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Content

Article **ECORFAN Journal-Mexico**
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Economic Growth and innovation in Latin America; An analysis of panel facts from a Schumpeterian focus

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In this article we examined the roll of the innovation on the economic growth of Latin America. We use an analysis of panel data for twelve countries of the region, stating the fulfillment of the Schumpeterian hypothesis that the innovation activities impel the total productivity of the factors and the economic growth in Latin America.

Endogenous growth, I+D, Innovation.

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Introduction

The models of exogenous growth type Solow and Swan (1956), explained that the economic growth is related with the technic progress, however do not explain the factor that determinate the technic progress inside the economic system. In the mid of eighties and beginnings of nineties of the past century came out the theory of the endogenous growth, which fundamental contribution was to explain the technic progress from inside the system, made endogenous the technic progress and for the same the economic growth.

The endogenous growth points that with the research of Paul Romer (1986), where explain that the growth of per capita income could not be unlimited and there is not diminishing marginal productivity of the capital 1.

Romer raised that in the long term the principal determinant of the economic growth is the technic progress, interpreted endogenously as human capital. The growing performances at scale of the production are result of the increase of the knowledge level in economic and that the increase of the production results from the existence of externalities which provoke growing performances of the production and in difference of the exogenous growth, this externality reinforce for the economic agents.

Robert Lucas (1988) put special interest in that the human capital is the factor which impulse the economic growth of the nations, the concept of human capital is big and includes the formal learning and doing introduces by Arrow, in theory of the economic growth.

Both, Robert and Lucas point that the economic growth in the long term is attached with the human capital and the formal and informal knowledge, although they do not explicitly treat the role of innovation in the economic development.

To explain the differences of productivity and economic growth between the nations important researches study the role of the innovation and its endogenous sources, between which highlight the works of Helpman and Groosman (1991) and AH (1992), they are known as Endogenous Growth Schumpeterian 2.

AH (1992) use the Schumpeterian ide of "Creative Destruction" and show that the innovator companies, the work quantity dedicate to the innovation, tent to increase the technologic progress and the economic productivity, economic is the production technology of innovations.

The theory of the Schumpeterian endogenous growth us on its model important assumed, Coe and Helpman (1995) try that the inversion in research and development impulse the total productivity of the factors, another research made by Young (1998) points that the growth of the Total Productivity of the Factors (PTF) follows the spent in Research and Development (I+D). Zachariadis 2002) in a study applied to the American manufacture industry show that the increases of the investment in research and development incite to the patents increment, these last, induce to a bigger technic progress which at the same time provokes, a bigger economic growth.

[1] They are key characteristics of the endogenous growth and which difference it from the exogenous growth.

[2] The Schumpeterian Growth, is denominate like that, in honor to the honorable economist Joseph Schumpeter for his introduction of the role that the innovation have in the economic system, although he was not the creator of the Schumpeterian Endogenous Growth, set up the bases with his contribution "Creative Destruction".

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

The difference of welfare income per capita and productivity between the rich nations and the developing countries could be linked to the technologic innovation activities in the different nations. Our hypothesis release from the former problem: "The innovation activities are of meaningful relevance for the increase of productivity and economic growth in Latin America.

In other words, the determinants of technologic innovation like: Investment in research and development, the number of patents, register brands, exportation of high technological content, could play a relevant role to increase the productivity and economic growth in the region.

The document examine the role that play the innovation in the economic growth of the region, endogenously analyze the role of the research and development, the number of patents, register brands and the exportation of high technological content in the impulse of the total productivity of the factor in the Latin American countries.

In order to prove the hypothesis we use analysis of fact panel for twelve Latin American nations, with information of the World Bank to prove if the predictions of the Schumpeterian Endogenous Growth are accomplished, analyze the innovation activities 3 and propose alternatives that allow increment the welfare levels in named countries.

The rest of the document is organized as the follow: the Second section give a short exposition o the Schumpeterian Endogenous Growth theory. The third section provides the information sources, facts and the used variables in our model. The fourth section is on charge of the preliminary descriptive analysis of the variables that will have on account our model.

The fifth section is presented the principal results of the panel estimations, the interpretation of the empiric evidence showed for the Latin American countries. Finally conclusions and politic proposals of derived politic of the research.

The Schumpeterian endogenous growth

The evidence shows that there are nation that have high their welfare levels like Ireland and Spain, while other have reduced their per capita incomes level like Chad and Venezuela, Helpman and Groosman (1994). Less than the half of the five hundred of the biggest companies of the middle of seventies, kept this privilege position nowadays (Fortune magazine). The explanation for the former situation could be joined to the innovation strategies that named countries and companies develop.

The key to achieve the success and keep seems to be, continuously innovating.

Schumpeter (1912) introduces the concept of innovation and classifies the innovations in the apparition of new product, a new process; new intermedium consumptions, new organization type, and new market. Schumpeter (1928) defines the innovation as the use of productive resources in uses without be proved in the practice until now. Schumpeter (1939) explain the as the creation of a new production function. Schumpeter (1942) introduces the term "Destructive Creation" explain the role of the innovation for the company and the economy dynamism.

[3] Not only analyze the role of the Inversion in research and develop but also the productivity of the same (Patents), its impact and diffusion (Exportations of High Technologic Content).

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

In the theory of endogenous economic growth, the first to promote the role of the innovation in the increase of the income are Romer (1990) and Segetrom (1990). Griliches (1990) shows the existence of a strong and positive relationship between investment in Research and Develop and the Patents. Kortumm (1993) conclude with a study of panel that there is a positive and meaningful relation between rate of growth of the Patents volume and the Total Productivity of the Factors.

AH (1992) shows that the economic growth of the per capita income and the technic progress in a country is attached to the increase of the inputs variety and the quality of its products, which are explained by the elasticity of intermedium wells demand and for the productivity of its researches.

Coe and Helpman (1997) proof that the spent in research and develop of the commercial associates have a positive effect over the total productivity of the domestic factors.

To support the Total Productivity growth of the Factors is necessary the increase of the spent in Research and Develop. AH (1998) and Peretto (1998).

Harris and Vicker (2001) show that the arrived of the foreign companies has a positive impact in the innovation, because from one site reduce the utilities of the local companies to high their investment in research and develop in order to enjoy of bigger profits, therefore the biggest competence incite to the biggest rate of innovation.

Zachariadis (2002) studies the relation of the different steps of the innovation process: first step is the investment in Research and Develop, the second step, consist in obtain Patents, with the induction of the phases to the increase of the total productivity of the factor and the product growth.

Ha and Howitt (2007) affirm that the total productivity of the factors follows to the investment in per capita research and develop On its work Madsen (2008) study five principal countries of the Organization for Economic Co-operation and Development (OECD)through a panel and conclude that the Schumpeterian theory is adequate to explain the increases in Toatl Productivity of the Factors and that not only are related with the intensities of local research, but also with the foreign research.

We consider a function of production Cobb-Douglas type with constant outputs of scale:

$$Y = AK^{\propto}L^{1-\propto} \quad (1)$$

Where Y is the Production, A is the Knowledge, K is the Capital, L the work, α is the marginal productivity of the capital and (1-α) is the marginal productivity of the work. Posteriorly we define the technologic knowledge growth as g_A, which we represent as:

$$g_A = \frac{\dot{A}}{A} = \lambda\left(\frac{X}{Q}\right)^{\sigma} A^{\theta-1} \text{ donde } 0 < \sigma \leq 1; \theta \leq 1$$

$$Q \propto L^{\beta} \text{ In the stationary state} \quad (2)$$

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

This function is used by (Ha and Howitt, 2007) and (Madsen, 2008), in which, Q is the product variety, θ is the rebate of the scale in the knowledge, σ is a parameters of the duplication, which is cero if all the innovations are duplications and 1 if there are not duplication innovations, β is the coefficient of the product proliferation, λ is a parameter of the investigation productivity, L is the use of the population and X are entries or inputs of Research and Develop. Q is the product variety measured by the work or the population because the product variety is proportional to the population if the stationary state, the equation (2) then covert in:

$$g_A = \frac{A}{A} = \lambda \left(\frac{X}{L^{\beta}}\right)^{\sigma} A^{\theta-1} \quad (3)$$

The models of Schumpeterian Growth suppose that θ=1, β=1, and like X represent the investment in Research and Develop (I+D), results that:

$$\frac{\dot{A}}{A} = \lambda \left[\frac{I+D}{L}\right]^{\sigma} \quad (4)$$

The quotient between $\left[\frac{I+D}{L}\right]$is denominate in this works the investigation intensity in other words is the inversion in per capita research and develop or per person in a country. The inversion in per capita research and develop in the Equation (4), we substitute it for the quotient of $\left[\frac{I+D}{PIB}\right]$, in fact, and we use the inversion in research and develop per dollar in the economy, instead of research and develop per person 4. For the present work the intensity in research and develop is the quotient between I+D and the income of the country.
The equation 4 converts in:

$$\frac{\dot{A}}{A} = \lambda \left[\frac{I+D}{PIB}\right]^{\sigma} \quad (5)$$

Introducing logarithms kept:

$$Ln\left[\frac{\dot{A}}{A}\right] = Ln\lambda + \sigma Ln(I+D) - \sigma Ln(PIB) + e_{1,t} \quad (6)$$

Taking out common factor σ

$$Ln\left[\frac{\dot{A}}{A}\right] = Ln\lambda + \sigma Ln[(I+D) - \sigma Ln(PIB)] + e_{1,t} \quad (7)$$

Now we suppose that $\frac{\dot{A}}{A}$ is stationary, according to the found for Howitt (2007)

$$\varepsilon_t = Ln(I+D) + Ln(PIB) \quad (8)$$

Then the changes in the inversion in Research and Develop and the Gross Domestic Product of a country, are necessary, but not enough, to explain the variation in the Total Productivity of the Factor.

Helpman and Groosman (1992), AH (1992) relate the increases of the total productivity of the factor with the diffusion of the technology through the international commerce, also Romer (1990).

Segerstrom (1990) get to the conclusion that the quality of final products of a country is related with the new technology implement to the intermedium wells imported from abroad with which produce, these, the intermedium wells imported, high the efficacy and increase the variety of the produced wells.

Howitt (2007) and Madsen (2008) analyze the role in the diffusion of the technology, and consider the geographic proximity as an element which could influence in the exploitation of the international overflow of the technologic knowledge.

Other researches like Helpman (1995) and Madsen (2008) related the increase of the total productivity of the factors with the importations of intensive wells in Research and Develop, with the patents of the commercial associates.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

[4] We suppose that the inversion in research and develop per monetary unit in a sample economy of a better form of intensity in research, in comparison with the inversion in per capita research and develop heritage of the macroeconomic tradition.

To estimate the increase rate of the Total Productivity of the Factor (PTF), we follow to Joseph Stiglitz (2004) where on his book of Macro-economy, start from the contribution of the capital to the increase of the production and explain it in the following form:

$$\Delta Q = r\Delta K \quad (9)$$

Where ΔQ is the increase of the Production, r is the output of the Capital and ΔK is the increase of the Capital.

The percentage increase of Q is simply:

$$\frac{\Delta Q}{Q} = r\frac{\Delta K}{Q} \quad (9.1)$$

Now we multiply the numerator and the denominator of the right part of the equation 10.2 for k, we have:

$$\frac{\Delta Q}{Q} = r\left(\frac{\Delta K}{K}\right)\frac{K}{Q} = r\frac{K}{Q}\frac{\Delta K}{K} \quad (9.2)$$

Then $r\frac{K}{Q}$ is the quota of participation of the Capital in total PIB, rK is the output of the Capital, Q in the total production, Therefore the percentage increase of the production attributable to the Capital, is the percentage increase of the multiplied capital for its quota of participation.

In the same logic, the percentage increase attributable to work is the percentage increase of the multiplied work for its quota of participation.

The increase rate of the factor productively, is increase of the product, which is not explained for the work and capital increase, in other words, that is the increase of the production explained by other factors, like the efficiency en the use of the resources, the technologic advance, the investment in Research and Develop, patents, exportation of high technologic content products, etc.

$$PTF = g_Q - (S_K * g_K) - (S_L * g_L) \quad (10)$$

The increase rates of the factors total productivity could be found in the following forms, Stiglitz (2004):

Where g_Q the growth rate of the product, SL is is the participation of the capital in the product, gK is the capital increase rate, SL is participation of the work in the PIB, gL is the work increase rate. The equation (11), is the one we use in the present work in order to calculate the factors 5 in the graphic analysis.

Sources of information, principal variables and descriptive analysis

In the graphics we use facts of the Iberoamerican network of Science and Technology Indicators, while in the estimation we use the information of the World Bank, the variables will be expressed in American dollars of the parity of the acquisitive power of 2000, except the variables like the Work, Patent and Register Brands which are measure in units.

Initially the estimations are made in the period of 1960-2008 with unbalanced panel, posteriorly the estimations with logarithms are made with a balanced panel in the period 1996-2008, this is because the information availability.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

With these facts we examined the correlation between the different variables of the model for the Latin American countries and we get to relevant conclusions. Analyze the participation of each one of the variables respect to Gross Domestic Product centering our attention in Research and Develop, Given Patents, register Brands and Exportation of High Technologic Content.

After that we present, the variables that we will use in the work, its definition and denotation.

The Gross Domestic Product (PIB) understand the total value of final wells and services in a country, in a determinate period of time, for all the countries including Mexico, the PIB will be expressed in American dollars of the Acquisitive Power Parity (PPA) of 2000.
The work (L), is one of the production factors and we will take as proxy variable to the total of the population of each Latin American country, which will be expressed in people; the Capital is another relevant factor of production and we will take as its proxy variable to the Gross Formation of Capital in each Latin American country, which will be expressed in American dollars of the PPA of 2000 and its denote as K.

The Research and Develop inversion (I+D) is the value of the investment in research and develop on each one of the countries, expressed in American dollars of PPA of 2000. The Given Patents: is the number of given patents on each one of the Latin American countries and denote as ***PatenO.***

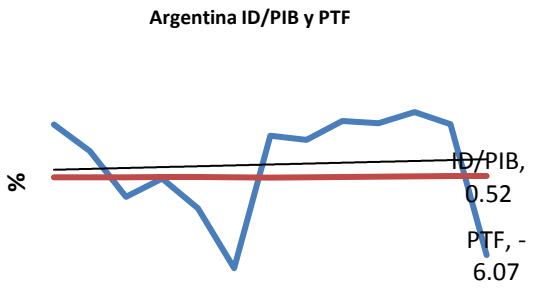
The register Brands is the number of Register Brands on each one of the Latin American nations and is denote as MR. Exportation of High Technologic Content: is the value of the exportation which are intense in technology, for example, the exportation from airplane part, cars, medicaments, software, and hardware.

It is measure in American dollars of the PPA of 2000, and is denote as XAT. The Schumpeterian Growth theory predict that the Factors Total Productivity (PTF) growth proportionally vary with the intensity of the spent in research and develop. The levels of inversion in the research and develop are dissimilar between rich nations and the developing countries, the develop countries invest in research and develop around 3% of it incomes, for example, according to the World Bank, in 2007, Japan invested the 3.4% of its income, Finland the 3.7%, Israel and South Korea invest the 2.70% of its PIB, Germany invest 2.60%.

The average of the OCDE is 2.5% of the PIB proportion. Developing Countries like China and India invest the 1.5% and the 0.8% of theirs income respectively, in 2007, according with the World Bank.

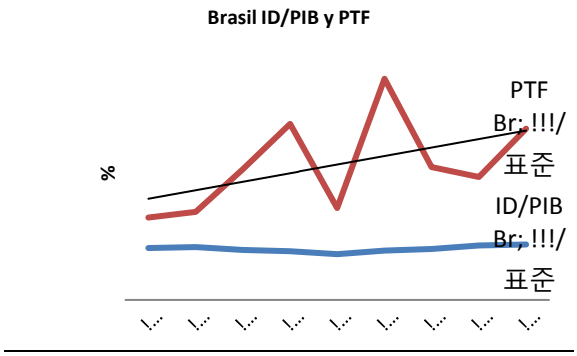
The following charts, show the growth of the inversion in research and develop as proportion of the PIB, the factors total productivity growth for some of the Latin American countries like: Mexico, Argentine, Chile and Brazil.

Proportion of I+D respect to the PIB and the Growth of PTF of some Latin American Countries

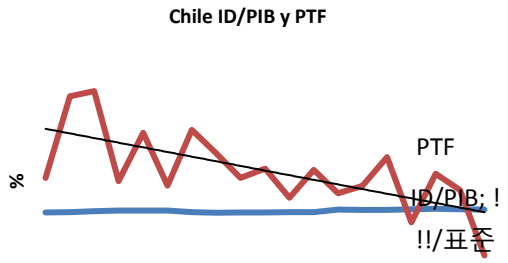


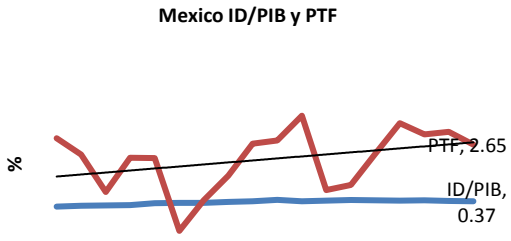
Graphic 1

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682



[5] There are many forms to estimate the Factor Total Productivity like the used by Angus Madison, Anthony Douglas and others; produce similar results.





Source: Own elaboration with facts of the Iberoamerican network of Science and Technology Indicators

In the graphic 1, is noticeable that in Argentine the inversion of Research and Develop do not get to the 1% as proportion of the Gross Domestic Product (PIB) of the South American country. In Argentine the increase of the PTF 6 seems not to follow the inversion in research and develop, because the proportion of the I+D respect to the PIB is insignificant.

The reader could notice, that the spent in research and develop respect to the PIB has been almost constant in the analyzed period, while the PTF has gone to the low in the period of 1997-2003 and falls again in 2003-2007.

The behavior of the Brazilian economy is different to the Argentinian, and also the weight of the spent in research and develop, overcome the 1% of the PIB. It is possible to observe that while increase the inversion proportion in I+D respect of the PIB as in 2000-2001 and 2004-2008 increments the PTF. And when reduce named proportion as in the period of 2002-2004 falls the Factors Total Productivity. The dynamic of the Brazilian Economy follows the prediction of the Schumpeterian hypothesis; this maybe is attributable to the weight of the ID/PIB is bigger than the other Latin American economies.

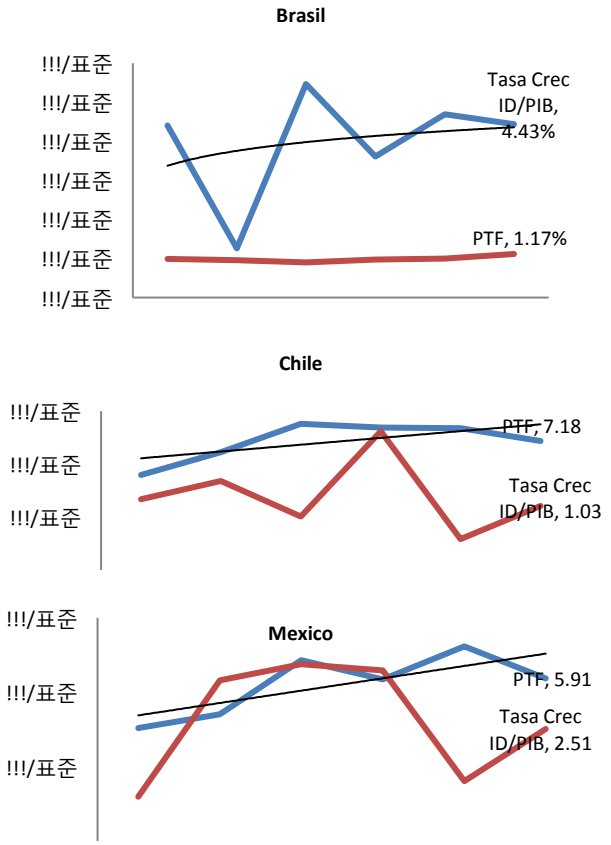
In the Chilean case in general we could say that the inversion proportion in I+D respect to the PIB is insignificant and that in general has been rising in the analyzed period, while the average behavior of the PTF has tendency to the shod.

In relation with Mexico, in general we could say, that even do the important variations of the PTF, the generalized behavior of the 1990-2007 period, is the rising, while spent more research and develop, as proportion of the income. Although the proportion of I+D/PIB has been increasing, still being inferior to develop countries and inclusive to nations of similar develop like Brazil, Chile and China.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

ECORFAN Journal-Mexico
August 2011 Vol.2 No.4 245-261

The increase of the weight of I+D in the PIB and the PTF Growth in some Latin American Countries (2001-2008)



Graphic 2

Source: Own elaboration with Facts of the Iberoamerican Network of Science and Technology Indicators 2011

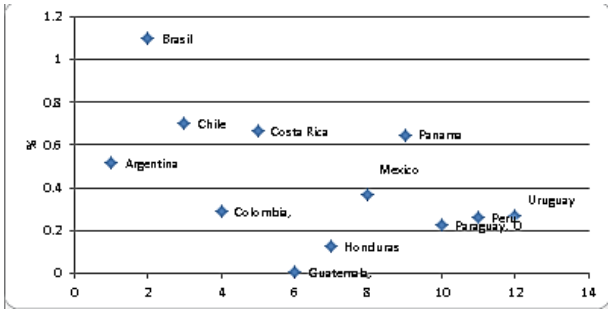
Considering the former graphic, which shows the factor total productivity growth and the growth of the research and develop weight in the income of the four most important Latin American economies, we could say that in general that they do not behave in a stable form the intensity increases of I+D in the region.

But in general is possible to appreciate in the tendency lines that the increases of the research intensity, tending to increase of the factors total productivity.

In general, we can realize of the experiment growth of the TFP and an increase of the research intensity in the analyzed period, which accord with the predictions of the Schumpeterian growth theory, the evidence of the chronologic series, until certain point, constant with Schumpeterian growth theory.

6 The calculations of the Factors Total productivity used in the graphic are determinate following to Stiglitz (2004), commented in the former section.

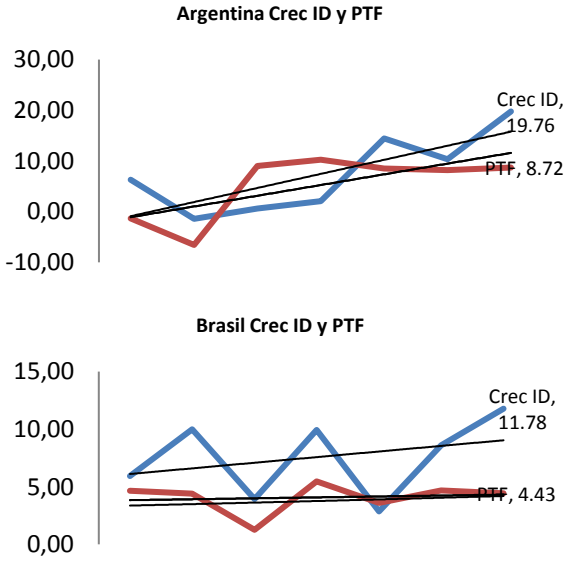
The investment in I+D as proportion of the PIB of some Latin American Countries in 2000



Graphic 3

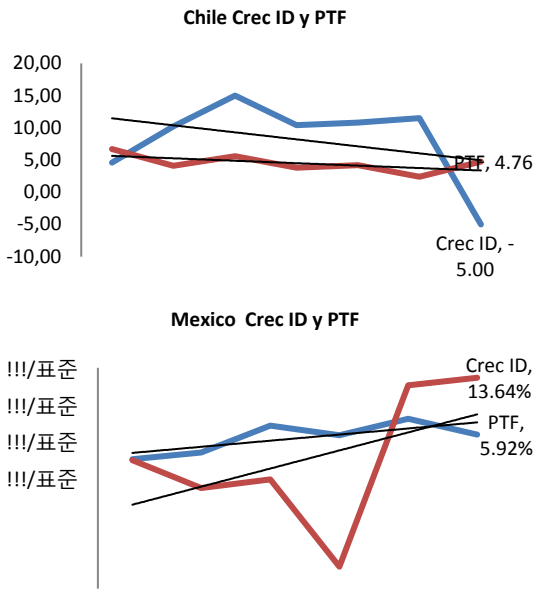
Source: Own elaboration with facts of the Latin American Network of Science and Technology Indicators 2011.

Dynamic of the Investment Growth in I+D and the Increase of the PTF (2001-2008)



ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

ECORFAN Journal-Mexico
August 2011 Vol.2 No.4 245-261



Graphic 4
Source: Own elaboration with facts of the Iberoamerican Network Sciences and Technologies Indicators 2011.

The graphic 3, shows the growth rates of the inversión in research and develop with the growth of the factors total productivity in the most important economies of Latin America and the Caribbean. In Argentine we could appreciate a growth general tendency of the inversion in scientific and technologic development which tent to promote the growth of the factors total productivity.

In Mexico and Brazil the tendency is similar to Argentine, and increase of the growth rates of the inversion in research and develop that promote the growth of the factors total productivity.

In Chile the opposite happens, a tendency to the decline of the inversion in research and develop which causes a negative tendency in the factor total productivity.

The empiric evidence matches with the predictions of the Schumpeterian growth theory.

Although Brazil still investing very little respect to the income in comparison with pointers countries like Israel and Sweden that spend 4.5% and 4.2% in relation to its income respectively.

We could resume in this section to the increases of the inversion in research and develop in the region, the effort still poor in comparison with the develop countries and even do in comparison with China, the intensity of the research could be high to increase the productivity in region as well as the life levels of the Latin American population.

The increase of the inversion in research and develop in Latin America should be fundamental object for the politicians and decision makers to foment the economic growth, the employment and the welfare.

Empiric estimations

This epigraph will be divided in two sub-epigraphes, the first will be dedicated to the panel theory and the second part of the epigraph will show the principal results and we will interpret mention information.

About panel

The use of the panel analysis is each time more frequently, because is very useful for the applied research. A Panel is a sample of characteristics (variables) which have the Countries all over the time.

The Panel relates facts of transversal cuts (information of many countries, individuals in given moment) during many time periods. The general model that we pretend to estimate is the following:

$$y_{it}=\alpha+\beta X_{it}+u_{it} \quad (11)$$

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

If all the variables of influence are not available then $Cov(X_{it}, \varepsilon_{it}) \neq 0$, in other word the residuals are not independent of the observations for that Minimum Ordinary Charts (MCO) will be biased. In order to solve it are proposed alternative models to the grouped regression through the nesting of the facts: Panel of Fixed Effects and Panel of Random Effects that we will comment after.

The use of panel presents may advantages because has bigger number of Observations, more and better information, admit more number of explicit variables, more efficiency in the estimation, another advantage is that could be made a tracing to each country or individual. Also relieves the problem of omitted variables, because they could be eliminating for difference those that do not change the time. For a detailed analysis revise more advantage of panel revise Baltagi (1995).

The panel also presents disadvantages because the facts are more complex, it is not about heterogeneity or the individualities, if all the qualities of the country are observable then the errors will be correlated with observation and the MCO will be inconsistent.

The model of fixed effects implies fewer suppositions about the behavior of the residuals. Supposed that the model to estimate is now:

$$y_{it}=\alpha+\beta X_{it}+\varepsilon_{it} \quad (11.1)$$

We consider that $\varepsilon_{it} = v_i + u_{it}$, replacing in (12) keep:

$$y_{it}=\alpha+\beta X_{it}+V_i + u_{it} \quad (11.2)$$

In other words, is supposed that the error ε_{it} could be decomposed in two parts, a fixed part, constant for each country v_i and another random which accomplish the requisites MCO ($\varepsilon_{it} = v_i + u_{it}$), which is equivalent to make a general regression and give, to each individual an origin point (order) different.

The model of random effects has the same specification that the fixed effect with the only different that v_i, besides to be a fixed value for each individual and constant over time is a random variable with medium value v_i and a variant $Var(v_i)\neq 0$. Therefore, the specification of the model is the same to (11.2).

$$y_{it}=\alpha+\beta X_{it}+V_i + u_{it} \quad (11.3)$$

Results of the panel estimation

The objective of this sub-epigraph is analyze the information in a model of panel which allows analyzing two aspects of importance when someone work with that kind of information and that are part of the non-observable heterogeneity: the specific individual effects and the temporal effects. In which referred to the specific individual effects, is said that these are those that affect in unequal form to each one of the selected countries in the sample that are invariables in time and affect in direct form the decision that make named units. Usually these types of effects are identified with politic stuff in each one of the countries, soundness of institutions, efficiency, access to the technology, etc.

The temporal effects would be those that equally affect to all thee individual units. This type of effects could be associated, for example, to the macroeconomic crashes, economic crisis that could equally affect to all the countries of the region, study objectives.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Our model includes a sample of twelve Latin American countries: Mexico, Argentine, Brazil, Chile, Colombia, Costa Rica, Guatemala, Honduras, Panama, Paraguay, Peru and Uruguay.

Having on account the variables like the Gross domestic Product, Work, Factors Total Productivity, The inversion of the Research and Develop, the number of Given Patents on each country, the number of Register Brands, the Exportation of High Technologic Content of the analyzed period from 1960 to 2008, counting with 586 observations. The panel was estimated with the econometric package: Stata. The principal Results that were obtained are the following:

Estimation of the PIB with many technologic variables (1960-2008)

Estimation	Method	Result	F	R^2	Rho
Es01	Be	PIB= -81.85 ID +3.26e^8 PatenO -30.37 XAT + 1533171 MR (0.12) (0.02) (0.19) (0.26)	0	0.99	78.58
Es02	Fe	PIB= 7.33 ID + 9917729PatenO +4.50 XAT + 2778716 MR (0.00) (0.00) (0.00) (0.00)	0	0.94	79.96
Es03	Re	PIB= 6.54 ID + 1.02e^7PatenO +4.84 XAT + 3579866 MR (0.00) (0.00) (0.00) (0.00)	0	0.93	79.95
Es04	Hausman	Chi2=-77 chi2<0			

Table 1

The table 1, show estimations made with the Stata package, the first estimation (Es01) was effected with the generalized Panel Method (be, Ordinary Least Squares)[1].

Obtaining the coefficients that accompanying the variables in the first estimation; with a coefficient of correlation really high of the 99%, the number under the coefficients ad that is inside the parenthesis is about the T probability.

The reader could realize that the coefficient of the Inversion in Research and Develop is negative (-81.85) and the T probability for mention coefficient is 88%. In general, in the estimation (es01) we could say that is only significant the coefficient of the given patents and that the expected signs accord with the given patents and the register brands; while the negative signs of the inversion in research and develop with the exportations of high technologic content are not the expected, but neither are meaningful.

The second estimation (Es02), was made with the fixed effects panel (fe) resulting all the coefficients of the technologic variables (research and develop given patents, register brands, exportations of high technologic content) and the signs of all the variables are positive, in other words, the expected signs; The coefficient of correlation really considerable of 94.6%. In the third estimation (Es03), was made with the random effects panel (re) resulting that all the coefficients and the signs of the technologic variables are the expected, positive and significant. The coefficient of the correlation really considerable of 93.3%, a little bit minor to the fixed effects.

The F test in the estimations point that there are meaningful individual effects of each one of the countries and suggest that the panel of Ordinary Least Squares would not be suitable. The rho suggests that the changes in the gross domestic product are related with the rates of technologic variables of each of the countries.

[1] In the estimation models that is the second column, Be, means estimation for Ordinary Least Squares; Fe is the estimation of Fixed Effects and Rem with Random Effects.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

The Hausman test which result is Chi2=-77. The negative sign of Chi2, points that the fixed effects have bigger consistence than the random effects, this is, the individual effects of each one of the countries have bigger weight, that the one of the region in group, about the individualities, in other words, the politics implemented in each one of the nations, the efficiency of the organization of each country, the role of the institutions, the access to the technology of each one of the countries of the region have bigger relevance, more weight in the economic performance of each nation; While the group performance has less influence over individualities.

Logarithm estimation of the PIB with many technologic variables (1996-2008)

Estimation	Method	Result	R^2
Es05	Be	lnPIB= 0.19lnID +1.24 lnPatenO +0.31lnXAT + 0.13 lnMR (0.81) (0.01) (0.03) (0.26)	0.957
Es06	Fe	lnPIB= 0.001lnID - 0.01lnPatenO +0.41ln XAT + 0.39lnMR (0.61) (0.15) (0.00) (0.00)	0.855
Es07	Re	lnPIB= 0.001lnID - 0.01ln PatenO +0.40ln XAT + 0.41lnMR (0.68) (0.26) (0.00) (0.00)	0.856
Es08	Hausman	Chi2=-2.03 chi2<0	

Table 2

The Table 2, shows logarithm estimation of the PIB respect to technologic variables, the result are alike to the char 1.6, the conclusions are the same, the variables are significant, the fixed effects are more consistent than the random effects, which points that the individualities of each one of the Latin American nations have more relevance that the group of the nations about each one of the region countries.

Estimation of the unitary roots and cointegration in panel

Gujarati (2009) the cointegration means that even that the series are no stationary in the individual level, a lineal combination of two or more series of time could be stationary. Granger (2003) defines the cointegration as the stationary difference, between a pair of series: and add that two or more series are non-stationary of order I… ((1)), are cointegrated if exist a lineal combination of the roots that are stationary or the order I_((0)). The vector of coefficients which create this stationary series is the cointegrant vector.

Guisan (2002), the cointegration is related with the casualty and sense of Casualty between Variables and also is related with Prediction and Forecasts. The cointegration also means that even do the variables individually do not cause the explained variable, a combination or integration of two or more variables could result more robust an then explain to the changes in the depended variable. It is said that two series are cointegrant over time, and the differences between them are stable (stationary).

The cointegration reflects the convergence of the economy in a balance in the long term. The differences (error term) represents the error of the unbalance in each point of time.

The cointegration from the economic point of view represents Banxico (1995). According the economic theory means that, some variable should not go far, ones from others in the long term. Such variables could go far in the short term but there is an economic force, whether they market mechanisms or interventions of the government, which tent to join them in the long term.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

For example: the interest rates, the prices of the same well in different localities of a country, incomes and government spends, money offer and price level, etc. If there are a pair of series, each one of which is I(1), in general a lineal combination of this series is also I(1). However, if exist a constant A such that t could be consider a relation of long term or balance. Granger (2003) if two series are cointegrated at least one of them should cause to the other.

Estimation of Unitary Roots and Cointegration (1990-2008)

	Test	Null Hypothesis	Series	ADF	Prob.	Obs.
Es09	Unitary Root	Exist	PIB, ID, XAT, PATENO, MR	-8.79	0.00	Reject H_0
Es10	Unitary Root	Exist	A, ID	-4.49	0.00	Rechaza H_0
Es11	Pedroni With integration	No Cointegration	PIB, ID	2.58	0.01	Accept H_0
Es12	Pedroni Withintegration	No Cointegration	PIB, ID, XAT, PATENO, MR	-3.27	0.00	Reject H_0
Es13	Pedroni With integration	No Cointegration	ID, XAT, MR, PATENO	2.96	0.00	Accept H_0
Es14	Pedroni With integration	No Cointegration	A, ID, XAT, MR, PATENO	-2.52	0.01	Reject H_0
Es15	Johansen-Fischer	No Cointegration	A, ID	(52.8)	0.00	Reject H_0
Es16	Kao With integration	No Cointegration	A, ID	-3.07	0.00	Reject H_0

Table 3

The Table 3 shows the estimation of stationarity and cointegration, in the estimation (es09) examine if there is a unitary root of the PIB series and the technologic variables, obtaining an ADF quite negative that points that is rejected the null hypothesis that there is unitary root and therefore the series are stationary.

In the estimation (Es10) is proved the stationarity of the series of inversion in research and develop with the factors total productivity and the evidence show that the series are stationaries, because, ADF is negative and the probability is of 0.00.

This show that there is a stability of the variables in the long term and one of them cause to the other as our work prognostic, that the inversion in research and develop cause the increase of the factors total productivity. The estimation (Es11) shows the cointegration test of residuals of Pedroni for income series and the inversion in research and develop, resulting that ADF is positive and of entry is accepted the null hypothesis that there is not cointegration between esteemed variables, Follow by a cointegration test of the Pedroni residuals between the product and the technologic variables where we obtained a negative ADF indicating that we should reject the null hypothesis of cointegration non-existence between variables and therefore there is cointegration between the gross domestic product and the technologic variables. Posteriorly we estimate Pedroni cointegration between the technologic variables where we accepted the null hypothesis of that there is not cointegration between DTF and the technologic variables. At the end is accomplished the prediction of the Schumpeterian theories with the cointegration estimations with the methods of Johansen-Fischer and Kao, that show that exist cointegration in the principal motor of the inversion in research and develop.

Causality test of Granger

The Granger causality is a fundamental analysis to detect relation between variables; this is a test which consists in measure the level of relation between two or more variables.

The test consists in establish the null hypothesis that there is no causality between variables, the reject criteria is based in detect the t static value and its level of probability, the t statistic are rejected which have associate level minor or equal to 0.05. The causality test is done for the different variables of interests for this research.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Granger causality in the period (1990-2008)

Lags	Hypotheis	Prob.	Observations
Delay 0	PIB does not Granger Cause PATENO	0.01	Reject H_0
	L does not Granger Cause ID	0.05	Reject H_0
	K does not Granger Cause PATENO	0.01	Reject H_0
Delay 1	PIB does not Granger Cause PATENO	0.01	Reject H_0
	ID does not Granger Cause PATENO	0.04	Reject H_0
	ID does not Granger Cause K	0.05	Reject H_0
	L does not Granger Cause ID	0.05	Reject H_0
	K does not Granger Cause PATENO	0.01	Reject H_0
Delay 2	PIB does not Granger Cause PATENO	0.01	Reject H_0
	L does not Granger Cause ID	0.05	Reject H_0
	K does not Granger Cause PATENO	0.01	Reject H_0
Delay 3	K does not Granger Cause PATENO	0.03	Reject H_0
Delay 4	ID does not Granger Cause PATENO	0.00	Reject H_0
	PATENO does not Granger Cause L	0.02	Reject H_0
Delay 5	ID does not Granger Cause PIB	0.04	Reject H_0
	ID does not Granger Cause PATENO	0.05	Reject H_0

Table 4

In the former Table is done the causality test between all the variables of interest with different lags, we find important findings. This is, that in the short term (until three years) the Gross Domestic Product, and Capital are those which promote the technologic variables (Given Patents, Research and Develop, Register Brands and Exportation of High Technology). While the technologic variables promote the product, capital and work in midterm (four or five years) cause the Given Patents in the same year.

From the Granger analysis we could deduce that in the short term the production and its factors (capital and work) impulse the scientific and technologic development, and that the technologic progress in the countries will promote the growth of the income and welfare with delays of three years.

Conclusions

The Literature of the Schumpeterian endogenous growth is emphatic in pointing that the activities generator of innovation like the inversion in research and develop, the patents, have important effects in the economic growth.

A bigger effort in research and develop promote the increase of the factors total productivity of an economy and with that the economic growth and the population welfare. Howitt (1999) points that the high rates of economic growth of a nation are generate by the high rates of intensity in research and develop.

The empiric reference presented in this document show the prediction of the Schumpeterian hypothesis for the Latin American countries that are study objectives, we point that there is a positive impact of the intensity in research and develop and other technologic variables with the increase of the factor total productivity and the economic growth in the analyzed period 1960-2008.

Our work starts of endogenize the PTF, endogenize also I+D in function of its results or its productivity that we suppose (Given patents in the country) and the impact that have not only locally (PatenO, Register Brands) but also the international impact (Exportation of Wells of High Technologic Content).

Because the different infrastructures: economic, technologic, social, place, geography, etc. we propose that each Latin American nation should search the tools, appropriate incentives in order to promote the innovation activities, that impact in the increase of the Factors Total Productivity and therefore in the Economic Growth and the population Welfare.

These actions could be oriented to the private sector with physical, financial, etc. incentives which promote the innovation actions, also guaranty the property rights and the best laws which impact in more innovation activities.

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Promote a major link between academics and entrepreneurs. In the other hand the international commerce, the financial and commercial opening, the competence could be conditions to promote the inversion in research and develop and channel for the access to international technologic knowledge.

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Article **ECORFAN Journal-Mexico**
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Implementation and adaptation of the computing crew of the English laboratory to and wireless network through Wi-Fi

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In this Investigation the implementation and adaptation of equip or calculation of laboratory Number 2 of English appear to a radio network by means of a WiFi. This will allow in first instance the elimination of wiring in the already existing equipment and to facilitate the exchange of information between academic students and of this unit of learning. It is important to indicate that at the moment the use of the technology that appears in our contemporary students, which will unquestionably facilitate between our students to have a greater interest in our unit of learning, every time the interchange of messages of text, images is promoted still more, of sounds, of grammar exercises related to the didactic units of our training programs etc. Which will contribute of way substantial and significant to reach the competitions contained in the Institutional programs of study before mentioned.

WiFi, Computer science Network, Technology. Classification JEL: L86, Q16, C88

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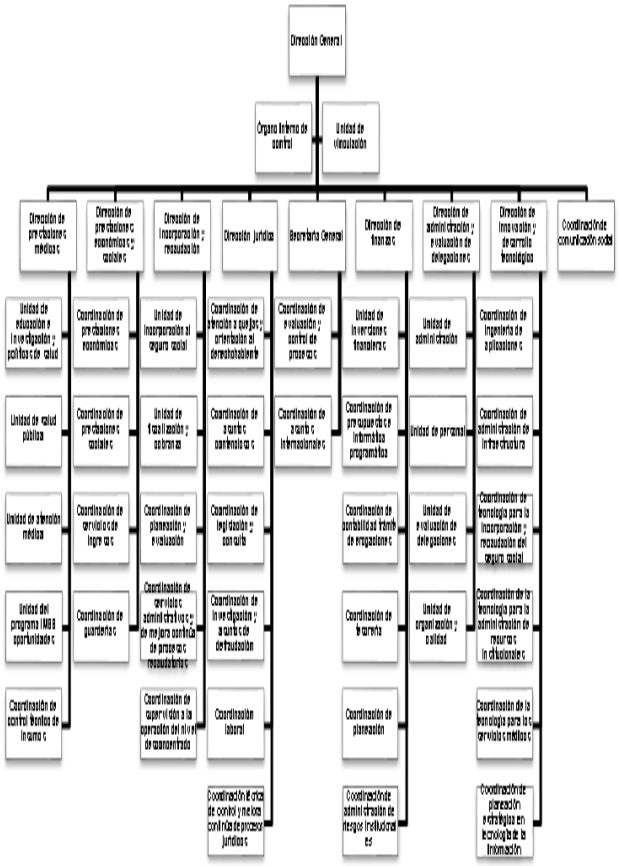
Introduction

This research was constituted in the implementation of a wireless network through WIFI to the computing equipment that already exists in the laboratory No. 2 of the learning unit of English. Given the characteristics of this research, is consider pertinent mention that is a topic which required an exhaustive consultation of different bibliographic sources related with the wireless networks and with the particularity that was develop in a laboratory, therefore its results of measurement were practically exacts results.

The study provides a vision about the importance that nowadays have the student for technologic advances and the academic value that these represent for it significant learning. It worth to point that nowadays the use of technology is a fortress that is present in our contemporary students. And through this interchange could achieve and stimulate the competencies content in all our Institutional study programs. In the chapter 1 are quoted the antecedents with the wireless networks through Wi-Fi and Bluetooth, explain how is given the communication through no-guided transmissions, and the advantages and disadvantages of the wireless networks, the form of its infrastructure, the use and applications of these networks as well. In the chapter 2 does reference to the install process, the operation of each one of the used components and as well the implement practices and the result of the same. For the ahead, the care and dedication in this research were considering deliberately different variables in order to implement it in an objective form.

An in the understood that the research will be supported in a methodology and experimental character, is important to point and know the functionality that represent all and each one of its practices.

General and organizational structure of the IMSS Mexican Institute of Social Insurance, National



Graphic 1

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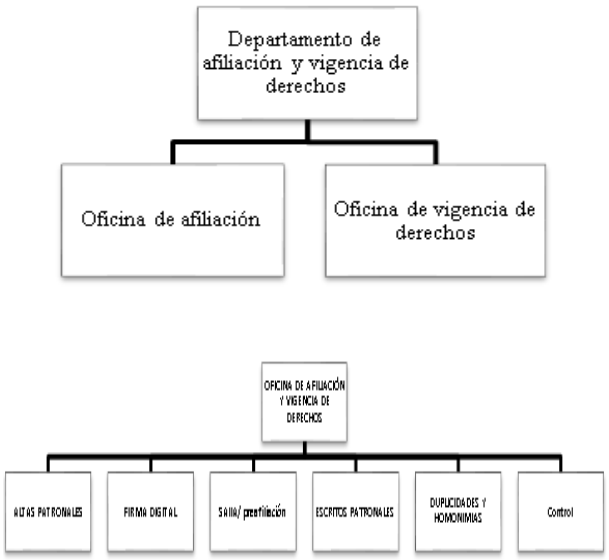
General and organizational structure of the IMSS, Mexican Institute of Social Insurance, Department of Affiliation and Validityof Rights.



Graphic 2

Methodology

This research is practically based in a quantitative and experimental methodology in which the variables were deliberately manipulated in order to specify the adaptation and the functionality of a wireless network in the computing equipment of the laboratory No.2 of the English learning unit, of first instance was made a systematic revision of the existent equipment in the aforementioned laboratory and once effectuated this activity it made a valuation scale of the existent equipment with the intention to confirm its functionality with the one of a wireless network, which represented an innovative research and that could give the pattern for other posterior further studies.

General objective

Implement and adapt the computing equipment of the No.2 English laboratory to a wireless network through Wi-Fi.

Specific objectives

- Interchange between our students, text messages through a wireless network using Wi-Fi with the existent computing equipment in the Laboratory No.2 of the English learning unit.
- Interchange between our students, sound files through a wireless network using Wi-Fi with the existent computing equipment in the Laboratory No.2 of the English learning unit.
- Interchange between our students, images and video through a wireless network using Wi-Fi with the existent computing equipment in the laboratory No.2 of the English learning unit.
- Transmit facts with reliability and security to a functional velocity.

The multimedia world into the informatics area opens to us a big field of interaction opportunities. Images, Audio, Video, Voice are four elements which practically broken all the virtues that the world of the informatics has. A Wi-Fi network will allow us has a nice and versatile multimedia interaction, because we will interchange information, manipulate and dispose of it in any moment.

Justification

In contemporary times the technology is the spearhead for any social being, is observed as the globalization phenomenon impact in the life style of the majority of habitants in this planet.

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In our Mexico the use of the technology is the daily bread, none of the habitants of this country could, not even can stay aside of the technologic development. In consequence the Polytechnic National Institute remains at the forefront with the technologic development, in virtue that in our educative Institution, develops, create and promote the investigation.

The impact of the wireless networks

"In the first instance, the manifestation of the computers networks and the internet carried with it new aspects in the behavior of the human beings and therefore appear new social problems. Nowadays the proliferation of the wireless networks and the new mobility possibilities that the technology does not end to make a light analysis in all the aspects of the human life that will be modifying with the pass of time.

While more broaden the covertures of the wireless networks, more possibilities of communication will exist accompanied of mobility every time more increasing. But at its time, that will carry new problems of security for which we should be capacitated in order to confront with adequate methods and tools. The changes in the human behavior that are origin with the manifestation of the wireless networks have a direct relation with the analysis and design of this kind of networks and there are important factors to consider about these topics during these activities".

Variables of study

- The time of life of the wireless networks adapted to the laboratoryNo.2 of the English learning unit.
- Progressive saturation of the networks (of the electronic spectrum) because the manifestation of users.
- The use of more scope is exposed to an excessive risk of interferences.
- The approximate durability of the wireless network considering the hard use of the laboratory.

Let's call hard use to have on the device that will focus in send and receive signal, this is, router, Access points, USB wireless. These devices are in reality those which will do the work. The router will send the signal to the two Access points and these at the same time will feed with signal to the Pcs of the laboratory, same that will get the signal through the USB wireless.

Generally the time of life of these devices is from 1 to 5 years, because vary between brand and brand, and also the environmental factors always influence like the dust, weather, etc. Give it 3 average years of time life but always doing emphasis that basically the time of life is of the devices not the networks.

Market rates

The market rates were many that were made to select the best equipment, functional and with better price that will cover our necessities and expectative in our project, which also should adjust to the assigned budget for such effect, keeping in the following form:

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Cant	Description	Price rank/unit(average)	Average Price between both prices	
1	Router Linksys WRT310N-LA GIGABIT WIRELESS	$900.00 - $1,540.00	$1,220.00	$1,220.00
1	Access Point Linksys WAP54G HIGH SPEED 802.11G WIRELESS G	$759.40- $1,700.00	$1,229.50	$2,449.50
40	ADAPTADOR USB WIRELESS-G	$200.00- $300.00	$250.00 (*40u)	$10,000.00
1	Kit de actualization Mother Board Zotac AMD DDR1 with processor Athlon x2 a 2.8Ghz y 4Gb Ram.	$3,400.00		$3,400.00
1	Cable Ethernet RJ-45 3Mts	$50.00		$50.00
40	Cable extension hembra-macho USB Capsull3 Pack	$50.00- 80.00	$65.00(*40u)	$2,600.00
			Total	$19,669.50

Chart 1

Detail description of the devices

a) Router Linksys WRT310N-LA GIGABIT WIRELESS

b)

- Router to share internet and Switch Gigabit of 4 ports, with an incorporate system in more velocity and scope, wireless access point.

- Wireless-N technology uses multiple radios per band to create robust signals for maximum range and speed, with redTecnología.

- Much faster than Wireless-G, but also works great with Wireless-G and -B devic

- 4-port Gigabit switch delivers wired speeds that are 10 times faster than 10/100 "Fast Ethernet" connection.

- Wi-Fi Protected Setup helps make wireless configuration secure and push button easy.

- Wireless signals are protected by industrial-strength WPA2 encryption, and your network is protected from most known Internet attacks by a powerful SPI firewall.

- Easy to install on a Windows PC or Mac with Cisco Setup Wizard.

- Included Network Magic software helps manage and optimize your network.

- Includes 30-Day Free Trial of Trend Micro Internet Security software to help protect against viruses, spyware, and identity theft Incluye.

- All ports support Gigabit speed and Auto-Crossover (MDI/MDI-X) -- no need for crossover cables accomplish also with the IEEE 802.11 b, 802.11g, and 802.11n draft 2 standards and with the standart of draft of norms IEEE 802.11 b, 802.11g, y 802.11n.

b) Access Point Linksys WAP54G HIGH SPEED 802.11G WIRELESS G

- Improve the network with an Wireless-G access of 54 Mbps. Allows enlarge the network and add computers, printers and wireless equipment without cables. It is also compatible with Wireless-B equipment. The reliable connectivity allows move notebooks or put desk equipment in any place or adds access points to two independent networks and create a connectivity without cables between them.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

- IEEE 802.11g allows velocities of facts until 54Mbps.
- Compatible with IEEE 802.11b equipment.
- Easy wireless configuration with the button Secure easy Set up
- Admit WPA security and WEP 64/128-bit encryption
- Configuration of IU web integrated to facilitate the process from any browser.
- Firmware upgradeable through the web browser.
- Compatible with wireless connection bridges, wireless repeater, direction MAC filter and events registration.

c) Adapter USB WIRELESS-G

- Model: WUSB54GC
- Standards: IEEE 802.11g, IEEE 802.11b, USB 1.1 y 2.0
- Channels: 802.11b / 802.11g
- LED Lights: link
- Protocols:
- 802.11b: CCK (11 Mbps), DQPSK (2 Mbps), DBPSK (1 Mbps);
- 802.11g: OFDM
- Transmitted energy:
- 802.11g: 14 ± 1,5 dBm (normal)
- 802.11b: 17 ± 1,5 dBm (normal)
- Reception sensibility :
- 11 Mbps: -87 dBm (normal)
- 54 Mbps: -71 dBm (normal)
- Security functions: encryption WEP y WPA
- Bits of security keys: 64 y 128 bits
- Principle characteristics
- Compatible with the standards 802.11g y 802.11b (2,4 GHz) Compatible with USB 2.0 with a transfer velocity until 54 Mbps with fallback automatic
- Admit encryption security WEP y WPA of 128 bits
- Admit Wi-Fi Protected Setup (WPS) to facilitate and protect the configuration.

e) Cable Ethernet RJ-45 3Mts

This kit is principally for the browser that will provide the signal to the other computers. It is for that reason that is necessary a powerful equip and with acceptable level of technology because the function that have to develop.

d) Updater kit Mother Board Zotac AMD DDR1 with procesor Athlon x 2 to 2.8 GHz y 4 GB Ram

Commonly use to connect networks, will be the link between the router and the point Access.

f) Cable Ethernet RJ-45 7.6Mts

Commonly use to connect networks, will be the link between the router and the point Access.

g) Extension cable male-female USB Capsull3 Pack

- Extension cable of facts male-female USB
- optimum transmission reducing the loss of facts
- Velocity until 480Mbps.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Chapter I

Wireless Network

Wireless network are those that communicate for a no-guided transmission media (without cables) through electromagnetic waves. Transmission and reception is made through feelers. Between the advantages that we have with the network without the necessity to use cables which allows the user mobility and also diminution in the installation costs and the maintenance of the same is compared with the conventional network.

"A wireless network is a group of computers connected through radio frequency or optical signals, without use cables, that will allow communicate and interchange information between them."[2]

"The possibilities that bring a wireless network are practically unlimited, because it possible to do all that the group of computers allows, information interchange, but with the aggregate of a big mobility and portability. The limits depend of how each computer interprets the information that get from the other and the coverture areas of the wireless network."[3]

"A system of wireless communication is a group of elements that interact between them with the objective to interchange information, without use cables."[4]

[2] C. HILLAR GASTON. *Redes inalámbricas Wi Fi Diseño, Instalación y Configuración.* Ed. HASA, Buenos Aires 2008, p.11

[3] C. HILLAR GASTON. *Redes inalámbricas Wi Fi Diseño, Instalación y Configuración.* Ed. HASA, Buenos Aires 2008, p.12

[4] IDEM. p.13

Parts that are part of the basic model

The system of origin or emissary, at the same time composed by:

- The source. This is the equipment or device that generates the facts to transmit. For example, a PC.
- The transmitter. It is the device in charge to transform the generated facts by the source in the radiofrequency signals adequate to them get out on air to transmit the information. Generally, the signal are not transmitted from the same that were generated, therefore, they require this previous process on their way to the media. For example, a card of wireless network, a wireless router connects to an Xdsl[5]connection, etc.
- The transmission media or system. It is the air and the signals of radiofrequency use to link the system of origin with the detiNo.

The system of destination or receiver, at is time composed by:

- The receptor which is the device in charge of transform signals of radiofrequency from the air, using to transmit the information in the facts that could interpret of the destiNo. Generally the signal is not received in the same form that is transmitted, for that, it requires of this previous process on its arrived to the destination and posterior to its way for the media. For example, wirelesses card, a wireless repeater, etc.

[5] Digital Subscriber Line - Líneas de Subscripción Digital.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

- The destiNo. It is the equipment or device that receive the facts generate by the source. For example, other PC.

In the same way, the wireless networks free you from the bondage of a cable Ethernet in a desk. The users or developers could work in the library, in a conference room, in the parking, or even do in the front cafeteria. While the users of wireless network that are inside the frames, could take advantage of the network.

The available equipment could include a corporative campus and in favorable terrain, could amply the scope of a network that rule under the standard 802.11 as far as 6 kilometers using repeaters, access points or some architecture that allow the application of our signal.

Wi-Fi

It is possible to obtain a complete list of the equipment that have Wi-Fi certification in Alliance-Certified Products. Only to know the brands which are compatible with Wi-Fi. Although was thought that the term came of Wireless Fidelity as equivalent to Wi-Fi, High Fidelity, which is use in the recording of sound, really the WECA contract an advertising company in order to get a name for its standard, in such form that it will be easy to identify and remember.

One of the most serious problems of which nowadays the Wi-Fi technology confront is the progressive saturation of the radio-electric spectrum, caused by the users manifestation, this specially affect in the connection of long distance (bigger than 100 miters). In the reality the Wi-Fi is designed to connect computers to the network to reduce distances, any use of bigger scope is exposed to an excessive risk of interferences.

How would be the interference?

One of the most frequently causes is because exist closer wireless networks that are occupying the same channel that ours. The cellphones are also cause of interferences and that in some moment could cause that the information could not be read in a correct form.

"The interferences generate as much as connection problems as velocity ones and limit the scope of the wireless networks, for which, constitute an inconvenient gene for the correct operation and with an adequate performance of the network. In the other hand, if the interferences are malicious, we will be also in front if security problems."[6]

The interferences are not the only thing about we should be worried in the moment to manipulate the computing equipment of the English laboratory and/or the other portable equipment, it should take in consideration another type of preoccupation such as:

Dust. The dust is one of the worst enemies of the electronic devices of the wireless networks and the PC, because the accumulation of the same could impede the correct operation of the fan of the power sources of the processors.

Liquids and moisture. The shed of liquids into of the networks devices that are not prepared to fight with climatic factors could get to be catastrophic. Avoid the drikns near any device of wireless device.

[6] C. HILLAR GASTON. *Redes inalámbricas Wi Fi Diseño, Instalación y Configuración.* Ed. HASA, Buenos Aires 2008, p.45

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Smoke and ash. Many wireless networks devices that are not prepared for the use in exteriors, in other words, they are not for be outdoors. It does not like the people who smoke near it. The problems generate by the ashes and the smoke are similar or worst that those that could produce the dust. It is common find with routers or access points that present failures in the environment where there are smokers.

A high percentage of networks are installed without having in consideration the security converting like that their networks in open (or completely vulnerable for the crackers), without protect the information which through them circulate.

The devices of the reception cover three majority types:

- PCI cards
- PCMCIA Cards
- Wireless USB adaptors
- The PCI cards for Wi-Fi are aggregates to the computers of desk. Nowadays are losing terrene because the USB cards.
- The PCMCIA cards are a model that was use a lot in the first portable computers, although are falling in disuse, because the integration of intern wireless cards in these computers. The biggest part of these cards is only capable to achieve the technology B of Wi-Fi. No allowing, therefore, enjoy a high transmission velocity.
- Wireless USB adaptors. Inside this little frame we find a card of Wireless network so capable and potent as the best PCI or PCMCIA. It has a maximum velocity of 54mbits that only could achieve if we use in an USB interphase. Its integrated antenna have a maximum scope of 120 mts average without obstacles and it is compatible with the principal security standards and of establishment of networks as much as through infrastructure points (access points) as for point to point networks (AdHoc)7.

It is compatible with 802.11g protocols therefore with its last version the 802.11b so we can use it in networks of 54Mbits and also in older networks of 11Mbits without any kind of problem. It also accepts “roaming” with which the mashing connects to the closer access point in automatic form improving the reception in networks with different repeaters or bridge. 8.

[7] Red AdHoc. It is the simplest mode for the network assembling. This mode is recommendable only in case that is necessary a communication between no more than two devices. http://es.wikipedia.org/wiki/Ad_hoc

[88] Bridge. Element that allow to approach networks of same nature, and which function is managed the messages traffic between both. Networks of facts and IP convergence. Alfaomega Grupo Editor.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Factors to have on account

"The cards of wireless network function in a similar form that other devices connected to a bus[9] of expansion or to a bus of E/When the equipment have to send facts in the network, or get of expansion bus or bus of E/S and is in charge of transform them in signals of radiofrequency adequate to transmit the information in a wireless form. In the other hand is in charge to receive the correspondent facts to the equipment to which are connected through the capitation of radiofrequency signals and transform it in information that could be transmitted by the bus directly to the processor memory." [10]

The USB cards for Wi-Fi are the most common type of card that exist and simplest to connect to a PC, being of desk or portable, doing use of all the advantages that the USB technology has. Also, some of them offer the possibility to use the named PreN technology, which is not standardized yet.[11]

Infrastructure mode

In the infrastructure mode, each informatic station (abbreviate EST) connect to an access point through a wireless link [12] . The configuration formed by the Access point and the stations[13] Placed inside the coverture area is called group of basic service or BSS. This forms a cell. Each BSS[14] Is defined through a BSSID [15] (identifier of BSS) which is an identifier of 6 bytes (48 bits), in the mode infrastructure the BSSID correspond to the Access point of the MAC direction.

It is possible to link many access points together (or more exactly many BSS) with a connection called distribution system (or SD) in order to form a group of extended service or ESS[16]. The distribution system could also be a connected network, a cable between two access points or even do a wireless network.

An ESS is identified through an ESSID (identifier of the group of extended services), which is an identifier of 32 characters in ASCII format.

[9] Is a digital system that transfers facts between the components of a computer or between computers. It is formed by cables or tracks in a printed circuit, devices as resistance and capacitors and also close circuits.

[10] IDEM. p. 53

[11] Reference: http://es.wikipedia.org/wiki/Wi-Fi. It is said of the PreN technology, will be the successor of the norm 820.11g and n respectively, and is said that will achieve bigger velocities and more distances that could offer these standards and some access points.

[12] We will remember that the transmission media is the air and the nodes are on a site and the access point in the other, each terminal which count with a device that allow creating the wireless link (USB Wireless, Wireless network card, etc).

[13] They are computers, Laps or minilaps that are inside the coverture area; In our particular case, from the A1 machine until h5.

[14] Basic service set

[15] Basic service set Identifier

[16] Extended Service Set

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Barberena A., Vázquez F., Ruvalcaba E., Implementation and adaptation of the computing crew of the English laboratory to and wireless network through Wi-Fi. ECORFAN Journal Mexico 2011, 2-4: 262-280.

Points of wireless Access

A point of wireless Access i a device in charge of establish and coordinate the wireless communications in a coverture area determinate by its scope Rank.

Its function is similar to the one that accomplish a hub in a cabled network with a start technology, but without using the cables. In many places, simply, the Priodigy could be used in a wireless form and this is a wireless connection. The wireless internet that we have in the CECyT (the already know Ecatepec is of al) in the same form is a wireless connection. There are many cities that count with wireless areas, in this case use antennas that allow the existent of signal and generally its finality is the use of internet. The cellphones also count with Wi-Fi technology, simply add the name of user and password or according to the modem configuration that the service offers and then is possible to get connection to internet.

Figure 1

If it refers a laboratory such as, well I need to investigate in depth but there are many of offices that use Wi-Fi as alternative taking on account its costs of installation and accessibility.

However the majority still using networks with cabling. [17]

Application of the wireless networks

- Connection between cellphones and free hands equipment.
- Wireless network is small places.
- Communicate without cables the pc and entry and out devices.
- Transference of files between devices through OBEX.
- Transference of contacts files, quotes and reminders between devices through OBEX.
- Remote controls like that use for the Wi console create by the Nintendo company.

The Bluetooth wireless technology is a shot scope of the communications of technology destines to replace the cables of portable connection and/or fixed devices, maintaining high levels of security. The key characteristics of the Bluetooth technology are the sturdiness of low potency and low cost.

The Bluetooth specification set up a uniform organization for a big range of devices to connect and communicate between them. It is denominate Bluetooth to the protocol of communication specially designed for devices of low consume, with a los coverture base in transceivers of low cost. These devices are classified as "Type 1", "Type 2" or –"Type 3" in reference to their transmission potency, being totally compatible the devices of a type with the other ones.

17 http://www.monografias.com/trabajos43/bluetooth/bluetooth2.shtml

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Type	Maximum potency allowed (Mw)	Maximum potency allowed (dBm)[18]	Rank (approximate)
Type 1	100 Mw	20 dBm	~100 miters
Type 2	2.5 Mw	4 dBm	~25 miters
Type 3	1 Mw	0 dBm	~1 miter

Chart 2

In the majority of the cases, the effective coverture of a device type 2 extent when is connected to a transceiver of type 1. This is thanks to the sensibility and potency of transmission of the device type 1, in other words, the biggest transmission potency of the device type 1 allows that the signal get with enough energy to the type 2.

In the other hand the biggest sensibility of the type 1 device allows to receive the signal of the other despite it is weaker. The hardware which is part of the Bluetooth device is composed by two parts:

- A radio device, in charge of modulates and transmits the signal.
- A digital control, composed by a CPU, for a digital signal processor (DSP) called Link controller and the interphases with the host device.

The IC or Link controller is in charge to do the prosecution of the base band and the management of ARQ and FEC protocols and of fixed cape.

Also, is in charge of the transference functions (as much as asynchronous as synchronous), audio codification and facts encryption. The CPU of the device is in charge of attending the instructions related with Bluetooth of the host device, in order to simplify its operation. For that, over the CPU runs a software denominate Link Manager which has the function to communicate with other devices through the LMP protocol.

Probable risks in the adaptation of the wireless networks

The only risk is that the network does not work at all, given the actual state of the equipment talking specifically about the hardware. It had never have maintenance.

About the software (I want to suppose that the school, specially the informatics area will do the installation of the operative system in all the computers and I do emphasis in the computers that do not work at the 100%) from Windows xp the software is totally compatible with the wireless devices. It is possible that the velocity of signal reception no to be the ideal because each Pc will be connected to a Wireless USB (we had to opt for the Wireless USB because the budget).

[18] Decibels ratio to one miliwatt

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Chapter II

Location of the computing equipment of the English laboratory no. 2

Proposal

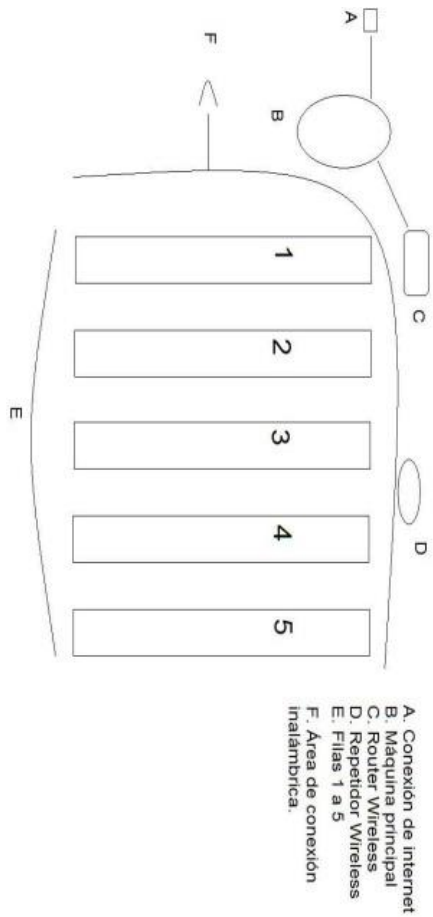


Figure 2

Installation process of the wireless network

The general idea of how to make the installation is apparently really simple, nevertheless, the configuration problems that could present between a computer and other.

Basically the connection to made with the cabling will be between A, B and C, in other words, the principal computer which shall exercise its function as server (In informatics, a server is a computer that, being part of a network, provides with services to the other computer, denominate clients) and this at is time will be connected to the router, that in the particular case will be who distribute the signal for the five computers or clients rows (which name is the correct in informatics terms). The figure D, is a repeater, like in the current topology (structure of the network that we have connect in the lab 2), that we have 3 repeaters and which function is, linked to its name, repeat the signal and that this do not lose its intensity. In the case of this research could or not be necessary to have a repeater, because the area is not that big, however, to be sure that we will have a good quality of signal, is recommendable. Talking of the devices that will need the computers in order to be adequacy configure, taking on account that these will receive an actualization or maintenance about Hardware and Software (It was a suggestion to install Windows XP because is friendly with the system and does not show many errors in the practice) the only thing that I need to install as additional Hardware was Wireless Network card. There are USB devices that have the same operation that the Wireless network cards.

The difference is in the fact that the cards are installed and the USB are external, therefore more susceptible to be damage.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Tow devices were quoted which operation is similar but not the same, these are: Wireless Router and AC Wireless (Access Pint).

Access Point: is a device that connects wireless clients to a cabling network. It has a RJ-45 connector (like the blue cable that the computers have or like the gray cable with which we connect to internet) in which connect the "cabling network" and the clients (laptops, pdas, pc's, etc.) they connect to the network through the access point.

Wireless router is a device that came out of the mixture of an Access point and a Switch Ethernet. (It has 4 normally) RJ-45 connector for the "LAN", 1 RJ-45 connector for the "Internet link" or Wan network (Wide Network area, the WAN networks could use communication system through satellite or radio) and the radio equipment (including antenna(s)) for the connection of wireless clients.

For these proposed scheme, was necessary a wireless router because what we want to do was create a new network and adapt to an existent one (although is not bad idea but could show some deficiencies given the condition of the installed network).

Practice

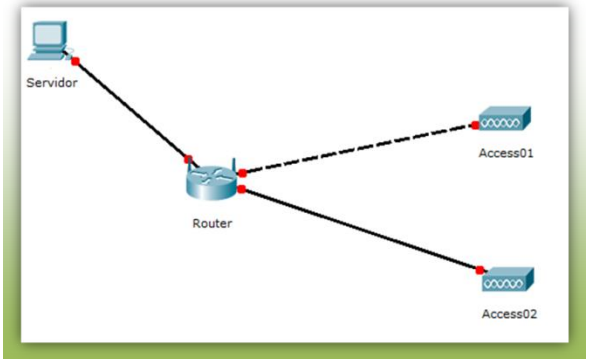
Definitely the experiences that the former practices have left to us have been very enriching, we have found that the Protect program does not limit at all the installation of our wireless network but the factors were limiting us to achieve a successful connection it was according to the scheme of the figure: S

Scheme 1 Wireless, Were installed the following devices.

- Wireless N 150 Home Router DIR-600 MAC Address: 1CAFF797FF70
- Wireless G Access Point DAP-1150 MAC Address: 1CAFF7EC0634
- Wireless G Access Point DAP-1150 MAC Address: 1CAFF7EC069E

Figure 3

Scheme 1



1. We turn named compute on according to the Scheme as "Server" and open Internet Explorer in order to configure the LAN connection of the Router.

2. In the address bar of Internet Explorer we type the following address: 192.168.0.1, which is the IP of the Router.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

3. Open the login page. In user we type "admin" and as password we only pressed ENTER.

4. We locate in the right panel the option LanSetup and once inside of the platform we disable the DHCP Server option clicking over the icon that appear nest to the same.

   If we do not disable this option in the moment to connect to our router the two Access points we will have 3 signals.

5. We logout. Now the router will only route to the signal of access 1 and the access 2. Now we proceed to configure the two access points.

Access Point 1

In the address bar we type: http://Dlinkap and give enter. It opens the platform in where first we will type in user: admin and in:

1. Password: only pressed enter. In the left Panel we placed the Setup Wizard option and click there.
2. Posteriorly once inside the window of this option, click in Lunch Setup Wizard.
3. In Device Name (NetBios Name) we type the name with which we will identify and know that name does the access point we are configuring has. In this case we wil put: Access1. Click in Next.
4. It asks us to create a password to login in this Access Point, type: access01. Click in next.
5. It asks us to select a method with which we will continuous configuring the device. We select Manual click in next.
6. In Network name or SSID (Service Set Identifier) we type: Ingleslab1 and then click in the option: Manually assign a network key. Click in next.
7. As Network Key type: access01. Click in next.
8. It shows the captured information and finally we click in SAVE.
9. After that we come back to the initio window, placed the LAN Setup option in left panel. In the separated of LAN CONNECTION TYPE there is an option which says: My LAN connection is: We select Static IP.
10. In STATIC IP ADDRESS LAN CONNECTION TYPE we will ingress the follow information:
11. IP Address: 192.168.0.3 Subnet Mask: 255.255.255.0
12. Gateway address: 192.168.0.1 (which is the IP address of our router that is the address of routing that will take as reference to obtain the signal.
13. In Device Name should appear the one we assigned in the process of configuration.
14. Finally click in Apply Settings.

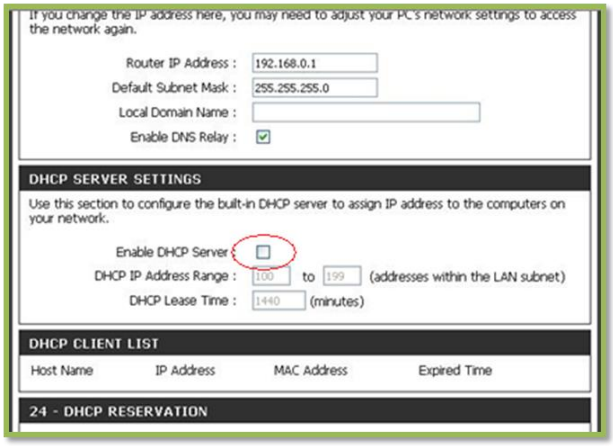


Figure 4

In base to the following diagram we will made the configuration of the topology.

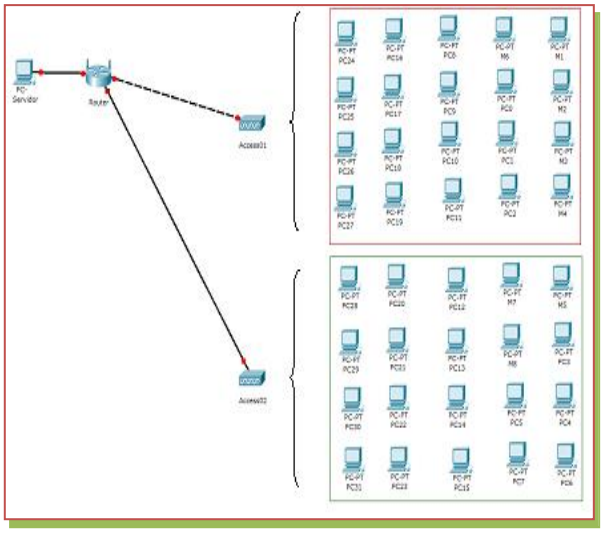


Figure 5

In order to allow the Access only to the computers of the cell 1 which will has Access to the network: Ingleslab1 we have to discharge the MAC addresses of each USB WIRELESS as much for those that will have the access to the network as those that will be restricted from the same. The same will happen with the MAC addresses of the USB WIRELESS that will use the Ingleslab1 network.

he principal advantage of this structure that we are using is that there will not be saturation in the signal because each point access will have defined its coverture area avoiding with this the weak signal. To configure each access point we follow the following steps:

This is the structure that our wireless network will have. The principal computer call for this practice as "Server" will be the one that share all the information that will be manage in tye networks. This does not limit that the users could no share files.

To our server will be connect the Router which will be the one that guide the signal to the access point.

We will have two access points connected to the Router.

Each one call as Access 1 and Access 2 respectively giving signal each one to each cell, market in the scheme as Cell 1 and Cell 2.

- Inside the interphase of access point configuration (1 or 2) places the option ADVANTACED in the principal menu and in the left panel the option Access control.
- EFor default appears to us in the window of drop down menu of the control access option; this is, any computer that wants to connect to our network (Ingleslab1 for example) could do it even if does not make part of the laboratory.
- For example a Lap that counts with card of wireless network and find the signal could joy to our network. We have to consider that this foreign computer to our network at least it know the password, will cannot connect; in other way will be almost impossible to do it.
- In MAC address we insert the MAC address of our USB WIRELESS; after we click in CCLONE and the in Apply Settings (what this last option do is actualize the typed information).
- We repeat the same operation for the entire MAC that will have access to our Ingleslab1 network, and to disable the MAC that will not have access in the Control Access option we select reject.
- We logout clicking in logout in the left panel and then click in logout with which send us to the scree "login".

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Graphic 6

Computer physically tagged as:	Name of the equipment in the network	I.P	MAC address	Status
D4	A1	192.168.0.5	F07D6811F01C	Accept
A3	B1	192.168.0.6	F07D6811F97E	Accept
D2	D1	192.168.0.8	F07D6811F313	Accept
E4	E1	192.168.0.9	F07D6811F046	Reject
H4	F1	192.168.0.10	F07D6811FEC8	Reject
B4	Ipn-020ª7248f49*	192.168.0.12	F07D6811FEEB	Accept
124/04 (Ref. # Serie)	lcb*	192.168.0.13	F07D6811f26c	Reject
A1	cecyt3-443fd5a2*	192.168.0.14	F07D6811F30B	Accept
H1	cecyt3-443fd5a2a*	192.168.0.15	F07D6811F0C1	Reject
H3	Lcb1	192.168.0.16	F07D6811EFF1	Reject

Cell 1

Chart 1

Computer physically enrich as:	Name of the equipment in the network	I.P	MAC address	Status
D4	A1	192.168.0.5	F07D6811F01C	Reject
A3	B1	192.168.0.6	F07D6811F97E	Reject
D3	C1	192.168.0.7	F07D6811EE60	Reject
D2	D1	192.168.0.8	F07D6811F313	Reject
E4	E1	192.168.0.9	F07D6811F046	Accept
H4	F1	192.168.0.10	F07D6811FEC8	Accept
A4	1alal*	192.168.0.11	F07D6811EE13	Reject
B4	Ipn-020ª7248f49*	192.168.0.12	F07D6811FEEB	Reject
124/04 (Ref. # Serie)	lcb*	192.168.0.13	F07D6811f26c	Accept

Cell 2

Chart 2

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In this window we could give discharge the MAC address of our USB WIRELESS which will have access to Ingleslab1 and Ingleslab2, as well as those that form part of them respectively. As we go capturing the Mac address of each USB WIRELESS we should click in Clone and then in Apply Settings. We will have to repeat this operation as much MAC we want to add. This operation we will implement in the two access points remembering that in each one of them we have to add the MAC that we will accept or reject in each access. Then it shows the accepted and rejected MSC address for each cell with the finality to see the comparison and understand better the mentioned structure.

Once done that, we try connecting from each computer used in this practice to the contrarious cell to which belong, for example, we consider the follow cases:

The computer D4 with equipment name A1 belongs to the cell 1; the network to which have to connect is Ingleslab1, we try to connect to the cell 2 which connection network is Ingleslab2. We ingress the password of the network that for Ingleslab2 is access02. It sends us a message saying: "It is not possible to connect to the asked network". With which we prove that the computer in the moment to try to connect, the access point 2 detect that the MAC address of the USB WIRELESS device is register as reject.

The computer D3 with equipment name C1 belongs to the cell 2; the network to which have to be connected is Inleslab2, we try to connect to the cell 1 which connection network is Ingleslab1. We ingress the password of the network that for Ingleslab1 is access01. It sends us a message saying:

"It is not possible to connect to the asked network. With which we prove that the computer in the moment to try to connect, the access point 1 detect that MAC address of the USB WIRELESS device is register as reject.

After that, we start to use the information of the shared files of the server. The types of information which with we interact were videos, audio, images, documents. We consider of importance the correct visualization and reception of the videos' audio and the sound files. We maintain in the different computers for almost 1 hour and a half and watching different videos and there were any problem with the reception and visualization.

Only in the computer A4 (does not belong to the one that was assigned for the practices) it was disconnect once. We restart the computers belong to the laboratory and at charging the operative system we realize that the software of the USB WIRELESS was erased. The computer assigned for the project work in a correct form.

Conclusions

In the beginning of the research, in our first practices were presented many problems to begin to transmit information through the wireless network between those problems highlight:

The equipment could not login to the wireless network.

The equipment of the applications crashed when the functions of the wireless network were use.

The performance of the facts transferences through the network was well below of the expected according to the desire technologies.

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Every time we transmitted information through the network, the general performance of the equipment reduce caused by a core of the prosecution represented a charge of work of the 100%.[19]

It is important to point that when the students and teachers do not count with the experience un the use of the wireless networks many are the hypothesis that come out after the first practice, however, now, we could classify that the last 2 implemented practices sample equipment has result successful in the transmission of information through Wi-Fi, which provide us elements of pertinent judges to ensure that the results that were expected in the moment to make the last practices in the which we will be managing the totality of our universe, will be of successful character, of course, that some variables could present like the transmission velocity that is desire to share, however, we consider that we will achieve successfully the general objective of the project. The complete process of the wireless network installation generates the application of different technologic tools that will allow being use definitely for the implementation of other projects.

[19] C. HILLAR GASTON. *Redes inalámbricas Wi Fi Diseño, Instalación y Configuración.* Ed. HASA, Buenos Aires 2008, p.73

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Fractal modeling of international financial rate

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This article shows the development of the Lagrangian, Itô's motto and Koch's principle economic models, focused on the company Industria Peñoles, S.A.B. de C.V., using the stock data from the Mexican Stock Exchange. Here are five cases that were developed based on fractal geometry, for making models. By making each model will allows more realistically observe the behavior of the company in the market.To conclude, the percentage result of the three models will be compared, in order to determine which one has profit performance above the others, or possibly a loss.

Peñoles, Dimensional's, Interest rate, Fractal, Variables, Brownian, Mexican Stock Exchange

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Introduction

The current state of fractals art has a close relationship with the financial markets, due to the use of derivatives of fractal geometry instruments which allows carrying out a more accurate assumptions analysis, providing more solidity in the results interpretation. Knowing the stock data of a company in the market, enabling the development of models based on assumptions, most of the time are not able to show it realistically, and how these data will move in a set period of time, for this reason the existence of efficient markets may not be possible due to high and unstable volatility in the financial market. his article shows the development of five assumptions derived from fractal geometry, which are: interest rate, 1st dimension (one-dimensional), 2nd dimension (two-dimensional), 3rd dimension (three-dimensional) and 4th dimension (fractal), in order that the above analysis of the company Industria Peñoles SAB de C.V. is more realistic.The representation of the cases above mentioned in this study will provide important knowledge, since using the fractal dimension, will be to compared economic-financial company results in short and long term, the economic-financial situation of the company, that is, at the end result of each models is positive will be the yield achieved by the company, otherwise the loss that could be incurred in the market.

Methodology

The stock data located on the Mexican Stock Exchange, of Peñoles Industry S.A.B. de C.V. considering economic-financial company up to April 2016, we set out three economic models, with certain variables to reach the target. These numerical values provide the context of operations in the stock market in order to analyze the financial situation of the company.

You will find bellow the detail development cases in each model, starting with the assumptions base.

Base Assumptions

These assumptions are the basis by which the three economic models were developed to analyze. For each of these assumptions, it is necessary to know the essential variables for its development. The variables to be used: Inflation $\pi = 2.60$, Deflation $D\pi = 2.12$,Interest rate Ti = 3.75,Financing F = 0.50 ,Financial leverage A = 0.25 ,Total cost Ct = -1 ,Margin Mg = 1, Finite $\alpha = 1$,Infinite $\Theta = -1$,Weighted average price PPP = 262.18,Exchange rate Tc = 17.3395,Stock outstanding AC = 397, 475, 747,Long-term Lp = 12 months ,Short-term Cp = 6 months, Golden mean $^3/_4$ = 0.75 and Brownian $^1/_2$ = 0.50

A PPP and AC logarithm is applied to smooth the data, being as follows:

$$\text{PPP} \rightarrow \log 262.18 = 2.4186$$
$$\text{AC} \rightarrow \log 397{,}475{,}747 = 8.5993$$

To determine the rate interest case, it will be necessary develop:

$$Ti = \left[\frac{PPP}{(Mg - CT)}\right]\left[\frac{^3/_4 - ^1/_2}{(Lp - Cp)^{^3/_4}}\right]^{Tc} \quad (1)$$

Replacing:

$$Ti = \left[\frac{2.4186}{(1-(-1))}\right]\left[\frac{0.75 - 0.50}{(12-6)^{0.75}}\right]^{17.3395} =$$
$$[1.2093]\left[\frac{0.25}{3.8336}\right] =$$
$$(1.2093)\,(0.0652)^{17.3395^{17.3395}} =$$
$$(1.2093)\,(0.2752) = 0.3328 \quad (2)$$

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By raising 0.0652 by the 17.3395 potency, shows a little result, that's why the rescaled range analysis will be used.The obtained result of the interest rate is, 0.3328.First Dimension, the basis for determining the course is as follows:

$$1° D = \left[\frac{F+A\,{}^{1}/_{2}}{\propto -\pi}\right]^{3/4} = \left[\frac{0.50+0.25+0.50}{1-2.60}\right]^{0.75} = \left[\frac{1.25}{-1.60}\right](-0.7812)^{0.75^{0.75}} \quad (3)$$

Then it is unable to raise a negative number to a fractional potency, so it is taken as an absolute value, it means, the sign is suppressed.

$$|-0.7812| = 0.7812 = (0.7812)^{0.75} = 0.8309 \quad (4)$$

The base assumption result for the first dimension is, 0. 8309.The assumption for the second dimension to be developed:

$$2° D = \left[\frac{F+A-{}^{3}/_{4}}{\theta+D\pi}\right]^{1/2} = \left[\frac{0.50+0.25-0.75}{(-1)+2.60}\right]^{0.50} = \left[\frac{0}{1.6}\right] = (0)^{0.50^{0.50}} \quad (5)$$

The result is 0, for the second dimension.

$$3° D = \left[\frac{F+A}{\left[\frac{\log AC}{\ln Ti}\right]}\right]^{1/2} = \left[\frac{0.50+0.25}{\left[\frac{8.5993}{1.3217}\right]}\right]^{0.50} = \left[\frac{0.75}{6.5062}\right]^{0.50} = (0.1153)^{0.50} = 0.33 \quad (6)$$

The result for the third dimension is 0. 3395.The assumption used for the fourth dimension

$$4° D = \left[\frac{F+A}{\theta} + AC\right]^{3/4} = \left[\frac{0.50+0.25}{-1} + 8.5993\right]^{0.75} [(-0.75) + 8.5993]^{0.75} (7.8493)^{0.75} = 4.6894 \quad (7)$$

The result is 4.6894 for the fourth dimension.

In the Lagrangian model all numbers with large digits become small numbers, logarithms, neperians and antilogarithms are implemented to reduce digits.Therefore, the base assumptions began to clear depending on its original structure.In this modeling the logarithm of golden mean and Brownian neperian average it is determined:

$$\mathbf{{}^{3}/_{4}} \rightarrow \log 0.75 = -0.1249$$
$$\mathbf{{}^{1}/_{2}} \rightarrow \ln 0.50 = -0.6931$$

The Lagrangian modeling interest rate assumption is:

$$Ti = \left[\frac{\log PPP}{\frac{Mg}{Ct}}\right]\left[\frac{\log {}^{3}/_{4} - \ln {}^{1}/_{2}}{\frac{Lp-Cp}{{}^{3}/_{4}}}\right]^{Tc} \quad (8)$$

In this case we will maintain the PPP variable.

Assumption replacing:

$$Ti = \left[\frac{2.4186}{\frac{1}{-1}}\right]\left[\frac{(-0.1249)-(-0.6931)}{\frac{12-6}{0.75}}\right]^{17.3395}(-2.4186)\left[\frac{0.5682}{8}\right]^{17.3395}(-2.4186)\,(0.0710)^{17.3395} \quad (9)$$

In this case, similarly rescaled range analysis is used, due to the size of the potency.

$$Ti = (-2.4186)\,(0.0121) = -0.0293$$

The result is -0.0293 for the interest rate.

For the four dimensions are determined by the F logarithm and the A neperian:

$$\mathbf{F} \rightarrow \log 0.50 = -0.3010$$
$$\mathbf{A} \rightarrow \ln 0.25 = -1.3863$$

The assumption with the 1st dimension remains as:

$$1° D = \left[\frac{\frac{\log F+\ln A}{{}^{1}/_{2}}}{\frac{\propto}{\pi}}\right]^{3/4} = \left[\frac{\frac{(-0.3010)+(-1.3863)}{0.50}}{\frac{1}{2.60}}\right]^{0.75} = \left[\frac{\frac{-1.6873}{0.50}}{0.3846}\right]^{0.75} = \left[\frac{-3.3746}{0.3846}\right]^{0.75} = (-8.7743)^{0.75}|-8.7743| = 8.77 \quad (10)$$

Taking the absolute value:

$$1° D = (8.7743)^{0.75} = 5.09 \quad (11)$$

According to the modeling of the second dimension assumption:

$$2° D = \left[\frac{\log F + \ln A}{\frac{\theta}{D\pi}}\right]^{1/2} = \left[\frac{\frac{(-0.3010)+(-1.3863)}{0.75}}{\frac{-1}{2.12}}\right] = \left[\frac{\frac{-1.6873}{0.75}}{-0.4717}\right]^{0.50} = \left[\frac{-2.2497}{-0.4717}\right] = 2.18 \quad = 2.1^{0.50} \quad (12)$$

We have to determine an AC antilogarithm, for this dimension:

$$\text{AC} \rightarrow \text{Anti}\log 8.5993 = 0.9345 = \left[\frac{\log F + \ln A}{[Anti\log AC - Ti]}\right]^{1/2} = \left[\frac{(-0.3010)+(-1.3863)}{[Anti\log 8.5993 - 3.75]}\right]^{0.50} = \left[\frac{-1.6873}{[0.9345-3.75]}\right]^{0.50} = \left[\frac{-1.6872}{-2.8155}\right]^{0.50} = (0.5992)^{0.50} = 0.77 \quad (13)$$

In the Lagrangian modeling the assumption remains:

$$4° D = \left[\frac{\log F + \ln A}{\frac{\theta + AC}{3/4}}\right] = \left[\frac{(-0.3010)+(-1.3863)}{\frac{(-1)+8.5993}{0.75}}\right] = \left[\frac{-1.6873}{\frac{7.5993}{0.75}}\right]\left[\frac{-1.6873}{10.1324}\right] = -0.16 \quad (14)$$

Within this model, it requires to follow these rules, all that is logarithm becomes limit

$\log \rightarrow \lim$ equivale 0.618 that is neperian becomes differential or derivative, the value of each will be successively applied. The number depends on how many neperians are in the assumption, the interest rate assumption, the modeling is:

$$Ti = \left[\frac{\lim PPP}{\frac{Mg}{Ct}}\right]\left[\frac{\lim {}^{3}/_{4} - \frac{d}{d_1}{}^{1}/_{2}}{\frac{Lp-Cp}{3/4}}\right]^{Tc} = \left[\frac{(0.618\times 2.4186)}{\frac{1}{-1}}\right]\left[\frac{(0.618\times 0.75)-(0.50\times 0.50)}{\frac{12-6}{0.75}}\right]^{17.3395} = \left[\frac{1.4947}{-1}\right]\left[\frac{0.4635-0.25}{8}\right]^{17.3395} = \left[\frac{1.4947}{-1}\right]\left[\frac{0.2135}{8}\right]^{17.3395} = (-1.4947)\,(0.0267)^{17.3395} = (-1.4947)\,(0.0267)^{17.3395} \quad (15)$$

The rescaled range analysis is used due the potency size

$$Ti = (-1.4947)\,(0.0520) = -0.07 \quad (16)$$

For the four dimensions are determined by the F limit and the A differential or derivative:

$$\text{F} \rightarrow \lim 0.50 = 0.30$$

$$\text{A} \rightarrow \frac{d}{d_1} 0.25 = 0.12$$

The assumption in the model is:

$$1° D = \left[\frac{\lim F + \frac{d}{d_1} A}{\frac{{}^{1}/_{2}}{\frac{\propto}{\pi}}}\right]^{3/4} = \left[\frac{\frac{0.309+0.125}{0.50}}{\frac{1}{2.60}}\right]^{0.75} = \left[\frac{0.868}{0.3846}\right]^{0.75} = (2.2569)^{0.75} = 1.84 \quad (17)$$

According to the modeling the assumption is:

$$2° D = \left[\frac{\lim F + \frac{d}{d_1} A}{\frac{{}^{3}/_{4}}{\frac{\theta}{D\pi}}}\right]^{1/2} = \left[\frac{\frac{0.309+0.125}{0.75}}{\frac{-1}{2.12}}\right] = \left[\frac{0.5787}{-0.4717}\right]^{0.50} = (-1.2268)^{0.50} \quad (18)$$

Taking the absolute value:

$$|-1.2268| = 1.2268 = (1.2268)^{0.50} = 1.10$$

For this dimension, the AC partial has to be determined:

$$\text{AC} \rightarrow \quad \partial\, 8.5993 = 6.44$$

The assumption remains:

$$3°\ D = \left[\frac{\lim F+\frac{d}{d_1}A}{\partial AC - Ti}\right]^{1/2} = \left[\frac{0.309+0.125}{6.4495-3.75}\right]^{0.50} = \left[\frac{0.434}{2.6995}\right]^{0.50} = (0.1608)^{0.50} = 0.40 \qquad (19)$$

The assumption for this modeling is:

$$4°\ D = \left[\frac{\lim F+\frac{\mathrm{d}}{\mathrm{d}_1}A}{\frac{\theta+AC}{3/4}}\right] = \left[\frac{0.309+\ 0.125}{\frac{(-1)+8.5993}{0.75}}\right] = \left[\frac{0.309+0.125}{\frac{7.5993}{0.75}}\right] = \left[\frac{0.434}{10.1324}\right] = 0.0428 \qquad (20)$$

Koch's principle modeling is similar than Itô's motto, using the same bases as Lagrangian model.The antilog will become as the following formula:

$$1/2\,\frac{d}{d_1} + 3/4\,\frac{d}{d_2} = \left[\frac{1/2\,PPP}{\frac{Mg}{Ct}}\right]\left[\frac{1/2\,\partial/\partial_{II} - 3/4\,\partial/\partial_I}{\frac{Lp-Cp}{\partial/\partial_{II}}}\right]^{Tc} \qquad (21)$$

Replacing:

$$Ti = \left[\frac{(0.50\times 2.4186)}{\frac{1}{-1}}\right]\left[\frac{(0.50\times 0.75)-(0.75\times 0.25)}{\frac{12-6}{0.75}}\right] = \left[\frac{1.2093}{-1}\right]\left[\frac{0.375-0.1875}{8}\right]^{17.3395}(-1.2093)\,(0.0234)^{17.3395} \qquad (22)$$

The rescaled range analysis is used due the potency size.

$$Ti = (-1.2093)\,(0.5285) = -0.63$$

Fort the four dimension, it will be determined by the F Brownian and the A golden mean:

$$\text{F} \rightarrow \quad 1/2\ 0.50 = 0.125$$

$$\text{A} \rightarrow \quad 3/4\ 0.25 = 0.1875$$

In the 1st dimension the assumption model is:

$$1°\ D = \left[\frac{\frac{1/2\,F+3/4\,A}{\partial/\partial_I}}{\frac{\propto}{\pi}}\right]^{\partial/\partial_{II}} = \left[\frac{\frac{0.125+0.1875}{0.25}}{\frac{1}{2.60}}\right]^{0.75} = \left[\frac{1.25}{0.3846}\right]^{0.75} = (3.2501)^{0.75} = 2.42 \qquad (23)$$

According to the model assumption is:

$$2°\ D = \left[\frac{\frac{1/2\,F+3/4\,A}{\partial/\partial_{II}}}{\frac{\theta}{D\pi}}\right] = \left[\frac{\frac{0.125+0.1875}{0.75}}{\frac{-1}{2.12}}\right]^{0.25^{\partial/\partial_I}} = \left[\frac{0.4167}{-0.4717}\right]^{0.25} = (-0.8834)^{0.25} = 0.96 \qquad (24)$$

For this dimension, is necessary to determine the formula that multiplies AC

$$(0.25\times 0.50) + (0.75\times 1.0) = 0.87 \text{ AC} \rightarrow \quad 0.875\times 8.5993 = 7.52$$

The assumption is:

$$3°\ D = \left[\frac{1/2\,F+3/4\,A}{\left(1/2\frac{d}{d_1}+3/4\frac{d}{d_2}AC\right)-Ti}\right]^{\partial/\partial_I} = \left[\frac{0.125+0.1875}{7.5244-3.75}\right]^{0.25} = \left[\frac{0.3125}{3.7744}\right]^{0.25} = (0.0828)^{0.25} = 0.53 \qquad (25)$$

The assumption for this modeling remains:

$$4°\ D = \left[\frac{1/2\,F+3/4\,A}{\frac{\theta+AC}{\partial/\partial_{II}}}\right] = \left[\frac{0.125+\ 0.1875}{\frac{(-1)+8.5993}{0.75}}\right] = \left[\frac{0.3125}{10.1324}\right] = 0.03 \qquad (26)$$

Conclusion

In the development of the three economic models: Lagrangian, Itô's motto and Koch's principle, the following results were obtained:

Lagrangian- Ti = -0.0293,1°D = 5.0981,2°D = 2.1839,3°D = 0.7741 and 4°D = -0.1665- Itô's motto Ti = -0.0778,1°D = 1.8413,2°D = 1.1076,3°D = 0.4010,4°D = 0.0428- Koch's principle Ti = -0.6391,1°D = 2.4206,2°D = 0.9695,3°D = 0.5364 and 4°D = 0.0308 to obtain the yield or loss of the company Industrias Peñoles S.A.B de C.V., the following operation is perform in each one of the results of the three models:

$$\frac{Ti+1°D+2°D+3°D+4°D}{5} \times 100 \qquad (27)$$

Observing the results expressed in percentage it stands that through the Lagrangian method a higher result is obtained in performance with the company respecting the rest two other methods, though, is important considering that no one of the results appears negative, so it shows that the company will have an efficient performance in the market. It should be noted that by using the fractal geometry instruments, the results obtained are more realistic and reliable.

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Article **ECORFAN Journal-Mexico**
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Risks of the increase of the spent in education on the gross value of the Huetano Municipality product; An analysis of the input-product

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The fundamental aim of this paper is model the effect that would have an increase of the expense in education on the productive activity of the municipality or Huetamo, Michoacán, using the Input – Output (I-P) table analysis. Although this technique presents limitations as all models, it allows showing the general effects on the productive sector of the municipality; it shows the little entail of the educational sector with the productive activities of the principal "cluster" detected in the municipality. The result allows supposing that the educational sector is not orientated or presents few entail with the agricultural and cattle sectors of the region.

Education expense, productive system, Input-Output table, clusters

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Introduction

The state of Michoacan is between the federative entities with biggest budget in the field of public education. In the higher level, the University of Michoacan de San Nicolas de Hidalgo (UMSNH) is the second educative institution which get the biggest percentage of this spend, after the Education Secretary of the State.

In the last years the decentralization of the UMSNH has been promoting in many cities of Michoacan, between them, the Unidad Profesional del Balsas de Huetamo (UNIP) with the finality to offer license programs, specialty and postgrad that take advantage of the sustainable regional development. The hypothesis that the present essay manage is that increasing the public spending in the educative sector in the municipality, will impact in the increase of the gross domestic value of the production of other economic sectors.

The ahead is made using a projection technic with Income Matrix-Product and the result are compared with the cluster that exist in the economic activity.

In the headland two is exposed an historic analysis of the spending in education in Mexico, as well, the comparison of the same with other countries; after that in the headland three addressed the education in Michoacan and the educative spending in the state is exposed; in the fourth section the composition of the productive system of the Huetano municipality and the education coverture are exposed.

The fifth headland describes the methodology applied for the elaboration of the present research, identifying the impact of the education spending in the productive system of the municipality; in the section six and seven are exposed the obtained results of the modeling of the public spending impact in education, considering the percentage recommended by the UNESCO; and finally with final conclusion and consideration.

Education and Economy

Part of the public spending destined to the educative sector in Mexico, has as finality between others, create new higher educative institutions.

Cohen (2000, p.7) conceptualize the education as: "The axle that articulates the economic growth and the social development. Provide the knowledge and skills that aloe to increase the productivity of the work and face the challenges of the competitively. As well, is one of the basic springs in the process of social integration". However, in Mexico has bet little to the spending in education as tool for the social economic development.

The graphic 1 result from the average of the public spending as percentage of the PIB, for the period 1980-2008 of 8 countries; Mexico is under the 8% recommended by the United Nations Educational, Scientific and Cultural Organization (UNESCO). While Cuba outperforms to Mexico in this field with more than the double.

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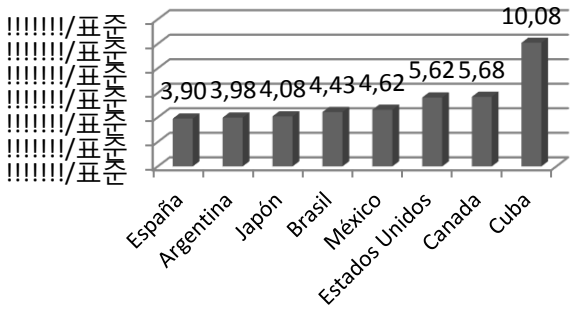
Percentage of the public spending in education respect the PIB, many years

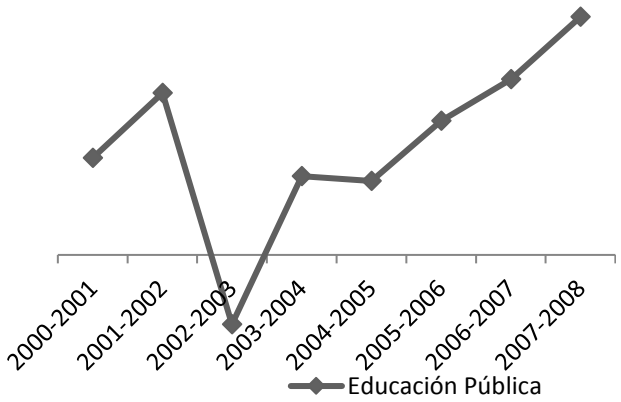


Graphic 1

Source: Own elaboration in base of facts of the Statistics Institute of the UNESCO

In the other hand, for 2001 we observe that in Mexico the evolution of the public spending in the field 11 (Public Education) grow in a 4.2% respect to 2000, for 2002 increase in 7% after is appreciable a fall for 2003 with -3% and only for 2007 approach a similar level that had in 2002, see graphic 2.

Annual percentage variation of the public spending in education 2000-2008



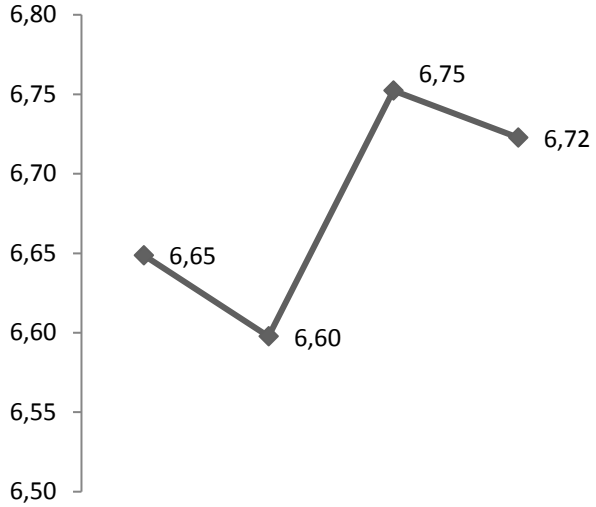
Graphic 2

Source: Own elaboration with facts of the Study Center of Public Finances of the H. Deputies Camera.

In the graphic 3, is presented the percentage of the spending destined to public education for the years, 2007, 2008, 2009 and 2010 respect to the Budget of Expenses of the Federation (PFF) that even if present a little recuperation it does not look to be enough to compensate the big deterioration in the education field that the country has.

In 2007 was approve a budget of expenses of 2,260, 412, 500, 000 pesos, from which the quantity of 151,963, 400, 000 pesos was destined for the public education, representing the 6.65% of the total. The PFE still increasing but it was not the same for the public education which suffers a setback of 0.5% for the 2008. For the 2010 the approved budget was of 3,176, 332, 000, 000 pesos, going to the quantity of 211,186, 159, 110 pesos for the public education, which represented the 6.72% of the budget total.

Percentage of the spending in public education, respect to the total of the Federal Budget in Expenses (PFE)



Graphic 3

Source: Own calculation in base of the facts of the (PFE) 2007-2010

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Although the PFE spending has been maintaining practically without real increase, otherwise the public spending destine to those educative programs of agrarian nature and which give support to the creation of the rural sustainable develop program has seen reduce in the last years such as we could see in the nest chart.

Approved spending in PFE for the program of rural sustainable develop in national level

	2008	2009	2010
Agrarian Education	4176.7	4,575.00	4,850.20
Rural Educative Program	155.3	55.8	205
Universidad Autónoma Agraria Antonio Narro	525.7	639.2	682.3
Opportunities	15324.4	15,324.40	17,773.60
Skills development	4512.8	5,027.80	4,816.20
Educative field 11 Public Education	28,327.30	25,622.20	24,694.9

Chart 1

Source: Own elaboration with facts obtained from the Budgets of Expenses of the Federation, educational aspect in millions of pesos

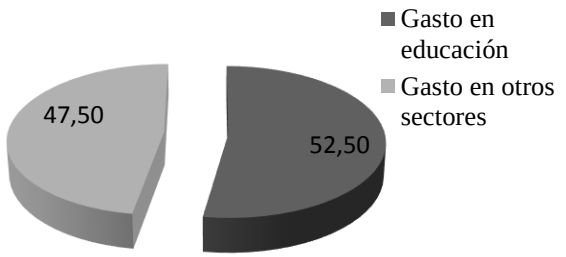
Education in Michoacan

The education is for the Goverment and the Michoacan society a prioritary subject to achieve the social and economic development, that's why it should be consider as the principal Axle of the public policies (Public Account of the State Treasury, 2004, p.2).

According to the annual informs of the Public Account of the State Treasury that publish each year the Secretary of Finances and Administration in the sector of social development, the state of Michoacan has destined in average near the 50% of the state spending as spending in education, which is not reflect in better education quality, therefore Michoacan is between the states with minor level of exploitation in the country.

For the year 2000, the 54.94% of the total spending was destined to education and the 45.06% for other sectors. In 2001 the spending in education reduced to 52.69% of the total.

Destine of the spending of the Michoacan State. Average of the period 2000-2007



Graphic 4

Source: Own elaboration in base of the annual informs of the Public Account of the Michoacan State.

Considering that the UMSNH plays an important role in the economic and social development of the state and neighbor states for its scientific and humanistic character, also which is highly understood with the promotion of the economic and social development have not seen reflected a real increase in the budget.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Practically it have been maintaining stagnant in the last years with respect to the total of the spending destined to education in the state (see chart 2), but if we compared it with the total public spending, it has destined a 30% less to the UMSNH in the period of 2000-2010.

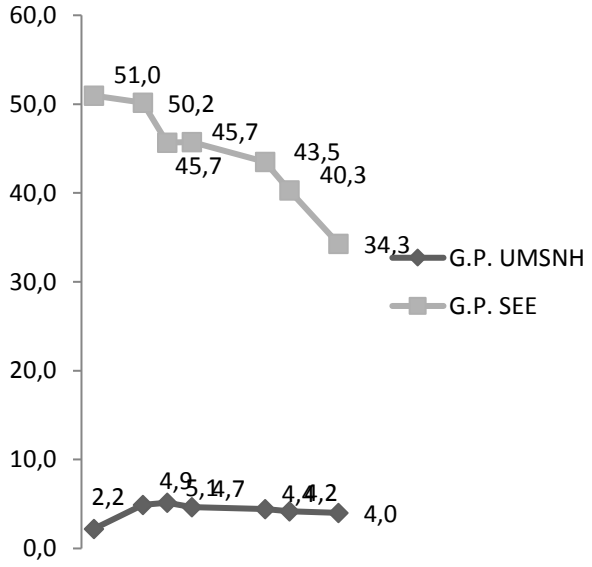
Percentage of spending destined to the SEE and to the UMSNH respect to the total educative spending

	2000	2001	2002	2003	2004	2005	2006	2007
State Secretary of Education	88.02	87.06	86.26	83.53	82.87	81.95	84.35	83.50
UMSNH	9.78	10.19	10.34	9.87	10.00	10.84	9.62	10.51

Chart 2

Source: Own elaboration in base of the annual informs of the Public Account of the Michoacan State.

Percentage of the spending in SEE and UMNSH respect the total



Graphic 5

Source: Own elaboration with facts if the Fiscal Budgets of the Michoacan State, many years.

Huetamo

Coverture of the education

In the Huetamo municipality, the medium higher education is formed by 2 high schools, in school of Bachelors and a school. In the level of higher education it has the Higher Technologic Institute of Huetamo (founded in 2001).

This institute offers the careers of Engineer in Alimentary Industries, Business Management, Industrial Engineer and Computational systems.

And, since 2004, it counts with the Professional Unit of Balsas, with Degree in Law and Social Sciences, Accounting and Informatics Administrative through a node of distance education created in 2006, which for the type of career do not have a direct impact in the agriculture and animal husbandry, because they focus principally in the formation for the services. These educative institutions in higher level attend a population of 7,637 people (Population and Housing Counting, 2005).

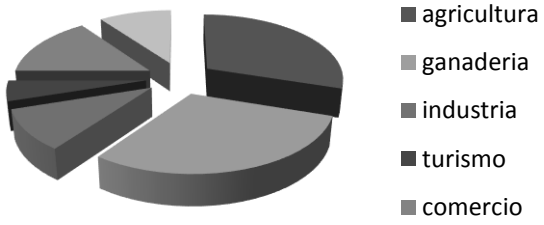
Economic aspects

According to the preliminary results of the Population and Housing Census 2010 of INEGI, live 42,000 people in the municipality, composed by 48.96% men and 51.03% women with a density of 20.4 people per square kilometer.

In the municipality the agrarian sector is preponderant; the agriculture represent the 30% of the total, the animal husbandry 30%, the industry 10%, the tourism 5%, the commerce 15% and the services sector 10% (State Center of Municipality Develop, 2000).

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Percentage distribution of the economic activities for 2000

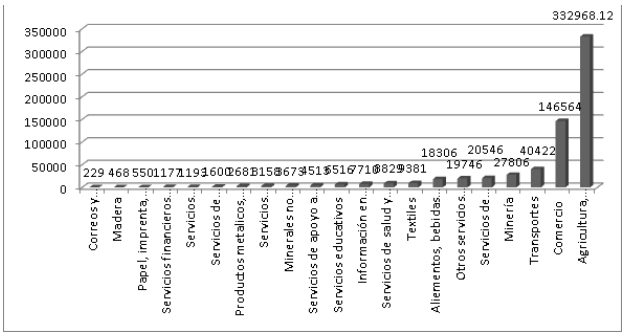


Graphic 6

Source: Own elaboration in base of the State Center of Municipality Develop, 2000.

In the graphic 7 came to reinforce in desegregate form, by sectors of weight that have the agrarian, animal husbandry activities and forest exploitation, follow by the commerce, transport and mining sectors. The chart highlights the lightweight that the educative sector represents with respect to the gross value of the production.

Production gross value per sectors of Huetamo



Graphic 7

Source: Own elaboration with facts of the SCIAN 2003, about sectors of the MIP of Huetamo.

Matrix of input-product and clusters identification

The Matrix of Input-Product (MIP) offers important tools for the regional analysis and planning. This methodology allows placing the industries that articulate with strong relations of interchange with the group of the regional economy of the state and fields that are enhancer in the chains to backwards and forwards, in other words providers and buyers of the production of an important sector or field[20].

The matrix structure of the transaction at the same that the real dynamic of the productive system through interdependency relationships, it shows the articulation of the economy sectors through the offer and demand, in other words, in the site of the shopping and sales

En It also could be used as tool of impacts measurement of the changes in the final demand or in the availability of non-intermeddle inputs about the gross production of the economy, from the linkages of production that the model manage, the could be derived coefficients and multipliers that register the articulations associate to the sectorial interdependencies that establish through other variables of the economic system (Aron Fuentes, 2005), such as: occupation, capital stocks, importations, exportations, aggregated value and remunerations to the factorial services, between others.

Mariña (1993), points that the multipliers of production express direct and indirect effects in the production level of a sector in the group of them, front changes in the final demand.

[20] Para conocer más sobre la estructura, construcción y aplicaciones de la Matriz de Insumo-Producto se recomienda revisar los documentos de Mariña (1993).

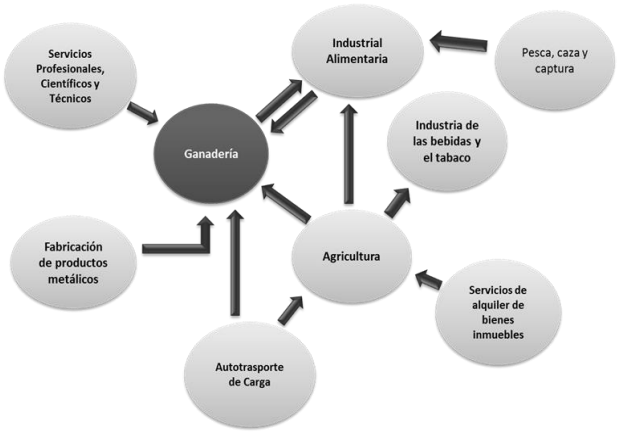
ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

In the understanding that the double articulation of the sectors, being as production offer of production or applicant of it, is opened the possibility to estimate the production multipliers to forwards and backwards, therefore of buy and sell respectively.

Tapia, Salazar & Zamora (2009), do the detailed study about multipliers methodology and equally present the results about the most important sectors of the Huetamo, resulting the clusters and chains between fields and sectors of the municipality economy.

In this work were found four clusters, but highlight for its importance in the generation of production gross values, the agriculture and animal husbandry sectors. [21].

The cluster of agriculture and animal husbandry in Huetamo, Michoacan



Graphic 8

Source: Own elaboration with facts of the MIP of Huetamo to 40 sectors.

[21] Include the animal husbandry sectors (2) as the key sector and that will turn on the agriculture (1), professional and scientific services (61), alimentary industry (14), transport (39), fabrication of metallic products (28), industries of drinks and tobacco (15).

Impact of an increase in the education spending about the gross production value (VBP)

The explained multipliers, as planning tools and modeling of the economic activity allow seeing the direct and indirect effects that over a field has a variation of the final demand (DF).

We do the matrix operation (1) and (2), we obtain the values of a new Gross production value (VBP) generating with the projection of an increase in the DF. It uses the multiplication of the technic coefficients [22] of the MIP inverse with the DF of each one of the sectors:

$$(a_{11} * Y_1) + (a_{12} * Y_2) + \cdots \sum_{n-1}^{\infty} a1nj*Yn \quad (1)$$

$$(a_{21} * Y_1) + (a_{22} * Y_2) + \cdots \sum_{n-1}^{\infty} a2n*Yn \quad (2)$$

Where:

a_{11}= the technic coefficient of the produce by the sector 1 and which is used by the same.
a_{12}= the technic coefficient of the produced by the sector 1 and which is used by sector2.
a_{21}= the technic coefficient of the produced by the sector 2 and which is sued by the sector 1.
a_{22}= Tte technic coefficient of the produced by the sector 2 and which is used by the same.
Y_1= The final demand of the sectors 1.
Y_2= The final demand of the sectors 2.

[22] The technic coefficients represent the percentage of the inputs that the industry *j* buys to the industry *i* in order to implement the production.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

In this form is used the information of the Matrix Input-Product of the Huetamo municipality 2003 [23] to 21 sectors where estimate the new production values of the economy sectors of the municipality to simulate the application of the 8% [24] in education spending, recommended by the UNESCO, being applied like increase in the DF of the educative sector belonging of the public spending, with the intention to observe the increases that generate in the VBP of the different fields of the municipality economy.

This increase could be generated through the increase of the public spending to incentive the economic growth of the municipality.

The results (see annexes chart 1) determinate that this increase of the DF in the educative sector impact in a more directly form (generating a growth) in the VBP of the sector like the commerce, professional services, scientific and commerce, as well the services of business support, management of rights and services of remediation, it is not like that for the agrarian sector, which makes think about the little link that it has (or that does not achieve permeate) with this sector. Though that the sectors with biggest weight in economy are in the agriculture, animal husbandry, forest exploitation, fishing and hunting; the effect over them is despicable, which reinforce the idea of the necessity to reorient the educative policies with the productive sphere.

In the other hand the sector Commerce, Professional services, Business support services, Management of remediation right and services and Host services are the activities that achieve positive effects with the increment of the Final Demand; Having on account, also, that an increase of 8% of the PIB in the educative sector spending would not be enough to compensate the lack of attention in previous years; In any case, the result of this research, leads us to further deepen in this topic[25].

Drag effect in the education in comparison with other sectors

Multiplier of production

The educative sector does not produce high productive chains inside the economic activity of Huetamo. Mariña (1993, p. 228) mention that the multiplier are useful as indicators of the direct or indirect inter-sectorial relations established by the offer and demand of intermeddle inputs. In the graphic 8 we could see that the multiplier of production (drag impact over the other activities) in the shopping side, in the educative sector is of 1.02 well below the state average (1.38). This means that the production in a direct and indirect form poorly responds to increases of the public spending of the education in important form of the final demand.

Therefore, highlight the big effort that should be done in the municipality in education field.

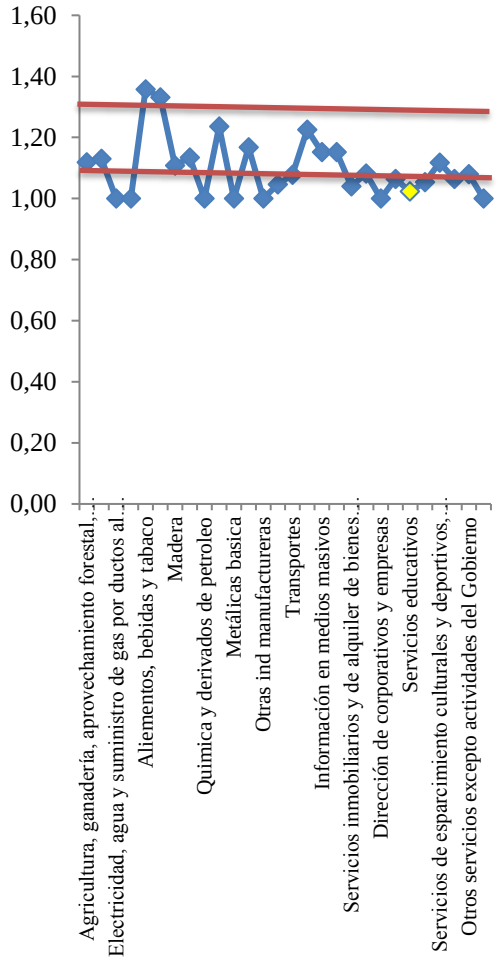
[23] See to Gabriel Tapia, Ismael Salazar et al. Construcción de la Matriz de Insumo-producto para Michoacán 2003, en prensa.

[24] This increase represents a quantity in monetary terms, of 520.75 thousand of pesos of 2003.

[25] Doing a simulation of the increase of 20% in the educative spending (see annexes: chart 2), we observe that the effect in the principal sectors of the productive sphere, principally in the fields located in the named cluster, is marginal. The principal observed increae3s of the Product Domestic Value from this simulation identify in the sectors of transport and services in general.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Multiplier of shopping production 2003, Huetamo, Michoacan



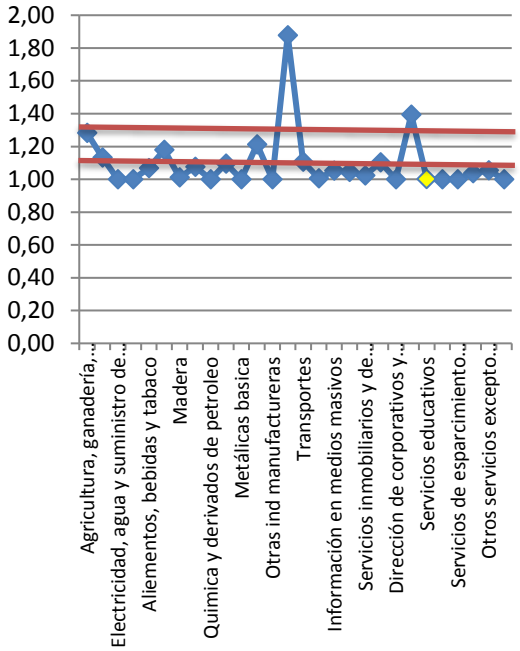
Graphic 9

Source: Own elaboration in base of the facts of the MIP Huetammo2003 to 28 sectors.

The obtained multipliers of the Input-Product Matrix of Hutamo to 28 sectors show us what Mariña (1993, p. 176) calls "The total potential effect over the gross production of the *i* sector of a unitary change in the final demand of the *j sector"*[26].

In the graphic 9 we observe the multiplier of the production for the shopping site where Huetamo has a multiplier of 1.00, which also is below of the municipality and state average.

Multiplier of shoping production 2003, Huetamo, Michoacan



Graphic 10

Source: Own elaboration in base of facts of the MIP Huetamo 2003 to 28 sectors.

Final considerations

In national level have not achieved to accomplish with the recommendations of the UNSECO of destine minimally the 8% as percentage of the PIB for education, which reflect the serious backwardness in education in the country therefore, its poor effect in the productive sector.

[26] Taking on account that the model input product help us to represent through a chart of double entry the sell and buy of the fields where the matrix are present as fields i and j. Mariña uses the equation $a_{ij}=\partial VBP/\partial DF_k$ to demonstrate the potential effect that represent the variation of the Production Gross Value in the Final Demand.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

The productivity is achieved increasing the education spending because this could destine more to the formation in research and development that permeate the different companies of the country.

At state level have been maintaining constant the education spending in the period 2002-2010, but to the UMSNH destines every time less despite to be the principal institution of higher level in Michoacan and generator of scientific research in the state.

The Huetamo municipality is characterized for it economic backwardness, with poor entailment of the educative sector with the productive apparatus, or in any case the group of action for the development, has not prioritized, not even achieve to establish an active entailment of named elements. This is demonstrating for the little drag that the educative sector has over the rest of the public sectors.

As we have been explaining, with the obtained results is demonstrated the direct effect of the public spending in the educative sector, over the rest of the economic sectors; however, the direct and indirect impact is marginal, more than anything in the principal economic activities as part of the cluster which include the agriculture and animal husbandry.
The low impact in named cluster could be consider consequence of the poor entailment of the services and advices that the educative sector could offer to named activities, because the educative institutions of professional formation do not offer career that imply and direct link with mention economic activities, but they are more oriented to another type of professional activities.

Consequently, is necessary, reorient the educative offer in function of the regional productive vocations of the municipality with a clearly proposal of social networks formation which include the work of the productive activities and the centers in charge of the research and development, as well as the municipality authorities and the civil society.

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Annexes

Changes in the VBP in front 8% of the spending in the DF of the educative sector in Huetamo.

Sector	VBP Original	VBP' Simulate	Difference
Agriculture, animal husbandry, forest exploitation, fishing and hunting	332968	332968.1437	0.02365335
Mining	27806	27806.00354	0.00353823
Food, beverages and snuff	18306	18306.12149	0.12149144
Textiles	9381	9381.046219	0.04621899
Wood	468	468.002407	0.00240702
Paper, printing, publishing	550	550.3371387	0.33713873
Non-metallic minerals	3673	3673.034676	0.03467622
Metal products, machinery, equipment	2681	2681.467926	0.4679264
Commerce	146564	146566.7478	2.74780419
Transports	40422	40422.44419	0.44419099
Mail and storage	229	229.0842279	0.08422791
Mass media information	7710	7710.071929	0.07192943
Financial and insurance services	1177	1177.011592	0.01159195
Real state services and furniture rental and intangible assets	1193	1193.220634	0.22063405
Professional, scientific and technical services	3158	3159.473213	1.47321252
Support services to business and waste management and remediation services	4513	4517.490627	4.49062661
Educative services	6516	7036.912727	520.912727
Health care and social assistance	8829	8829	0
Services of cultural and sporting amenities, and Recreation services	1600	1600.004354	0.00435388
Temporary accommodation and food and beverage preparation	20546	20546.80611	0.80611045
Other services except Government activities	19746	19746.33102	0.33102095
Total	658036	658568.7555	533

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Changes in the VBP in front of 20% in the DF of the educative sector in Huetamo.			
Sector	VBP Original	VBP' Simulate	Difference
Agriculture, animal husbandry, forest exploitation, fishing and hunting	332968	332968.1791	0.05913337
Mining	27806	27806.00885	0.00884557
Food, beverages and snuff	18306	18306.30373	0.3037286
Textiles	9381	9381.115547	0.11554748
Wood	468	468.0060175	0.00601754
Paper, printing, publishing	550	550.8428468	0.84284684
Non-metallic minerals	3673	3673.086691	0.08669056
Metal products, machinery, equipment	2681	2682.169816	1.169816
Commerce	146564	146570.8695	6.86951049
Transports	40422	40423.11048	1.11047748
Mail and storage	229	229.2105698	0.21056977
Mass media information	7710	7710.179824	0.17982359
Financial and insurance services	1177	1177.02898	0.02897988
Real state services and furniture rental and intangible assets	1193	1193.551585	0.55158512
Professional, scientific and technical services	3158	3161.683031	3.68303129
Support services to business and waste management and remediation services	4513	4524.226567	11.2265665
Educative services	6516	7818.281818	1302.28182
Health care and social assistance	8829	8829	0
Services of cultural and sporting amenities, and Recreation services	1600	1600.010885	0.01088471
Temporary accommodation and food and beverage preparation	20546	20548.01528	2.01527613
Other services except Government activities	19746	19746.82755	0.82755236
Total	658036	659368	1332

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National and international context of the neutral investment

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The objective of this article is to analyze the causes that gave origin to the use of the neutral investment, as well as to present/display, the instruments of neutral investment that the foreign investors can use to participate in exclusive activities of Mexican or in which participation limits exist, as well as to review some of the initiatives that recently have occurred in the Congress of the Union and which they must like aim be transparent the concept of neutral investment.

Neutral Investment, Foreign Investment, CNIE

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Antecedents

The intervention of the State in the economy establish in the Constitution of the United Mexican States published in the "Diario Oficial de la Federacion" (DOF) in February 5th of 1927. In particular in the article 25 where the State is the maximum rector in the complete develops that the country needs about the sovereignty and broadens the democratic regime (Guillen, 112: 1997). Later in the same article is added the State will raise, drive, coordinate and orient the national economic activity that the common interest demand to it. (Constitution, 21:2007).

Since the publication of the Constitution until the mid of eighties the economic motor of the country was the State. With the entry of Mexico to the General Agreement on Tariffs and Trade (GATT), the fall of the Berlin wall and especially with North American Integration Treaty, the State reduce its participation in the economic to liberalize the commerce and allow the free passage of goods and services between Mexico, Unit States and Canada, eliminating the permissions, the fees, licenses and particularly the rates and tariffs, as well the liberalization of the financial sector.

In the context of the negotiation of 1992 of the North American Integration Treaty between Mexico, Unit States and Canada, was elaborated a new Law of Foreign Investment (LIE) that was published in the DOF in December 27th of 1993 [27].

The LIE of 1993 was modified by decrees published in the DOF in May 12th of 1995, June 7th of 1995, December 24th of 1996, January 23th of 1998, January 19th of 1999, June 4th of 2001 and July 18th of 2006. (Gomez, 2005: 676). The last actualization is of August 2oth of 2008.

This law has with eight titles, thirty nine articles and eleven transient for the better operation of the law it count with the Regulation of Foreign Investment published in the DOF September 8th of 1998. The regulation has forty nine articles and six transients (Gomez, 2005: 676). The only reform is the one of May 4th of 2009.

In the frame of the commerce liberalization, the LIE adapts to the new necessities of the economy with the finality to obtain more foreign investments. In 1999, the direct foreign investment amounted to 12,858.6 millions of dollars; while in 2008 achieve the number of 22,481.2 millions of dollars, which represent an annual average growth of 5.52%.

The total accumulation of foreign direct investment from 1999 to June of 2009 is of 227,017.6 million of dollars, which is placed in many economy sectors, although with the predomination in the manufacture industry and the financial services, with a participation of the 43.0% and 25.6% respectively.

[27]The antecedent of this Law, is the Lay to Promote the Mexican Investment and Norm the Foreign Investment that had as objective promote the Mexican investment and norm the foreign investment to stimulate the fear and balance development of the country". Diario Oficial de la Federación, March 9th of 1973, p. 5-9.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

With the objective of diversify and expand its markets, Mexico have continued establishing free trade agreements and other preferential agreements. Some of the last agreements are with Uruguay, which came into effect in July 15th of 2004, and with Japan, April 1th of 2005. Mexico also maintains bilateral and regional free trade agreements with: Bolivia, Canada, Unit States, Costa Rica, Colombia, Chile, El Salvador, Guatemala, Honduras, Nicaragua, Israel, European Union and the European Free Trade Association. In total, Mexico has 12 agreements of free trade with 44 countries. Also in the frame of the Latin American Integration Association (ALADI), Mexico maintains Agreements of Economic Complementation (ACE) with Argentine, Brazil, Peru and Cuba and with the MERCOSUR.

With almost all the free trade agreements that Mexico has with different countries, like the Agreements for the Promotion and Reciprocal Protection of Investments (APPRIs), incorporate disciplines in the investment field. In general, the chapters of investment incorporate in the free trade agreements talk about the sectorial liberalization, national trade, trade Mexican Official Norm, minimum level of trade, prescriptions of results, capital movement, expropriation and mechanism of differences solution, including the relation between the investors and the State. Only the agreement with Israel (in effect since July 1th of 2000), does not incorporate a chapter relative to the investment.

The neutral inversion

The neutral inversion is which allows the participation of foreign investment [28] in the social capital of Mexican societies, which do not have foreign investors for dedicate to some of the reserved activities for Mexicans or in those that are attached to the maximum limits of foreign participation, coinciding with that, their participation in these activities and the possibility to contribute in a bigger percentage to the allowed by the LIE, because this kind of inversion is not take on account to determinate the foreign investment percentage in the Mexican societies.

In this kind of inversion, the control of the company decisions are know the Mexican investors because the voting right is eliminated or new foreign rights are established, which, only get a yield for their inversion, but do to have an important role in the operation and decision making of the company.

[28] According with the article 2 of the current LIE for foreign investment is understand: a) the participation of foreign investors, in any proportion, in the capital of Mexican societies, b) the one made by Mexican societies with majority of foreign capital and c) the participation of foreign investors in the activities and events contemplated by the LIE. In the article 1 fraction V of the Lie normative is defined the participation of the foreign investment in the social capital as "the percentage of foreign investment in the social capital of a society, calculated in relation to the total actions or social parts which do not have the character of neutral inversion, including the action of social parts affected in trust".

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Because the lack of national capital for the development of specific activities and with the desire to promote the participation of foreign investment in these activities, is established for first time the concept of neutral inversion in the General Resolution Number 2 issued by the National Commission of Foreign Investment, published in DOF, June 21 of 1989.

The concept of neutral inversion was very criticize because was consider a type of inversion that was not predicted in the Law to Promote the Mexican Investment and Regulate the Foreign Investment of 1973 and because did not accomplish with the principles of novelty of the law and law reserve. Despite these critics, this concept was regulated more widely in the Law to Promote the Mexican Investment and Regulate the Foreign Investment of 1989[29] and then in the LIE of 1993.

This Regulation established two forms participation of the neutral inversion

a) For International Financial Societies for the Development in the capital of Mexican societies (article 8 and 9).
b) For Certificate of Ordinary Participation emitted by fiduciary institutions (article 12 to 15).

These certificates should be acquired by foreign investors and accomplish to conditions:

That the in trust patrimony would be constituted by representative actions of the social capital of societies with actions that will be quoted in the Mexican stock exchange.

The actions in trust integrate neutral series or "N" which only could be acquired by credit institutions as fiduciaries, in the trusts that for this effect could be constituted,

Of the first condition is derived that only could opt for this type of financing the companies that quoted in the stock, not having access, the rest of the companies, limiting their participation; After the concept of neutral inversion is established in LIE of 1993.

In this regulation like in its posteriors modification the neutral inversion is considered as the one that is made in Mexican societies or in authorized trusts and that is no computed to determinate the percentage of foreign investment in the social capital of the Mexican societies (article 18).

The current LIE, establish that the forms in which the neutral inversion could participate are:

Tool of neutral inversion emitted by trusts, with the authorization of the Economy Secretary, that give only respect societies, pecuniary rights[30]

The new tools of neutral inversion now are commercial paper[31], that can be positioned through the stock houses and have special regulation in the Law of Titles and Credit Operations.

[29] This regulation set up the bases of the new dispositions to promote the foreign participation in projects of investment in Mexico. Some of the most important modification are the regimen of automatic authorization, which allows, that an established company have any percentage of stocks by foreign investors or to increase the capital in existent companies, without the necessity of the authorization of the National Commission of Foreign Investment.

[30] The pecuniary rights relate to the economic participation that the investors have in the utilities of the Mexican societies for concept of the inversion that they made.

[31] Antes eran Certificados de Participación Ordinaria.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

These new tools are not attached to the conditions that should accomplish the Certifies of Ordinary Participation, the LIE and its regulation; do not say anything about it.

From the exposition of motives that Carlos Salinas de Gortari in the "Document of Presentation of the Foreign Investment Law to the Chamber of Deputies of the Union Congress" keep clear that can participate through these new tools, the mercantile companies by stocks, quoted or not in the Mexican Stock exchange, which constitute an advance in relation with the Certifies of Ordinary Participation. Salinas points: "The neutral inversion is a mechanism, that have proved be an scheme highly benefic in order that the societies which quoted in the stock market could cleave extern resources and financing of the investors".

Special series of stocks in Mexican societies, without voting rights or with limited corporative rights, previous authorization of the Economy Secretary and to be applicable of the National Banker Commission of Values (article 20). This new form of neutral inversion participation allows that not only the companies which quoted in the stock have access to this type of inversion, but all the companies, quoted or not in the stock.

It constitutes an advance in relation with the Certifies of Ordinary Participation that established only the participation of the companies that quoted in the stock. Eliminating the voting right or establishing limited corporative rights, the LIE, does not allow that the foreign investors take control of the company neither intervene in the decision making, not even in the those which correspond in the ordinary assembly and only will have pecuniary rights or limited corporative rights.

For International Financial Societies for the Development in the society's capital of Mexican societies (article 22). Consider International Financial Societies for the Development the foreign moral people who have as objective promote the economic development, through the contribution of the temporary risk capital, grant of preferential financings or technic support of different types, according with the article 24 of the Regulation of the Foreign Investment Law.

According with the article 25 of the same regulation, named Societies will be forced to previously obtain the recognition of the National Commission of Foreign Investment and in the case that they desire to participate in reserved activities or with specific regulation, should obtain favorable resolution of the Commission and accomplish with the article 29 of the Regulation. With the objective to norm and control the inversion from other countries, the LIE of 1993, on its article six points the economic activities exclusive for Mexicans or Mexican societies with inclusion of foreign. The current Law, in the same article, points that these activities are:

- National land transport of passenger, tourism and charge, without include the services of mailing and package.
- Retail trade of oil and distribution of liquefied petroleum gas
- Radio broadcasting service and other of radio and television, different of the cable television

Institution of development banks, in terms of the subject law;

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

The benefit of the professional and technic services that expressly point the applicable legal dispositions.

The foreign investment will not participate in the mention activities and societies in the present article, directly or through trusts, social pacts or statutory, pyramid schemes or another mechanism that give control or some participation, except for the disposition in the Fifth title of the law. In the article seven of the LIE established the maximum amount and the areas in which could participate the foreign investment (see chart num. 1).

Limits to the foreign participation in economic activities and societies attached to the specific regulation, 2009

Up to 10%	Up to 25%	Up to 49%
Production Cooperatives	National air transport	Insurance institutions
	Transportation by air taxi	Bonding companies
	Specialized air transport	Exchange hause
		General Deposit Warehouses
		Companies referred to in Article 12 bis of the Securities Market Law
		Administrators retirement funds
		Manufacture and sale of explosives, firearms, cartridges, ammunition and fireworks excluding the acquisition and use of explosives for industrial and extractive activities, or the development of explosive mixtures for use in such activities.
		Printing and publishing of newspapers for circulation in the country.
		Series "T" of companies owning agricultural land, livestock and forestry
		Freshwater fishing, coastal waters and the exclusive economic zone, excluding aquaculture
		Integral Port Administration
		Port pilotage services to vessels for inland operations, in terms of the law of matter.

Chart 1

Source: Foreign Investment Law of December 27th of 1993, the last reform of August 20th of 2008.

The limits for the foreign investment participation pointed un this article, could not be directly overload, neither through trusts, convenes, social pacts, pyramid schemes or any other mechanism that give control or a bigger participation to the one is establish, except by the disposition of the Fifth Title of this Law.

In the article 8 is established the economic activities and societies in which is required favorable resolution of the National Commission of Foreign Investment in order that the foreign investment make part in the percentage major than 49% which are: port services to vessels to make operation of interior browsing, such as towing, mooring and lighterage, shipping companies engaged in the operation of ships only in high traffic, concessionary societies or aerodrome licensees service for public, private service of preschooler education, primary, school, high school, higher and mixture, legal services, credit information services, value qualifiers institutions, insurances agents, cellphone telephony construction of pipelines to transport oil and its derivatives oil and gas drilling and the construction, operation and exploitation of railroads which are general communication ways, and provision of public service of rail transport.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

It required favorable resolution of the Commission when the total values of actives of the societies which is about, in the moment to submit the acquisition solicitude, overloading the amount that annually determinate the Commission (article 9).

From the above, came out that the foreign capital could not participate in the activities and societies mentioned before, being a necessary condition but not enough, because the fifth Title of the LIE establish that the foreign capital can participate in the activities exclusive for Mexicans or Mexican societies through neutral inversion. Until February of 2006 there are around 201 resolutions of the Economy Secretary about neutral foreign inversion, that have been authorized, working the same number of companies through the neutral inversion. (Mares: 2006).

The Senate sent to the Chamber of Deputies a letter about neutral inversion with the only finality to make the inversion transparent. The letter sent April 4th of 2006, contains:

- The application of the term that the Ministries of Foreign Relations and Economy have to authorize the entry of foreign neutral investment, and in the case of resolution operate the operates the ficta affirmative:
- The neutral inversion is redefined, as well, the flows that could be computed under the same, therefore is consider as such, only to the investment belonging to:

a) Trust
b) Investment societies
c) Funds of foreign investment

- The attributions of the National Commission of Foreign Investments are applied, with the finality to establish more controls in front the possible utilization of the neutral inversion figure as way of simulation.
- Specific penalties are set to the simulation through the use of any scheme that allows the foreign investors overload the established limits in the Law of Foreign Investment.

The Chamber of Deputies rejected this initiative for the fundamental principle that the inversion is benefic for the country and because will go against the principal objective of the LIE, which I the attraction of foreign investment to the country, its arguments are:

That the foreign direct investment is fundamental for the countries' development, being in an important source of financial resources to long term and, therefore, exerting a strong impulse to the economic growth through the generation of new employs, the complementation of the national inversion, the strength of the productive sector, through transference of knowledge and technology.

That the Law of Foreign Investment is of public order and the general observation in the entire Republic and its object is the determination of rules to canalize the foreign investment to the country and provide that this contribute to the national development.

According to the article 18 of the Foreign Investment Law, the "neutral inversion is that which is made in Mexican societies or in authorized trusts according to the present title and it will not be computed to determinate the percentage of foreign investment in the social capital of the Mexican societies."

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

That the stage direction of neutral inversion only to the belonging of trusts, investment societies or fund of foreign investors, is clearly violative of the Free Trade Agreements and of the Reciprocal Agreements if Promotion and Protection of Investments (APPRIS), of which Mexico is part, concretely about that constitute a direct violation of the principle of "National Trade", through which: "Each one of the parts will give to the investors of the other part a treat not less favorable to than the one is given, in similar conditions, to its own investors referent to the establishment, acquisition, operation, sell or other disposition of the inversions" (example article 1102 of the TLCAN).

That with the redefinition of foreign investment prevents the possibility of investment in the sectors with restrictions for foreign investment, pointed in the article 6 of the Foreign Investment Law, such as land transport, oil commerce, distribution of liquid gas, service of radio broadcasting and other radio and television.

In the same way, this reform will stop the inversion in the sectors with specific regulation, mentioned in the article 7 of the law, like airlines, telecommunications, insurance and financial institutions, financial leasing, port administrators, retirement funds management, etc. in other words, all the foreign companies and corporative groups, will be exclude, if they are not trusts, investment societies or investors funds.

That the own Free trade Agreements and APPRIS, subscribed by Mexico and approved by the Senate, in particular the TLCAN, establish that the part could not modify any existent disposition to the date of the implementation of the Trade, in such way that named modification has as effect reduce the rate of conformity with the principles of the Trade (Article 1108 of TLCAN), like is the principle of "National Trade", except that mention modifications be correctly excepted or reserved by Mexico (Annex I of TLCAN).

That the expansion of the terms to authorize neutral foreign investment, is contrary to the policy of regulatory improvement, which has as finality to simplify and streamline the procedures to the public administration, also is estimated that the terms establish in the Law of Foreign Investment are enough and suitable, and of conformity with the article 31 of the Federal Law of Administrative Procedure, supplementary of this Law, is possible to expand the legal term to solve the solicitudes of neutral inversion.

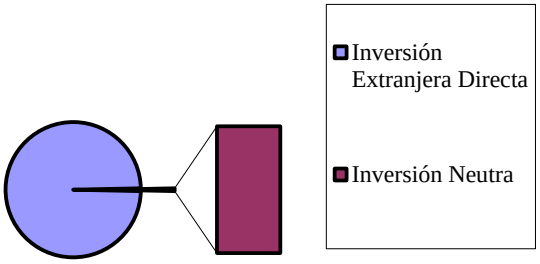
Extend the power of the National Commission of Foreign Investment to solve about the authorization and the terms and conditions of the neutral inversion participation in any of the activities pointed in the article 8 of the Foreign Investment Law, is contradictory, because the neutral inversion was designed especially in order that the foreign investment participate in the reserved or with especial regulation activities, contemplated in the articles 6 and 7 of the Law.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

The proposal of infractions, relative to the neutral inversion, results understandable, however, a reform to the sanctions of the Foreign Investment Law should be integral, because in sanctions subject there are general and specific rules, and should also exist a balance between the different hypotheses. Consequently, the authority should has sufficient scope to solve the events and acts with a proportional strength to the importance of the fact.

The Chamber of Deputies perform according to the tendency that Mexico has been following about foreign investment, because Mexico has trades of investment with different nations of the world, which carry to violate a one of the clauses that the foreign investment required from national trade . This clause is include in almost all the trades that Mexico has signed being like the APPRIS and the integration trades, like for example the trade of Mexico with the European Union. According to the Economy Secretary would lost between 200 and 500 millions of dollars in the period of 2006 and part of 2007 respectively, if the bill were approved.

If we compared the fact of the accumulated neutral inversion of 1989 until 2007 [32] (1,257.9 millions of dollars) and the IED (194,560.4 millions of dollars) that understood the period of 1999-2007 in a graphic (Graphic 1) it is noticeable the insignificant of the neutral inversion.



Foreign Investment

Graphic 1

Given the not meaningful of the neutral inversion cyphers we should not be afraid of the foreign capital not even of the neutral inversion. The neutral inversion is not an important amount yet. However, helps the national companies to improve its productive efficiency and human capital.

The Economy Secretary will send an initiative, that until now have not been presented, to the Congress of the Union to promote the growth of the neutral inversion in some activities, not specified yet. The initiative created favorable expectative in the American Chamber of Commerce because its members are 2000 companies, with a potential of more than 100,000 millions of dollars of foreign inversion in Mexico.

Some of the national companies that have neutral inversion are: Televisa radio that participates in the Prisco Company that belongs to Spanish capital and Telefonica which also belong to Spanish capital in Pegaso.

[32]Since 2008 the Economy Secretary, is going to provide facts about neutral inversion on its annual inform.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Also the Americans had done it in UPS message and the telecommunications Maxcom ang Acir Group, which have investments of Clear Channel and Enlaces Terrestres Nacionales (ETN), as well Telefonicos de Mexico (Telmex) and the Group of Mexican telecommunication (GTM) this last with Spanish foreign capital.

Application of the neutral inversion concept has carried some confrontations between many companies. For example, recently Telmex had a confrontation with GTM because was consider that this company violated the article 7 of the LIE, having 97.7% in direct investment and 89.6% under control of its Spanish subsidiary Telefonica de Moviles, S.A, with which would be overloading the allowed limits of the foreign investment.

Telmex requested, in September 4th of 2007, to the Federal Commission of Telecommunication (COFETEL), to determinate if its forced to provide the interconnection to its telephonic networks to GTM, which will allow the expansion of its telephonic services, despite to considerate that was violating the LIE. In October 31th of 2007, Eduardo Ruiz Vega, Commissioner of COFETEL, said that GTM "has a shareholding of 51% of a Mexican company and 49% of Telefonica Moviles. With conformity to the LIE was possible to give an authorization for the participation in the Mexican stock capital through the neutral inversion way."[33].

This resolution points that for participate GTM through neutral inversion, this participation, is not consider as percentage of the foreign investment in the social capital, according with the disposition of the LIE.

In August of 2008, was a discussion the initiative to eliminate the current restriction that only allows a maximum of the 49% in fixed telephony, which will make necessary modify the LIE[34], many sectors are in favor of this posture, for example, Luis Tellez, CEO of the Secretary of communication and Transport (SCT) said "We would see with new eyes the opening of the segment to this investment that is present in the mobile telephony, because this will imply more competence"[35].

The arguments of Tellez to support this initiative are that the fixed telephony has operated in a regime of inversion not very optimum that has expressed in a low penetration of its services, high level of tariffs and low level of quality. Telmex has showed in favor of this initiative because consider that the help to transparent the presence of foreign companies which search to participate in the fixed telephony, avoiding confrontations between the companies, if the legislation is more clearly, to the respect.

Conclusions

The necessity to promote the development of specific activities, motived that the Regulation of the Law to Promote the Mexican Inversion and Regulate the Foreign Investment of 1989, as will the LIE of 1993, include the concept of neutral information.

[33]Periódico Reforma, October 31th of 2007.

[34]Since June of 2008 is a discussion in the Congress of the Union an initiative to reform the current limit of foreign participation of 49% in fixed telephony.

[35]Notimex/Síntesis Informativa, August 1th of 2008.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

The neutral inversion allows the participation of the foreign investment in reserved activities for Mexicans or in those that are attached to the limits of foreign participation consider in the LIE (article six and seven respectively).

It is considerate neutral because is made through special series of stocks or neutral investment tools in Mexican societies or in trusts respectively, which do not give right to the vote about the decision of the company because its participation is not consider for effects of the percentage in foreign investment consider in the LIE. Giving respect of societies pecuniary rights, in other words rights about the utilities of the Mexican societies, which are derived of its participation in the inversion of these societies. The rejection to the Senate's letter, April 4th of 2006, by the Chamber of Deputies was justify why it was against the principles of investors attraction and of the signed trade by Mexico with different nations of the word.

The neutral inversion is not meaningful in relation with the IED, of 1989 to December of 2007, is just 1,257.9 millions of dollars while the IED of 1999 to 2007 of 188,636.8 millions of dollars, having preference and power in the economy. The neutral inversion is insignificant but represents a relief for the companies to improve their efficiency as much as technologic as of human capital. The confrontations between companies for the application of the neutral inversion concept had been solved by the COFETEL, according to the dispositions of Telmex and GTM, end in favor of this last one, because its inversion more than 49% was made under the scheme of neutral inversion and according to the LIE, this participation is not consider as percentage of foreign investment.

Fixed telephony subject, in August of 2008, is discussed an initiative to eliminate the maximum limit of foreign participation of 49% being agree with this initiative many sectors, between them, the SCT because favor the competence between companies a will give more efficiency to the services and better prices.

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Administration of the MEVI integral evaluation model as strategy for increase the competitively of the institution of higher education

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Higher education institutions are exposed to the demands of government institutions, learners and businesses since the first one sets the direction for education, the second quality of the teaching-learning process, and the third specific features that must have the graduate to enter the workplace. Not an easy task, however, the extent of its possibilities give effect to the expectations of every one of them. Be sent to new paradigms, such as the comprehensive assessment of student learning is a strategic way to consider the retention and profitability of the institution in the education sector.

IES, Educative Sector, Instructive Sector

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Introduction

The present research about the topic of Integral Evaluation has an orientation based in the promotion of convictions and personal cares derived more from academic experiences than administrative that without left to consider factors that have had relevance in the educative tasks of our country, pretend to become in a modest contribution to named task.

An example that contribute to enrich the research, is the importance that has the text "Twenty Telegrams for Higher Education and a desperate petition" of Antonio Gago Huguet (1986), that was presented in a forum dedicated to the higher education during the campaign of the presidential candidate, Carlos Salinas de Gortari, which include some proposals that were implement to the sectorial program of the government. It is important to mention that this date marks a milestone, because since then, the topic of evaluation has been priority in the plans of the federal government. We should add that since then, is a lot what it has advances in evaluation of the higher education made between the IES [36] and the governmental authorities, like is the case of the CIEES[37]. Linking the priority to incorporate the evaluation topic to the government plans and the labor ambit in the international frame, this research of descriptive character, will clarify the dimensions of the Integral Education that the teacher of undergraduate level, could apply the learning of the student inside an holistic frame.

For that, was consider pertinent describe in the justification the influence that has the extern ambit (international and national) in the evaluation systems of the Mexican IES.

In order to clarify the ambits mentioned ahead, first was required to define in the theoretical foundation the basic concepts under which is conceptualized the "Integral Evaluation" and in this way, conceive it as the process through which one or many characteristics of a student will be analyzed, and that in function of criteria and indicators, and harmoniously with the knowledge measurement, allows the teacher to make a judgment around the student education.

The obtained results, have allowed propose enrich the evaluative method of any Institution of Higher Education and with base on it, design the Innovation Project: "The implementation of the Integral Evaluation Model MEVI as strategy to increase the competitively of the Institutions of Higher Education IES".

Justification

Throughout the history of man, the education have been being "understood as the transmission of the cultural knowledge of a society to its new generation that has per principal object, adapt for the new generation the model of life established by the social system that was give…" (Carrillo 1989, 87), which, besides of being the tool to develop its intellectual faculties, has been promoter factor of the changes on its behavior, that's why it is supported by many elements for the accomplishment of its objectives (educative models, strategies and different styles in the learning teaching process, besides the evaluation).

[36] Institution of Higher Education

[37] Interagency committees for the Evaluation of the Higher Education.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

During all this time, the circumstances that round the human being have favor the existence of intern and extern changes, qualitative and quantitative, therefore, the same education has seen in the necessity to adapt itself to the new circumstances that each epoch had demanded, Like that, this transmission of knowledge, independently of the time, has seen attached to the premise of being evaluated.

Nowadays, this fact to evaluate students is in discussion, because make this activity has been a delicate and complex homework, because are in game a group of attitudes, predispositions and even prejudices that should be considerate with the biggest balance possible.

After, made an evaluation of the student learning is not something simple, because require of interest, compromise and coordination in order to favor the implementation of the integral evaluation as objective process, constant systemic that enrich the teaching-learning process of each higher educative institution, but more than anything, that promote the integral behavior of the graduated students according to the requirements of the companies solicitant of labor force. The evaluation systems inside of a globalized context.

If the intention of this research is to contribute with elements that help to enrich the evaluative standards of the IES, then, is required to find the point of reference that facilitate named task, for that, it saw fit to identify un the international ambit which in the evaluation field has been doing in the last decade. Next, mention some activities that in different latitudes of our continent were made.

In the international ambit, The Organization of Ibero-American States (OEI), since 1993 crated the Latin American Laboratory of Education Quality Evaluation[38], As a technic resource to disposition of the Latin American countries which constitutes as well, like a discussion ambit technic-politic for the problematic of the learning and its related variables. Its objectives consist in the identification of scholar learning standards for the region and the appreciation of the rank and level of achievement of such standards in the countries; the promotion of the educative change that will allow achieving such standards; and the formation of human resources which will make possible that change.

Between the countries participants are: Coordinators of the Education Ministries: Argentina, Bolivia, Brazil, Colombia, Chile, Costa Rica, Cuba, El Salvador, Honduras, Mexico, Paraguay; Peru; Republica Dominicana and Venezuela, also the UNESCO.

The relevant about this mention is the justification that support the Laboratory, "The appreciation of the level and quality of the education through the measurement and evaluation, charge every time more importance, in the average that the countries recognize the advantages to establish and compare theirs performance inside an international context.

The statistics that countries usually recollect are not exhaustive in Education. The majority of the efforts are dedicated principally to describe and quantify entry variables. It has not gave many attention to document how the schools work or what and how much the student learn. Even do, the majority of the fact could help to define the use of the resources or to establish the effectively of the resources for the Education, are not at hand".

[38] Revista Iberoamericana de la Educación. Número 10

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

In other point, the OEI mention the methodology aspect, in which envisions that in the present decade will produce a growing and gradual complementation between the quantitative and qualitative focus, for the determination of the achievements of the learning, conform to the authorities and planners center their attention in new medias of improvement for the teaching. Also of the observation of the knowledge and skills develop required in order that the student be active part of the culture and possibility their insertion in the work market, another reason to make studies about the scholar performance is the search of new efficacy pedagogy.

Continuing with information emitted by this organism, is considered that the international studies facilitate the compared study of the educative efficiency in many systems simultaneously and that named studies allow generating national informs about learning, centered in eventual differences based in the genre, the urban or rural condition, between polyvalent or traditional schools, and consequently contribute with information about Education in a country, its performance and the incident variables on it. Finally, and for effect of the project, was take on account its finality to make this studies, "offer a model big enough in order that could be appreciate the global effects of the teaching over the learning".

2º Program for International Student Assessment (PISA) of the Organization for Economic Co-operation and Development is an example of the worried of many countries to strength their educative systems, searching to achieve more quality learning, particularly those that favor the development of competences and skills important to confront the challenges of life, in societies with advanced economies and mature democracies.

PISA is a comparative project of evaluation promotes by the OCDE (Organization for Economic Co-operation and Development). A characteristic feature of PISA is its integrator vocation, because is based in the collaboration of the countries and is guided in conjunction from common interest in educative policies. With the finality to guaranty that the results of the educative performance to be comparable, PISA evaluate similar population; because there are differences between countries about the nature and duration of the education, the age of entry to formal school and the structure of the educative system: the scholar grades are not international comparable, that's why was decided to opt for define the objective population with reference of a determinate age.

In this way, PISA include to the students between 15 years and three months and 16 and two months, in the moment of the evaluation, without caring the rate or type of institution. In Mexico is from the high school level and are exclude, therefore, the students of 15 years that still in some primary grade, an also of those that no dot assist to the school. In this form could be observed, that the world tendencies, by –social, politic, economic or commercial blocks- are improve more the educative systems and at the same time, the evaluation systems that guaranty the quality of the graduated that answer to those educative standards by blocks.

To this respect, the Dr, Larios Muñoz Izquierdo, Director of the Institute for the Research in Education and Investigation of the Universidad Iberoamericana, comment: "I always said to the authority: do not be afraid to the globalization.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Do not worried if is open to the market, to come other big and important institutions, because the key is in reinforce our capacity in answer with a better educative quality.",” … if are going to come 10 or 20 universities, well, let them come. Porque yo soy bueno, y tengo calidad”… Because I'm good and i have quality”… of course his commentary does not let place for doubts the tendency of the foreign universities and its labor in Mexico”[39]

The influence of our Educative system in the Higher Education Institutes

Since some decades, the issue of the educative evaluation in our country has been under the magnifying glass of experts that have considered to this as an innovator activity of newest incorporation to our educative system. It have been object of different interpretations and attitudes of all kind: for example, there are who consider as a chimera (for being something impossible to achieve), there others who consider it the panacea (for being the solution to the entire problems) although, only in some occasions, is said about it what it is for real, "transmission of the cultural knowledge of a society to its new generation that have as principal objective, adapt the new generations to the life model established by the social system that is given…".

This diversity of criteria and opinions warning a question in which are involucre different elements. As was mentioned before, the educative evaluation is a complex issue and it is from its condition of inevitable process. So, the evaluation, is done well or wrong, but is always done.

Therefore, the problematic of the IES in our country, is not established between the option to evaluate or not evaluate, because in all of them is being evaluated, the situation is how they are doing it.

1º in first instance is estimated that the preliminary facts of the scholar cycle 2004-2005, in higher education could be an area of opportunity for the IES. We only have to observe the following facts, and realize about the importance of why we have to improve, "I higher education, assisted to the universities two millions of 552 thousand students. From the total, tow million 393 student cursed the school modality (87.6% graduates, 6.1% normal and 6.3% Postgrad) and in the no-school teaching were attended 159 thousand" [40]

2º In the other hand, to know our educative system, we used one of the most recognized specialist in educative evaluation, the teacher Antonio Gago Huguet, founder and for many years principal of the National Center of Evaluation for the Higher Education (CENEVAL), who on its obligation "Notes about Educative Evaluation" [41] consider the following points:

"Of the educative evaluation is known:

- It is a function present since the school exist and since was established the first governmental authority of education.

- It is an associate function to any attempt to insure the quality of the programs and the tasks of education.

[39] Periódico Libertas. Año 16, número 181. Septiembre 2005

[40] Periódico Libertas. Año 16, número 180. Agosto 2005

[41] Apuntes acerca de la Evaluación Educativa. Antonio Gago Huguet. Secretaría de Educación pública. Diciembre 2002

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

- It is a function which concludes with the expression of a value judge, with the adjunction of and calefactive.

- is only and auxiliary function that does not have ends on itself, because the important it is not evaluate, but what to do after we know the results of the evaluation.

- It is something that we all do, before to buy shoes, enroll a child in a school or before to give a subsidy to a university.

- Evaluate a complex activity in which are imply ethical principles, technic procedures, ideological positions and eve the personal sensibilities.

- There are well done evaluation and wrong ones too; and between the wrong evaluations, some are deliberately wrong in function to the interest and predetermine purposes.

- The majority of people like to evaluate, while are minor those who accept calmly accept to be evaluated.

- It is perceived as threat, but also as opportunity of knowledge; that some see it as bureaucratic exercise and others said as the panacea of the solutions.

- Teachers who do not have another source of authority on their faculty to give qualification, although there are also teachers who have authority for their skills and talent in order to achieve that their students achieve the best grades.

- People who has degrees or titles and their knowledge are not enough, as well for people which knowledge are vast, but do not have degree or accreditation.

- Of prejudge, of reputations of educative centers that replace the evaluation process with publicity campaigns.

3º finally, is important to mention that inside our country exists a headland of evaluation which norm the Institution of Higher Education IES, about which the Huguet teacher mentions:

"The educative programs acquire official value when the federal government or any state government gives formally named recognition.

There is also the legal figure of the "incorporation", through which a public institution of medium or higher education could give legal recognition to the programs of a private institution. In the case of the autonomous institutions, the respective organic law expedited by the legislative power priori gives legal validity to their programs. These are the traditional procedures, predominant, to accredited the educative programs in the posterior levels to the obligatory basic education.

Recently start their operation other accreditation instances; are organisms that make independent evaluations of the official procedure in charge of the educative authority and, without having legal necessity, play the role of a social accreditation.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Gradually this function has been wining ground. In such circumstance, the responsible of the educative programs has a double challenge; for a site achieves the recognition of the official value and for the other site, being creditors of the credibility that other instances give in which participate academic organizations, gremials, professions schools, companies, etc.

The circumstance of the double accreditation barely starts and is obvious that the majority of the directives is conformed with the official accreditation which is almost always poorly demanding. However, every time is more evident the advantage of count with the social accreditation.

Of the traditional evaluation with base only in the inputs of the program we passed to the consideration also of the quality of the process and results; Of two simple statistical reports presented by the own evaluative institutions, we continuous with the confirmation and verification by the "pair committees", and through the use of test of knowledge and skills of national value.

The process of evaluation and accreditation of educative programs are made now- after ten years since the creation to the National Commission for the Higher Education Evaluation (CONAEVA)- through a network of organism and specialist programs which grow quickly:

In that network highlight the National Council of Science and Technology CONACYT; the National Association of Universities and Institutions of Higher Education ANUIES, the Mexican Federation of Institutions of Higher Education FIMPES.

National Center for Higher Education Evaluation CENEVAL; the Council for Accreditation of Engineering Education CACEI, the National Council of Education Ontology CONAEDO, the nine Interagency Committees Committees COUPLE Evaluation in Higher Education (CIEES) and others the regularly exist. It is a group of institutional instances and intersections that have built an vast system of reference frames, criteria, indicators, standards, measurement tools, stimulation and strategies of promotion which have as fundamental purpose the contribution to improve the quality of the teacher functions and the research.

Our educative system, in which do the evaluation practice and the accreditation, is heterogeneous and contradictories; this features are evidence of the transition phase that we live. It is necessary to wait a soon arrival to the consistence and reasonableness of the mature phases. From the step to these desirable circumstances feeds the vision of the future. With this information could be infer that the evaluation of our educative system could consolidate the ide to improve the education in Mexico, all depends of how prepared are the Institutions of Higher education to face these challenges.

The, should be the evaluation volunteer or obligatory for the IES?

In relation with this disjunctive, we agree with the following points expressed by the teacher Gago Huguet [42] : "Will be predominant, for some years more, simply because is less risk for authorities, as much in the educative institutions as in the governmental depended.

[42] Apuntes acerca de la evaluación educativa. Antonio Gago Huguet. Secretaría de Educación Pública. Diciembre 2002

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

However, in parallel form will gestate a precision about these authorities that will drive to a juridical formalization of the functions and characterizes of the evaluation and accreditation.

The precision will approach from the public opinion, since the educative communities and from the economic and social sectors. The legitimation of this precision if given by the necessity to improve the current quality of the educative functions; In this context, is easy to see that will be more exigencies respect to what is supposed to be understood by good educative quality. It is easy to see that will not still being valid that only be the teacher who evaluate the learning of his/her students in conformity with his/her personal points view; that will not be valid that is enough have one academic tittle to exert a profession in the entire country and during the entire life; also is easy to see that will not be acceptable that the continuous operating of indistinct form as much the accreditation programs only officially as those which count with double accreditation.

Could be prevent that timidity and indecision will imply bigger risks for the authorities, which will carry to the establishment of norms and laws in which the evaluation and accreditation will stop being something voluntary, something conjunctural and something susceptible to avoid if is necessary."

According with this national panorama, could be said that the student community, every time more, will require the accomplishment of the graduation profile promote by the IES, while the business sector will cheer up the improvement in the quality and expansion in the studies coverture.

In fact, that during the next two years the conditions for the institutions of higher education will be modified in:

The operation of the evaluation organisms on each IES in conditions and circumstances because they will not be symbolic or just nominal, but also juridical legitimized and underpinned with enough elements and technic and economic resources,
The daily implementation and operation of the departmental evaluations in the IES.

The effective congruence between what the curriculum says and what happens and in done in the activities of teaching-learning and the evaluations that dire to the certification/graduation.

The forced relationship of periodical evaluation process, through criteria, standards, indicators and tools, as much as internal as external on each IES.

4º about the institution that has been worrying to offer technic services and have contributed in the recent times to create a national system of educative evaluation is the CENEVAL. In where, its tolls of evaluation are for the service of the IES of the educative authorities, of the companies and society in general.

Its purpose is to verify that the extern evaluation in order to consider as "naturalization letter" in the Mexican IES, that the students do not only conform with the evaluation that their own teacher do; that the new generation of professional have the necessary attitude to face the repeated evaluations to which will be submit throughout their professional life in a society every time more exigent and more dynamic.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Synthesizing, could be mention that in such globalized ambit:

The education is not free to suffer modification as much on its strategies as on its application mechanisms, and to continuous being rentable, more than anything the private Institutions of Higher Education, require not only of actualization but also a step ahead in front the growing competence in the world.

While in the national ambit

- There are a big number of potential students who desire to acquire the necessary tools to satisfice the labor offer.
- The university evaluation, although is not left to be complex, is viable.
- Its realization required the participation of the university student and other extern instances, in the symbiosis that reflects the social development and the welfare of the population.
- The university evaluation should not be seen as finality on itself, but as a tool which contribute elements to decide posterior actions.
- The evaluation allows identifying and not to be the cause of the problems.
- Costumes and makeup the evaluation will not make that the reality change.

Sooner or later the social groups form a judge about the universities, although not always will do in with base in evidences of starting for criteria or suitable indicators.

Theoretical foundation

In all individual or group activity will always be important identify the rate if accomplishment of the objectives, success, achievements, failures, limitation, etc. in other words, always will be important evaluate the fruits of our effort, and for that, is required beforehand establish metes, because is not possible to evaluate something from a point to get to another. In this form, the evaluation process usually recognized as value elements for the educative authorities, although also is necessary that its results be exploited by the teacher to feedback their own practice.

In this context and given the central role of the teacher in the educative process, the use of the evaluation from this key actor will help that the school valuate their achievements and limitations and develop better teaching forms which allow them achieve higher levels of quality, for that, in the following pages, will be described the concepts that we believe are appropriate for the innovation project.

What is the evaluation?

Traditionally the evaluation was conceived and practice as a terminal activity of the teaching-learning process, however, the evaluation in an expanded sense consider the institution on its totality; under this perspective, the problematic of the educative evaluation have been in the eye of the hurricane of the educative system in Mexico, because with the globalization tendencies there are who consider it as an innovator activity in the educative systems around the world, from which, of course, our country have not kept apart, because we will only need see the recommendations that the World Bank made in 2004, to realize that the term evaluation have acquired more relevance inside the educative ambit:

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

"The educative system in Mexico at the same that other Latin American countries will have to increase the number of hours in their education…".

Now, that relevancy have given pattern to interpretations and attitudes of all kind and in all the levels of our country, this diversity if points of views put in manifest that the educative evaluation in a complex issue that difficulty allows to the involved sectors agree in the design of a process that accomplish with the expectative of our society, leaving as sequel a disjunctive, in which educative institutions is evaluate and not evaluate? The answer id, yes, is evaluated, but not always is done correctly.

This introductory reflection carry us to a first conclusion: the evaluation of the education should include quality in the same process of the evaluation; from which we should make a distinction between educative quality and evaluative quality, and define two concepts, the education and the way in which the education of the student in evaluate. For effect of this project the term in which are we interest on is the second, identify the way in how the student is evaluate, to support the implementation of a Model of Integral Evaluation in the institutions of Higher Education. In this form, were considerate different concepts and authors. For example, in the dictionary the word Evaluation is defined as: "point the value of something, estimate, appreciate, or calculate the value of something".

In this form more than exactitude what the definition searches is establishes a quantitative or qualitative approximation. Give a value, a judge about something or someone, in function of a determinate purpose, picks up information, emit a judge with it from the comparison and then make a decision".

In technic terms is possible to define to the evaluation as: "The phase of the educative process as the finality to check, of systematic way, in which measure have accomplished the proposed objectives with advance. Understanding the education like a systematic process, destined to achieve positive and durable changes in the behavior of the subjects, integrate to the same, in base to defined objective in concrete form, social and individually acceptable". P. D. Lafourcade, (1996).

Hilda Taba (1986), talks about the evaluation of the curriculum and considers that this "could be evaluated on its objectives, its approaches, the quality of teacher, the student preparation, the relative importance of the different subjects, the rate in which the objectives are accomplish, the teaching media, etc."

In this sense, the institution and the curriculum are not a final product, but are process which in the moment to be evaluated could be modified in order to give them a complete change of route if this is required. In this way, the evaluation to institutional level has as purpose judge the social, economic and cultural education of the educative institution in relation to the development of the society." But for B. Macario (2003) the evaluation consists in: "make a judgment of value about the evolution or results of a student, with the finality to take a decision". J Maria Sancho (1994), defines the evaluation as "the relation of a group of actions guided to pick up a number of facts around a person, a fact, situation or phenomenon, with the finality of make a judgment of value, which generally is in function of pre-established criteria and which has as finality inform for the decision making".

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

This means that the evaluation activity could have many finalities, like for example, determinate the efficiency of the educative institution, the viability of a study plan, the teacher competence, of the graduated, the achievements of the students; determinate of the curriculum is congruent with the necessities of the social, economic and politic reality of a country.

Otherwise, "the evaluation is a systemic operation, integrated to the educative activity with the objective to get its continuous improvement, through the knowledge of the most exact possible of the student, of the entire aspect of her/his personality, contributing adjusted information about the same process about all the personal and environmental factors that in this impact. Points in which measure the educative process, its fundamental objectives and confront the set up with the actually achieved."

A. Pila Teleña, (1989). Another concept of evaluation from which rescue important elements is of Manuel Fermin (1989; who says that "from the educative point of view, is possible to define the evaluation as a systematic, continuous and integral process destined to determinate until which point were achieved the educational objectives previously determinate. Is a process that appreciates and judges the progress of the students according with proposed finalities or goals to achieve".

To this respect, D. Stufflebeam (1976), assures that "the evaluation implies comparison between the imposed objectives to an intentional activity and the results that produce. It is necessary to evaluate not only the results, but also the objectives, the conditions, the media, the pedagogical system and the different media of its implementation".

In this form could be inferred that the evaluation is like the indicator which compare the obtained results against the established objectives. Of course, in the educative ambit, this indicator could be useful for many things, such as:

- Modify the long term objectives, because these could be establish so high that is hard to achieve them or, so low that they are easy to achieve, provoking then the lack of motivation or stimulation to continue.
- Modify the technic or systems of teaching-learning used when the results are not the expected.
- Be an stimulation to favor the self-evaluation of the student
- Modifying the custom that the student should be qualified and evaluates form the exterior denying them the opportunity to participate in this process.
- Enrich the opening clime, confidence, responsibility in the relation teacher-student.

Like Stenhouse said (1084): "to evaluate we have to understand and for that, the teacher should be a critical and not just a qualifier."

For example, the decision that should take the evaluator if want to land someday, is short its work and select the following:

- The subjects and objects that will be evaluate.
- The criteria, indicators and units of the measure that will use to do the evaluation of each element.
- The tools, the procedures and the people or organization that will do the evaluation.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

- The standards of parameters that will allow classify and establish the quality level of each subject or object, as the evaluated instance.

With base in the former concepts, we could say that:

- The evaluation of the educative fact is an integral, systemic, gradual and continuous process that starts when the continuous situation study starts through the entire educative process, ending with the analysis about the intellectual and social development of the student.

- The evaluation is the aspect to judge, is a process that conclude in a value judgment. Evaluate goes beyond is more complex that measure, count and examine that are activities which are implied, cover and integrate in a valorative synthesis.

The evaluation also implies the activities of compare and praise highly, because to judge something or someone is necessary to previously consider the different circumstances in which happened what if judge.

Evaluate has as closer synonym to qualification, in other words, attribute to a person or thing some quantity, some sum or combination of attributes with its respective adjective. From there that, reduce this in a simple scheme but operative, could be said that evaluate is the art to assign adjectives in fundament form.

To know better the intention of the evaluation, we saw convenient observe the differences that exist with the measurement, for that, then are describe the characteristics of the last to after analyze the possible relation that exist between both concepts.

What is the measurement?

Nunnally and Berstein (1995) said to us that the classic definition of measurement belongs to Stevens, who in 1957 affirm that measure in a big sense is assign numerals to the objects or events according to the rules. In fact, consist in rules to assign symbols to objects in such way that:

Represent quantities or attributes of numeric form. Points that the attribute and the object are present.

Define if the objects fall in the same category or in other different with respect to essential qualities.

We also could distinguish two types of measurement process: the direct and the indirect. In the direct, is put in direct correspondence a measurement tool with the property of the measurement object.

That is how it could be inferred the quantity through manifest indicators. In those cases, we in front of a second type of measurement: the indirect.

For example, it is possible to use answer to a group of questions to determinate the quantity of knowledge about history that a person has.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

In that sense, the tools of measurement are indispensable, which could be define as those tools that allow the numeric assignation to the magnitudes of the property or attribute, being direct comparison with the measurement units or provoking and quantifying the manifestation of the attribute when this is indirect (Nunnally y Berstein, 1995).

In general named quantification is made through the direct scores obtained in the test. The direct score is determinate generally like the sum of the obtained scores on each item. To understand better the evaluation next we present existent characteristics between the evaluation and the measurement. However, is important to mention that the intention to difference is not to minimize the importance of the measurement but to establish with more clarity what is pretended inside the project, because, finally, the measurement is include into the evaluative process.

Evaluation	Measurement
Express a relative judgment of value. It is a dynamic process. Subsumes to the measurement being more extensive. Imply between others procedures, to the measurement. It is the same valuation of itself . Compare facts with results.	Express an absolute value. It is subsumed in the evaluation. It does not apply evaluation. Constitute a media to valuate. It is simply, a media to obtain facts.

Chart 1

Comparative between evaluation and measurement

The, "The measurement could be understood as a quantity that estimate what a person has learn as consequence of an instruction or formation process; is the capacity of the student to answer to the process in function to competences and objective. It also could be understood in relation to a social group which settles up the minimum levels of approbation front a determinate accumulation of knowledge, procedures or attitudes" [43]

For effect of the project, is necessary that the evaluation required the absolute facts, like the assistance, the number of participations in class, the number of presented homework, and even the grades obtained in the test by the students, in order to have a criteria about their learning. In other words, in order to evaluate is required to measure.

Which is the holistic concept?

In a globalized World business the solutions are not easily found, because is required of interdisciplinary equipment that favor the support to the business productivity. The education of course is part of part of that interdisciplinary support and, from a holistic field, define the necessary requirements in order to satisfice the demands of the labor ambit. For its better comprehension it is described the holistic concept.

Holistic: is a word which produce the Greek voice "holos" which is express as prefix "hol or holo" and means "all or totality". Also points "integral and organized". The term integral comes from Latin "interger", means totality or intact unit.

[43] Fermín, Manuel. La evaluación, los exámenes y la calificación Ed. Kapeluz, 1989

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

The holistic is an adjective that referred to the way to see the entire things, "the integrity of the all in its harmonic relation with the elements that integrate it".

The holistic process is reinforced by the scientific advance of the quantum physics and holographic which give origin to the emergent paradigm in the last decades of the XX century, known as Holistic or global. It is to result that the holistic does not belong to any philosophical, scientific or religious current. It is a free and universal process like it is the scientific method, the solar energy or the air. It is only a process where interrelate in complementary form and symbiotic the most versatile and efficient foundations of philosophy, the science and technology for the comprehension or integral creation of each one of the dimensions and manifestation of the human being.

Any concept, philosophic principle or scientific and technologic procedure where apply the holistic is characterized by accomplish the principal criterion of the efficiency. This consist in that should be simple, easy and practical to understand, apply and evaluate by them in this focus is considerate the source of the practical knowledge. It is based in the principle: "the knowledge in source of the wisdom, not applying the knowledge for the promotion of the welfare, is not known yet" (G. De Lansheere, 1997).

In the holistic vision of the human interaction with himself and with the environment it is present that the fundamental purpose of the philosophy, the science and technology, in group with scientific and cultural advances, it is to promote the complete integral development of each one of the dimensions of the Human Being in order to consolidate the maximum potential of welfare or holistic health. In order to take advantage the resources that bring the holistic focus, as indispensable part of the human being, in the following subjects will be approach criteria that desire to be include in proposal of the model of integral evaluation, to contrast with the evaluation of the current learning that is made in the university.

What is it the integral evaluation?

In each activity performed by the human could be observed a primordial characteristic; the creation of the forms of behavior that in planed form or not, influence on him and the environment that round him.

In this interrelation of elements, lets called it system or process, is affected the all allowing develop in many fields the science and the daily life, from a site, create conscience in the person in order to establish its own limits and for other, and the conscience of the integral focus, consider that in the interrelation of these events, it is the holistic sense of the comprehension, experience, reason of being and transcendence.

To describe the integral focus, the nest example is considered opportune to observe the application:

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

"It is the multidisciplinary evaluation, independent and with focus of systems, of the grade and form of accomplishment of the objectives of an organization, of the relation with its environment, as well as its operations, with the objective to propose alternatives for the more adequately achievement of its finalities and/or better exploitation of its resources. The Integral Auditory has a holistic focus over the entity, in which analyze it as an all and also each one of its parts. In this form understood to all the operation of the entity and evaluate its relation with the environment."" [44]

After that, in educative terms, the comprehension of named process, situations or contexts will happen since holos (totality), because on its dynamism in the relations, in the events, came out a new synergy, new relations happened and are generate new events.

It is the all the determinant, even when this recognition does not avoid to analyze each case in particular, analysis that is more successful when happens inside a holistic comprehension. "…the challenges of the education nowadays, will be then to achieve that the students can establish relation between the life experiences that carry when they come to the school with the systematized knowledge that in the school is presented, in such form that they could perceive the world in integrate way" (Brazón y Esté, 2001).[45]

Therefore, and under the educative perspective, the integral evaluation have been being present in the develop of the universal thought because its philosophical comprehension, since its beginnings, has been holistic.

In other words, came from an universal comprehension entire or integrate of the process and of the appreciations, to progressively derive to aspects of realities understood in mentioned process, "the all and each one of the synergies are tightly link with constant and paradoxical interactions" (Well, 1996).

"The integrate evaluation of natural form in the didactic process has to include the student like being who is learning" (Gimeno Sacristan, 1992 pag. 387). "An evaluation which has a globalization and holistic character, should achieve to the entire student's personality. This holistic pretention of the evaluation is supported in the follow aspects:

- The implementation of a more human form to understand the students, which is centered not only in the intellectual aspects, but also in other dimensions of affective, social and ethic type.
- The adoption of model that explain the development and learning.
- The repercussion of evaluation models that raise the necessity to explain complex realities.

A total pedagogy that attend to the integrity of the student development understand the student who learn as an unit, explaining the progress as consequence of the behavior of all her/his personality in relation with the circumstances that round the student.

This is an inherent aspiration of the teaching understood as personal communication and stimulation of the development of the personal possibilities and help to overcome the limits.

[44] Academia Mexicana de Auditoria Integral y al Desempeño A.C.
[45] Irene Plaz Power. Universidad Central de Venezuela

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

"With the finality to evaluate the quality of an Educative Model, is important difference the knowledge, the doing, the innovation and the being, basic elements of the integral learning and meaningful, which allows evaluating the knowledge, aptitudes, creativity and attitudes that acquire the students as product of their learning.

It is also evaluating the programmatic advance of the studies, the capacity of the teacher to teach the knowledge, skill, values and the correct utilization of didactic resources which require an educative process base in the learning."[46]

Implement this type of evaluation in the current moment have big obstacles. One of them is a limited professional formation of the teachers to process information, pick it up, interpret it and record it. Another limitation came of the teachers' organization in the higher levels where a teacher imparts classes according to the specialty of an assignment, having to attend lots of students in many groups. This situation limits the possibility of global knowledge of the students, requiring in this case the formation of teachers' crews of work with the finality of integrate in a coherent and cooperative vision the valuation criteria of the students. Like that, the integral evaluation make reference to the tendency that allow to understand events from the point of view of multiple interactions that characterize them: correspond to an integrative attitude as well to an explicative theory which orient to a contextual comprehension of the process, of the protagonists and its contexts.

The integral evaluation referred to the way to see the entire things on their totality on their complexity, because in this form could be appreciate interactions, particularities and process that in general are nor perceived if are studied the aspects that conform the all, by separate. In an educative case in the south of our continent, the concept of integral evaluation is conceptualized as that which

"Consider inside of the evaluation the follow aspects: teacher integral evaluation, student integral evaluation and the institutional integral evaluation. In second establish "norm the learning evaluation process in the educative institutions of high school education of the basic regular education of the country".[47]

In other point, if someone wants to make of the evaluation a privileged instrument of quality improvement, it should be total. According to Jaim Royero[48], In first place, an evaluation model should answer to four basic premises: a theorical-conceptual framework, a methodological framework, a legal and normative framework and an administrative and organization framework.

In second place, an evaluation model should be de maximum representation of de educative democracy. Theorical conceptual framework: in this point it should fundament the model according to the following parameters:

[46] Tecnológico de Estudios superiores de Ecatepec

[47] Ministerio de educación República del Perú

[48] Contexto Mundial sobre evaluación en las instituciones de educación superior. Instituto Universitario de Tecnología José Antonio Anzoátegui, Venezuela

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

- The theorical clarification: which consist in define the theorical and epistemological budges that underlie in the proposal, like the basic concepts, relevant categories and dimension of theorical analysis that will serve to identify the ideology of the evaluation and its social purpose.

- The clarification socio historic: represents the pertinence of the theorical principles to the reality where it pretend to be applied, in terms of description of the cultural system, the politic system, the economic system and the educative system.

- The institutional clarification: suggest the critical analysis of the scholar level where tend to apply the evaluation process and the regional institutional role in terms of its integral development.

Methodological Framework: Constitute the definition of the following terms:
The purpose or context of the evaluation: this point suggest identify the purposes of the evaluation as accreditation or evaluation of institutional results (self-regulation or self-evaluation).

The methods of evaluation: describe the determination of the type methods to apply for the evaluation (direct measurement, use of indicators, manifestation of the actors, manifestation of the experts, couple evaluation, etc.).

The stratification of the evaluation: understood the situation study of the institutions according to a previous classificatory evaluation for its minim leveling.

The evaluation itself: understand the application of the agreement methods in a frame of equality and justice.

Normative legal framework: this framework represents the discussion of the following aspects:

- The juridical regulation: point the elaboration of an obligatory legal framework in realization of the evaluation process in concordance with the correspondent laws and regulations.
- The juridical creation of an coordinator organ in charge to implement the organization and execution of the process in conjunction with the involved actors.
- The creation of an ethic codes that norm the equality and justice between the evaluator and the evaluated.

Institutional organizational framework: represents the planning of the evaluative process like: daily administrative activity in the higher education institutions and the role of the extern agents related with the following considerations:

- Reproduction of the evaluation model: points the institutional programing through the participation of the university community through cultural strategies that favor the accomplishment of the process.
- Creation of administrative offices for the staff for the governing boards, specialists in planning and promote the intern evaluation process.
- Creation of extern entities of evaluation no related with the State and concerted in regional offices, guided by the university community, and supported by the professional schools.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

So, for effects of the project, will be take on account the integral evaluation as educative philosophy which analyze the integral evaluation system in order to understand the reality of the student and find the opportunity areas that will allow the university get closer, design and implement changes in the dimensions of the evaluation that achieve a high impact in the global performance of the student as an all.

Innovation program

Because the result of the research reflect opportunity areas in the standardization to evaluate the learning of the student, that exist a big spectrum of tools to evaluate in integral form the student and advantaging the interest of the university for implement a quality education which help to transform its organizational culture:

- Implementations of the Integral Evaluation Model that will allow enrich the philosophy of the university and modify the tasks of teachers and students.

- The standardization of the evaluation helped to the institutions, to build an operation system that facilitate the continuous improvement of the process and standardized the institutional quality level.

- Adequate the Integral Evaluation Model to the curricular map, highlighting the theorical and practice aspects.

- Bus more than anything, take on account that if the integral evaluation is considered a reflexive process and with participation of those who intervene on it (teacher ans students), could be a professional formation process which satisfy the expectative of the students and as consequence make the university more competitive in the educative ambit if the higher level.

A solution planning, Integral Evaluation Model MEVI

The, because the educative function of the evaluation goes beyond of the application results of a test in the classroom and which means dynamic the roles of teacher and student, strengthen with that the process involved as much in the teaching as in the learning, is important considerate that the evaluation in the classroom get more sense when is used to improve teaching and learning processes.

Use and integral evaluation to improve the learning of students implied that the teachers can increase their vision respect to the pedagogical function of the evaluation as a powerful resource to improve their strategies of teaching, which will impact in the performance of students.

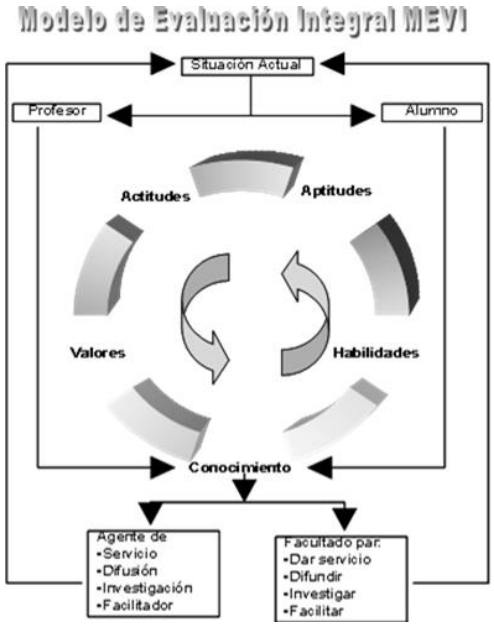
Therefore, in the definition of the new integral evaluation model for the institution illustration 1, is necessary ratify that is oriented to an academic change of the institution that has as consequences a new organizational culture and the substantial increase of the quality in the process of, generation, transmission and evaluation of the student leaning.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Like that, the present project Integral Evaluation Model MEVI, presents an alternative, form a holistic point of view, in order to homologate the evaluation criteria in the Administration Career, in first instance to then extend it to all the careers, about the: knowledge, skills, aptitudes, attitudes and values, to develop the dimensions of the student, from the humanistic perspective, conceiving this last one, as a creative being, free and conscious, which function as an organized totality in front the experiences field.

In other words, guiding the student to is self-knowledge, in order to point the values development and exploited her/his capacities, emphasizing in the ethical and moral aspects; Ensuring that the student assist to classes by own initiative and that the learning will be a combination of the cognitive and affective.

Integral Evaluation Model MEVI



Graphic 1

But also the model required of media to achieve its purpose. Therefore, is necessary an efficient institutional management that favors the change process for the permanent improvement and overcoming.

According with the expressed, the new model will have essential character, of being centered in the Integral Evaluation of the learning that:

- Promote an integral formation, of high technologic and humanist quality.

- Combine balanced the development of the teacher as agent of service, diffusion, research and facilitator[49] of knowledge, skills, aptitudes and values.

- Provide a solid formation that faculty to the graduated to serve, promote, research and be a facilitator in the labor ambit.

Of course, the new model as generic orientation will require to ratify or rectify the practices until now have been performing in the evaluation of the learning of the student, for that is considered three fundamental aspects to follow inside this process by the teacher.

[49] Alcalá, Adolfo."" The facilitator orient the learning of the adult, trying to link it to the necessities if this with the pertinent knowledge and resources in opportune way, effective and affective. Should be prepared to facility the learning"

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

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ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

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Transaction of the Pymes and its workers in front of it, Mexican institute of social security and its national importance

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The objective of this investigation is to see that the Law of the Social Insurance, contemplates perfectly, as they are the subject people of securing, and of equal way the patterns must be registered before the Mexican Institute of the Social Insurance, to be able to offer to their workers the benefits them of law in the matter of social security like a work relation.

PYMES, IMSS, Relation of Work, Productivity

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Introduction

The Mexican Institute of Social Insurance has a legal mandate derived of the article 123 of the Constitution of Unites State of Mexico. Its mission in to be the basic tool of the social insurance, established as a public service of national character, for all the worker and their families. In other words, the increase of the coverture of the population is pursued as a constitutional mandate, with a social sense.

By its site, the Article 2 of the Law of Social Insurance (LSS) establish that the social security has as finality guaranty the health right, the medic assistance, the protection of the survival media and the social services necessary for the individual and collective welfare, as well the grant of a pension that, on its case previous accomplishment of the legal requirements, will be guaranty by the State. In this sense, the Institute provide to its entitled habitants to a spectrum of insurances that allow accomplish with the established in the Law and more than anything bring tranquility and stability to the workers and their families in front occurrence of any of the risks specified in the LSS. The Social Insurance understands the Obligatory Regime and the Volunteer Regime.

The schemes of benefits, requirements and contributions, in order to have access to these regimes are different in each case and are clearly established in the LSS.

Letter of the rights and duties of the employers in social insurance subject

The letter of the employers rights and duties in social insurance subject is a code of behavior that search, for a site, promote and incentive in the employers linked to IMSS their compromise for the accomplishment of the responsibilities of social insurance to their employees and their families; and in the other site, make patent by the IMSS the compromise to establish a relation more clearly and informed with the employers, the workers and their families, breach of the dispositions that emanate of the federal law of the taxpayers rights.

The letter details the normative administrative and social compromises that the entrepreneurs in Mexico should assume to accomplish with their obligations in subject of social insurance with the workers of their companies. The letter put in manifest the compromise of responsibility that exist between the IMSS with the employers in subject of social insurance, offering an image of good administration, transparent management, efficient operation and institutional compromise.

To support this letter the employers, assume the social business responsibility, with the objective to involve the companies in a model of management employers which has achieved a high level of diffusion and international recognition, considering it part of the standards of reliability required for the interchange of goods and services in global level.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

The employers' rights and obligations that establish this letter are a basic index of the established by the law of the social insurance, as well as in its regulations and other disposition in subject of Affiliation, classification of companies, collection and control. Consider as well, the legislation relative to the governmental responsibility and of the public services in the research of transparency and good governance. Considering the rights of the employer:

It was informed and assisted by functionaries of the IMSS in the accomplishment of its obligations, as well the content and approach of the same.

That the public servers of the IMSS accomplish their responsibility with respect to the legality, with honesty, loyalty, impartiality and efficiency.

- To be treated with the correct respect and consideration by the public servers of the IMSS.
- Not be object of any form of intimidation by the personal of the IMSS.
- The official identification should be showed of any person who visits in name of the institute.
- Obtain a number of employer record an identification; in case, a unique employer registration
- Record with efficacy and efficiency of the workers, through the electronic media magnetic or printed.
- Clarify for rectify affiliation movements
- An express petition, distribute quotes between the employers or subjects obligate that employ a worker of simultaneous form.
- Be notified of the ignition and administrative procedure of execution (PAE), on its case, presence the diligence of sequestration and sign the respective act.
- Manifest according with acts of the IMSS through the resource of inconformity.
- Received written notification of a domiciliary visit (auditory) by the IMSS.
- Exercise the resource of fiscal correction.
- Obtain, on its benefit, the devolutions of contributions of social security that come in the legal terms of the social insurance law.
- Solicited to the IMSS authorization to pay the fiscal credits in terms, being differed or in partialities.
- Opt for rule its contributions to the IMSS by authorized public accounted.
- To know the state of advance of the procedures in which is part.
- Access to the public information in power of the IMSS, in the terms of the legislation about transparency and governmental information access.
- Know in opportune form changes to the social insurance law and of its regulations; also the agreements of the technic council of the IMSS that affect as taxpayer.

Incorporation of the employer, to the Mexican Institute of Social Insurance

The employers' inscription should be made for any individual or moral person when a labor relation is established.

When some of the follow changes are presented:

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

- Suspension of activities
- Resumption of activities
- Close
- Change of name, denomination or social reason.
- Change of address.
- Change of legal representing, employers or obligation subject.
- Employer substitution.
- Function.

Or any other circumstance that modifies the fact provided to the institute, it should be made the modification of the employer record. The suspension or end of activities and the close mean a decline of the personal record.

The employer resumption will be effected after a decline of the employer record and is equivalent to patronal inscription proceedings.

The employer or the legal representative correctly accredited could make the inscription or employer modification presenting the correct documentation and the established formats by the IMSS.

The probation documentation are only legal documents which accredited the existence and activity of the employer, like the report to the secretariat of hacienda and public credit, in the constitutive act of the company, the notarial power in case of the legal representative, the receipt of address and the official identification of the employer or the legal representative.

Once inscribe as employer should present the card of employer identification for any processed.

Cases in should be made

- When the labor relation start, the employer or bound subject should register in the IMSS.
- The notice of inscription should be presented inside the five weekdays, according the case, since that:
- Contract the first employee.
- Start of operations of the cooperative society.
- Start of the agreement validity with the IMSS.
- Start of the right validity expiated the Federal Executive.

This is necessary made in personal form by the employer of legal representative, with the correct accreditation; through the authorized formats by the IMSS.

For employer or bound subjects of the construction industry should make its processed in the program IDSE IMSS from its company, digital sign, where they made the upper of the construction in the program SATIC.

Moral people

As first element the employer should get into the portal of the Mexican institute of social insurance, www.imss.gob.mx. And in named page, should made the date to go to the sub-delegation which will control the employer registration that will be granted to the company, in this same page will be informing about the Filling Process, and the day, time and sub-delegation to which should go with the documentation as well.

- Taxpayers federal record

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

- Constitutive act of the society or association correctly inscribed in the public record of the property and the commerce that correspond and in its case modification of the same.
- Document to prove the character of the legal representative, through which is pointed the faculty to make processed in public entities respect of administrative acts and for lawsuits and collections in name of the bounded subject.
- Official identification of the legal representative.

Association of private assistance

- Occupation of authorization of the joint of private assistance

Condominium or coparcenary

- Federal record of taxpayers. In case of not being with this and do not have legal representative, the only key of population record (CURP) of the condominium administrator.

Public writing fourth of condominiums and coparcenary assembly Syndicate

- Document that proves the character of the legal representative, in where should be point the faculty to make processed in public entities.
- Certificate of registration in the ministry of labor and social welfare or in the board of conciliation and arbitration.

Cooperatives

- Certificate if registration in the public register of the property and commerce, according with the established in the General Law of cooperative societies.
- Constance if inscription if the national cooperative record.

Decentralized companies and organisms, also

- Agreement or presidential decree of its creation
- If eventually perform some construction
- Personal card indentification
- Societies and associations of different nationality to de Mexican
- Accreditation document of its legal operation in national territory issued by the secretariat of exterior relationships

Natural People

- Address constancy
- Federal record of taxpayers
- In its case, document that prove the character of the legal representative, through which points the faculty to make processed in public entities, respect of administrative acts and for lawsuits and collections in name of the bounded subject.

If counts with an established business inside the particular address and lack of official documentation

- Document that corroborate the employers identification and with which is possible to define the address for effect of notification.
- Minors that will be register as employers.
- The express written mention, under proposed to say the truth that the employer is a minor.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

- Official identification of the present minor (Father or tutor)
- Subscribed the legal representative of the minor with the compromise to accomplish and answer to the obligation derived of the employer inscription of the minor.

Countryside employers

- Permit planting.
- Receipt of payment of irrigation water
- If is dedicated to the public transport of passengers or freight, plus:
- Card of the vehicle.
- Permit the Secretariat of Communications and Transportation.

The employer inscription should be made by electronic form and once obtained the date, should be made in the sub-delegation that corresponds to the fiscal address or work place. When the first grows on its locality, form 8:00 am to 15:30, in weekdays for the Mexican institute of the social insurance. It has effect since the date of the reception of the formality in front the institute with the mention requirements.

The notice of inscription of the employees, even if they present in the opportune term of the five mentioned days, does not set the employer free of the obligations to pay the constitutive capitals that derivate of a work risk, if this happen before of the notice presentation.

When the required documents are expended out of the national territory should present, legalized and in case with the translation to Spanish.

It is convenient that the employer register to the employees one day before to start the labors, with the finality to avoid possible constitutive capital or work risks. The employer inscription is a warning which is made between the employer and a bounded subject under protest to say the truth which is received for the institute, giving stamped copy of the notice inside the posterior weekdays to the reception of the warning in the sub-delegation. The institute has the power of register the employers and the rest of bounded subjects, even without full management of the interested without this set free the bounded of the responsibilities and sanctions for infractions en which could have incurred.

The initial employer description should be made simultaneously to the exclusion of the company and modification in the risk insurance of work.

Modification of the employer record

Cases in which should make the employers or bounded subject should notify to the institute the modification of the patronal record when present any of the following cases:

- Change of name, denomination or social reason.
- Change of address.
- Employer substitution.
- Suspension of activities.
- Close.
- Fusion.
- Change of activities.
- Change of legal representative.
- Resumption of labor relationship.
- Excision.
- Incorporation of new activities, asset purchase or any act of disposal, bailment lease or translating trust, if this implies a change of activities.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

- Another circumstance which could modify the information provided to the institute.

Not necessarily have to notify the number of employer record in all the cases, it is possible to inly modify the information which is storage in the system of the institute, and with it is possible to modify the level of risk bonus.

This should be made personally by the employer or bounded subject or on its case by the legal representative, correctly accredited through the authorized formats by the IMSS and a free write, in which should describe the characteristics of the modification, in the cases of fusion situation and excision with the following characteristics:

- Notice of employer record or modification on the record (Form AFIL-01).
- In case of activities change, fusion, excision, substitution and when there is incorporation of news activities, asset purchase or any act of disposal, bailment lease or translating trust, and as well resumption of the labor relationship, should be present, also, the inscription format in the companies and modification in the risk insurance of work.

Documents that should be included

- Personal identification card.
- Attorney power of the legal representative, through which points the faculty to make processed in public entities, respect of administrative acts and for lawsuits and collections in name of the bounded subject.

For name change, denomination or social reason

- Notice to the secretariat of hacienda and public credit.
- Notarial attestation that accredit the change, inscription in the public record of property and commerce.

For address change

- Notice to the hacienda secretariat and public credit.
- Constance of address (bills of public services; water, light, or praedial of the last two months).

For substitution

- Notarial attestation which should describe the operation of which is deduced that originated to a situation, recorded in the public record of the property and commerce.

For suspension

- Notice of the hacienda secretariat and public credit.
- Notice of the employee or employees decline (Form AFIL-04).

For end activities

- Notice of the secretariat of hacienda and the public credit.
- Notice of the employee or employees decline (Form AFIL-04).

For close

- Document expedited by the correspondent authority that accredited such situation.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

- Notice of the secretariat of hacienda and public credit on its case.

For fusion

- Notarial attestation which should accredited the situation, recorded in the public record of property and commerce, on its case.
- Notice to the secretariat of hacienda and public credit.

For legal representative change

- Notarial attestation that accredit it, recorded in the public record of property and commerce.

For resumption of labor relationship

- Notice to the secretariat of hacienda and public credit.
- Notice of inscription of the employee in (form AFIL-02).

For excision

- Notarial attestation that accredit such event, recorded in the public record of property and commerce.
- Notice to the secretariat of hacienda and public credit.

In the supposition or end of activities, also, is necessary to present the movements of declination of employees, same that could be done through electronic media, magnetic, or through paper when are less than five movements. The form of employees decline notice (AFIL-04) should be filling with base in the presented documentation. The interested should sign the solicitude and lay a fingerprint, in presence of the institute member.

The documents should be presented in original or certified copy (for comparison) and simple copy.

They should not have errors, blasting, erasures or amendments. The modification in the employers' record should be done in the sub-delegation, in which is inscribed, inside the established schedule for the institute.

Conditions to make the modification in the employer record

Present some of the provided cases that imply a modification in the initial employer inscription. Accomplish the required requirements and present the solicited documents.

The correct presentation of the employer record modifications should be inside the term of five weekdays, count from the start of the respective supposed.

The notice of inscription of the employee, eve when are presented in the correct time of the five days, do not set the employer up of the obligation to pay the constitutive capitals that derived from a work record, if this happen before the presentation of the notice. If derived from the modification of the initial employer inscription would affect the inscription record of the employees, the employer should present the inscription notice of the employee, form AFIL-02, on its case, the format of notice of employee decline, form AFIL-04.

For excision, the spun-off company and the split company should made the formalities of employer inscription, inscription of the companies and modification in the risk insurance of work to the affiliation movements that correspond, according to the change condition that were generate.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

When the solicited documents are sent out of the national territory should be presented legalized or on its case with the Spanish translation. The modification in the employer record is a warning that made the employer under protest to say the truth, which get from the institute giving stamped copy of received inside the five weekdays posterior to the reception of the solicitude in the sub-delegation.

The correct presentation of the modification in the employer record is inside the term of five weekdays, from the supposed event, except for the warning of bursting of strike, which are eight weekdays.

Rights and duties of the insured

Solicit and obtain complete and opportune information respect the formalities that should be done.

Received from the IMSS personal, in all moment, an efficient and dignified treatment.

When the institute provide a number of social insurance, does not generate rights. The rights are generated from the moment that an employer contracts an employee and inscribe it in the institute. Another way to generate rights is when people who not have a work relationship with an employer ask the inscription in the institute, for example, in the health insurance for the family, the volunteer continuation in the obligatory regime with the independent workers.

Respect the duties provide the correct information and the necessary documents for the assignation of the social insurance number.

Keep the document that the institute give with the social insurance number, in order to inform the employer about it.

The social insurance number is the control number that is assigned to people when they get register for first time in the institute.

Who could solicit the social insurance number?

- People older than fourteen years old.
- The employer who contract another person who does not have social insurance number.

When can I solicit the social insurance number?

- People can solicit it before to be contract by a employer.
- Employers must solicit it in the moment to contract an employee who does not have social insurance number.

Where could I solicit the social insurance number?

- In the sub-delegation that correspond to the address of the person or in the case of the employer the address of the company.

What documents should present?

- Birth certificate of the person to whom is being assigned the social insurance number.
- Official identification – voting credential, military card, passport or professional license (identification with photography).
- Address corroboration.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

- Unique Key Population Register – CURP.

Which is the term in which the institute informs about the social insurance number?

- The same day in which the solicitude is presented.

Which is the validity of the social insurance number?

The social insurance number in unique, permanent and is not transferable to another person, in the moment to be contract, the employee should inform to the employer if she/he already has the social insurance number in order that the contributions will be correctly sent and the institute could give the benefits that correspond.

Rights and duties if the employee-employer

- Get from the institute the orientation that request in any moment, a worthy and efficient treatment.
- Being recorded or with the base salary of quotation that receive in the moment and during the term of its affiliation, without overloading the established limits, to receive the benefits of the social insurance that by law correspond.
- Respect to the employer.
- Get register in the IMSS and inscribe the employees, communicating discharges, readmissions and modifications of the salary, inside the established term.
- Provide the necessary elements to pin down the obligations on its charge.
- Do not set the employer free of the obligation to pay the services and benefits given by the IMSS (constitutive capitals) as result of works risks, if these risks take place before the insurance of the employee.
- Give to the workers of the construction a constancy of the worked days and partial salaries.
- Provide to the eventual workers of the city, constancy of the worked days, name of the employer and employer record, name of the employee, duration of the working, complete or reduce between other cases.
- Use the employer record of electronic identification in substitution of the sign, previous celebration of the respective agreement.

It is important to mention that the Affiliation movements, is the warning that an employer makes to the IMSS that the upwards (when a worker is contracted by an employer for first tie), downwards (when an employee stops working with an employer) and the modifications (increases or diminutions) of the workers' salary.

The movements are presented in a term no longer than five weekdays, since the moment of the upward, downward or modification of the salary, these formalities could be done in sub-delegations, administrative offices or through electronic media like internet, using the system IMSS from its company IDSE 2 digital sign.

It is really important that the information of the workers to be completely fill and must be real ones, with the finality that they get the benefits to which they have right with major opportunity.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

If the employer is recorded in the IDSE system, could present the movements from his/her office, the 24 hours a day of the 365 days, which will help to avoid possible sanctions by extemporaneous movements and allow having important administrative saves, and also avoid transfers and waits.

National importance of being record Pymes-worker in the Mexican Institute of Social Insurance

The IMSS is the biggest Institution of social insurance in America Latina, fundamental pillar of the individual and collective welfare of the Mexican society; is without doubt, one of the dearest institutions in Mexico.

After analyze step by step the process of companies and workers adhesion in the Mexican Institute of Social Insurance, is important to understand, that is not only to be recorded in the institute, but also the real importance to be recorded, of give security to the worker sector or into the national territory, the Mexican government analyzed and understood that everyone sooner or later we will get to an old age, and as well we could lack of health by natural reasons or external which prevent us to work for such reason as consequence to require of support, economic or medic, unfortunately not everyone has this support, or the ways to solve these problems, for such reason the creation of the Mexican Institute of Social Insurance, has as fundamental base protect all and each one of the worker and their families inside and outside of the daily activities bringing the confidence that they are protect.

When we talk that a person could get sick, nowadays the possibility to get attention in a private hospital, result expensive, and most of the people do not count with the sufficient means to solve medical spending and the derived spends of the same, without mentioning the families which do a big effort to achieve a particular medical service, their spends not only are for the hospital, but they transcend not only to days or moths but for years and spend considerable amounts of money that end for broke the budget of the family, is for that reason the creation of the Mexican Institute of social Insurance is focus to freedom form this economic and psychological charge which is generated in a person or family having one or many sick family members.

The Mexican Institute of Social Insurance is really an insurance which through the contributions worker-employer, discount a part of the salary of the employee with the finality that the employee in the moment to need medic service can have it at fingertips, an important part of the social insurance is the fact that for a minimum salary is possible to have insurance not only for the employee but also for a family average between five or six people, and also the social insurance is not limited to the medical service, the social insurance provide a big number of benefits to all the entitled.

Some of them that we could mention are the following:

- Medical service.
- Retirement and pension.
- Economic benefits.
- Sport centers.
- Cultural centers.
- Funeral Services
- Event center.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Which are focused to cover the total necessity of the entitled affiliate in the institute. Another important aspect inside the institute that all the people get old, where for obvious reasons is not easy perform intellectual or physical activities and with it we also move from a productive or labor world, which generate a big problem for the person, family and country, is just in this post where also the institute focus because insure to all the elderly people, provide them with a medical service and contribution to survive on their life.

When we talk of the importance that a company to be recorded in the institute, is because the pillar is the people who work, the people who produce from the smallest company to the biggest, for such reason we could conclude that a company being recorded in the institute will be a company which worry for its employees and at the same time the company will allow them to be in optimum physical and psychological conditions in order to continue producing with better results, with that the country is benefit, people will benefit, and the productive business sector counts wiyh health people and with security for the employ and its family.

Conclusions

The IMSS is the biggest institution of social insurance in Latin America, fundamental pillar of the individual and collective welfare of the Mexican society and principal element redistributive of the wealth in Mexico; is without doubt, one of the dearest institution in Mexico.

The Mexican Institute of Social Insurance is an Institution created to give benefits to all the worker of our country.

For such reason is important that the productive, business sector counting with employees should provide them with Social Insurance, which cover their necessities of physic and mental health for illnesses, and cover also their necessity for amusement and this will be reflected in the country, with well guided growth and development, with vivid and palpable benefits.

In Mexico the most important element is the people, the same people that every day, since the sunrise, strives to be better and for live better with their families, like a clock when a gear failure, all the machine fails and is right there where the Institute spreads its wings covering the Mexican in order to bring total security to them and their families, the Mexican Institute of the Social Insurance is searching its continuous improvement focusing always in the necessities of the population and the country. It is important to awareness our country, authorities and the same people which is the real work force, we are all the people and is important that we all have the security that if we get a mishap, we can overcome it supporting, like in this case with help of institutions like the IMSS.

In the other hand a reality that many do not want and other accept is that we all will be old and with that we will limited to work, for such reason is important awareness the business sector that should not only decline their employees in the institute, for obligation of the law or for an illness, is important that worker count with a retirement and social insurance in health, in order to live a dignified life and old age.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

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Objectives, methodology

Contribution

(150-200 words)

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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.

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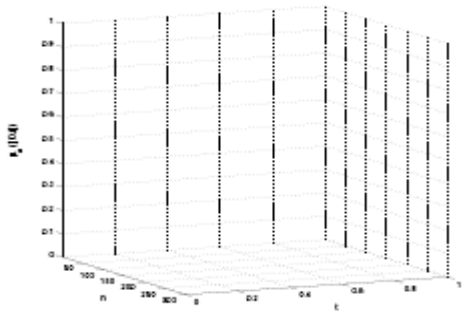

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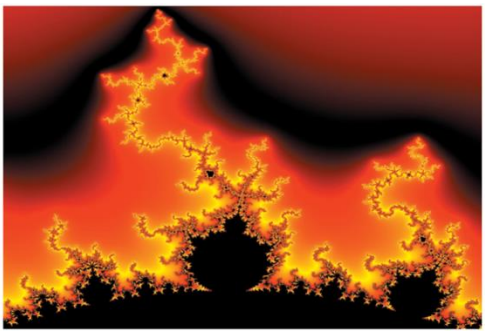

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Develop give the meaning of the variables in linear writing and important is the comparison of the used criteria.

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