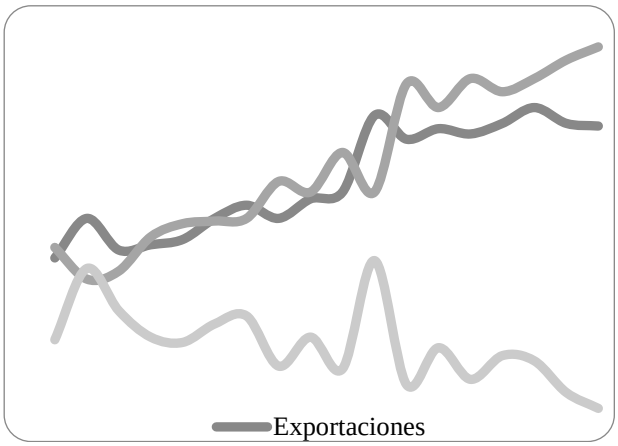

Figure 4

The result of the two previous stages is a deficit trade for most years but with moderate levels except for 1995, time, where there is a strong peso devaluation that resulted in a surplus in the balance as a result of the fall in imports of nearly 23%, then we can say that the Mexican agricultural balance has had negative balances in almost every year of NAFTA (Figure 4).

In short, we must say that for decades the integrated and sustainable rural development has not been provided to achieve food sovereignty to ensure sufficient supply of basic food through domestic production; thus, this provokes to unemployment or migration of a large amount of rural population.

These public policies for several years, which have not been designed to strengthen the production for the domestic supply, food self-sufficiency and cheap food imports, have driven much of the population of the rural area and have discouraged to continue producing for the market. The economic, physical and productive wastage is a peculiarity of the Mexican rural sector, so this brings back to the question, what will be done with most of the staples that are expensive and imported to achieve reverse of high dependence on imported food from outside?

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The food crisis and rising food prices: effects for Mexico

During 2008, the world, has faced high food prices, which have meant the most highest prices for 30 years, have plunged into chronic hunger to millions of people and have increased the vulnerability of the NFIDCs countries like Mexico In response, the Mexican government should take steps to encourage investments that increase productivity in food production and take advantage of the situation of high prices to encourage farmers to produce, and thus, will help to increase global food supply and reduce their vulnerability to food imports. Rising food prices is a crucial concern for governments and organizations around the world due to the high risk of triggering a global food crisis.

The economic theory tells us that high prices mean positive signals that can encourage increased supply, in this case, to promote the increase for agricultural production. However, this response depends on the responsiveness of producers, markets and public policies implemented by governments.

In this case, however, and despite the positive incentives which represent high prices for producers, it is expected the responsiveness of these, low or slow due to high oil prices, input as fertilizer and energy. So, these have been increasing at par and even at higher proportion of the increase in commodity prices, and this discourages the producers of low and medium productivity of developing countries, who have little or no technology and are most affected by high input prices. Thus, we can observe that up to 2006, there was a first stage where prices of food basket had fallen by nearly half for the last thirty years, which discouraged the production of many farmers.

And now that food prices are high, producers are not able to recover to produce because they are strongly capitalized, unmotivated and many have emigrated.

Consequently, the Mexican government is to resolve several issues, including:

1. - Ensuring affordable food prices, ie to ensure food security for its population.

2. - Encourage farmers to produce food, to increase the supply to ensure food availability.

3. - Find public policy strategies that support productivity and competitiveness in food production and help meet its domestic demand.

4. - Modify the criteria of planting and harvesting in view to greater adaptation to climate changes that occur in each region.

5. - Encourage research and technology that will support the increased productivity and sector development.

Comply with the above points is of great value to avoid economic, social and food problems, therefore, we must act on it, when there is still time to do so.

Since the increase in food prices and the decline in purchasing power tend to affect the vulnerable population and may generate social unrest (there are families who spend 80 percent of their income on food).In response some measures on public policy should be taken for the short, medium and long term, as to increase production, productivity, improve marketing and distribution sector.

The fact that Mexico is a net importer of food (NFIDCs), a serious problem for balance of payments is expected. Commodities such as grains, oilseeds and dairy are the ones that got the highest increase of international prices.

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We have mentioned that the high volatility[5] of prices in agricultural markets is quite marked, taking high and low prices on a frequent basis, and however it is considered that high food prices that markets are facing will continue in the medium to long term.

As a result, Mexico has great challenges to break the cycle of food dependency, including, redirecting public policy and encourage small and medium farmers and overcome their limitations such as:

1) Lack of rural infrastructure
2) Limited access to inputs
3) Lack of modern irrigation facilities
4) Lack of roads
5) Lack of storage facilities
6) Rudimentary technology
7) More education of farmers on modern agricultural technology
8) Lack of access to credit
9) Reduced market share
10) Fewer or null investment

Countries that rely heavily on the export or import of commodities often have unwanted effects, including:

1. - The agricultural exporting countries may have a temporary support for high prices but then the high prices of agricultural inputs and other foodstuffs and often devour profits and,

2. - Importing countries often have balance payments problems, causing severe pressure on its economy and will damage their efforts to reduce poverty.

On one hand, producers in Mexico have suffered from high prices of inputs that actually devour their profits and secondly inputs have strong economic impacts because high food prices that currently characterize the global markets have led to a strong pressure on the Mexican economy and high poverty lines.

Another important aspect is the strong change of weather that has impacted the world food situation with profound implications for the supply; in the same way, shocks in oil prices have caused a major impact on food production, which has also contributed to the decrease in the food supply worldwide, also aggravated, due to the increase of produced bio-fuels demand from food supplies.

Mexico, has presented, for more than twenty years, a strong dependence on cheap food imports highly subsidized by developed countries, based on policies that leave the agricultural sector to the free market forces, without the government constituting as an arbitrator or policy maker for achieving self-sufficiency goals.

All this has contributed to the loss of sovereignty and has increased the dependence of food cheap imports from abroad.

In addition, for decades, several OECD countries have given heavy subsidies to agricultural production and are net food exporters to developing countries and LDCs.

[5] The high volatility quantifies the fluctuation in the prices of one or more products in a given time, uses the standard deviation of prices. And a great price fluctuation in a short period of time is "highly volatile".

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This is the case of the United States of America (USA) where corn is largely being channeled to ethanol production and the European Union (EU) that was a strong sugar exporter and now has changed its agricultural policy. This paradigm of agricultural subsidies led to rising prices by lowering supply situation that lasted for several decades. Nowadays, the establishment of new policies has also performed market changes, and has reduced strongly cheap stocks from these countries for certain products.

Mexico, like other net food importing countries, for decades, preferred to import grain and other cheap foodstuffs highly subsidized by developed countries, causing an imbalance in the market and widespread bankruptcies of Mexican producers. But, the government never anticipated that one day imported food would stop being cheap, the financial crisis in developed countries has also resulted in the reduction of some subsidies. In addition, it was never anticipated that food prices would be as high as those achieved in recent years and now Mexico, like other countries (NFIDCs) pay the consequences of bad decisions made about food policy. For decades, it has been diminished of growth prospects and food sovereignty of the rural Mexican.

It is also unacceptable that governments have no grains storage programs and better policies for productive development and be dependent on outside food is like having the cupboard empty or buy per day which is to be consumed, and worry not to produce and store to feed our family.

Therefore, it is important that the governments of the NFIDCs countries, including Mexico, implement public policies in the short, medium and long term with specific goals to achieve food sovereignty and elevate the character of national security as EU and US have made for decades.

And as China that already have very significant levels of self-sufficiency in some products in recent years.

The question is, what actions should governments take to counteract the impact generated by the high food prices on the population? It is necessary to implement good public policies towards medium and long term; with achievement goals of food self-sufficiency and food sovereignty as a national security project before the global food crisis reach us. Rubio (2008) mentions that "The food crisis will give way a new global food order which is emerging and will generate significant changes in the national agrifood.

A lot of world changes have precipitated, in recent months, in rural areas. Unusual rise in commodity prices, food shortages in the poorest countries, population revolts by rising food prices, growth of ethanol plants, not only in developed countries but also in the developing ones; unusual processes of productive recovery together with commodity shortages and financialization [6] of the foodstuffs, which generally has been called, the global food crisis."

Mexican agricultural development could overcome their state of food dependency and achieve international levels of productivity while creating enormous economic value.

[6] It was respected the term *financialization* that comes inside the quotation from B. Rubio.

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If it is promoted well-targeted policies, with short, medium and long term to support obtaining greater productivity with greater investment and technology in farming methods, seeds, inputs as well as to guide those produced crops that have structural advantages on competitive grounds. Corn, beans and rice are special cases for being very essential commodity in our country, so they should be treated in a special and strategic way**.**

It is necessary to generate economies of scale. To take advantage of trade agreements to attract inputs[7] whose prices reflect true opportunity costs: water, labor, energy, technology, finance, etc. And to pay workers according to the higher value added per capita and benefiting them with improved conditions for marketing and distribution of their products. Promote workers training. To limit and remove the corporatist domes, policies and other actors of the industrial and commercial chain derived from the rural field, that are used for themselves with all the benefits and supports, possessing advantages and canonries, who serve as caciques.

Conclusions

The Mexican agricultural sector has had strong changes in trade patterns over time. In the first eight decades of the twentieth century, the agricultural trade balance was favorable for Mexico. However, from the beginning of the sixties, Mexico gradually loses food self-sufficiency that was achieved at the time of the economic miracle era; the balance begins to be unfavorable and negative, leading the country into a spiral of food dependency.

Some governments tried various policies to alleviate the crisis in the country, but none was continuous or wise.

The lack of an appropriate policy for the rural field with short, medium and long term, equitable integration, no vision and productivity were the triggers to fall back into crisis and stagnation.

Mexico became a net importer of food because food is imported in bulk, there is a steadily increased undercapitalized and there is lack of field production. Inequality is a major feature of the Mexican rural countryside, on the one hand, the temporary peasant with subsistence production, without support or with support and drabs of government and, secondly, irrigated production, enterprise-class production to domestic supply and exports, with benefits and government support. Also, for many years, field braces have been used as political power and social control.

It is important to be recognized by all decision makers and the civil population, that agriculture provides an important role in food security and economic and social development of Mexico. And the neglect of domestic food production and food safety risks associated with external deficits and imbalances also affects the pattern of development of the country, and especially in the rural sector, increasing poverty lines.

The high food prices on world markets since 2008, are threatening to drag on for decades, which impacts on the trade balance and spending.

The future option is to adopt a new economic strategy for the Mexican rural countryside.

[7] Tactics used in Brazil after its economic opening.

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It is urgent to launch a new agricultural policy with a clear objective of increasing productivity and improvement for the field and a full goal of food sovereignty. To generate economies of scale with input prices that reflects true opportunity costs: water, labor, energy, technology, finance, and so on.

To pay workers according to the higher value added per capita to benefit them with improved conditions for marketing and distribution of their products. Promote rural worker training. To limit and remove the corporatist domes, policies, and other actors of the industrial and commercial chains derived from the rural field, using all of the benefits for themselves. To take a proactive approach to ensure that, at this time of crisis, can emerge a modern and fair scheme to both producers and consumers.

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Implementation of VoIP services through the Integration of technologies Call Manager Express and Asterisk Server

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This paper presents the VoIP (Voice Over Internet Protocol) services implementation applied to an organization. It is a proposal for improving the voice transmission quality at low bit rate available to all users. To this end, are integrated with VoIP technology. Infrastructure for internet access and simultaneously has wireless IEEE 802.11n/g/b standards. Given a network communication over voice over internet using SIP protocol for communication between a server Call Manager Express (CME) and an Asterisk server. Managing calls to the needs of users from one server to another customer and arriving at the other end. Furthermore, the implementation is suitable for a voice VLAN and a VLAN for data. To convert analog voice to digital voice, the codec G7.11 is used.

Implementation, communication, voice, protocol, internet, integration, service, organization, customer.

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Introduction

The Implementation of VoIP services is one in which voice communication is established over internet protocol (IP). This term describes the essential concept of making a phone call and putting it on an IP packet network.

A technology that is considered the basis of the convergence of *voice, data and video* over a single network and under the same protocol. That is, in essence implementation of technology that promises reliability, accessibility, and above all low costs [5].

This work is founded on actual experience Integrating VoIP with two different technologies trying to analyze the current situation and previous research studies to develop options for the future and its application to the reality of communication in organizations whether they are: educational institutions, government agencies and companies [17].

VoIP users will grow exponentially in the coming years and it is anticipated that they will replace existing technologies currently existing. It can be seen by referring to applications: such as Skype, Google Talk, Fring, and Rebtel This Type of software is the Most Popular VoIP technology to search. The companies have chosen to compete In this area due to its popularity, usefulness, and its perceived future in a few years when a link to the Internet is more common, when will be more convenient to use the data network than the current connections provided: such as GPRS (General Packet Radio Service) , GSM (Global System for Mobile) [6,7].

It should encompass the selection of technologies, including hardware, software, and necessary platforms, along with installation and configuration of both basic functions and other more advanced IVR (Interactive Voice Response), group communication, gateways to the PSTN (Public Switched Telephone Network), etc.., of a VoIP based system that can meet the basic needs of telephony services in an organization.

It uses free software for the Implementation of the telephone to make its easy integration into the infrastructure [6, 7]. Simultaneously managing two very different technologies is Cisco (Call Manager Express) and free software (Asterisk) respectively. Cisco is known as a leader in networking for the Internet with many of its standard or proprietary protocols in other words the same technology would only work with Cisco. The other side has the solution under GPL (Generic Public License) That is cheaper and not having to pay license fees to use the service and a wide range of VoIP protocols like SIP, IAX (Inter Asterisk eXchange), H.323, MGCP (Media Gateway Control Protocol). Having a more likely possibility to Establish Communication between different technologies [1, 4, 8, and 10].

Communication modes

Internet telephony can take various forms, but the most popular is the verbal conversation between two people.

These forms of Voice over IP, are established according to the devices used by the participants in the communication:
Softphone to Softphone

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- Softphone to Phone (Fixed or Cellular).
- Telephone (fixed or cellular) to telephone (fixed or cellular).

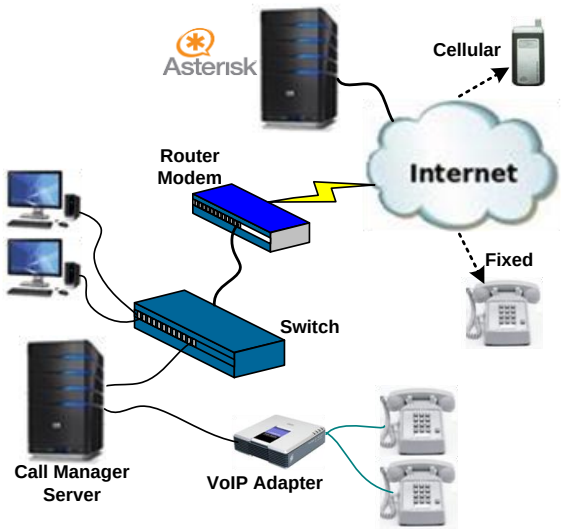

Figure 1

Figure 1 shows the arrangement in equipment and services that are going to work together. You can see that it takes a server on the Asterisk which is mounted to switch either calls to the PSTN or to an internet service that may still end up in a traditional analog phone, mobile, or softphone (combination of *software* and telephone).

There is a device that works like Linksys analog telephone adapter and also has a very important role as it is the router that directs calls to the VoIP service provider for them to be redirected once again to traditional or cellular phone.

Depending on the type of VoIP service , you can make phone calls and IP (Internet Protocol) from a softphone (computer application), special VoIP phone or a traditional phone with or without an adapter.

Moreover, the existence of new access points to high speed internet or "hot spots" in public places: such as airports, parks, and cafes allow you to connect to Internet and use VoIP service wirelessly.

If the VoIP service provider you have regularly assigned a phone number, then may you regularly receive calls from phones that do not need any special equipment and can surely be marked as is usually we done.

Justification (traditional telephony vs IP Telephony)

Drawing on the IP telephony capabilities, you can perform the same functions or features of traditional telephony, but also has a number of new features, among which we can mention are: [7, 8, and 10]

- Call transfer.
- Monitoring of calls.
- Reporting service (call history).
- Recording calls.
- Identify users.
- Videoconferencing.
- Music on hold.
- Volume Control.
- Emergency calls.
- Calls on hold.
- Answering calls automatically.
- Blocking caller.
- Web mail interface to check.
- Call simulator
- Reduction in installation and maintenance costs.
- Conference call.

Maximum mobility: The availability of your telephone extension anywhere in the world, provided you have an internet connection [7].

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Quality of Service (QoS): This consists in assigning priorities to the transmitted packets over the IP Network. For example, setting a higher priority to voice packets are time sensitive during transmission [9, 11].

Integration: Provides the integration of telecommunications services: such as voice, data, video and Internet on the same network, in an efficient, fast and effective way.

It's worth mentioning that in recent years hundreds of companies have changed their traditional telephony services to VoIP. Since 1995 when VoIP started to be used with small applications in the last 10 years we have had a technology revolution until today so this is nothing new and is well established to offer great quality service [7,9,10,13].

Methodology

Cisco Lifecycle Services

The methodology of Cisco Lifecycle Services was considered because it permits the use of a business plan, an assessment of the network, and the documentation on the Implementation of the system. With this you get to make calls from extension to extension assigned by VoIP servers, to conventional phones with a lower rate than what is currently available and it has an infrastructure that is easy to manage, control, and scale that adapts to future needs [7].

Infrastructure used

- Server Call Manager Express 7,
- Cisco Catalyst 2960 Switch,
- Cisco ATA 186(Analog Telephone Adapter)
- Cisco IP Phones 7940 and 7906
- Server Asterisk,
- 3CX Softphone, IP Communicator and Linphone
- AP router D-LINK to access the Internet
- Wireless service with IEEE802 .11n/g/b [6].

Cisco 2821 router features of Call Manager Express (CME)

- Offers call processing for Cisco IP phones to branch offices or small office environments.

- Permits a wide range of integrated service routers to offer Cisco IP telephony`s commonly used features by business users to meet the requirements of voice and video communications for small to medium sized offices.

- Enables the deployment of a communications system that is economical and very reliable through a single integrated services router [2,3,7,and 10].

Features of the Cisco Catalyst Switch 2960

- Supports voice, data, video, and secure access.
- Offers scalable management that adjusts to a company's needs [3].

- *Features of the 186 ATA (Analog Telephone Adapter)*

- Connects POTS (plain old telephone system) to the Internet.
- It's a phone jack for VoIP [7].

Features of the Router D-LINK DIR - 615 Wireless.

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- Provides excellent performance in transfer rate up to 300Mbps and wireless coverage up to 5 times the standard 802.11g signal.
- Enables Internet connection sharing within your network wirelessly and wired as well as video , music, photos, and documents.

- Uses smart antenna technology to transmit multiple streams of data which enable you to make and receive wireless signals to the farthest corners [7].

Features of the 3CX Softphone

- It is a phone program that allows:

- Making voice conversations

- Having an extension and connecting to have free communication.

- Performing cheap calls to traditional telephony system [7].

VoIP Protocols

H.323 is Commonly used for Voice over IP and IP-based videoconferencing.

MGCP implements the control interface gateway media as a set of transactions. The transactions are composed of a command and a mandatory response.

SCCP (Skinny Client Control Protocol) terminal control protocol owner. It is defined as a set of messages between a thin client and the Call Manager [10].

SIP (Session Initiation Protocol), designed according to the model of the Internet and whose purpose is the communication between multimedia devices. SIP makes this communication possible by two protocols that are RTP / RTCP (Real Time Protocol/Control Protocol in Real-Time) and SDP.

It is based on request and response messages. This protocol uses a port(5060) for signaling and RTP audio 2 ports for each connection (at least 3 ports). If you have 100 simultaneous SIP calls 200 (RTP) ports would be used along with port 5060 for signaling [5,7,18].

IAX *(Inter-Asterisk eXchange protocol)* protocol connections between Asterisk VoIP servers are used for connections between clients and servers that support the protocol [5,7].

Codec

Voice communication is analog, while the network is digital data. The process of converting analog waveforms to digital information is made with a coder - decoder (CODEC). There are many ways to transform an analog signal, each Governed by various standards, Table 1 shows some of them [7].

Standard	Application	is used
G.711	Designed composite audio, used mainly in telephony. Operates to 64Kb / s.	Yes
G.728	Conversely adaptive uses previous voice samples for adapting the coefficients filter.	No
G.729	Used mainly with VoIP applications Requires low bandwidth. Opera at 8 Kb / s	Yes

Table 1

Asterisk

Asterisk is an application to monitor and manage communications of any kind, analog, digital, or VoIP by all VoIP protocols it implements.

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It is an environment of open source work, created to design communication applications. Also power systems, PBXs, IP gateways, VoIPconference servers, and much more [1].

Asterisk is based on separate modules that can be uploaded and downloaded at will, Depending on the needs you want to provide the system. Each module has a specific function, that can handle all aspects of the system, via the channel types (IAXSIP) DAHDI or connections to other systems to interact with Asterisk (mail, databases, web, etc. ..) [1, 7.13].

Applications of Asterisk

Asterisk applications are management actions that apply to calls within the dial plan. For example, the most popular in all plans would be the application, Dial which simply aims to launch a call to a channel based on the properties identified during implementation.

There are other common applications like Voice Mail (responsible for voice mail management), Record (to record the sound of a channel). Some common features of the applications are as follows [1,7,13]:

- The actions are exclusively focused by and for the channels.
- Are loaded dynamically.
- Are run synchronously.
- The classic format of this type of modules is app_ <name>. so

Resources for Asterisk

The specific function of the resources is to integrate Asterisk with external systems such as: databases, web servers, calendars and more.

To have the ability to use their own applications on the system, but one of the differences with respect to these, is statically loaded, and can operate on multiple ongoing channels simultaneously, rather than dynamically created for each channel [1, 7.13]. The classic form of this type of module is *res_ <name>. so*

Functions DialPlan

The basic notion behind the function is the ability to obtain or add certain specific information to each channel.

They use to be complementary to the applications and are able to offer improvements to certain aspects of the system which in itself could be limited. Therefore the most common way they are used is by the application Set.

For example, a typical function is able to collect the call identifier of a channel (CALLERID) to handle within the dialing plan at will [1,7,and 13]. The classic form of this type of module is *func_ <name>. so*

Drivers Channel

They are specific drivers for each channel type available now or in the future for Asterisk. These are the ones who specifically provide the possibility of returning the system completely independent of them in order to treat them fully homogeneous. It is exactly a kind of interface Between the core of Asterisk and the "logic" in the operating system. All typical channels, have a corresponding module for the driver [7].

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The classic form of this type of module is *chan_ <name>. so*

Translators Codecs and formats

They are the representation for digital, audio, and video transmission systems (codecs) and storage (formats). That is, are responsible for converting via software, from one type to another format or codec simultaneously within the course of the call. For example, if a call comes on the DAHDI channel, and wants to switch to a SIP extension in Asterisk system with G.711 the codec translator will be responsible for this conversion in real time. On the other hand, if you are dealing with files, the responsibility for interpreting the contents to pass through the corresponding audio channel would be translator formats. In this area the most popular are the standards, GSM and WAV in which most of the default system sounds of Asterisk are (prerecorded messages) [7]. The classic format codecs modules is: *codec_ <name>. so* and for formats: *format_ <name>. so*

Trunks or gateways

It's a link That connects external calls of a telephone, concentrating and unifying multiple simultaneous communications on a single signal for transmission and efficient transmission distance (usually digital) and to establish communications with another exchange or a whole network of them [1,3,4,7].

Service provider VoIP

It's a company dedicated to providing VoIP service. It is dedicated to connect by phone VoIP users with users of conventional mobile phone.

If you want to call from the softphone or through an Internet connection to a traditional line telephone or mobile phone, you need someone to manage the voice traffic and send it through everyday conventional lines . That is where the VoIP provider's work comes in [14,15]. Such calls are not usually free,

You have to create an account with a provider and buy some credits that will be used to call landlines and mobile phones [14, 15].A PBX type telephone system uses a trunk line to make the center part of the network of other plants and maintain communications. Generally the digital PBX trunk lines are links That support up to 30 channels (lines) and voice intercom. If communication of the trunk is interrupted, there would be no communication between plants by any of its 30 channels [14,15].

IAX is a protocol used by Asterisk PBX server (telephone) open which is source and sponsored Digium. It is used to manage connections Between VoIP Asterisk servers, and between servers and clientes that also use IAX protocol [1].

Implementation of Infrastructure

The Asterisk server was installed and configured and later the extensions were added that users would use with the protocol, SIP along with adding a trunk to a service provider which performs the routing of calls to what is Known as public switched telephone network PSTN via Call Manager Express(CME) its protocol is taken advantage of by Skinny Client Control Protocol(SCCP) to interact With The IP Phone 7940 and 7906, it has a network over voice communication over the Internet with the ability to work.

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With The SIP protocol to establish a communication between the CME and Asterisk Server redirecting calls to the needs of users from one server to another customer and arriving at the other end. In both the catalyst switch is suitable for Implemented a voice VLAN and data VLAN [1,7]. 'SCALL Manager acts as a proxy signaling for initiated calls through other protocols: such as H.323, SIP, ISDN or MGCP [7.10].

Subnet Design

Step 1: Identify the broadcast address for the network address [7]. Table 2 shows the data of the private network.

Parametersnetwork	Data
network address	172.16.0.6/16
Subnet Mask	255.255.0.0
Broadcast Address	172.255.255.0
Number of host's	65,234

Table 2

Step 2: Determine the number of subnets.

The number of subnets is determined by the amount of bits that are in the subnet counting range (for this network, 3 bits.)

$2^n = 2^3 = 8$ subnets.

Step 3: Identification of the number of hosts per subnet.

The amount of hosts per subnet is determined to by the number of host bits (In this case, 13 bits counting from right to left of the host 172.16.00000000.00000000) minus 2 (1 for the subnet address and 1 broadcast address subnet).

$2^n - 2 = 2^{13} - 2 = 8190$ hosts per subnet.

Step 4 : Identify the range of host addresses.

To get the range there are several ways, the simplest is to subtract from 256 the number of the subnet mask adapted and which takes 3 bits of the host portion to form subnets $(128 + 64 + 32 = 224)$.

In this case is: $256 - 224 = 32$.

So, the range of each subnet is 32, Table 3 shows the information related to the network 172.16.0/19.

172.16.0.0 /19	Usable IP's			
No. Subnet	Subred	IP start	IP Final	Broadcast
1	172.16.0.0	172.16.0.1	172.16.31.254	172.16.31.255
2	172.16.32.0	172.16.32.1	172.16.63.254	172.16.63.255
3	172.16.64.0	172.16.64.1	172.16.95. 254	172.16.95. 255
4	172.16.96.0	172.16.96.1	172.16.127.254	172.16.127.255
5	172.16.128. 0	172.16.128. 1	172.16.159.254	172.16.159.255
6	172.16.160. 0	172.16.160. 1	172.16.191.254	172.16.191.255
7	172.16.192. 0	172.16.192. 1	172.16.223.254	172.16.223.255
8	172.16.224. 0	172.16.224. 1	172.16.255.254	172.16.255.255

Table 3

Step 5: Results.

In this case only the subnet number 1 is considered. And table 4 shows the results obtained for the design of this subnet.

Parámetros de red	Datos
SubnetAddress	172.16.0.0/19
MaskSubnet	255.255.224.0
Subnet Bits	$2^3 = 8$ subredes
host bits per subnet	$2^{13} - 2 = 8{,}190$ hosts por subred
IP for this subnet start	172.16.0.1
IP for this subnet finish	172.16.31.254
Broadcast address	172.16.31.255

Table 4

Subnets avoid unnecessary broadcasts, simplify management and monitor growth.

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Dial Plan

According to the dial plan, extension mappings were made only considering those used in connection with testing each forms of communication. These are shown in Table 5. While Table 6 presents all allocations made.

Extensions						
	Special	IP-Comunicator	Mobil	ATA	IP-Phone	PC
Ext. Start	2000	3000	6000	7000	8000	9000
Ext. Finish	2999	3999	6999	7999	8999	9999

Table 5

Server	Extension	Name	MAC
Asterisk	9000	ZAGA	2C:81:58:E2:7B:97
Asterisk	9001	CRISTHIAN	00:22:5F:B2:A5:95
Asterisk	6000	IPHONEMACIEL	24:AB:81:13:5D:BB
CME	8000	M.C.C. CANO	00.19:55:FB:32:4E
CME	8001	M.I. MASCOTTE	00:12:00:45:82:A0
CME	3000	TSU. JAIME	08:00:27:A9:62:AB
CME	8002	M.I. HERRERA	00:22:90:BC:21:70
CME	8003	DR. BARRON	00:23:33:9D:45:36
CME	7000	TIC Secretary	00:1D:45:95:64:24
CME	7001	DEM Secretary	1D:45:95:64:24:01
CME	2000	2000	44:E4:D9:E6:AD:41
Asterisk	2001	Conference	N/A

Table 6

Dial Patterns:
Local: 01 + area code + Phone:
National 01 + area code + Phone
Cell: 044 and 045 + area code+ phone

Implementation of Elastix server

Elastix is a free distribution of Unified Communications Server that Integrates into one package [3,4]:

-VoIP PBX
- Instant Messaging
- Email
- Collaboration

It implements much of its functionality on four important software such as: Asterisk, Hylafax, Openfire and Postfix.

These functions Provide PBX, Fax, IM and email respectively. Furthermore, it runs on CentOS operating system and the version currently installed is Elastix 2 [4,7].

Installing Elastix

Elastix is distributed as an ISO file can be burned to a CD from any CD burning software.
Having Elastix ISO properly recorded on a CD, once burned the CD is inserted into the PC when starting.

But we must ensure that the boot is the optical drive (CD-ROM), this is enabled in the BIOS of the PC. As soon as it's started the installation window will appear.

Note: At installation time the hard disk is formatted during installation, thereby ensuring the information is important.

1. At the opening screen of the initial installation hit ENTER to start the installation settings.

2. Now proceed to choose the type of keyboard according to the language. If the keyboard is Spanish language, select "es."

3. Then select the time zone according to the region.

4. Was enter the password That will be used by the administrator of Elastix.

5. The password that the administrator for Elastix will be using is entered.

6. Once the installation is complete, proceed to reboot.(Note: You must remove the disc and preferably modify the BIOS to boot from the hard drive as the first option.)

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7. After restarting, the system will Automatically start the Following kernel: Elastix-base (2.6.18-53.1.19.e15)

8. Then you enter as root user and the password entered at the time of installation.

9. Upon completion of the installation, the screen displays information about joining the Elastix kernel. This is shown below.

CentOS release 5.9 (end)
Kernel 2.6.18-i686
348.1.1.e15on an

Asterisk login: root
Password:

Network Configuration

Once accessed the configuration is done by assigning a network IP address, for access via HTTP. The screen displays the Following information:

IPv4 Configuration for eth0

Accton Technology Corporation
SMC2-1211TX
00: E0: 29:9 D: 19: A2
() Configuration of dynamic IP (DHCP)
(*) Configuration Manual TCP /IP

IPAddress Prefix (Network Mask)
172.16.0.2_ _____ / __ 255.255.224.0_

OK Previous

This information Indicate s the IP address assignment.To enter via http, then open the web browser and enter the IP address in the address bar, to open the server you enter the username and password Assigned [4,7,13].

And then, the screen is displayed in the main interface elastix server, which is shown in Figure 2.

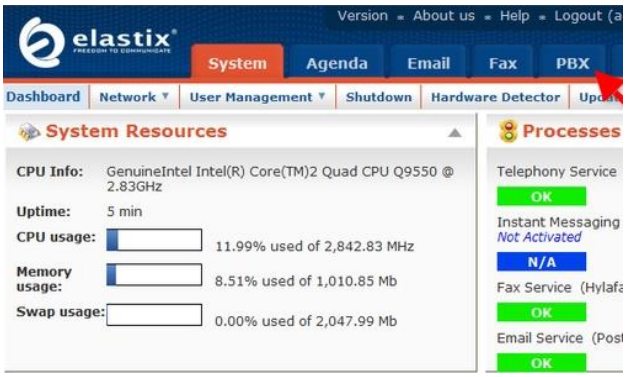

Figure 2

Adding extensions

The extensions are those numeric identifiers that enable communication between hosts on the local network and external telephone numbers, this number is then assigned to what can be a IP softphone or a phone.

To add it, find the tab with the legend of PBX submenu and Extensions then choose between the protocols you want to use in Which there is: SIP, IAX2, ZAP,DAHDI, etc. Once you have selected it, press the Submit button [4,7,and 13].

Next is a new page to add a basic extension, the field User Extension must be filled. this option will contain the number or caller ID to send and receive calls for it to work, consider the following: special numbers of functionalities that codes give access to various functions of the PBX based on this your Dial Plan is established.

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Likewise, in the field Display Name the user name is show when making a call to another extension, for example M.I. MASCOTTE and most important is to add a password so that not everyone can use the account and only one person has access to it, this is defined in Secret.

When finished press Submit and a box appears box asking reload the Asterisk server to apply the settings that Have been established [4,7].The first section is the Edit Extension which has the following options:

- Display name: This is the Caller ID That displays the user when calling another user.

- CID Num Alias: This parameter is optional and what it does is replace the user caller id for the one that is Indicated here. It only affects internal calls.

- SIP Alias: If you want to allow direct calls by SIP, for example by an unregistered terminal, you can put a simple and short name instead of the extension number [4,7].

Add trunk

Trunks are useful additional servers to interface VoIP service, they may have a different extension range or can work with a technology or different communication protocols extending more options. One of the main stem used in this system is the one that communicates with the VoIP service provider (vozia) and a secondary to integrate Cisco and ATA phones to also add analog terminals. To add a trunk to the Elastix server, go to the PBX tab and submenu trunks [4,7].

Among the protocols That Can be selected are: SIP, DAHDI, Zap, IAX2, ENUM, DUNDi. Choose the most adequate.

Having selected the protocol to use for the trunk, a new page opens to modify the configuration. In the part of Outgoing Settings the main parameters are introduced. Trunk Name is the name of the trunk to be assigned. PEER Details or USER Details depending on the context.

If you type =user: can only receive calls as "user".

If you type =friend: you make calls as "peer" and receive calls as "user" (used for extensions.)

If you type =peer: to make calls as "peer" and receive calls as "peer" (used for trunks) [4,7].

Overall parameters are specified as: VoIP provider IP address, user name, account, password, account, etc.

The "Register String " is a parameter that is used because you must be registered with the server When the IP address is dynamic, in the case of Internet service in most companies. This string tells the remote server where to find the user forever, even though its public IP address changes [4,7]. The format is:

Username: Password @ proveedorIP or
Username: Password @ proveedorIP /User

Outgoing routes Setup

Outgoing routes are extremely important in conjunction with dialing patterns when making decisions to use different trunks. To configure an outbound route, the first thing is to go to the menu where it says "Outbound Routes “and a menu appears where in "RouteName" you will put a descriptive name. RoutePassword: Here a code is assigned that it will always you to input to use this route projection [4,7].

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Configuring inbound routes

Outgoing calls must be configured for when you want to make out calls, but when you want to receive calls you must procure a virtual number service or better called DID (Direct Inward Dialling or Direct Inbound Dialing).

Having the account of this service you can direct to where it says "inbound routes" at the bottom of the page where it says "Set Destination", where it says "Extensions" if the extension is located to which you wish to receive the call, also worth noting you can receive an IVR system (Interactive Voice Response or Interactive Voice Response) that amounts to a virtual operator that describes a menu to find the right destination extension or correct extension [4,7].

Additional Services

Additional services are those features that give a bonus to VoIP communication.

Leaving aside the ability to send and receive calls, you should also monitor and manage the service and provide alternatives in different situations [4,7].

Were configured the following services:

- Email
- Voicemail
- IVR
- Call conference
- clock control.

Email

The function of email in Elastix server has the main objective to provide the right conditions to turn voice mail enabled, since in this case the voice mail works via email where call recording is stored [4,7].

Voice Mail

Having created the email account domain you can proceed to create the users linked to existing extensions, for that you must go to the tab System and the submenu Users to press the button. Add New User.To activate the service begin of voicemail you must set the time it will ring before being redirected to another extension or in this case it is sent to voice mail, the configuration is called Ring Time and standard telephone companies is set to 20 seconds [4,7].

Conference Call

The conference call is the synchronization of multiple simultaneous calls that through a password allows or denies access to configure this service go to the tab PBX andsubmenu PBX Configurationin the left side menu there is a group called Internal Options & Configuration click on conferences [4,7].

Security

Elastix comes with an integrated firewall which can block ports that are not going to use and increase safety to prevent attack on certain vulnerable ports or in special cases on certain IP addresses.

To configure the service go to the Security tab and the Firewall submenu, now find the port you want to close [4,7,18].

Equipment Setup

1.9.1 Cisco Router 2821 Call Manager Express (CME)

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Network Configuration

Enable DHCP service to act as a server address, which may provide IP addresses to devices that are within the same network, so exclude some addresses which are manually implemented [7.10].

The information displayed on the screen corresponds to the telephony service and are shown below:

```
sip-ua
credentials username 3000 password 7
 1240044F165C0A522E7F2F  realm asterisk
authentication username 3000 password 7
 135C164A0F5B027C2F7023
retry invite 4
retry response 3
retry bye 2
retry register 10
timers register 250
registrar ipv4:172.16.0.2 expires 3600
sip-server ipv4:172.16.0.2:5060
!
!
```

Add client SIP

Enable telephone service, you create the ephone-dn which contains the user name and extension, then you create the ephone which relates the MAC address of the device the codec that will be used, the type of device (ATA, IP Cisco 7940, Cisco IP 7906, ICPC) and assigned the line button on the phone to address specified MAC [2,3,7].

Dial plan CME

To configure, assign the rules for voice dialing assigning a name to the rule, a description of the rule, the translation, the destination pattern, the session destination, protocol and codec used.

Switch Cisco Catalyst 2960

VLANs are created in which they will work, in this case voice and data.

Then you enter a specific port range which will interact in the voice VLAN [2,3,7].

The screen displays the information for the verification of assigning ports to VLANs active. Shown in Table 7.

Switch-VoIP#show vlan

VLAN	Name	Status	Ports
1	default	active	
2	Voice	active	Fa0/1, Fa0/2, ----- , Fa0/12 Gi0/1, Gi0/2
3	Data	active	Fa0/13, ----- , Fa0/24
150 1001 1002 1003 1004 1005	Super voice fddi-default token-ring-default fddinet-dafault trnet-default	active act/unsup act/unsup act/unsup act/unsup act/unsup	

VLAN	Type	SAID	MTU	Parent	RingNo
1	enet	100001	1500	-	-
2	enet	100002	1500	-	-
3	enet	100003	1500	-	-
150	enet	100004	1500	-	-

VLAN	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	-	-	-	0	0
2	-	-	-	0	0
3	-	-	-	0	0
150	-	-	-	0	0

Table 7

With this configuration, the VLAN are implemented in the switch, the fragmentation of large broadcast domain into several smaller parts reduces broadcast traffic and improves network performance. The fragmentation of VLAN domains also allows greater confidentiality of information [7].

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ATA 186 Analog Telephone Adapter

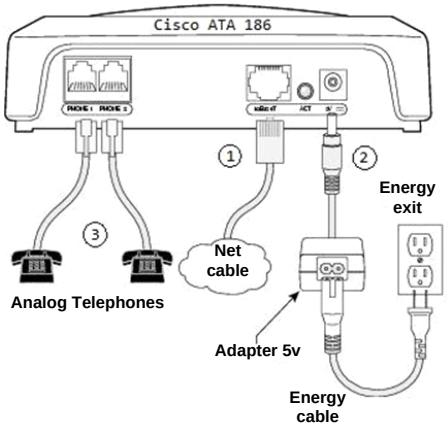

Figure 3

Considering Figure 3, after making the connections you pick up the phone and press the red flashing button located on the top of ATA 186.

Upon hearing the recording dial 20 followed by the pound key (#), which enables DHCP mode. Then restart the ATA 186 by unplugging the power cord for 10 seconds and reconnect. Now it detects the IP address that contains the ATA picking up the phone and pressing the red flashing button located on the top of the ATA 186 [7].

Upon hearing the recording dial 80 followed by the pound key (#) and listen to the IP address that was assigned by DHCP as this 172.16.31.254.

Access the web browser and enter the IP address in the address bar on set of / dev, so it is entered as follows: 172.16.31.254 / dev.

Configuration of Router D-LINK DIR-615Wireless

In this device, the following settings are made:

WAN Interface

To configure the device enter the IP address you entered in the browser address bar and open the home screen D-Link in which data is entered from the installation [7].

LAN interface

When adding the IP address of the internal network which was used as a gateway, you enter the corresponding IP address and save the changes by clicking the save settings button [7].

WLAN Interface

To configure the WAN network, enter setup and within the WIRELESS SETTINGS tab click Internet Connection Manual [7].

Enablement of web filter

To enable network filter select ADVANCED NETWORK FILTER tab, being inside you enter the MAC addresses of the devices that have access to the network, allowing you to block unauthorized access. When entering addresses all devices that will access the information is saved by clicking the save settings button and wait for the D-Link device to restart [7].

Softphone Configuration (Cisco IP Communicator)

Accessing address: www.fiberdownload.com/Download/19120/Cisco-IP-Communicator. It downloads and runs the installer with extension .Msi [7].

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3CX Configuration

Access the following address: http://www.3cx.com/VOIP/voip-phone.html download and run the installer with extension .msi.

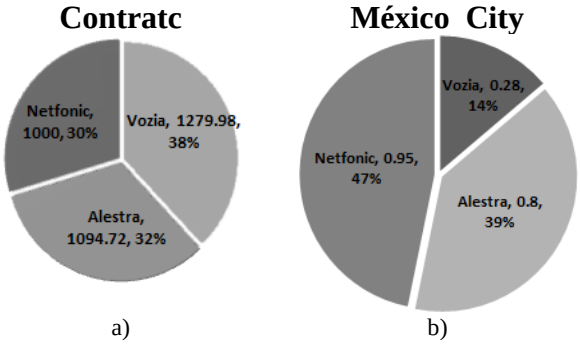
Then open the application. Which appears in the active state and the name of the account you use (see Figure 4a). Now once active, the only thing left to do is try to making a call to any active extension (see Figure 4b).

a) b)

Figure 4

Supplier evaluation

Figure 5 shows the main information for contract fees and costs of each provider by means of these graphs that differ both in prices and volume, increases or decreases the competitive advantages of each in a fast and efficient way [7].



a) b)

Figure 5

In Table 8. It shows which VoIP service provider is more economical to contract.

Provider	Payment / Serv. Tel.	%
Vozia	2200	17%
Netfonic	2450	19%
Alestra	2604.16	21%
Telmex	5539.62	43%
Price of dollar in Mexico		
Sell	12.8793	
Buy	12.8738	

Table 8

After study, it was decided to make the contract with the supplier Vozia it turned out to be the most convenient.

Operation

Figure 6

Figure 6 is considered to describe the steps of communication service operation:

Step 1. The two participants in the conversation are connected to the VoIP server with their phones.

Step 2. Issuer Team asks for the equipment and receiver using a specific protocol (SIP, H.323, IAX / 2).

Step 3. The VoIP server returns the sender contact information (eg IP number.)

Step 4. Phones establish a connection and agree on a code (G.711, G.729, and GSM).

Step 5. Voice data is compressed and sent by the RTP protocol.

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Step 6. Receiver receives RTP packets, decode voice data.

Step 7. Listen voice.

Results

When operating the VoIP service communication tests were deployment between the various forms of telephone communication over the Internet.

Of course, having made a contract for VoIP telephone service provider *vozia* for the purpose ofverifying savings.Information was obtained for a comparative costs and calls between Telmex and Vozia suppliers. This is shown in Table 9.

Call	Minutes	Telmex	Vozia	TPM US/MX
Local	100 Calls	$70MX	$67.56*MX (5.25 US)	0.035US/0.45MX
Cell phone	150 Minutes	$119.48MX	$115.83MX (9 US)	0.060US/0.77MX
National	200 Minutes	$119.48MX	$41.18MX (3.2 US)	0.016US/0.20MX
US	100 Minutes	$179	$23.16MX (1.18 US)	0.18US/0.23MX
*Equivalent to 150 minutes				

Table 9.

As it can be seen in Table 9 the difference is remarkable. From local calls there are already savings and is more significant in national calls.

Implementation of VoIP services is a foundation on which calls can be made internal extension to extension, local, mobile, national and international with the lowest market economic MX ranging from 0.25 cents to 0.77 cents MX this means great savings on a comparison against traditional telephony, following costs are provided to certain types of calls:

Internal Call: From extension to extension. The call is free extension to extension has no cost and can be performed even without having access to the Internet, you only need access to the local area network (LAN).

Local Call: In extension to the local town of Valley Santiago. A local call to the VoIP service provider Vozia considered in this case as OFF NET (off-grid), meaning that it does not belong to the list to make inexpensive calls since it is one of the main cities of Mexico. Its estimated cost in dollars is $ 0.45 perminute.

National call: In extension to the city of Mexico is considered ON NET (In-Network) in major cities so there are already so many surcharges of what is known as interconnection . The approximate cost in pesos is $ 0.206perminute.

Cellular call: From extension to a mobile phone. In what is a call to a phone company is the rate that is considered more expensive because it is the interface even for phone companies still conventional lines is very cheap. Its estimated cost in dollars is $ 0.771 per minute.

Calling abroad: The cheapest calls can be made precisely to other countries since the servers that route calls are mainly in the united states.

That is the reason that the call to Mexico is more expensive to call a foreign country as is USA. Approximate cost in pesos to call Washington, USA is $ 0.231 per minute.

The server was changed to a local network that is a private IP. When calls are generated problems arose since the NAT was interfering with communication with the SIP protocol.

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Therefore, we chose to use theprotocol IAX2 as the server *vozia* is Asterisk could be used without problems, the advantage of this protocol is that it is lighter than SIP to transport themselves on the network because it eliminated some packet headers, supports NAT no problem which is what I mainly wanted to get, in other words quality voice transfer at low cost, but its drawback is that it is standardized and so far only devices that work with Asterisk can use so there is not much hardware or software to work with IAX.

Conclusions

Two different technologies have integrated, such as Call Manager Express and Asterisk. And so, getting calls from both extensions and out and have the services of call forwarding, call waiting, etc.

Also managing the service without relying on a vendor that you can continue adding extensions, manage voicemail service, answering machine settings, see the call states as records, accounts, who else called extensions, reporting for period of time determined by the user, the place that was called and the caller.

It's a proposal to improve the state of networking in an organization and provide better service and more secure Internet, scalable and focused on Quality of Service (QoS) where they can be properly integrated converged services.

The SIP protocol security IAX was changed to keep unauthorized people from using service outside the organization so that they could make calls. And although it is lighter, has the disadvantage that it is not standardized. Making this change could keep the server on a local network with private IP respective communicate without problem VOZIA VoIP server even with some improvements in the network traffic.

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User satisfaction through "plural-comprehensive" primary health model

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This paperwork aims to propose the implementation of a plural-complete model of primary health care in Mexico that speeds up the access of people to these services and ensures the satisfaction of users. A review and critical bibliography analysis was carried out on the topic to improve the proposal. In various countries, there have been implemented primary health care-oriented health care systems and better results are on the health of the inhabitants and are more efficient. In order to improve the quality of Primary Health Care (PHC) in Mexico. It is proposed the development of a plural-complete model allowing free choice of the doctor of care system that the patient of family decides. That has public financing or mixed program, depending of the case and has a certified technical quality assurance.

Primary health care, quality of care, satisfaction of users.

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Introduction

The initiative of this work stems from the perceived need to improve user satisfaction of services of Primary Health Care (PHC) in Mexico, considering it requires greater flexibility in accessing the system using a "Plural" and comprehensive model, which in one hand expedite the entry of people to these services and on the other ensure quality standards and increase their level of satisfaction. So there was a review of existing information on the subject to enable to enter and generate a proposal to change the established paradigms about the traditional supply of PHC services in the country.

The Primary Health Care (PHC) is the most important gateway to the National Health Service (NHS) and the fact that it is a factor of satisfaction of those who access it is an indicator of the quality with which the service is provided in the various institutions and constituent components.

The current model of PHC, existing in Mexico is mainly given by the institutions of Social Security, The Mexican Institute of Social Security (Instituto Mexicano del Seguro Social, IMSS) and the Institute for Social Security and Services for State Workers (Institute de Seguridad y Servicios Sociales para los Trabajadores del Estado, ISSSTE), Mexican Oil Company (Petróleos Mexicanos, PEMEX), Secretariat National Defense (Secretaría de la Defensa Nacional, SEDENA), and for those who do not have social security, they can have access to the Ministry of Health (Secretaría de Salud, SSA) and the IMSS program opportunities.

It is considered that users care systems especially in case of health, represent a niche of opportunities for improvement.

As in the various areas of patient contact with service providers may generate a significant number of cases of dissatisfaction with either the waiting time, with the treatment, or the deferral of specialized care, which may be delayed for two to three months and in some cases longer (Ramírez-Sánchez, Nájera-Aguilar and Nigenda-López, 1998).

To illustrate, in a study conducted in family medicine units of the Mexican Social Security Institute (IMSS) in 2007, it was noted that a health care unit where the first contact was made by telephone appointment concerted up to 85% of cases, was achieved by 66% of users satisfied with the care provided by the family physician and 68% with the waiting time, while other units where only 28% of users had made appointment prior telephone, satisfaction with family physician care was 48% and waiting time 34% (Colunga, López Aguayo and Canales, 2007).

This low percentage of claimants satisfied considered is facilitated by the way in which services are performed, their organization and the capacity to solve them, driven in turn by the time available for conducting medical consultations and the type of standardization thereof.

Background

The primary health care (PHC), is the most important focus of the health system and its first contact care, bringing the maximum possible health care to where people live and work (Loyola, 2005).

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The preventive health care and screening tests for the early detection and treatment of diseases are held mostly in the Centers for Primary Health Care (PHC). These centers, where people can come spontaneously, they are also the largest providers of management and continuous care.

An estimated 80% of health care provided at the community level and first contact, where PHC centers are the basis of the health care system. PHC centers are the frontlines of health care and therefore are places that serve the function of providing the initial contact, prolonged and continuous to patients.

The government of Mexico created the Mexican Social Security Institute (IMSS) in 1943 with the purpose of protecting the health of workers employed in the formal sector of the economy.

The ultimate goal of this strategy was to provide 100% coverage population with this system by the end of the twentieth century; however, the maximum coverage is achieved in about 50% of the country's population.

By the early eighties, health authorities had reported that more than 10 million Mexicans lacked access to formal health services, that half of the population used public health services and social security (Nigenda, 2005). Despite this, life expectancy in Mexico increased from 65 to 75 years in the last 20 years, maternal mortality was reduced, as well as infant mortality.

Moreover, the segmented structure of the health system in Mexico has been an obstacle to achieving coverage targets primarily because the existing competition for funds to cover uninsured populations.

The federal government channeled resources 2.4 times more per capita to the population covered by social security to the population served in the Ministry of Health. This reflects corporatist policy even created in the forties that favored the provision of services to people based on their ability to be formally employed (Nigenda, 2005).At present, the public health care and social security institutions face adequacy problems of financial and human resources for their activities.

To illustrate the above in regard to the distribution of health spending, it calls the attention of all of this 15% of the total is intended for health needs of 40% of the population that is socially and economically marginalized and is used compared to 48% of it to meet 10% of the population which has purchasing power (Arredondo López and Recamán Mejía, 2003).

The strategy called primary health care is based on the resolutions of the conference in Alma Ata, Russia held in the year 1977 and that was the basis of the goal of the World Health Organization, "Health for All by the Year 2000" (Hoskins, Kalache, and Mende, 2005; Álvarez Alba, 1991, 65).

The main features of the PHC are: Health promotion, increase preventive actions, attention to more frequent and endemic diseases, supply of food and medicine, maternal and child health, family planning, training and staff development, work equipment, active community participation, appropriate technology and cost, expanding coverage and integration of health services and promotion of basic sanitation.

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To date, the coverage expansion programs have not been able to extend the range of services and the structure of the health system, which inadvertently it has reinforced inequality to the various segments of society.

This is true especially the economically disadvantaged, and more specific in the distribution of financial resources, which already are existing below average in Latin America and the Caribbean who spends on average (7%) of gross domestic product (GDP) on health, while in Mexico barely reaches (5.6%) (Nigenda, 2005).

It is considered that the countries with a health system oriented Primary Health Care (PHC) have better health outcomes of the population and are more efficient (Pujol Rivera, Gene Baida, Sans Corrales, Sampietro-Colom, Pasarín Rua, Iglesias-Pérez, Casajuana-Brunet and Escaramis-Babiano, 2006).

Current trends of PHC involve choice doctor or primary health care system that is preferred as it could be in France or Germany, and this precisely is related to a strategy for improving primary care.

Ortun and Gérvas (1996, p: 97) believe that health and economic efficiency of the primary medical attention (PMA) is based conceptually on longitudinality and the role of patient flow regulator of PMA and comprehensive view of the patient.

The family physician acts as a regulator of the flow of patients to the use of specialized services in countries like Canada, Denmark, Finland, Spain, Holland, Ireland, Italy, Norway, Portugal and the UK.

It is emphasized, the importance of recovering the overview of the interaction between patients and the general care and specialized medical-liaison facilitating doctor.

Plural-comprehensive primary health care model.

Lara Di Lauro (2011) defined the plural-comprehensive primary health care model as the reform of the health system that is based on the principles of universality, solidarity and pluralism in order to pursue the purposes of equity, quality and efficiency.

The Plural-comprehensive primary health care model is organized by function and not by social groups, separating regulatory functions financing and delivery, looking for efficiency and quality of care, and encouraging the participation of users in their own care.

Thus, the modulation becomes the core mission of the Secretariat of Health. Funding is the core responsibility of social security, extending it to private insurance. The joint function becomes explicit through the administration of payments and coordination of provider networks, through the ISES and finally the provision of a scheme is open to plural public institutions, civil society and private. In order to better meet the public and provide performance incentives to providers, must be recognized freedom of choice for users.

Interrupting the vicious cycle of poor primary care

Countries that have broken this cycle, such as Denmark, the Netherlands and the United Kingdom, began with the creation of a professional association of general practitioners (GP) and powerful family that was inserted into the universities and obtained postgraduate training which became mandatory for the profession.

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With the help of regulations determining the GP-family as a filter and coordinating, regulating access to specialists, primary care is the cornerstone of the health system in these countries. In these cases the family physician, is highly recognized, is reasonably well paid which generates the existence of candidates for the exercise of the profession of good quality and the population is broadly satisfied with their services (Ortun and Gérvas, 1996).

There are cases like that of Canada where, operation costs have elements of control by the federal government on the provincial government. Health spending has remained at 8.6% of GDP in 1997, with an annual per capita expenditure of $ 1,836.00 USD. Regarding the payment mechanism, as it has been noted, doctors are paid by the provincial health insurance, primarily through a fee for service. Health care is publicly funded, but private provision. It is based on primary care physicians, and they are the first formal contact users. 60% of practicing physicians in the country are primary care physicians.

They usually work in private, communities and have a high degree of autonomy. Canadians usually go to the doctor or clinic of their choice. They must present their current insurance card to receive care that allows access to the insurance, so they do not need to pay co-payments, deductibles or premiums (De los Santos Briones, Garrido Solano and Chávez Chan, 2004).

Another interesting case is represented commenting Health System in Cuba which, in the eighties prompted the primary health care model, with the Plan Family Doctor and Nurse, which is the protagonist of the health strategy in this country.

The national health system has a network of institutions that provides easy access to 100% coverage of the population. The benefit is primarily focused on primary health care (PHC) model based on the Family Medical and Nurse (FMN), which currently covers 94% of the population. It is Established an office of FMN for every 600 to 700 people and in certain places of work or study (De los Santos et al, 2004, Lopez, Morales, Lara, Martinez, Lau, and Soler, 2009).

User satisfaction as a measure of quality of health services

Among the indicators that measure the quality of results, and which is given increasing importance, included patient satisfaction with the care received. That satisfaction is derived from subjective experience of compliance or noncompliance with the expectations a person has about something.

If we try to offer the highest quality services and build institutions of excellence, then, the evaluation of user satisfaction, families and providers becomes a permanent task and provides dynamic data on how far is it to meet expectations of each other (Massip Perez, Ortiz Reyes, Llanta-Abreu, Peña Fortes, and Infante Ochoa 2008).

A valuable tool to learn about the user satisfaction are the surveys, because they provide information about the user satisfaction regarding the treatment received and can fix or adjust the objectives to be achieved with the improvements made.

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The service orientation towards the needs of those who use health services is increasingly present in the proposals of professionals, managers and planners in health. In this sense, the analysis of user feedback incorporates the perspectives of citizens within the overall framework of the evaluation of health programs (Massip et al. 2008).

The appointment at the primary care level, it may be beneficial to user satisfaction because it aims to reduce waiting times for patients and lead to greater user satisfaction with the care provided. Colunga, Lopez Aguayo and Canales (2007), Serrano Del Rosal and Loriente Arin (2008) found that some specialists in the field have shown the high correlation between user satisfaction and service quality, implying knowledge of the need to better understand the first and second boost.

Once it has been known the satisfaction in each dimension of the service received, it can be determined, how they contribute to shaping the global satisfaction.

At first, one might say that overall satisfaction is a sum of all partial satisfactions, but all dimensions equal to weigh in shaping overall satisfaction? In reality, the answer to this question, not to be supported by empirical reality, it would be nothing more than a hypothesis or theory course starting (Serrano Del Rosal and Loriente Arin, 2008). While some earlier analysis concluded that these three variables, the recommendation of the center is the most important to be considered as overall satisfaction with primary care services. Indicators can be grouped into three:

A. Satisfaction with facilities
B. Satisfaction with the organization
C. Satisfaction with the medical treatment.

This grouping together realizes the holistic approaches of structure, process and results that Donabedian (1993) considered necessary for the evaluation of quality. Partial satisfactions, satisfaction with the organizational aspects are those with greater ability to vary the overall satisfaction, with a significance of 51.6%. The satisfaction of the medical act gets 35.2 percent of importance and satisfaction with facilities 11%.

On the other hand the characteristics of supply and the user also affect the overall assessment of their satisfaction.

The three partial satisfaction indicators that more percentage of dissatisfied presented in this study are the evaluation of the waiting time, ease solving procedures and papers, and assessment of the organization of the school in general, all aspects pertaining to the organizational dimension (Serrano Del Rosal and Loriente Arin, 2008).

Finally, the role of user feedback on services received is key aspects in the definition of quality and its evaluation is essential to provide proper health care. Patient perception therefore becomes one of the principal steps in evaluating how or which improve the quality of care.

The ultimate goal is to detect the presence of attendance problems and develop proposals for improving care through the patient assessment revealing the service received (Granado de la Orden, Rodriguez Rieiro, Olmedo Lucerón, Chacon-Garcia-Escribano Vigil and Rodríguez-Pérez, 2007)

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Conclusions

It is considered that to achieve the purpose of improving the quality of PHC in Mexico may be worth checking the satisfaction of users of these services, by enabling the patient or her family doctor to choose the medical doctor and the system of the first contact the user prefers.

Then, he/she can select based on proximity to his/her location, affordability (reaching even to propitiate the gratuity based on the principle of citizenship).

Also on the basis that the users count on the necessary organization to simplify administrative procedures for their care and have a support system when required for higher level of medical expertise to solve the most complex health situations efficiently and timely.

All of these should result in achieving a higher level of satisfaction with the health care services received, with the lowest risk for health and a permanent improvement.

In the reviewed literature, it has been shown the feasibility of such strategies especially if it is considered important to clarify the comparison that can be made between different sets of primary health care in several countries and the way that care is provided in Mexico. As part of the proposal representing the Popular Health Insurance, which has been mentioned already that one of its claims is to achieve universal access to health services.

This can be interpreted that there are different funders of health services including existing ones as in the Mexican Social Security Institute (IMSS), the Institute for Social Security and Services for State Workers (ISSSTE) and derivatives from Secretariat of Health (SSA) coupled with the system for Integral Family Development (Desarrollo Integral de la Familia, DIF).

It is intended that a claimant from these institutions or any citizen even if not have any entitlement can go to any unit, clinic, health center, family practice unit, which is accredited to provide this service to request services from PHC.

This would be equivalent to that access to these services is given by citizenship even as there are various lenders, payment of providers of these services would be given by the institution to which is entitled the individual or family.

This system is considered to be an advantage that can be achieved for the user because it creates competition by giving quality services among the various providers of PHC, since when there is a possibility that a user of the IMSS or ISSSTE go with private physician practicing in a colony near their home could facilitate access and service satisfaction.

It is considered that users will be served preferably where they get greater satisfaction with the service received.

In addition to achieving service standardization, it exists within the Ministry of Health a group of trained professionals to carry out the accreditation of the different type of unit.

Accreditation has a clearly defined evaluation system on granting services health units and has a term of five years for the units that have been accredited.

This system can be generalized to private units and civil society and thus can guarantee uniformity of services provided in PHC in the public and private sector.

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To provide greater certainty to this type of organization proposal would add the social comptrollership that would be the possibility that this strategy be monitored and audited by various civil society organizations.

Another advantage that can be considered to be achieved with this proposal is that current services would be used and the existing infrastructure of the various institutions.

Thus, to extend the offer to users, the federal and state governments do not require large investments in new units as in most cities, towns and communities have some general practitioners.

With reinforcement in training of these general practitioners, it can be achieved to give primary care services of high quality and highly satisfactory to the user population.

At the end of the day, it can be implemented in everyday practice, the right to health protection with a wide satisfaction for all Mexicans without unjust distinctions fostered by the divergent supply that currently exists of PHC services.

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Migration and remittances on Mexican economic growth

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Mexican population in 2010 compared with 2000 shows a 32% reduction in international migration and a 36% reduction in the number of people who emmigrated to the United States, so that the USA went from 96% to concentrate 89% of total flow of international Mexican migrants. The aim of this research was to analyze the influence of the variables: number of migrants, the exchange rate, the minimum wage in Mexico, remittances, USA wages, unemployment and inflation in the United States on Mexican economic growth. To develop the study, it was performed a multiple linear regression model of the Gross Domestic Product (GDP) in terms of migration and remittances uptake. Based on statistical and economic analysis, it was concluded that the main explanatory variables for economic growth were: the number of migrants, the exchange rate, remittances, wages and unemployment in the United States.

GDP, Mexican migration, remittances.

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Introduction

The Population Division of the United Nations (UN) estimated that in 2010 there were 214 millions of international migrants, a 3.1% of worldwide population from which a 60.0% were located on developed countries. Europe is the continent that concentrates the greatest number of migrants (70 millions), followed by Asia (61 millions) and North America (50 millions).

With the recent economic crisis, some people and institutions anticipated a massive return of migrants to their origin countries. However, there is no evidence of greater quantities of people returning to their origin countries so far; on the contrary, less people have continued to emigrate.

Even in some regions it has accelerated the rate at which it had been growing the number of international immigrants, such is the case of Asia and Latin America, where from 2000 to 2005 the growth was 1.2% annual average and grew respectively to 2.0% and 1.7% for the past five years (2005-2010).

Since 1990, Mexico has registered two economic crises: the first in 1995 and the second started in late 2008. These crises have had a negative impact on the main macroeconomic aggregates and labor market; this generated an increase in the number of people in a poverty situation.

The consequences of the crisis became imperative to determine the more effective public policies to reduce its impacts and external shocks on poverty, inequality and vulnerability (CEPAL, 2011).

The answer to the problems that Mexico deals with, has been given in two ways: one is through migration to other states or other countries, primarily the United States, the second through informal employment.

The massive labor migration from Mexico to the United States began in 1920 and increased significantly over the last century. It is an exodus caused by factors of expulsion and attraction, but certainly the main cause is the huge development gap and wages between Mexico and the U.S.

Other expulsion factors are a lack of economic opportunities and a lack of access to capital, credit and financing funds. Among the pull of attraction factors to move to USA are the availability of jobs, economic opportunities and upward social mobility and equality towards the law (Heredia, 2006).

After the economic crisis the flow of Mexican migrants abroad has decreased, it has increased people moving to their origin countries, but not massively, and reduced the relative importance of the U.S. as the main destination.

The census of 2010 compared with the one in 2000 shows a reduction of 32.0% in international migration and a 36.0% in the number of people who emigrated to the United States, so that this country went from 96.0% to concentrate 89.0% of the total flow of international migrants from Mexico.

Thus, since 2007 to now the number of Mexican migrants has remained fairly stable, between 2007 and 2010 increased from 11.81 to 11.87 million.

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It is considered that this stagnation will be temporary, such as it has occurred in previous economic downturns in the United States, and that the flow may continue to reach previous levels once the U.S. economy recover its growth rate (BBVA Research, 2011).

Due to the creation of laws against migrants in several states of the United States, which generally seek to restrict the benefits to migrants and reduce employment opportunities in Arizona, Florida and Georgia, it has been a greater outflow of Mexican migrants form such states.

There was a way out from Florida of over 140 000, 70 000 from Arizona, and from Georgia more than 40,000 between 2007 and 2010. It has generated movements of Mexican migrants to other close states.

In New Mexico, Texas, and North Carolina the presence of Mexican migrants has been increased, such restrictions would continue promoting the movement of Mexican migrants to other states.

Jalisco and Michoacan, being entities with the highest proportions of international migrants in the 2000 census (10.6% and 10.0%), went down to the second and third position respectively, while Guanajuato being the entity that was in third place as an entity expelling migrants came to occupy the first position (10.8% of migrants between 2006 and 2010).

The rest of the entities from which the largest number of international migrants come from Mexico, are the state of Mexico, Puebla, Veracruz and Oaxaca.

Together, these states sent 50.5% of migrants according to the 2010 census. From these, only the state of Mexico reduced its participation.

All states with the lowest number of international migrants (Campeche, Baja California, Quintana Roo, Tabasco and Yucatan) slightly increased their share of total international migrants (BBVA Research, 2011).

According to estimations of the World Bank (WB), flow remittances in the world have grown rapidly since the late 80's and in 2008 reached a high record of 444 billion dollars. Since 1986, 2009 was the first year in which there was a decline of 5.3% in dollars.

Europe and Central Asia showed the largest decline in percentage in 2009, a 14.7%. The group includes Armenia, Kazakhstan and Azerbaijan, where there were falls of around 30%.

The next group includes the countries of Latin America and the Caribbean, which in the same year, remittances decreased 9.6%.

From this group, the countries with the greatest percentages of loses in dollars were Mexico (15.7%), Colombia (12.5%), Jamaica (12.0%), Honduras (10.6%) and El Salvador (9.0%). However, the most dependent economies on remittances such as the Central American and Caribbean are those who have suffered the greater effect.

For example, between 2007 and 2008 in Jamaica the proportion of remittances in Gross Domestic Product dropped a 5.0%, a 4.4% in Honduras and a 2.0% in the Dominican Republic (BBVA Research, 2011).

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Mexican migration to the United States begins to change

Mexican migration to the United States underwent a major change, for the first time in 40 years the flow of illegal migrants who return to their country is greater than that of those who leave Mexico.

Many were deported, others returned because they could not find employment and a significant amount decided to escape the anti-immigrant climate that exists in several U.S. regions. Measurements of the Pew Hispanic Center (PHC) show that in four years a million undocumented Mexicans abandoned the U.S.

In 2007, undocumented Mexican migrants in US were seven million, while in 2011 the number was reduced to six million. According to PHC, in 2010 fewer than 100,000 Mexicans crossed the border illegally or violated the conditions of their visa to settle in the US (Najar, 2012).

Despite it was predicted a massive return between 350,000 and three million U.S. migrants following the economic crisis of 2008, the reality was different according to the study "Mexican Migration 2011" of BBVA Bancomer.

Albo, chief economist of the institution, said that estimates at the beginning of the crisis of 2008, which aimed to occur a massive return of civilians.

The reality is that the magnitude of returning migrants was very small. There were only 300,000 in 2011 that returned to Mexico. "

The interpretation to be given to this situation is that the flow of migrants stopped, mainly as a result of the Arizona effect, as known to the enactment of anti-immigrant laws, and by the economic crisis.

It is said that in the coming years Mexicans will continue returning, among other things, as a matter of cultural reasons.

For the case of flow remittances to the country, coincided with the U.S. economic cycle. It is expected for this year an increment in dollars between 7.0 and 8.0%, although it is until 2013 that will be reached the peak levels as they were in 2007 and 2008.

"The analysis by BBVA Bancomer forecast for 2012 is that remittances will be a total of 24380 billion and by the end of 2013 will return to the numbers obtained before the global economic crisis, with a total of 26000 million (The Economist, 2012).

The behavior of the macroeconomic variables of Mexico

In Mexico it was published the Gross Domestic Product report corresponding to the fourth quarter of the year 2011 where an annual growth of 3.9% was expected (3.3% annualized).

With this, it was very likely that the present economic activity would grow 4.0% during 2011.

It is considered that during the fourth quarter of the year the main driver of economic activity growth was domestic demand, as the service sector showed a strong dynamism during this period.

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In particular, the trade subsector exhibited good performance, helped in part by the growing competition among commercial establishments and the implementation of the program "The Good End", which had a positive impact on aggregate household consumption in the fourth quarter of 2011.

Thereby, it is estimated a 6.3% annual growth for retail sales and 1.7% per annum for wholesale, so the trade component would have shown an annual growth of 4.2%. Similarly, it is believed that the dynamic formal employment continued during the fourth quarter led to a major advance in the service sector.

In seasonally adjusted amounts, there was a creation of 181000 new jobs, a quantity that exceeded in 37,000 the jobs recorded during the third quarter of 2011 (IXE, 2012).

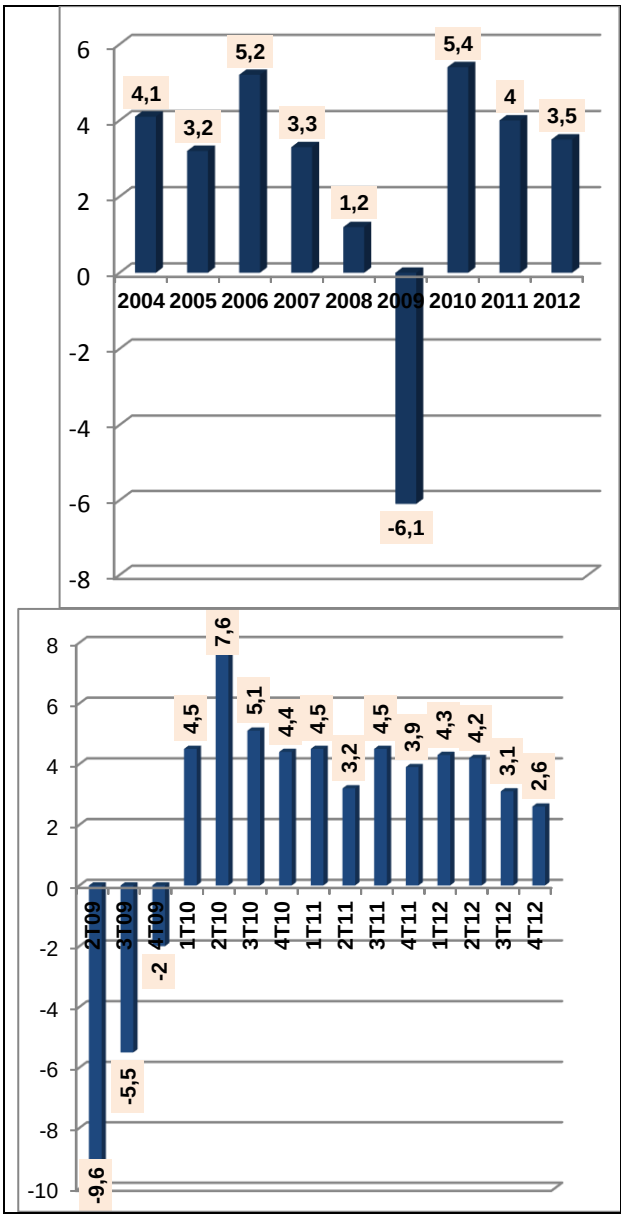

Figure 1

In Figure 1, it can be observed that the quarterly GDP growth rate for 2009 was negative (-6.1%), 5.4% for 2010, 4.0% in 2011 and 3.5% so far in 2012, all this as a result of the U.S. financial crisis.

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Unlike developed economies now facing fiscal and debt problems, in the past five years Mexico has maintained its public finances in order and, according to quantities from the Ministry of Finance, the external debt fell from 45.0% of total debt to a ratio of 19.0%. However, even though the Mexican economy faced in the second half of 2008 the worst economic crisis since the depression of 1929, with a plunge of 6.1% of GDP at end of 2009, it managed to grow 5.5% in 2010, with a high social cost, economists agree.

To one year for the end of the administration of President Calderon, it appears that the forthcoming years, Mexico must be located in 14th place among the world's major economies, and the problems must be resolved until the next administration.

Considering that 2012 is an election year, and with the risk of a probable global economic slowdown, it will limit the scope of action of the Federal Executive to obtain the approval of structural reforms. The stability in prices has been kept, but the cost has been a slow and low economic growth, assures the director of Moody's Analytics for Latin America, Alfredo Coutiño (CNN Expansion, 1st of September of 2011).

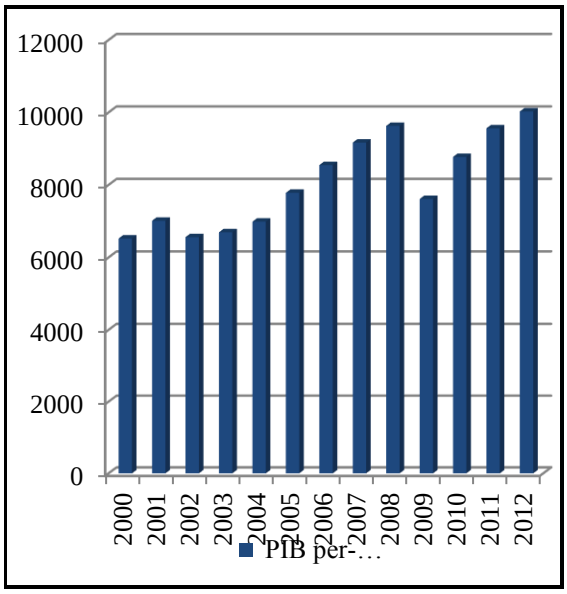

Figure 2

As seen in Figure 2, the GDP per capita has varied from $ 6.520 USD in 2000 to $ 9.629 in 2008 and falls to $ 7.612 USD in 2009 due to the financial crisis in the U.S. and that hit Mexico greatly, however it was increased again from 2010-2012.

The GDP per capita measures the potential hypothetical income per capita in the country and not its distribution.

In terms of pesos, the progress is much more modest with barely 5.5%, to settle at $ 116,959.1 and according to the National Household Income and Expenditure Survey (ENIGH) concentrates 36.3% of Mexican households.

Of the remaining 63.7% households, covering deciles I to IX, revenues do not reach half the GDP per capita in pesos for 2010.

During the last decade, Mexico has implemented policies that have strengthened its macroeconomic stability: in 2007.

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GDP grew at an annual rate of 3.3%, while the rate of inflation continued a converging path anticipated by the Bank of Mexico and stood at 4.0%, the lowest among major economies of Latin America and lower than the U.S. (4.1%) and Spain (4.2%).

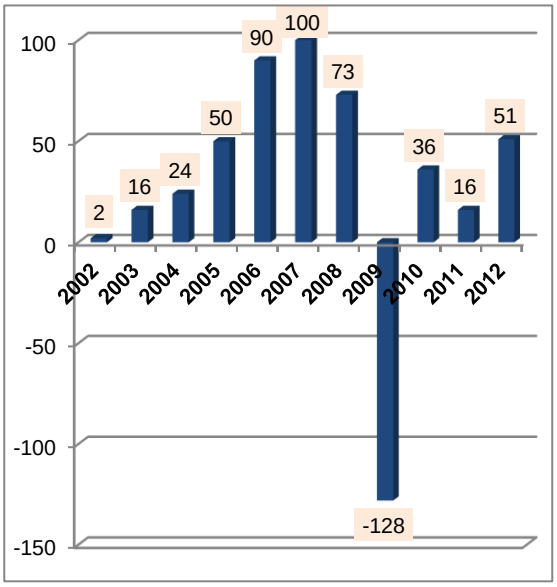

Figure 3

Regarding job creation, from 2008 the formal jobs were decreasing (73,000), in 2009 declined (-128,000), to 36 000 in 2010,and declined to 16,000 in 2011, so far in 2012 there exist 51 thousand formal jobs (Figure 3).

Macroeconomic framework	**2009**	**2010**
GDP (%)	-2.8	2.0
Inflation (%)	3.8	3.0
Exchange rate ($/Dollar)	14.5	14.5
Interest rate (%) (Cetes 28 days)	6.2	6.3
Current account (mdd)	-24,099	-20,037
Mexican mix (dpb)	42.0	48.3
EU GDP (%)+	-0.8	1.6

Table 1

The economic outlook in 2010 saw a moderate recovery in the growth rate in the United States in the second semester of 2009. For 2010, the Secretary of the Treasury forecast a growth of 2.0%, inflation of 3.0% and a price of Mexican crude oil of 48.3 dollars per barrel (dpb) (Table 1).

	2010	**2011**
GDP (real Var %)	5.3	4.2
Domestic demand (real Var %)	4.7	4.1
GDP per capita (Dollars)	9,200	9,600
Current Account Balar (% GDP)	-0.9	-1.1
Foreign Direct Investment (Billions of dollars)	13.1	13.4
Domestic interest rate (%)	4.5	3.5
Consumer inflation (%)	4.5	3.8
Average exchange rate ($/dollar)	12.4	12.5

Table 2

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The economic outlook in 2011 considered a moderate recovery in the growth rate of 4.2% from the second semester. The per-capita GDP of 9,600 dollars, with a domestic interest rate of 3.5%, an inflation rate of 3.8% and an exchange rate of $ 12.5/Dollar (Table 2).

Mexico is in the process of recovery from a severe economic down turn in 2009. However, the economic environment is fragile, with many conditions that are extended with little room for the new administration in 2012 and beyond. The main challenges are: a) An economy unable to grow significantly; b) A growing shortage of formal employment, c) A weakening of the federal and state government finances, d) A possible financial collapse of Social Security e) A waste the demographic bond: f) A depletion of the benefits of free trade and continuous loss of competitiveness. Mexico has grown at a rate similar to that of a developed country (USA), without being, emerging countries have widely exceeded it (GEA, 2011).Based on the above background, the objective was to analyze the influence of the variables: number of migrants, the exchange rate, the minimum wage in Mexico, remittances, US wages, unemployment and inflation on the U.S. over the Mexico's economic growth.

Methodology

For the development of this study the following methodology was used. In order to determine the functional relationships between GDP, migration, wages, the exchange rate and inflation, and the remittances, among others, a multiple linear regression model of GDP was used as a function of the number of migrants, the exchange rate and the minimum wage in Mexico, variables that happened to be the most significant.

Description of the Models

Model 1:

$$GDP_t = \beta_0 + \beta_1 MIGMex_t + \beta_2 ER_t + \beta_3 WMex_t + \varepsilon_t$$

Where: β_0, β_1, β_2 and β_3 are the model parameters; GDP_t is the Gross domestic product of Mexico (Billions of pesos of 2003); $MIGMex_t$= Number of migrants in period t (Number of migrants); ER_t= Exchange rate ($/Dollar); WMex=Real minimum wage in Mexico ($/work day); ε_{t1}=Error.

Model 2:

$$GDP_t = \alpha_0 + \alpha_1 \mathrm{Re}_t + \alpha_2 ER_t + \alpha_3 WUS_t + \alpha_4 UUS_t + \alpha_5 INFUS_t + \varepsilon_t$$

Where: α_0, α_1, α_2,…,α_5= are the model parameters; GDP_t= Gross domestic product of Mexico (Billions of pesos of 2003); Re_t = Remittances in period t (Dollars); ER_t=Exchange rate ($/Dollar); WUS_t=U.S. minimum wage (Dollars); UUS_t=Unemployment rate in the United States (%); $INFUS_t$= Inflation rate in the United States (%); ε_{t2} = Error.

To conduct the study, information was obtained from public institutions such as the World Bank (WB), Bank of Mexico (B of M), National Population Council (CONAPO), National Institute of Statistics and Geography (INEGI), National Survey Occupation and Employment (ENOE), Economic Commission for Latin America and the Caribbean (ECLAC), Secretary of Finance and Public Credit (SHCP), among others. To estimate the model we used the statistical package (SAS).

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Model estimation

To develop the results, the analysis was performed as follows.

Statistical results

The results obtained from the processing of the data are shown in the following tables and the analyses of the structural coefficients allow appreciating the consistency of the estimates with theoretical economic relationships embedded in each equation.

Model 1, which was obtained to explain the GDP in function of the number of migrants, the exchange rate and the minimum wage:

Variable dependiente: PIB

Analysis of Variance

Fuente	DF	Sum of Squares	Mean Square	F-Valor	Pr > F
Modelo	3	66733521	22244507	**302.59**	**<.0001**
Error	27	1984893	73515		
Total corregido	30	68718414			

Root MSE	271.13589	**R-cuadrado**	**0.9711**
Media dependiente	6337.50387	Adj R-Sq	0.9679
Coeff Var	4.27827		

Parámetros estimados

Variable	DF	Parameter Estimate	Standard Error	Valor t	Pr > |t|
Término ind	1	3484.28399	569.28840	6.12	<.0001
MIGMex	**1**	**0.00051499**	**0.00003169**	**16.25**	**<.0001**
ER	**1**	**-189.94552**	**45.30121**	**-4.19**	**0.0003**
WMex	1	6.41235	3.24014	1.98	0.0581

Durbin-Watson D	1.516
Número de observaciones	31
1st Autocorrelación de orden	0.149

Table 3

The results in Table 1 show the functional relationship of GDP with the number of migrants, the exchange rate, and the wage rate in Mexico.

The overall analysis of variance shows that the value of the test $F_c = 302.59 > F_{3, 27, 0.05} = 2.96$, with $\alpha = 0.05$, so the null general hypothesis is rejected overall, indicating that at least one of the parameters obtained in the equation is not zero.

The same regression is highly reliable, indicating a highly explanatory power of the estimated regression equation.

It can be ensure, from the information obtained, that the 97.1% of the variation in the gross domestic product of Mexico (GDP) is explained by the independent variables of the number of migrants (MIGMex), exchange rate (ER) and the minimum wage in Mexico (WMéx) included in the model for the period of 1980 to 2010.

The variables that were highly significant in the equation of GDP were the number of migrants with a value of t of 16.25 (t> 1), a calculated value for t of -4.19> 1 for the exchange rate.

Somehow these two variables are the most important account for the increase in the household consumption at the local level by analyzing the situation whether or not they contribute to the economic growth of the country.

In the case of wages in Mexico it was calculated a value of 1.98 t> 1

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The results are based on information obtained from the sources and represent the behavior of the same in the period analyzed.

Model 2 was obtained to explain the GDP in terms of remittances, exchange rate, US wages, unemployment and inflation rates in the United States:

Variable dependiente: PIB

Analysis of Variance

Fuente	DF	Sum of Squares	Mean Square	F-Valor	Pr > F
Modelo	5	68115550	13623110	564.93	<.0001
Error	25	602864	24115		
Total corregido	30	68718414			

Root MSE	155.28860	R-cuadrado	0.9912
Media dependiente	6337.50387	Adj R-Sq	0.9895
Coeff Var	2.45031		

Parámetros estimados

Variable	DF	Parameter Estimate	Standard Error	Valor t	Pr > |t|
Término ind	1	5070.98459	477.22230	10.63	<.0001
Re	**1**	**0.00008865**	**0.00000588**	**15.07**	**<.0001**
ER	**1**	**-155.27656**	**35.28013**	**-4.40**	**0.0002**
WUS	**1**	**582.38072**	**64.70371**	**9.00**	**<.0001**
UUS	**1**	**-123.97730**	**18.56237**	**-6.68**	**<.0001**
INFUS	1	-53.29134	18.11891	-2.94	0.0070

Durbin-Watson D	1.514
Número de observaciones	31
1st Autocorrelación de orden	0.233

Table 4

Table 4 shows the relationship between GDP and remittances (Re), the exchange rate (ER), the wage rate (WUS), the unemployment rate (UUS), and the rate of inflation United States (INFUS).

The overall analysis of variance shows that the value of the test $F_c = 564.93 > F_{3, 27, 0.05} = 2.96$, with $\alpha = 0.05$, reason for which the null hypothesis is rejected overall, indicating that at least one of the parameters obtained in the equation is not zero.

The same regression is highly reliable, indicating a highly explanatory power of the estimated regression equation.

It can ensure, from the information obtained, that the 99.1% of the variation in the Gross Domestic Product of Mexico (GDP) is explained by the independent variables such as remittances, the exchange rate, the minimum wage, unemployment and U.S. inflation in the model for the period of 1980 to 2010.

From the estimation of model 2, the variables that were highly significant of the GDP were: remittances with a value of t of 15.07>1, 9.0> 1 for US wages, for unemployment -6.68>1 in absolute value, the last two variables for the American Union of -4.4> 1 for the exchange rate and -2.94> 1 for inflation in the same country.

Somehow these five variables are those that represent greater importance in explaining the economic growth.

The results obtained are depending on the information obtained from the sources and representing the behavior of the same in the period 1980-2010.

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- Economic Interpretation of the elasticity

The analysis of elasticities for the models considered the concept *ceteris paribus*, that is to say, by varying some explanatory variable, a variable acting on an endogenous variable; it is assumed that all other factors remain constant.

This is done in order to quantify the effects specified in the functional relationships that compose the model. These types of elasticity are known as short-term.

$\varepsilon_{MIGMex}^{GDP} = 0.5915537$ $\varepsilon_{Re}^{GDP} = 0.1110823$

$\varepsilon_{ER}^{GDP} = -0.00681177$ $\varepsilon_{ER}^{GDP} = -0.16494886$

$\varepsilon_{WMex}^{GDP} = 0.060431207$ $\varepsilon_{WUS}^{GDP} = 0.40774432$

$\varepsilon_{UUS}^{GDP} = -0.1233699159$

$\varepsilon_{INFUS}^{GDP} = -0.0306653$

Table 5

Table 5 presents the eight elasticities involved in the two models proposed to explain economic growth in function of the number of people migrating from Mexico to the United States, and the recruitment of domestic workers' remittances.

As shown in Table 3, with an increase of ten percent in the variable number of migrants towards the United States, Gross Domestic Product increases by 5.9%, whereas if a 10.0% increase exchange rate variable, the Gross Domestic Product decreases by 0.068%. In the case of wages in Mexico if it is increased by 10%, the gross domestic product increases by 0.6%.

For model 2, we have that with an increase of 10.0% in remittances captured by Mexico to increase by 1.1% gross domestic product, whereas if it increases by 10.0% the exchange rate there will be a decrease in the Gross Domestic Product.

A 10.0% increase in unemployment in the United States, the Gross Domestic Product will decrease by 1.2%, for the case of salary if the U.S. increases by 10% will result in an increase in the gross domestic product by 4.1%. Regarding the 10.0% increase in U.S. inflation Mexico's GDP will decrease by 0.3%.

With respect to the behavior of the variables involved in the models and according to the Economic Theory:

Model 1, we have that the increasing migration of Mexican the GDP will decline, however the results showed the opposite sign; for the case of the exchange rate this did not fulfill, for it was expected a direct relationship; on the other hand, the salary of Mexico presented the expected sign according to economic theory.

Model 2, if it increases the remittance transfers this will result in an increase in the GDP so that this increases the family income which will cause aincreased local consumption.

In the case of the exchange rate of U.S. wages and unemployment in the same country this was not fulfilled as its sets by the theory. With regard to the inflation of the American Union to achieve inflation increased to decrease the purchasing power of the migrants, this will lower remittances to the country.

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As can be seen, on the information obtained, the Mexican economy is tied to the one of the U.S., for example, employment in the construction sector, where 17.0% of Mexican migrants work, showed an increasing trend over 2011, but has recently begun to see a reduction of jobs. Preliminary figures from the Department of Labor of the United States said it lost more than 50,000 jobs between February and June 2012.

The leisure and hospitality industry where 16.0% of Mexican migrants work, generated between November 2011 and April 2012 an average of about 40,000 jobs every month, but recently job creation has stalled.

Also in the retail trade sector, working 8.0% of Mexican migrants, after almost a year of expansion has also stagnated employment as preliminary figures indicate. Together these three sectors, where job creation seems to be stopping, employ more than 40.0% of Mexican migrants (BBVA Research, 2012).

The use of Mexican migrants has tended to behave differently to the use of other Hispanics since 2010. The "Arizona effect" was a factor that stopped the use of Mexican migrants without causing significant impact to other Hispanics.

In July 2012, while the Hispanic employment reached a new record high, employment of Mexican migrants did not grow up with the dynamism that it was doing, according to BBVA estimates. It is not known with certainty whether this is a result of what seems to happen in three sectors mentioned previously and whether it has reached a new turning point that could generate a downward trend in the employment of Mexican migrants.

Even the employment figures for May and June are preliminary, so it could be adjusted upward or downward. It is needed to waitin the following months to havemore robust information (BBVA Research, 2012).

Economic development is the factor that ultimately can stop migration to the United States. Perhaps with this, Mexico is no longer considered a problem by their high rates of expulsion of unskilled labor.

Today Mexico has an open economy that is increasingly diverse, a more democratic political system and a birth rate that is declining.

It is therefore reasonable to expect that the day comes when the increase in demand of jobs in Mexico ends with unemployment and absorbs the incoming workforce.

The Mexican economy is almost entirely dependent on oil sales in the medium term that tends to sell out, so a way to diversify foreign exchange earnings has seen migration as a key factor in this regard.

However, labor that emigrates to the United States is qualified and emigrate illegally, so that cant access skilled jobs with attractive salaries, in this regard it must be that the education levels of the population rises more marginalized as much as possible so that they have more skills and may have better opportunities in the country or abroad (BBVA Research, 2011).

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In this sense, in recent years the relationship between migration and development (MD) has re-occupied a privileged place in the academic and political agendas of national governments as well as the most diverse international agencies and supranational institutions (IOM, 2003, MIF, 2004, World Bank, 2006; SEGIB, 2006).

Thus, from the mid-nineties have driven various government programs and policies, and we have seen a proliferation of publications, forums, conferences and meetings of high-level experts, which are discussed and agreed upon various strategies to maximize the impact migration in the development processes of sending countries (Canales, 2007).

The migration for countries of origin is seen as an opportunity to enhance their processes of economic and social development (Kapur, 2004).

On one hand, it is noted that migrants act as agents of social and economic change, which encourage innovation and transfer of knowledge and technology (HAS, 2007). Moreover, they send remittances that have great potential as a tool to reduce poverty and promote economic development in their communities (Ratha, 2003, Adams and Page, 2005, Terry, 2006).

Interestingly, it seems that from international agencies were promoting a new development paradigm for the Third World, according to which migration and remittances assume a leading role, replacing the previous role in development schemes and paradigms have played both the state and the market itself (Canales, 2008).

Specifically, we can identify two levels from which remittances and migration have such effects on economic development.

On the one hand, at the micro economic level, and based on the asset approach / vulnerability developed by the World Bank (Moser, 1998), stated that the situation of vulnerability in which migrants and their families and communities could be countered with proper asset management (assets) social, economic, cultural, political and demographic that they possess and that can accrue to migration (social capital), regardless of their limited income and financial resources as well as the conditions imposed by the structural context. In this new paradigm, remittances make up a kind of economic capital, which along with other social capital linked to migration (family networks, family work and community and migrant organizations, among others), constitute privileged resources for communities that could help overcome the conditions of social vulnerability and economic insecurity, even if the conditions of the structural environment in which they live are not favorable (Canales, 2007).

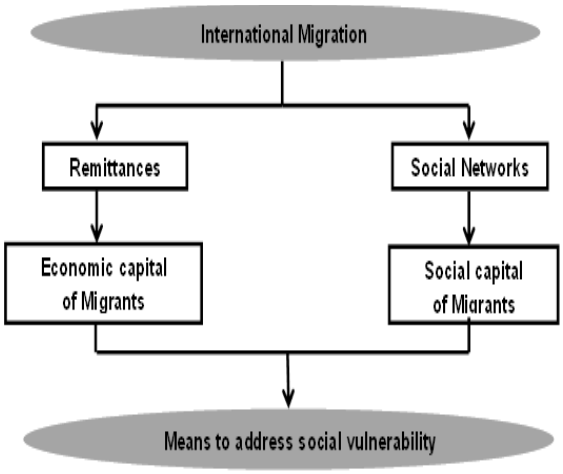

Figure 4

Figure 4 illustrates this type of reasoning applied to the case of migration and remittances.

At the macroeconomic level, this optimism is based on a series of arguments that highlight the impacts and effects of remittances on the economic dynamics of the recipient countries.

Specifically, it identifies at least four ways in which these positive effects channeled remittances.

First, it says that while remittances are mainly used to finance household consumption, often underestimated the volume of remittances to productive investment in agricultural land and the formation of companies and family businesses in urban areas, thereby underestimating the impact of remittances in promoting local development (Durand, 1994; Jones, 1995).

Second, several authors call attention to the multiplier effects of remittances. Not only productive investments, but also consumer spending financed with remittances boost the national and local economy, since the increase in demand for consumer goods boosts the local market and promotes the formation of new businesses, encouraging the creation of new jobs (Adelman and Taylor, 1990; Durand, Parrado and Massey, 1996; Zárate, 2007).

Third, states that remittances contribute to improving the living conditions and welfare of the population perceiving and reduce the incidence of poverty.

Both its volume and flow directly to those most in need, without having to go through bureaucratic filters (Wahba, 2005), remittances, more than any other transfer, have a clearly positive effect on reducing economic inequalities generating a more equitable income distribution (World Bank, 2004).

Finally, we highlight the contribution of remittances to the country's macroeconomic stability earners. Compared to other traditional sources of foreign exchange, remittances show greater dynamism and stability, which makes them a more reliable income and allowing solve crises.

In fact, the time series show that in times of economic crisis, when there is usually a desertion of foreign capital and domestic savings, remittances, however, stating increase countercyclical behavior and inflexible downwards (Ratha, 2003; Canales and Montiel, 2004).

Conclusions

Based on the statistics and economic analysis, it is concluded that the main explanatory variables for economic growth were: the number of migrants, exchange rates, remittances, wages and unemployment in the United States. The lack of employment and adequate income represents a major insecurity of people, so it's important to use a well-paid wage needed to meet minimum needs for development.

If the economy does not improve in the U.S. as well as the working conditions of Mexican immigrants, the remittances uptake will decrease causing families who depend on that source not being able to subsist, since these transfers will provide at least the minimum resources needed by poors to live, in addition to the above, the conditions prevailing in the Mexican economy is the upward increase of unemployment, meager wages in Mexico, high inflation thereby achieving greater loss of purchasing power, the steady increase of the first necessity products.

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Some authors argue that migration has been a lifeline to unemployment and low wages in the country, so that remittances have helped reduce poverty in the medium which the majority of the population has no formal employment and have favored the economic growth of local communities.

In recent years there has been renewed interest in international migration. It's not just an academic interest for an emerging phenomenon, but also a political and social interest, under the quantitative dimensions that migration has become in recent decades, as well as its potential social impact, cultural and economic.

In this context, the debate tends to focus on two different but complementary dimensions. On the one hand, regarding the effects and consequences in the countries of destination of migration, and on the other, the impacts and consequences in the countries of origin, in one dimension the debate tends to be the hegemony of a speech arising from international organizations and governments of the core countries.

Indeed, international migration tends to focus on one hand, in the social, political and cultural factors that it would generate in the host countries, and on the other, in the supposed opportunities and benefits that migration would have for the development in countries of origin (Canales, 2007).

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Modeling stock index of Colombia, Peru, Mexico, Chile and United States between 2001 and 2011: Evidence against of informal efficiency.

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This article presents estimations of the conditional mean and variance of stock returns of the following indexes: IGBC (Colombia), IPC (México), IPSA (Chile), IGBVL (Perú) and S&P 500 (USA) between 2001 and 2011. With the goal of establishing the dependence of these financial time series and categorize stock markets using informational efficiency findings. The methodology was based in the estimation of ARIMA and APARCH models using assumptions of probability distribution in the tails like t student and asymmetric GED. The findings show United States as the most informational efficient market and the least efficient were México, Chile, Colombia and Peru.

Information and Market Efficiency. International Financial Markets. Forecasting Models and Simulation Models. Financial risk.

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Introduction

The capital market is an instrument through which savings becomes investment. It is composed of intermediate and non intermediate capital market. In the first one there is an institution which works as an intermediary savers and borrowers such as banks, financial corporations and other agents in the market. In the latter one the relation among savers units and saving lacking units is direct through stock markets which are trading equities, bonds, forex and financial derivates.

Given the relevancy of this mechanism to the economy, the efficiency in these markets will have a positive effect over economic growth (King and Levine, 1993; Levine and Zervos; 1998; Wurgler, 2000; Levine, 2004).
In that way, the financial markets had a good effect on the allocation of capital and this is possible through price mechanism. In economies with advanced financial development, the prices allow a better allocation of resources shifting investment to more productive sectors and reducing in the worst (Wurgler, 2000).

Nonetheless, after the last financial crisis, once more the hypothesis of efficient market (EMH) has been put in question, especially in the more developed economies such as the United States where EMH is suppose to be valid.

The proposition of Fama(1970) that prices in the financial markets always reflect the available information is not true because during last crisis in United States the prices overreacted and this is one of the reasons which explains the deep recession in US, the worst from Great Depression in 1929.

When prices do not reflect available information in the market, then someone who knows a relevant fact can get an extraordinary profit thanks to that informational advantage. Likewise this situation shift to an allocation of resources where valuations of assets are not based in the fundamentals of the economy and indeed is just speculation, as a consequence the price of assets increase and it helps growth of speculative burbbles.

In less developed economies such as in Latin-American the problem of informational efficiency (in the Fama´s sense) is a reality. However, during last decades level of financial development in Latin American countries has improved and also its financial systems have become more modern, integrated and bigger. At least this can be concluded after comparing findings about size of Wurgler(2000) and Uribe(2007). For instance, Colombia had a ratio of capitalization over nominal IBP of 3% in 1997 according to Wurgler(2000) and after ten years that measure has change to 41.61% according to estimations of Uribe(2007). The same exercise was made for México, Chile and Perú with similar conclusions.

In recent days, some Latin American countries have taken another important step toward regional integration of stock markets of Chile, Colombia and Perú with the launch of MILA (Mercado Integrado Latinoamericano). México wants become a member of this group and is expected to do so in the near future.

In this sense is important to make a new revision of EMH of Fama (1970) in the markets which are part of the MILA adding to México and US during a time where took place international financial crisis.

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In that context, the main goal of this paper is to find the equations of conditional mean and variance of equities returns of the market in the MILA moreover México and US between 2001-2011 and classifies the markets from less to more efficient in Fama´s sense.

The organization of the document is the following. In the next section will present the theory framework which is an explanation of the conditional media models (ARIMA) and conditional variance models (APARCH: GARCH, TARCH and GJR GARCH) moreover a short comment about the informational efficiency concept. Then methodology is discussed and stylized facts of financial time series, findings and finally conclusions and recommendations.

Theory Framework Informational efficiency.

In the correlations analysis with the past of financial time series, like this one, is impossible to separate the findings of the discussion about informational efficiency. Then will make a short exposition of the concept.

Fama (1970) said "A market in which prices always fully reflect available information is called efficient". Malkiel(1987, 120, quote by Uribe and Ulloa(2011), 130) said something similar "A capital market is said to be efficient if it fully and correctly reflect all relevant information in determining security prices. Formally, the market is said to be efficient with respect some information set, φ, if security prices would be unaffected by relevant information to all participants. Moreover efficiency with respect to an information set, φ, implies that it is impossible to make economic profits by trading on basis of φ."

An efficient market, according to Fama (1970) and Malkiel(1987), incorporates all available the information in the price, every player in the stock market gets the information and in this way is impossible make huge profits.

For example, when a relevant fact affects the price of one asset, it ups or down and after a short time the markets come back to equilibrium because if it would up (or down) indefinitely, one of the parties would not be able to trade with the other one. If it happens and exist relevant profits, this market is not efficient. When it happens the speculative burbbles take place.

That kind of efficiency is called informational efficiency or weak efficiency hypothesis. Campbell, Lo y Mackinlay (1997) did a classification of efficiency:

- Weak efficiency. Historical information is part of the financial time series. The best forecast he price for tomorrow is the actual price.
- Stronger efficiency. The price of the assets reflects all public available information.
- Strongest efficiency. In the market is known all the information even prívate information.

Using auto correlations analysis, especially ARIMA models, is possible to find out if one stock market is efficient or not (weak hypothesis). When autocorrelation coefficients are different of zero, is valid to say that stock market is not efficient in the Fama´s sense. This is the main goal of the present research.

In the next section will be present some theories about conditional media and variance models.

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Conditional mean. The conditional mean of a time series is a combination of auto regressive process which order *p* and a moving average with order *q (*Box and Jenkins, 1978). It is called an ARMA process (*p, q):*

$$r_t = \mu + \sum_{i=1}^{p} a_i r_{t-1} + \sum_{j=1}^{q} b_j e_{t-1} + e_t$$
$$\mathrm{E}\,(e_t, e_{t-1}) = 0$$

Where is expected that $a_i > 0$ and $b_j > 0$. r_t, is a daily return of the financial times series in the time t. If it is a stationary process, $\sum_{i=1}^{p} a_i + \sum_{j=1}^{q} b_j$, one shock over the mean has decreasing effect until it goes toward zero. When alpha plus beta are bigger than one, ($\sum_{i=1}^{p} a_i + \sum_{j=1}^{q} b_j > 1$), it is said that process does not toward to zero and its frenzied growth. If alpha plus beta are equal to one, any shock over the mean has a persistent effect.

When a time series needs to be differentiated respect to its lags to be forecast it, it is called integrated with order *d* and the literal means number of times that series have been differentiated. In this case, ARMA model (*p, q)* becomes in ARIMA model (*p, d, q).*

Conditional variance. The concept is illustrated in the equation (1), e_t is the stochastic term which is uncorrelated with the square innovations. The phenomena was analyzed by Engle(1982) who propose the ARCH models *(p, q) (*Autoregressive Conditional Heteroskedastic). He defines ARCH process as follow:

$$e_t = z\sigma_t$$

Where z is an idd process (zero mean and unit variance) and σ_t is not constant over the time showing volatility clusters (high volatility times are preceding by high volatility times). The conditional variance is explained by ARCH terms:

$$\sigma_t^2 = \vartheta_0 + \sum_{i=1}^{Q} \alpha_i \, e_{t-i}^2$$

Where $0 < \alpha_i < 1$, to ensure a non conditional variance finite Bollerslev (1986) proposed the generalization of ARCH models which him called GARCH (*p, q*), and the principal difference respect to ARCH process was add a new term in the equation: volatility of the past. Next, it will be show:

$$\sigma_t^2 = \vartheta_0 + \sum_{i=1}^{Q} \alpha_i \, e_{t-i}^2 + \sum_{j=1}^{P} \beta_j \sigma_{t-j}^2$$

$\sum_{i=1}^{Q} \alpha_i + \sum_{j=1}^{P} \beta_j$ (persistence) must be less than one to ensure the process toward zero. Otherwise any chock over variance would growth indefinitely.

After GARCH models new specifications have been proposed as such TARCH, GJR-GARCH, EGARCH, GARCH-M, among others. In this research will use GARCH, TARCH and GJR-GARCH models. The last ones have additional variables to capture the effect of positive and negative news over conditional mean (leverage effect).

GJR-GARCH models. The model proposed by Glosten, Jagannathan y Runkel (1993) adding a new term in the equation to capture leverage effects. The equation is:

$$\sigma_t = \omega + \sum_{i=1}^{q} [\alpha_i e_{t-i}^2 + \gamma_i (\max(0, e_{t-i}))^2] + \sum_{i=1}^{P} \beta_i \, \sigma_{t-i}$$

Gamma (γ_i) is a term to capture leverage effect. If it is different to zero, is valid to affirm that variance is sensible to negative news more than positive ones. Negative news increase the volatility.

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A similar model, EGARCH, was present by Nelson (1991) which specification is as follow:

$$\log(\sigma_t) = \omega + \sum_{j=1}^{P} \beta_j \log(\sigma_{t-j}) + \sum_{j=1}^{Q} (\alpha_i \frac{e_{t-j}}{\sigma_{t-j}} + \gamma_i \left| \frac{e_{t-j}}{\sqrt{\sigma_{t-j}}} \right|)$$

If γ_i is siginificative the variance presents asimetry.

TARCH model (Threshold Autoregressive Heteroskedastic).

The TARCH model was introduced by Zakoïan(1994), the way as the model captures the asymmetry in variance is including dummies variable in the conditional variance equations:

$$\sigma_t = \omega + \sum_{1}^{Q} \alpha_j e_{t-j}^2 + \sum_{1}^{P} \beta \sigma_{t-i} + \phi_1 e_{t-1}^2 d_{t-1}$$

d_t=1 si $e_t < 0$ y d_t= 0, otherwise (positive news). If ϕ_1 is different to zero, the leverage effect is true.

APARCH model. The APARCH model (Assymetric Power ARCH Model) was proposed by Ding.

Granger and Engle (1993), it garners all the special cases of conditional variance in the models as GARCH, TARCH, EGARCH and GJR-GARCH.

$$\sigma^{\delta} = \omega + \sum_{j=1}^{q} \alpha_j (|e_{t-j}| - \gamma_j \varepsilon_{t-j})^{\delta} + \sum_{1}^{P} \beta_i (\sigma_{t-i})^{\delta}$$

$$\varepsilon_t = \sigma_t Z_t \text{ , } Z_t \sim D(0,1)$$

Where,α_j ,γ_j, δ and β_i are terms to be estimated. If γ_i is positive and significative, variance is more sensible to negative news that positive ones.

The equation must to satisfy the follow conditions:

1. ω>0 , $\alpha_j \geq 0$,j=1,2,…q, $\beta_i \geq 0$,=1,2,…p, when α_j=0,j=1,2,…q, β_i=0, i=1,2,…p, so $\sigma_t^2 = \omega$. It is because variances are positive, ω >0.
2. $\sum_1^Q \alpha_j \left(1 - \gamma_j\right)^{\delta} - \sum_1^P \beta_i < 1$ guarantee non conditional variance exists.

Changing the value of the parametersω, α_i , γ_i, δ and β_i in (8) is possible to find especial cases of family GARCH models: "…

- When $\delta = 2, \beta_i = 0\ (i, = 1, \dots p), \gamma_j = 0 (j = 1, \dots q)$ APARCH model is an ARCH model.
- When $\delta = 2, \gamma_i = 0\ (i, = 1, \dots p)$ APARCH model is a GARCH model.
- When$\delta = 2$, APARCH model becomes is a GJR-GARCH model.
- When$\delta = 1$, APARCH becomes is a TARCH …" (Ding-Ding, p. 7, 2011).

To estimate conditional variance model were running different specifications changing parameters.

Methodology

In the estimation of ARIMA models and different versions of GARCH was used maximum log likelihood method.

Considering the main goal of the present document is to find dependence respect to past of stock index´s returns only AR terms were specified in the mean equation and the identification of the process was carry out through Box and Jenkis methodology and analyzing the innovations with Box Pierce test to rule out serial auto correlation.

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Once selected no correlated models, the best models was chosen with information criteria[8].

Estimation of conditional mean needed to prove with different specifications, changing parameters in the APARCH model.

Eligible models were free of serial auto correlation and ARCH effects according to Lung Box test as single innovations as square innovations.

Finally, no correlated models and without ARCH effects were testing with Kolmogrov Smirnov test to prove if everyone follow a probability distribution t or asymmetric GED.

Once selected the best models according to desirable features of its errors, the model was chosen through information criteria.

Every index was run under assumptions of probability like t or asymmetric GED. The chosen had lower information criteria.

The information. All the information of the stock indexes corresponds to daily records of IGBC (Índice General de la Bolsa de Valores de Colombia), IGBVL (Índice General de la Bolsa de Valores de Lima), IGPA (Índice de la Bolsa de Comercio de Santiago), IPC (Índice General de la Bolsa de México) and S&P500 (Index of New York Stock Exchange) since 3 July of 2001 until 30 May of 2011 equal to 2419 observations. The information came from Banco de la República de Colombia, Banco Central de Chile, Banco Central del Perú, Bolsa de Comercio de Santiago and la Bolsa de Lima.

The estimation method was log likelihood to run ARIMA and GARCH models. In this research was use the econometric software R project i386 and packages like FGarch functions.

Findings

Stylized facts. In the graphic 1, see the daily prices of the stock index of Colombia, Chile, México, US and Peru.

Is evident the inexistence of constant mean, in other words these process are non stationary in mean.

To resolve this problem and to forecast every time series, the solution was become them stationeries. The new time series was continuously composed return equivalent to logarithmic difference respect to price (watch graphic 2) between t and t-1 periods.

In the graphic 2, the returns had a stable mean or they were stationary in mean albeit non in variance.

[8] Information criteria:

Akaike $AIC = -2\frac{lnL}{T} + \frac{2k}{T}$

Bayesian: $BIC = 2\frac{lnL}{T} + \frac{klnT}{T}$

Schwarz: $SIC = T^{\frac{K}{T}} SCR/T$

Hann Quinn: $HQ = \ln(\sigma^2) + \frac{2k}{T}\ln((\ln(T))$

Where L is the likelihood, T is number of observations; K is number of parameter to be estimated in every model, SCR is the Square Residual Sum and σ^2 is residual variance. The election was done, looking for a model with the lower information criteria.

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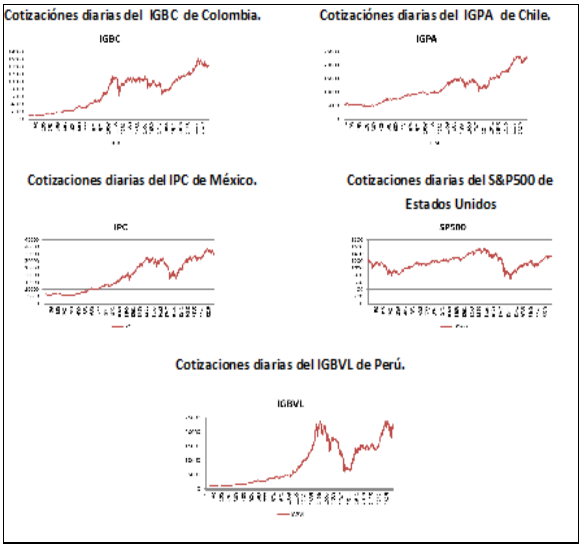
In the other side, descript statistics of every stock return are shown in the picture 1. The mean of the returns was less than zero, Kurtosis was bigger than 3(leptokurtic) and returns presented negative asymmetry except for IGBC from Colombia. It means that in Colombian stock market had best daily opportunities to make profits respect others in the Region.

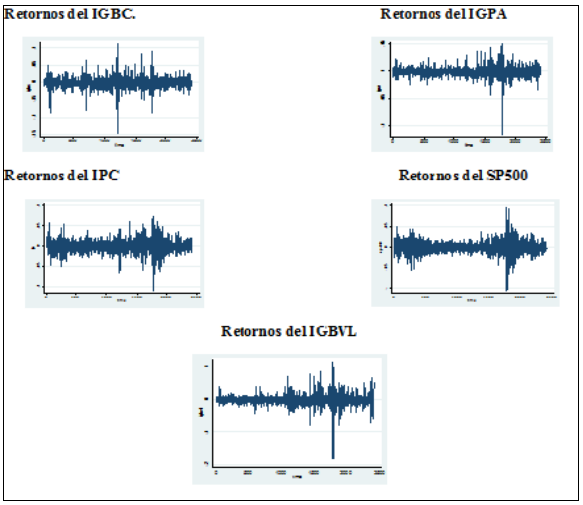
These facts bring to think about no normality of analyzed stock returns.

As a consequence was run Kolmogrov-Smirnov test. Null hypothesis of the test is that time series follow a normal distribution and the alternative is that the last affirmation is not true. Findings are shown in the picture 1.

After test the conclusion was rule out null hypothesis with significance level of 1%. The stock return did not follow a normal distribution.



Graphic 1



Graphic 2

Indices					
Estadisticos	igbc	igpa	igbvl	ipc	sp500
mean	-0.0011054	-0.0005988	-0.0011414	-0.0006826	-0.0000312
max	0.11052	0.0501674	0.1144087	0.0726612	0.0946951
min	-0.1468805	-0.1170959	-0.183389	-0.1111152	-0.1042356
sd	0.0143103	0.0081887	0.0161555	0.0139897	0.013656
kurtosis	15.48874	24.20723	21.6585	8.588747	11.44006
skewness	0.2218972	-0.643981	-0.5203136	-0.1292254	0.1753769
mean	-0.0011054	-0.0005988	-0.0011414	-0.0006826	-0.0000312
Kol Sm	0.48	0.49	0.48	0.48	0.48
p- value	0	0	0	0	0

Table 1

IGBC

In the picture 2 are shown no correlated models under assumption of probability distribution of errors t- student. Conditional mean model with less information criteria was ARIMA (40, 0, 0), with 40 auto regressive terms (AR).

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In variance the GJR GARCH models (with probability distribution t student) were free of serial correlation, without ARCH effects and overcome KS test. Among these models, the best one was (1, 1).

Moreover was run a model with GED assumption of probability in tails (watch pictures 1 and 2). The best mean model was ARIMA (40, 0, 0) with variance GJR GARCH (1, 1) under GED distribution.

Modelos de media con distribución condicional t						Modelos de media con distribución GED			
ARIMA	(40,0)	(41,0)	(42,0)	(43,0)	(45,0)	(40,0)	(41,0)	(42,0)	(43,0)
AIC	**-6.1926**	-6.192112	-6.191512	-6.19085	-6.191775	-6.18E+00	**-6.184208**	-6.18E+00	-6.183086
BIC	**-6.080043**	-6.077161	-6.074166	-6.071109	-6.067244	-6.071994	**-6.069256**	-6.066409	-6.063344
SIC	**-6.193337**	-6.19288	-6.192312	-6.191683	-6.192674	-6.185287	**-6.184975**	-6.184556	-6.18E+00
HQIC	**-6.151667**	-6.150309	-6.148838	-6.147305	-6.146488	-6.143618	**-6.142404**	-6.141081	-6.13954

Table 2

Finally, the selected model was an ARIMA (40, 0, 0) and GJR GARCH (1,1) with conditional probability distribution t student. This finding is in the same direction of research as such Alonso and García (2008), Alonso and Serna (2009), and Uribe(2007). They found dependence in the returns of IGBC albeit using different methodologies and research fields.

IGPA

In this index, an ARIMA model (20, 0,0) with t distribution was chosen because models with higher lags had lower information criteria (watch picture 4). Selected models were least parsimonious.

In variance, the eligible models were GARCH (1, 1), GJR GARCH (1,1) and TARCH (2,1). Among them the best was TARCH (2, 1) (watch pictures 5, 6 and 7).

Then the same exercise was done with assumption of probability GED. The best model in mean was ARIMA (20, 0, 0) and eligible models of variance were GARCH (1,1) and GJR GARCH (1,1), the best was GJR GARCH (1,1). (See pictures 4 and 5)

Among models with t- student and GED assumptions, the best model according to information criteria was an ARIMA (20, 0, 0) with a TARCH (2, 1) model in variance under t student assumption.

Modelos de media con distribución t									Modelos de media con distribución GED							
ARIMA	(20,0)	(25,0)	(30,0)	(35,0)	(38,0)	(45,0)	(41,0)	(45,0)	(20,0)	(25,0)	(30,0)	(35,0)	(38,0)	(40,0)	(41,0)	(45,0)
AIC	**-7.254264**	-7.253045	-7.255122	-7.256246	-7.267910	-7.268486	-7.267804	-7.267433	**-7.256727**	-7.255965	-7.258007	-7.258586	**-7.273857**	-7.273915	-7.273111	-7.275357
BIC	**-7.189604**	-7.17641	-7.186514	-7.186963	-7.192143	-7.192926	-7.152052	-7.143902	**-7.192067**	-7.179331	-7.170599	-7.168003	-7.165289	-7.161348	-7.158159	-7.152666
SIC	**-7.25451**	-7.253089	-7.255501	-7.256806	-7.268586	-7.269222	-7.268572	-7.268332	**-7.256973**	-7.25631	-7.259466	-7.270176	-7.273733	-7.276542	-7.278076	**-7.279996**
HQIC	**-7.23075**	-7.225176	-7.222699	-7.227668	-7.229719	-7.227553	-7.226	-7.222146	**-7.233212**	-7.220096	-7.226704	-7.233008	-7.233866	-7.233921	-7.233307	-7.229008

Table 4

Modelos de GJR GARCH con distribución t					Modelos de GJR GARCH con distribución GED			
Criterios de información	(1,1)	(1,2)	(2,1)	(2,2)	(1,1)	(1,2)	(2,1)	(2,2)
AIC	**-7.254264**	-7.253589	-7.268065	-7.254187	**-7.256727**	-7.255956	-7.25661	-7.25648
BIC	**-7.189604**	-7.186534	-7.150719	-7.182342	**-7.192067**	-7.188901	-7.18716	-7.184635
SIC	**-7.25451**	-7.253853	-7.268865	-7.25449	**-7.256973**	-7.25622	-7.256893	-7.256783
HQIC	**-7.23075**	-7.229204	-7.225391	-7.22806	**-7.233212**	-7.23157	-7.231353	-7.230353

Table 5

Modelos de GARCH con distribución t					Modelos de GARCH con distribución GED			
Criterios de información	(1,1)	(1,2)	(2,1)	(2,2)	(1,1)	(1,2)	(2,1)	(2,2)
AIC	**-7.248082**	-7.247313	-7.246511	-7.246657	**-7.250033**	-7.249158	-7.248436	-7.248494
BIC	**-7.185816**	-7.182653	-7.181851	-7.179602	**-7.187767**	-7.184498	-7.183776	-7.181439
SIC	**-7.24831**	-7.247559	-7.246757	-7.246922	**-7.250261**	-7.249404	-7.248682	-7.248759
HQIC	**-7.225438**	-7.223799	-7.222997	-7.222272	**-7.227389**	-7.225643	-7.224922	-7.224109

Table 6

Modelos TARCH con distribución t				
Criterios de información	(1,1)	(1,2)	(2,1)	(2,2)
AIC	-7.270992	-7.272294	**-7.272474**	-7.272266
BIC	-7.206332	-7.205239	**-7.203024**	-7.200422
SIC	-7.271238	-7.272559	**-7.272757**	-7.272569
HQIC	-7.247477	-7.247909	**-7.247217**	-7.246139

Table 7

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IPC

The conditional mean of the IPC´s returns can be estimated using a ARIMA (30, 0,0) under assumption of probability distribution t student (see picture 8). In the conditional variance, eligible models were GJR GARCH (1, 1), GARCH (2, 1) and TARCH (1, 1), the best was last one (see pictures 9, 10 and 11).

Under assumption of conditional probability distribution GED was estimated an ARIMA (30, 0, 0) because it was only model without no serial correlation. In the side of variance were run GJR GARCH models because they were only ones without no serial correlation and ARCH effects. The best among GJR GARCH models were (1,1). (See picture 9)

The best model was an ARIMA (30, 0, 0) and TARCH (1,1) under assumption of probability t student in tails.

This finding is similar to findings like Lopez (2004) who found as best model to the TARCH (1, 1) too.

Criterios de información	Modelo de la media con Distribución t	Modelo de la media con Distribución GED
	(30,0)	30,0
AIC	**-6.067013**	**-6.068048**
BIC	**-5.978404**	**-5.979439**
SIC	**-6.067472**	**-6.068507**
HQIC	**-6.034789**	**-6.035824**

Table 8

Criterios de información	Modelos GJR GARCH con distribución t				Modelos GJR GARCH con distribución GED			
	(1,1)	(1,2)	(2,1)	(2,2)	(1,1)	(1,2)	(2,1)	(2,2)
AIC	**-6.067013**	-6.065542	-6.067607	-6.06678	-6.068048	-6.066615	-6.068174	-6.067347
BIC	**-5.978404**	-5.974538	-5.974209	-5.970987	-5.979439	-5.975612	-5.974776	-5.971554
SIC	**-6.067472**	-6.068026	-6.068116	-6.067315	-6.068507	-6.067099	-6.068684	-6.067883
HQIC	**-6.034789**	-6.032447	-6.033642	-6.031944	-6.035824	-6.033521	-6.034209	-6.032511

Table 9

Modelos GARCH con distribución t			
GARCH	**(1,2)**	**(2,1)**	**(2,2)**
AIC	-6.045625	**-6.048453**	-6.047588
BIC	**-5.957017**	-5.959844	-5.956584
SIC	-6.046084	**-6.048912**	-6.048071
HQIC	-6.013402	**-6.016229**	-6.014493

Table 10

Modelos TARCH con distribución t				
Criterios de información	**(1,1)**	(1,2)	(2,1)	(2,2)
AIC	**-6.096105**	-6.096603	-6.097553	-6.096733
BIC	**-6.007496**	-6.0056	-6.004155	-6.00094
SIC	**-6.096564**	-6.097087	-6.098062	-6.097269
HQIC	**-6.063881**	-6.063509	-6.063588	-6.061897

Table 11

IGVBL

Conditional mean of the IGBVL´s return was estimated under different specifications as shown in the picture 12. Using assumption of t student, the best model was an ARIMA (70, 0, 0) with conditional variance models as such GJR GARCH, GARCH and TARCH models.

Eligible models were GJR GARCH (1, 1), GARCH (1, 1) and TARCH (1,1) (see pictures 13,14 and 15). The selected model was a GJR GARCH.

When assumption of probability distribution changed to GED, the model with best behavior was an ARIMA (30, 0, 0) according to its parsimony. Meanwhile, conditional variance was calculated with GJR GARCH models because these specifications were no correlated and free of ARCH effects. The best model was GJR GARCH (1, 1).

In this sense, the decision was choose an ARIMA (70, 0, 0) and GJR GARCH (1,1) with assumption of conditional probability in fats t student.

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Modelo de la media con Distribución t								Modelos de media con distribución GED	
ARIMA	(20,0)	(25,0)	(30,0)	40,0	50,0	60,0	70,0	(30,0)	40,0
AIC	-6.11979	-6.122613	-6.123793	-6.130806	6.209992	-6.267531	**-6.318965**	-6.123519	**-6.131879**
BIC	-6.05513	-6.045978	-6.035184	-6.018249	-6.073487	-6.107078	**-6.134563**	**-6.03491**	-6.019322
SIC	-6.120036	-6.122957	-6.124252	-6.131543	-6.21107	-6.269012	**-6.320911**	-6.123977	**-6.132616**
HQIC	-6.096275	-6.094743	-6.091569	-6.089873	-6.16035	-6.20918	**-6.251905**	**-6.091295**	-6.090946

Table 12

MODELOS GJR GARCH con distribución t			MODELOS GJR GARCH con distribución GED			
Criterios de información	1,1	1,2	**1,1**	1,2	2,1	2,2
AIC	-6.318965	-6.312641	**-6.123519**	-6.121639	**-6.123663**	-6.122889
BIC	-6.134563	-6.125844	**-6.03491**	-6.030636	-6.030265	-6.027096
SIC	-6.320911	-6.314636	**-6.123977**	-6.122123	**-6.124172**	-6.123425
HQIC	-6.251905	-6.24471	**-6.091295**	-6.088545	-6.089698	-6.088053

Table 13

MODELOS GARCH con distribución t				
Criterios de información	**1,1**	1,2	2,1	2,2
AIC	**-6.121813**	-6.119909	-6.120379	-6.11968
BIC	**-6.035599**	-6.0313	-6.03177	-6.028676
SIC	**-6.122248**	-6.120368	-6.120838	-6.120164
HQIC	**-6.09046**	-6.087685	-6.088155	-6.086585

Table 14

MODELOS TARCH con distribución t				
Criterios de información	**1,1**	1,2	2,1	2,2
AIC	**-6.149813**	-6.149501	-6.149111	-6.148089
BIC	**-6.061205**	-6.058497	-6.055713	-6.052296
SIC	**-6.150272**	-6.149985	-6.14962	-6.148625
HQIC	**-6.11759**	-6.116406	-6.115146	-6.113253

Table 15

S&P500

S&P 500´s returns were forecast with ARIMA models of 10, 15, 16 and 17 lags in their conditional means. They were eligible models without auto correlation serial. In the conditional variance was estimated one model, GARCH (2, 1), it was only one without serial correlation and ARCH effects, moreover it overcame KS test. (See pictures 16 and 17).

Under assumption of conditional probability distribution GED only models with 10, 15 and 16 AR terms in the conditional mean were relevant. The ARIMA (10, 0, 0) was chosen because it was least parsimony.

The decision was chosen an ARIMA (10, 0, 0) in the conditional mean and GARCH (2, 1) with GED assumption of probability according to information criteria.

Modelo de la media utilizando distribución GED					Modelo de la media utilizando distribución t		
ARIMA	10,0	15,0	16,0	17,0	10,0	15,0	16,0
AIC	**-6.343999**	-6.338434	-6.338785	-6.338289	-6.321912	-6.324426	-6.324579
BIC	**-6.303287**	-6.288142	-6.286099	-6.283208	-6.283595	-6.274135	-6.271893
SIC	**-6.344097**	-6.338583	-6.338949	-6.338468	-6.321999	-6.324575	-6.324743
HQIC	**-6.329194**	-6.320144	-6.319625	-6.318258	-6.307978	-6.306137	-6.305419

Table 16

Modelo GARCH	
Criterios de información	2,1
AIC	**-6.343999**
BIC	**-6.303287**
SIC	**-6.344097**
HQIC	**-6.329194**

Table 17

Conclusions

In the present research was found that all analyzed stock returns indexes exhibits dependence from its past.

In other words they do not collect relevant information in the asset prices so quickly (inefficiency informational). It means that if one stochastic event increases (decrease) the prices of assets in the Latin American stock markets, its effect will take some time to be assimilated.

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As a consequence, it would be possible to forecast the price of one asset using models like ARIMA or GARCH and improve their behavior adding new variables to capture "day effect" and "hour effect", it has been done by Montenegro (2007) and, Alonso and Garcia (2009) analyzing IGBC from Colombia, Bravo (2004) with his structural model to IGBVL from Peru, Garcés and Calle (2007) using ARCH models and different versions of GARCH models in Peru and Sanchez-Vinnelli(2008) with time series models to explain daily returns of a group of nine companies from Peru.

This finding has one important repercussion: growing of speculative burbles if it does not controlled on time[9].

The stock markets more efficient according to numbers of lags in the conditional mean equation are: United Stated and Chile. While México, Colombia and Peru are slower that first ones.

Especially Peru stock market is the slowest in the group because it is affected by events from two months ago.

To conclude that stock markets in Latin America and specially in the analyzed markets are inefficient in the informational sense is nothing new because the same argument has been found by researchers in Colombia by Alonso and García (2008 and 2009).

Montenegro (2007), Uribe (2007), Uribe and Ulloa (2001), in Peru Bravo (2004), Silapú and Calle (2007), and Sanchez and Vinelli(2008), in México López (2004) and to other Latin-American countries Espinosa (2005).

Findings of this paper could be useful to get new risk premiums (correlations term) in the CAPM model to MILA´s markets through vanguard methods like Copulas.

It could be a new topic for researching.

Also is important to talk about the existence of *leverage* effect in the mean equation of the regional index´s returns. In this sense is valid to affirm that all analyzed stock indexes are more sensible to negative news than positive ones with exception of US market which is the most efficient in the informational sense.

Finally, in the present document was evident how important is to estimate financial time series models using assumptions of probability different to normal distribution like asymmetric t student or asymmetric GED to forecast or make VaR analyses.

The recommendations are as follows:

- Toward regulatory authorities and Central Banks: They should consider to take measures like proposed by Uribe and Ulloa (2011)to prevent speculative burbles which has terrible consequences over economies.

- In the same way should be important to design mechanism to improve the access PYME companies to regional stock markets. It requires a great effort to formalization of the companies.

- Is necessary to continue the integration process of the regional stock markets to increase trade volumes, investments options and deep of the market.

[9] This phenomenon has been studied by a recent work written by Uribe and Ulloa (2011) about informational efficiency using copulas.

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Appreciative Inquiry: new form to generate change in education organizations. Case: Polytechnic University of Zacatecas-UPZ

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Developing Appreciative Inquiry is a topic that has attracted interest in recent years by the public and / or private; among the aspects that this issue has generated include: consideration of the most successful when it has had on the organization, socialization of a story for each participant, identifying factors or things that make this possible, however little has been said about the application of this model as an indicator of improving government performance in organizations. This paper aims to describe the ideal state of two undergraduate university administrative coordination to identify the strengths, values and practices of successful special in the coordination of International Business and administration and management SME's of the Polytechnic University of Zacatecas (Universidad Politécnica de Zacatecas, UPZ)

Developing appreciative inquiry, organization, socialization.

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Introducción

This Appreciative Inquiry´s investigation is a model that invites to research and conscious inquiry that over our history that is rich and can energize, excite and create value, both in our own lives and in those of others and explore our hopes and dreams for the future (Castillo, 2012). Such is the involvement of this model in Mexico is more normal to use this concept within organizations regardless type or nature and thus leaving some firms exclusivity.

The application of this model that generates specific organizational change in educational institutions, makes the term Appreciative Inquiry is of importance especially if there is a change intended to generate active participation of the members of the organization, in order to generate change through enriching experiences. However the fact that the participants express their experiences about the highlights of the organization does get involved and be part of the organizational change. But little is known of the potential for the application of this model, since there was no follow-up to the outcome: the implementation of suggested changes in the work's results of Appreciative Inquiry. In this research applies the model by two teams: International Business and Administration and Management of SMEs careers in the UPZ, in order to know the most successful moments and take the results as a basis for further research on the application for organizational change in the UPZ.

This research consists of five sections, the first describes the problem, justification and rationale of the research. In the second section presents the theoretical framework of Appreciative Inquiry and theories that give rise to and support.

The third section details the contextual framework of the UPZ. The fourth section sets out the methodology used to support research and ensuring the accuracy of the results. And the fifth and last section discusses the results and conclusions.

Background of the problem

Today's organizations need to share your personal or human talent to create change in the organization. The mental model of Appreciative Inquiry is an invitation to appreciate the best of what is, seeing what can be, to discuss what should be and what will innovate: building a bridge to success. And problem solving analyzes only causes, possible solutions and proposes an action plan.

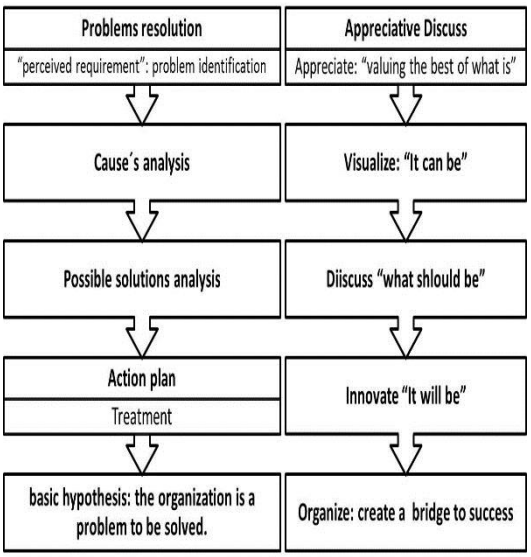

Figure 1

That is why even though organizations require organizational change is not only necessary with the resolution of problems.

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It´s necessary that the human talent have an active participation in the change process in building the type of organization in the they want to live, too, then measure the level of commitment in the implementation of what will be.

Problem delimitation

With the results of this research will get the ideal state in which the coordinations of International Business and administration and management SME's of the UPZ, as a basis for further analysis of results regarding the full implementation in the UPZ. The research question is: What is the ideal state of teachers' work in the coordinations of International Business and administration and management SME's of the UPZ?

General Objetive

Analyze the work's ideal state of teachers in the coordinations of International Business and administration and management SME's of the UPZ

Justification

Determinate the work's ideal state of the teachers in the coordinations of International Business and administration and management SME's of the UPZ will have a basis for evaluate the UPZ's organization system, as these results show aspects to change or improve in the institution and even to propose a methodology that provides effective results for further organizational development. Appreciative Inquiry proposes find what works well in an organization.

The result indagative latent process is a series of statements that indicate where ideally the organization should be, taking into account the statement of its participants (Hammond, 1996).

Theoretical and conceptual framework of Appreciative Inquiry (AI)

It is important to know the main concepts and theories about the IA, so below is first the concept of IA, this term development over time, finally an analysis of the theories and empirical development on Appreciative Inquiry.

A. IA Concept

The Real Academia Española de la Lengua (2010) defines appreciate as "recognize and estimate the merit of someone or something" and inquiry defined as "trying to figure out something, inquire something, running or with questions." The combination of the two words has given its name to a theory that is also a method of action research and a methodological approach for change intervention in organizations (Ruiz, 2010).

Cooperrider creator of AI (Appreciative Inquiry) notes that it is a philosophy (discover, imagine, design and intended) incorporating a process approach to involve people in the levels of one or all to produce a positive and effective change. It is now used throughout the world in both small and large-scale change initiative (Cooperrider, 2008). Hammond (1996) notes that the AI represents an innovative philosophy of change and organizational development being a distinctive way of thinking, seeing and acting upon making proactive changes oriented transformational changes.

Considering the above, the AI can be conceived:

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- As Technique, *is* very useful tool that makes explicit steps, through a series of questions carefully designed to address a real business or community.•
- As a Paradigm, it is a way of thinking, acting and feeling all the realities that surround us, to find the generative, positive, viable and possible.
- Like Art, is a way to go formal institutions and areas of an organization, with the child's surprised look, embracing the mystery before us, to get creative and innovative in multiple perspectives of the same reality.

B Theories underlying the Appreciative Inquiry

Maslow's needs hierarchy

Maslow was a psychologist who proposed that in every person there is a hierarchy of five needs (Robbins, 2008):

1. The physiological needs. The needs for water, food, air, rest, and all those required to keep the body in balance.
2. Security needs. Both the physical and psychological sense.
3. The need to belong to a group and love. The need for attention and social activity.
4. The need to estimate. Includes self-respect, desire, power, achievement, competence, wisdom and competence.
5. The need for self-actualization (realization). This refers to the desire to feel self-fulfilling man.

It should fathom what moves each individual to meet their needs within an organizational environment. The following figure shows the relationship of human and organizational needs regarding personal and organizational motivations:

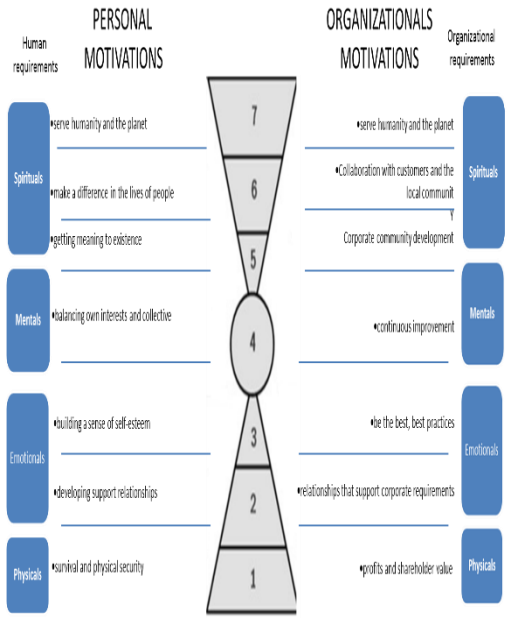

Figure 2

In developing their theory on one hand indicate that the individual becomes reality on the other hand is produced by every individual. The theory of social construction of reality, states that consensual processes by which human beings establish frameworks of understanding within which to make sense of their lives and interactions, and then taken by objective facts "true" and "eternal", only product of social processes are generated by specific historical circumstances (Berger, 1996).

Theories Narrative Construction of Reality and Identity (Schutz, 1966)

The theory of the narrative construction of reality states that when we talk about something, we are building the world, as the words and categories we use to talk about things are conventions built on human interactions. Thus, the language not only describes our world, so constructed, so that the descriptions and explanations we make on any level, will have effects on the same (Holstein, 2008).

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Appreciative Dialogue

The metaphysical questions of what makes social existence possible, what kind of social system is the best, the most worthy, the most just, never disappear and the question of how to approach the ideal. Appreciative Dialogue is a way of building elements that ideal and put them in the context of designing a better system (Cooperrider, 2005).

Universidad Politécnica de Zacatecas contextual framework

UPZ born September 2, 2002 under decree creating issued by the Government of the State of Zacatecas, is headquartered in Fresnillo, is one of the forty-three higher education institutions incorporated into Polytechnic Universities Subsystem. Their main sources of funding are the Zacatecas State Government and the federal government. Polytechnic Universities subsystem is a pioneer in implementing a model of competency-based education to higher education level. This model is designed to be fully well their students by taking them to a world-class labor competition.

The organization is committed to target their services to the satisfaction of its customers, making efficient use of resources in the implementation of academic and administrative processes, continuously improving our Quality Management System.The courses offered are technology-oriented, there are currently five engineering and two administrative careers.

- Engineering: Mechatronics Engineering, Industrial Engineering, Computer Systems Engineering, Biotechnology Engineering and Energy Engineering.
- Administrative Careers: Bachelor Degree in International Business and Management Administration and Small Business.

Number of employees
The total administrative staff is: 72
The total academic staff is: 181

Bachelor of Management and Administration of Small and Medium Enterprises (LGAPyME's):

One of the two runs that initiates the institution, whose main objective is to prepare professionals with highly competitive management skills that meet the challenges facing organizations in uncertain environments, effectively managing their resources and, through a pioneering vision to design, evaluate and implement strategies that enable or enhance innovation processes in organizations within a framework of sustainability.

Featuring:
6 full-time professors
8 assignature professors
159 students

Bachelor Degree in International Business (LNI):

Career that starts from September 2003 and aims to prepare professionals with ability to lead, advise and execute trading strategies and management in areas of uncertainty and international competitiveness, applying and innovating tools administrative, economic, financial and merchadological.

Featuring:
6 full-time professors
7 assignature professors
127 students

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Teacher´s process description

"Equalization new students" the purpose is to establish the activities to have a standard level of basic knowledge in aspiring new students, in order to ensure a minimum level of knowledge equally among all members . The master has two activities:

- The teacher applies the diagnostic evaluation instrument free form the first day of school with reagents to demonstrate the basic level of knowledge in the areas that fall within each race (Table 1), in order to analyze the level of knowledge with who graduated from high school.

Management and Administration of Small and Medium Enterprises	International Business
Mathematics	Mathematics
Accounting	Leadership
Induction	Induction

Table 1

- Delivery of the preparatory course and final assessment. The teacher taught preparatory course at the end applies diagnostic evaluation instrument and delivery to Career Coordinator qualifications list.

"Academic Management" the purpose is to establish the necessary activities planning and implementation of the teaching and learning of each tetramestre. The teacher has three activities:

- Career Coordinator notifies a teacher his schedule, the teacher signs the "Schedule Teachers" and attached a copy of it, teacher evidence folder, eight days before the start of the semester.

- According to the schedule, the data sheet of the subjects, and group lists general guidelines; taught class. The teacher sets up his folder with the following evidence: mission, vision, quality policy, quality objectives, attendance lists, bulletins, technical specifications and accumulates evidence of the work done (free format) during the semester.

- The teacher delivery midterm grades list to School Services in electronic format as School Services school calendar in the middle of semester.

"Students Retention" is to help reduce dropout rates and failure of the student by assessing students. The teacher plays the 3 activities as a tutor in the proceeding being which are described below:

- Knowledge ago students verbally has been appointed as his tutor at the beginning of course.

- The re-registration period determines the tutor tutees in accordance with their academic load with reference to current legislation.

- The tutor caught advisory needs students in the subjects they teach and provide appropriate advice.

"Maintaining Infrastructure", the teacher acts as the user doing the following activities:

- Detect when an anomaly in the infrastructure and give notice to the Department of General Services.
- Signature under at the time that their specifications were met.

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Research methods

This section will describe the methodology chosen for the research, that is to know the social phenomenon of the Appreciative Inquiry from objective reality consisting of subjective experiences of teachers in the directions of degrees offered by the UPZ (Sampieri, 2003).

The exercise was conducted in two stages, dividing the group due to the needs of each career:

1st stage. The program of International Business in a group met in the conference room of teachers, located in building B, consisting of a 1-hour session.

Procedure or intervention strategy

- They were asked permission to record the session.
- Gave them an introductory talk about the Appreciative Inquiry group to delve into the topic of discussion.
- Concepts were read about the issue.
- Were discussed views on the Appreciative Inquiry.
- Intervention was initiated by each of the members.
- It led to the socialization of the subject in the group.
- Gave the conclusions of the meeting

2nd. stage**.** The program of Management and Administration of Small and Medium Enterprises sent their comments and results by e-mail.

Procedure or intervention strategy

- Sent an abstract where explained the intent of the research, as well as a questionnaire and tables to help study intention.
- Making individually the current and previous Appreciative Inquiry.
- To make way for the results in teams of 3 to the socialization of the previous year.
- Responses were received within 3 days.

Workshop appreciative inquiry.

Exercise: The forces that give life
Discovering and articulating the forces that give life.

Objetive:

Share the most powerful stories (stories inspiring and relevant for the future) and discover all the factors in the stories that contribute to those successes.

Participants:

17 International Bussiness and Management and Administration of Small and Medium Enterprises teachers.

Description or meeting Workshop Agenda:

1. Objetive presentation.
2. Ask what is considered the peak of success we've had?
3. Socialization of a story for each participant. Must exemplify the best moments of area, department, organization, family, etc..
4. Identification, in pairs, of the factors - strength, practices and special values of success - things that make this possible, because the repetition of certain stories, was reduced to the following: Use of instrument A.

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Histories	Causes
1. Academic growth of teachers.	- Through the inspiration for entry and participation in a postgraduate.
2. He launched the quality management system.	- Achieve certification and the impact on streamlining administrative procedures, as well as academics have sufficient evidence on which it is made sure that working with competency-based programs and thus impact the certification of some of the careers.
3. Construction of buildings and laboratories.	Existence of external support to increase and improve the infrastructure of HEIs Skilled personnel for the proper management of resources Enrollments have increased to allow entry to certain projects.
4. Enrollment rising.	8 years ago in the UPZ, teachers began teaching at International Business careers PyME'sy and groups in both careers were an average of 30 students each incoming and opened 3 or 4 according to the existing demand .
5. There was organizational environment and communication between staff and faculty was better.	- Rectory carried out monthly meeting with the group of teachers to understand their concerns and needs, is celebrating teachers who met years by month.

Table 2

Historias	Causas raíz
1. Improving the tutorial program.	- Assign a department Tutorials - Hire a psychologist to channel students with special problems.
2. Entering in the field of research.	- Assign teaching hours for investigation. - Interest of some teachers to participate in research. - Participation of teachers in PhD studies. - Development of external sources for increased research in HEIs.
3. Full-time teachers were hired for an indefinite period.	- Determined as previously hired for a specified period, as required each course.
4. Promoting teachers category.	- According to the notice issued by the current administration to a recategorization who met the requirements stipulated by the Regulation of Admission, Promotion and Permanence of Academic Staff of the University.

Table 3

Results

Next, Table 4 presents the Socialization of the exercise, describing the results arising from the Appreciative Inquiry of the current administration (Table 2) and the previous administration (Table 3).

The groups were performed as follows: represented by the letter "N" for International Business and an "A" for Management and Administration of SMEs. Remaining six groups in total (three of each career).

The factors were determined as the maximum of importances and indispensable for the development of teachers' work as groups. From this suggests some practices are necessary for the fulfillment of the factors.

Values are important to the study of organizational behavior because they give the foundation for understanding the attitudes and motivation of individuals, because they influence our perceptions. Milton Rokeach Values Survey created the same name (EVR). It consists of two sets of values, each with 18 individual values.

One contains the terminal values, and refers to the final states are desirable. The other set, formed by the instrumental values, refers to the preferred modes of behavior, or means for achieving terminal values (Robbins, 2009).

Groups	Factors	Values
1. N.	Communication	Mind wide. Diplomat.
2.N.	Teamwork	Servicial Responsibility
3.N.	Support and reward	Sense of achievement Social recognition Ambitious
1.A.	Interest in participating in research projects.	Capable Logical Equality
2.A.	Identification of the main activity of the teacher	Pleasure Independent Responsibility
3.A.	Project right direction	Logical Capable Responsibility

Table 4

In the International Business and Management of SMEs careers consider that the ideal state, is under the following features:

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- Continuous communication with the rector.

According to Fred Luthans and his associates studied more than 450 managers. What they found was that they were involved in four managerial activities (Robbins, 2009):

1. Traditional Administration. Making decisions, planning and control.
2. Communication. Exchanging routine information and processing documents.
3. Human Resource Management. Motivating, disciplining, managing conflict, assign and train staff.
4. Networking. Socializing, politics and interact with people from outside.

In the study, the manager "average" dedicated 29% to communicate, the manager "successful" 28% devoted to the same concept.
However the manager "effective" shows a connection between being clear communication is 44% explaining that those seeking information among your colleagues and employees (even negative) and explain their decisions is more effective.

- Teamwork: teachers identify as a collaborative effort strength to get ahead with implications or challenges presented to them despite adversity or change forces either internal and / or external:

According to Robbins & Judge (2009), a work team generates positive synergy through coordinated effort. For a team to be successful requires four factors: adequate resources, leadership and structure, trust and performance evaluation and reward system.

- Support and reward only in the current administration have actually been doing full-time nominations and categories.

Payment plans based on merit remunerate the individual's performance, as they rely on the rating of the performance evaluation. The main advantage of the merit pay plans is to allow employers to differentiate pay based on performance, so that people considered great filmmakers are given larger increases. In an effort to motivate and retain employees that work best, more and more companies that increase the gap between them and the less efficient (Robbins, 2009).

- Interest in participating in research projects.
Teachers working in the University of Zacatecas according to their occupation are having two personality types according to " Holland Typology " (Robbins, 2009):

- Investigator Type: leaning on activities that involve thinking, organizing and understanding, analytical personality, original, curious, independent.
- Sociable Type: having preference for activities involving help and assist in the development of other, outgoing personality, friendly, cooperative and comprehensive.

- Identification of the main activity of the professor:

Project right direction: this is directly related to the decision-making and to that end proposes six steps Model Rational Decision Making proposed by Robbins & Judge (2009):

1. Define the problem
2. Identify the decision criteria
3. Assign weights or weights to the criteria.

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4. Develop alternative
5. Evaluate the alternatives.
6. Select the best alternative.

a. Description - ego state (transactional analysis) of each member

Transactional analysis is a theory of personality and human relationships with their own philosophy that currently applies to psychotherapy, growth and personal or organizational change in many fields. His concepts are expressed by means of a simple and original vocabulary primarily seeking understanding of phenomena by all (professional clients). Their analysis models are universal. His explanations are intentionally simple and close to the people's immediate experiences (Giardino).

Ego states, are classified into (Castillo, 2012):

Father: that may be critical parent (positive or negative) and protective father (positive or negative)

Adult: not divided in their study and have logical characteristics, analyzes the facts, live for today, weighing pros and cons and updates the parent and the child.

Child: which is divided into natural and adapted.

Is now made Transactional Analysis based on the working groups in the degrees.

The Degree in Administration and Management of SMEs to the present administration has:

Four full-time teachers category
One full-time teacher category B
And the rest of assignature

It is observed that the teachers of career of the Bachelor of Administration and Management of SMEs Adult ego state, despite a predominant group I watching Child rebellion, freedom and sometimes revenge. The Father I leads to devaluation behaviors as the critique.

The Degree in International Bussiness to the present administration has:

Four full-time teachers category
One full-time teacher category B
And the rest of assignature

The fact that there are states in the career Father I of International Business be because teachers holding administrative positions within the University and affects the compliance function as task management, research and / or teaching. Prioritizing tasks or administrative functions.

a. Description of the ideal state of organization, department or area:

- Communication.
- Teamwork.
- Support and reward.
- Develop an interest in participating in research projects.
- Identify the core business of teaching.
- Project right direction.

6. Conclusions

The forces that give life, After reviewing the root causes that have promoted the success of our University of Zacatecas, masters of the Bachelor of International Business and Administration and management of SMEs believe that the ideal state is subject to the following features:

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- Maintain close communication through regular meetings with the rector.

- Work as a team to contribute to academic management activities taking responsibility and being helpful to others departments.

- That their work is supported and rewarded through periodic calls to stimulate the development and growth of teachers obtaining academic sense of achievement and social recognition.

- Fostering interest in participating in research projects: assigning hours to research, participating in doctoral studies, increasing its logical sense, capacity and resulting in equal opportunities.

- Identify the core business of teaching, focusing on the activity of teaching classes such as basic engine and it's college;

- Project right direction where the trained groups are proposed to obtain necessary objectives, without the need of extra work for teachers, that is logical, capable and responsible to an end.

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The family-owned company and its implications in the attitude steward with the performance of the company

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This paper analyzes how the family owned company produces a behavior steward of CEO and in turn this behavior with family ownership and partnership plans are generated to good financial performance. For this, it contrasts theories of agency and stewardship, using the method of seemingly unrelated regressions (SUR) to a sample developed in Mexico and in Colombia and with a survey of 88 companies we have that the results are there is a positive and significant relationship between ownership of the business and financial performance.

Agency theory, stewardship theory, financial performance.

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Introduction

This paper will analyze the family owned corporate governance and its relationship with the CEO steward behavior and a better financial performance in companies in Mexico and Colombia. All this from a perspective of stewardship theory. It has in the strategic management literature, the study of corporate governance is very important (Shleifer y Vishny, 1997), but however, in our context there are few studies on this topic (Ruiz Porras y Steinwasher Sacio, 2008: 58).

Therefore, start by analyzing the context of corporate governance in Mexico and Colombia, and then delve into the theories explaining the corporate governance, agency theory and stewardship theory. Then you go to see different empirical studies that have sought to test the relationships proposed above and thereby formulate hypotheses. It ends with the conclusions of which are that the vast majority accept the hypotheses and generate a structural model that explains the relationship between corporate governance structure, the attitude of the general manager and financial performance.

Context of corporate governance in Mexico and Colombia and family ownership

Most studies of corporate governance in both Mexico and Colombia are based on the concentration of ownership and control of companies (Cano Morales, Orduz Aguilar, Hoyos Ramírez, 2007; Pelayo Maciel, 2011; Pelayo Maciel, Calderón Hernández, Serna Gómez, 2012).

Studies have also found that the most common type of owner is the family, who holds a high concentration of ownership and control in business (Castañeda, 1999; Husted y Serrano, 2002; Ruíz Porras y Steinwascher Sacio, 2008).

Furthermore, the type of control structure that is characterized pyramidal (La Porta, López-de-Silanes y Shleifer, 1999). These findings allow us to see the importance of corporate structure of family ownership, as this play an essential role in defining corporate governance practices.

This may be due to cultural reasons a company, understanding this as the set of shared beliefs that influence the behavior of individuals (Smircich, 1983). These cultural elements are socially created and therefore cannot be assumed that the structure of corporate governance is entirely a product of rationality and the explicit design of individuals. Under this assumption, the way relationships are created or formal or informal links into and between companies depends on cultural values prevailing in a given society. In societies with a confidence bounded as in Mexico and Colombia, where the affinity and credibility is given exclusively in family or close friend is where you create economic groups, who are business networks with strong links but limited in scope. There is a custom trust that reduces risks of opportunistic behavior. In countries where this type of culture is prevalent, such as the Latin American encourages ownership concentration, because it distrusts those outside the family or social network (Lansberg y Gersick, 2006).

Theoretical background

This section will discuss the theories that support this research, we first discuss the concept of corporate governance, understood as the system by which business corporations are directed and controlled by the distribution of rights and responsibilities between different participants in the corporation such as the board, managers, shareholders and other stakeholders.

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Subsequently, will be analyzed the two currents that try studying both the governance structure and the behavior of managers, the agency theory and stewardship theory.

To the Organization for Economic Cooperation and Development (1999, cited Clarke, 2004) defines corporate governance as the system by which business corporations are directed and controlled. The corporate governance structure specifies the distribution of rights and responsibilities among different participants in the corporation, as the board, managers, shareholders and other stakeholders; explains the rules and procedures for corporate decision making, and provides structure and fundamentals of setting objectives, the means to achieve and ways to monitor their implementation.

Another definition of Eiteman, Stonehill y Moffet (2011: 30), who define corporate governance as "the relationship between interest groups used to determine and control the strategic direction and performance of the organization." Under this definition, you can understand the corporate governance structure and the institutional arrangements, formal and informal, which companies resolve disputes arising from the interplay of stakeholders.

These institutional arrangements define the structure of ownership and control, and its functions are the following (Chavarín-Rodriguez, 2011): operation of the board, the role of investors, incentives for managers and workers, control mechanisms to management, and how to finance companies.

Agency theory and stewardship theory

There are two theories to study corporate governance, one of which is the agency theory and another call stewardship theory.

The agency theory mentions that the property in big business is diversified in multiple shareholders who transfer authority in making decisions to managers in order to achieve optimum business performance. The fact that shareholders have a small shareholding leads to a difficult access to information about the acts of its managers (Berle y Means, 1932, city by Davis, Schoorman, Donaldson, 1997; Jensen y Meckling, 1976), the control is costly and also information is costly to obtain, especially for a person.

For this reason there is a possibility that managers pursue their own goals even at the expense of the interests of shareholders. The separation of ownership and control has the main problem of avoid possible opportunistic behavior of managers that could affect safety on the return on investment of shareholders (Jensen y Meckling, 1976). For these reasons and in order to explain the motivations and behaviors of the parties (principal and agent), arises agency theory is defined by Jensen and Meckling (1976) as a contract by which one or more persons (the principal) appoints another person (the agent) to perform some service on their behalf, which involves delegating some authority to the agent decisions.

The agency problem arises when the well-being of a person's depends on another, in this case, the agent is the person acting and the principal is the person affected by the action. A major problem for investors is that managers can pursue their own goals, even at the cost of obtaining lower profits for owners. In any negotiation between the two parties establishing a relationship of agent and principal, which is characterized by the existence of a hierarchical relationship that can be established through a formal or informal contract.

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One party has possession of an asset or senior administrative role, the principal, the other party manages the assets of a company, which is called "agent". The key feature of this relationship is the asymmetry of information, the agent has more information about the daily operation of the organization and the principal has only generic information, thus incurring high costs to monitor the agent's actions (Jensen y Meckling, 1976).

This is given by the absence of contracts made in full, thus, identifies some actions that the principal can take to define differences to their interests, which are based on incentive systems and incur costs monitoring to limit opportunistic aberrant activities of the agent.

In particular, this model promotes the use of independent power structures for example the same person does not agree with the position of CEO and chairman of the board of directors of a company, in order to prevent opportunistic behavior of its managers (Jensen y Meckling, 1976).

Moreover, the agency problem has been widely criticized, since it faces a problem only between managers and owners and the shareholders and they are not the only ones affected by the activities of the company but are also all stakeholders.

Which are also affected by the organization, therefore arise the stewardship theory such as that described below.

Stewardship theory arises as opposed to a model that establishes the agency theory; this model holds that the interests of management are aligned with the interests of the principal, in contrast to the selfish motivations holding agency theory.

According to this theory, managers seek to balance the interests of shareholders and stakeholders, so try to make decisions for the benefit of all (Davis, et al., 1997; Fox, Halmilton, 1994).

Davis, et al. (1997), determine the characteristics of the behavior that managers should have stewards perspective who are motivated to act proactively and collectivist, which has a high value compared with individualistic and selfish action. Due to the high need for growth and achievement, psychological motivations, the manager appreciates the value of collaboration using their initiative to promote success, establishing bonds of trust with them. This has a positive attitude toward harmony groups avoiding conflict or confrontation.

Analysis of the literature

This section presents a review of the literature that supports the hypothesis of this paper. To do this, we analyze the relationship between ownership of the company and the company's financial performance. Taking corporate governance as the system in which counselors supervise the operation of the company through their managers, and the board members who are in turn responsible for the minority shareholders of the company, this leads to implications positive performance of the company to its employees, shareholders, consumers and banks, among others.

Good corporate governance plays a vital underpinning the integrity and efficiency of financial markets. But this causes high costs, called agency, generated by asymmetric information possessed by the manager, and that can sometimes encourage him to act opportunistically.

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As already mentioned, the agency theory assumes that the separation of owners (principal) and managers (agents) increases the attitude of the latter to take actions that do not maximize shareholder wealth (Jensen y Meckling, 1976). However, to Fama and Jensen (1983), the separation of ownership and control within the company reduces agency costs and thus leads to high performance, which necessarily implies that the chairman of the board is different from general manager.

However, if we analyze the family business ownership and control is an important component of the economy around the world (La Porta, et al., 1999) and based on authors like Eddleston, Kellermanns, Sarathy (2008); Miller, Le Breton – Miller (2008); Minichilli, Corbetta, MacMillan (2010) who find that the manager of a family business will have attitudes type steward, which in turn will lead to better financial performance, but other studies have not mentioned this theory as part of his theoretical framework, but if they do mention of the family as a source to optimize company profits (Husted, Serrano, 2001; Anderson, Reeb, 2003; Ruiz Porras, Steinwascher Sacio, 2007; Villalonga, Amit, 2006). So here are the different investigations that examine family property as part of a corporate governance structure and that this leads to improved performance.

Studies in Mexico reveal that a concentration of ownership through family ownership leads to better performance as is the study of Castrillo-Lara y San Martin-Reyna (2007), which suggest that there is an alignment between agent and principal, leading to greater value creation. In another study by Ruiz Porras, Steinwascher Sacio (2008), find that family-owned businesses tend to diversify their sources of income, but found no relationship between family ownership and firm performance.

In another study in the United States of America (Anderson y Reeb, 2003) concluded that family ownership is present in a third of the Standard & Poor's 500, and that companies in this category performed better. While in another study conducted in Norway, Mishra, Randy y Jensen (2001) conclude that firms controlled by the founding family have a higher market value. For Miller, Le Breton – Miller, Scholnick (2008), who analyze the family ownership estate in Canada and they prove that in this type of governance structure generates: 1) business continuity, 2) community of employees and 3) good relations with consumers. In another study conducted in Italy by Minichilli, Corbetta and MacMillan (2010), they show that the presence of a family CEO generate efficient work teams which causes better financial performance than companies who hire a separate CEO.

In stewardship theory, managers are inherently trustworthy and not prone to divert company resources (Donaldson y Davis, 1991). It is believed that managers are good servants to the principal and will be effective to develop strategies that increase shareholder wealth. The duality between ownership and control (ie, that the manager is on the board) promotes flexibility in the company and reduces conflicts between the board and management, leading to high levels of shareholder returns (Davis, Schoorman, Donaldson, 1997).

Stewardship theory argues that performance variations resulting from the structural situation in which the executive is to facilitate the adoption of effective measures. In family-owned companies, the leadership expectations are clear and consistent for both board members and the managers; these factors, therefore, achieve efficiency, resulting in better company performance compared to a separation structure and control property (Miller, Le Breton-Miller, 2006).

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The evolution of governance models presented by the stewardship theory, obligations extend beyond the company's shareholders. This based on the assumption that the company has responsibilities to society and a variety of ethical and moral obligations (Caldwell, Karri, Vollmar, 2006).

Therefore we propose the following hypothesis:
H1: The family-owned businesses generate attitudes steward of the CEO.
H2: Attitude steward generates better financial performance.

Methodology

For the present research makes use of the method of seemingly unrelated regressions, which is a way to make a system of simultaneous equations, and is best, suited for this type of analysis. To which creates the following system of equations:

$$ST = \gamma_1 + \gamma_2 PF + \varepsilon_3$$

$$DF = b_1 + b_2 ST + \varepsilon_3$$

Where:

PF is family owned company
ST is the CEO steward attitude
DF is the financial performance

To measure the variables developing a survey to 48 Mexican companies and 40 Colombian companies to develop a confirmatory factor analysis and extract the latent variables, to which we applied Cronbach's alpha test for validity by membership or by its transfer of the original structure that has belonged to that variable to another. The result of this test was to what shown in Table 1, and as seen stewradship variable exceeds the boundary alpha is 0.70, so it is concluded that the variable is valid.

In addition to measuring the variable family owned business is done through a binary variable (0.1) with a metric where 1 where there is family owned and 0 in other cases, financial performance was measured through the ROA.

Variable	Coefficient alpha
Stewardship	0.96

Table 1

To carry out the investigation and as mentioned before, is developed a questionnaire with items derived from the assumptions, appropriate to a Likert scale, often called combined grading method (1932, in Hayes, 1999). This scale is also a widely accepted multivariate technique, with which the participant indicates the amount, which will qualify you agree or disagree with a variety of statements about some attitude or object. For this survey takes into account the tools developed by López Cabrales, et. al. (2009); Rodrigo, Arenas (2008).

Analysis of results

When analyzing the relationship between the ownership of the company and the CEO steward attitude can be seen (Table 2) that there is a negative relationship, but also that the coefficients have no significance for accepting Hypothesis 1, therefore it says there is no evidence to say that there is a relationship between family ownership of the company with the attitude of the CEO.

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The performance of the company and its relationship to the steward attitude

	Regression coefficients
Attitude steward of CEO	1.332705** (3.15)
Constant	-3.594037*** (-8.54)
Observations	80
F	9.90**
Prob> F	0.0017
R^2	0.1103

Table 2

Nota: La variable dependiente es desempeño financiero. Los estadísticos t se encuentran entre paréntesis. Uno, dos y tres asteriscos indican niveles de significancia de 10, 5 y 1% respectivamente.

In analyzing the second equation, where you see the relationship between company performance and attitude of the general manager, you can see that there is a positive and very significant (at a level of 5%), which means that a CEO steward of attitude will lead to a better financial performance.

Conclusions

This paper is a study of the literature produced by authors of both empirical and theoretical research to argue how the family owned company positively affects the performance of the company, thanks to the attitude of the chief steward of the company, generating core competencies in human resources.

As noted throughout this paper, according to some studies (Mishra, Randy, Jensen, 2001; Anderson, Reeb, 2003; Castrillo-Lara, San Martin-Reyna, 2007), confirms that family ownership creates better financial performance and also according to Miller, Le Breton – Miller (2006) shown that this is caused because the family tend to have CEOs-owners of the company and this will cause attitudes steward (service). It was hypothesized that 1: the family-owned businesses generate attitudes steward of the CEO, but this relationship can not be accepted because the relationship between the variables obtained steward attitude (ST) and family-owned company (PF) not significant.

The family-owned company and its relationship with the attitude of the director of the company

	Regression coefficients
family owned	-0.0294158 (-0.13)
Constant	.0191205 (0.10)
Observation	80
F	0.06
Prob> F	0.9713
R^2	0.0007

Table 3

Note: The dependent variable is the attitude of the CEO steward. T-statistics are in parentheses. One, two and three asterisks indicate significance levels of 10, 5 and 1% respectively.

So in this part of the theory can not be explained Stewardship.The hypothesis 2 is tested, where all the implications of what he says Stewardship theory in the sense that such attitudes (steward), generate better financial returns.

Therefore, it can prove part of the theory, so we can conclude that there are limitations of the study because it remains to be determined whether there are differences between the samples in both Mexico and Colombia, which are needed to develop tests structural change and apply in-difference estimator, which will be developed in future research.

Also as part of future lines referred develop case studies to complement this research as quantitative methods often leave variables that are impossible to measure numerically.

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Abstract

Title

Objectives, methodology

Contribution

(150-200 words)

Keywords

Indicate (3-5) keywords in Times New Roman and Bold No.11

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† Researcher contributing as first author.

Introduction

Text in Times New Roman No.12, single space.

General explanation of the subject and explain why it is important.

What is your added value with respect to other techniques?

Clearly focus each of its features

Clearly explain the problem to be solved and the central hypothesis.

Explanation of sections Article.

Development of headings and subheadings of the article with subsequent numbers

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In the article content any graphic, table and figure should be editable formats that can change size, type and number of letter, for the purposes of edition, these must be high quality, not pixelated and should be noticeable even reducing image scale.

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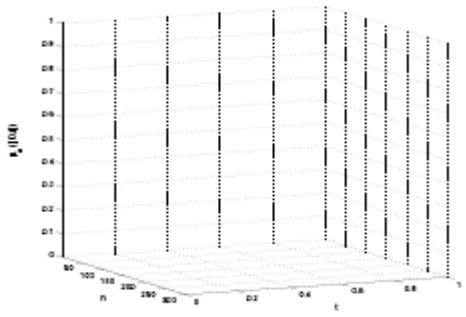

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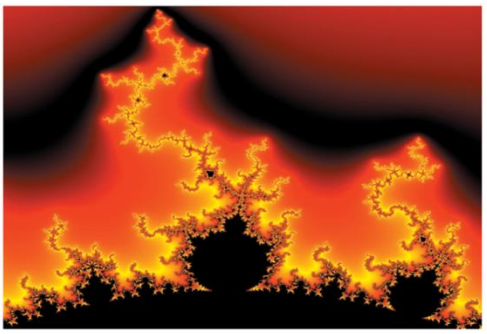

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Each article shall present separately in **3 folders**: a) Figures, b) Charts and c) Tables in .JPG format, indicating the number and sequential Bold Title.

For the use of equations, noted as follows:

$$Y_{ij} = \alpha + \sum_{h=1}^{r} \beta_h X_{hij} + u_j + e_{ij} \qquad (1)$$

They must be editable and number aligned on the right side.

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Methodology

Develop give the meaning of the variables in linear writing and important is the comparison of the used criteria.

Results

The results shall be by section of the article.

Annexes

Tables and adequate sources thanks to indicate if they were funded by any institution, University or company.

Conclusions

Explain clearly the results and possibilities of improvement.

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Using APA system, should **Not** be numbered, either bulleted, however, if necessary, will be because reference number or referred to in any of the article.

Data Sheet

Each article must submit your dates into a Word document (.docx):

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7. References

Author Name (s)
Email Correspondence to Author
References

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