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In Number 1st presented in Section of Economy an article The relation between foreign direct investment with the growth and inequity of the income: A regional analysis for Mexico. *by Angeles-Gerardo, with adscription in the Kent University, in Section of Computing an Structural equation model for measuring the value of client-companies by Ojeda- Fernando & Solares-Pedro, with adscription in the Universidad Anahuac and Universidad Iberoamericana, respectively, in Section of Optimization an article* Currency exposure coverage of ICA S.A.B. of C.V. using Fractal methodology *by Espinoza-Éric and Palafox-Oscar, with adscription in the Universidad Mayor Real y Pontificia de San Francisco Xavier de Chuquisaca and Universidad Tecnologica de Mexico, respectively, in Section of Risks an article* Systematization of the recommendations of the external evaluations to the Mexican federal programs *by Verduzco- Alfonso & Flores- Pedro, with adscription in the Universidad del Mayab and Instituto Tecnologico de Estudios Superiores Monterrey, respectively, in Section of Finance an article* Institutional policy and economic development in Mexico *by Tomta- Danielle & Chiatchoua- Cesaire with adscription in the Instituto Politecnico Nacional, in Section of Administration an article* Effects of human capital formation in the generation of employment: an analysis of the state of Hidalgo *by Juarez- Carmen with adscription in the Universidad Politecnica de Tulancingo, in Section of Net Business an article* Tourism opportunity for economic growth *by Peralta-Enrique with adscription in the Instituto Nacional de Administracion Publica.*

Content

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The relation between foreign direct investment with the growth and inequity of the income: a regional analysis for Mexico

ANGELES, Gerardo †*

Escuela Superior de Economia del IPN, Plan de Agua Prieta #66, Col. Plutarco Elías Calles, C.P. 11340, del. Miguel Hidalgo.Casco de Santo Tomas, Ciudad de México

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It is an article where we raised the orthodox postulates, through the Neoliberal models, of growth restricted by the balance of payments, limiting the FDI like a factor of economic polarization and its main indicators of economic correlation.

Entrance, Balance of payments, CMNs, FDI, SMEs.

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*Correspondence to Author (email: gangeles@ipn.mx)
† Researcher contributing as first author.

The theoretical vision of the FDI influence over the distribution of the income and the economic growth.

The FDI as a redistributive and growth trigger factor in developing countries.

In this paragraph, initially we state the neoliberal arguments and its main theoretical base- the neoliberal theory. This paperwork glimpses the foreign direct investment flow as an advantage for growth and income distribution.

Additionally, we set out a growth model limited by the balance of payments considering the capital flow. In this kind of models, the debt flows or volatile investment flows balance the current account deficit and trigger the economic growth in the short term, nevertheless, they cannot ensure a sustained growth, contrary to the FDI flows, which besides triggering economic growth; represent a more sustainable financing source.

Orthodox postulates

According to the liberal approach the interdependency relationship between developed and developing countries, through commerce, investment flows and job division, not only affect the last ones, but also tends to favour them. Particularly, through the investment flows, the less developed economies acquire higher possibilities of accessing international markets, as well as capital and technologies. Additionally, investment flows contribute to the capital formation (Gilpin, 1987: 266-267).

Once the developing economies identify the benefits of the investment flows, they improve their efficiency to attract more capitals, reason why foreign investment produces an attitude change in the institutions and the productive sector.

On the liberal theory, the opening of markets, understood as merchandise and investments flows, promotes a better distribution of income for two main reasons. The first one is the promotion of exportation, employment and economic growth; consequently, it allows the acquisition of additional resources that facilitate the income distribution. The second one is the facilitation of the market opening and the price mechanism, which allows distributing the resources with more efficiency.

The angular politics of liberal theory is the trade opening (Corden 1993). Regarding economic growth, trade opening allows access to imported capital goods in more favorable terms, which drives technological modernization, productivity and hence growth. This policy is also assumed as a boost to exports and as a base for providing growth directed by exportation. In turn, the commercial balance is given by a flexible exchange rate.

The theoretical foundation that supports the distributional effect of trade is the Stolper-Samuelson theorem (FitzGerald 1996, 32). In this neoclassical two-factor model- capital and employment-, the liberalization of foreign trade increases the demand of the abundant and low cost factor, because exports and imports are adjusted according to the orthodox principle of comparative advantage.

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In contrast, scarce and expensive factor is used less. As a result, this mechanism increases the return factor used more in the exportation factor and which is in turn more abundant. Conventionally it is assumed that this factor is unskilled labor in developing countries, consequently their return rate is increased through salaries and income distribution is improved.

In the orthodox theory, trade opening and capital flow opening are two policies that complement themselves because with the release of foreign investment large foreign cash flows are expected, which are accompanied by technology transfer, organizational skills, and improvements in efficiency and productivity.

Additionally, cash flows are expected to mobilize external savings, supplementing domestic savings and triggering more investment and higher growth (Griffith-Jones 1996, 27). At the same time, foreign investment emerges as a financing source; which enables the proportion of credit bank to fall. This pattern opens the possibility of assigning more resources for both the private and public expenses. In this regard, large flows of foreign investment stimulate export expansion, making them more competitive, and eventually they generate more growth. In the orthodox model, the distributive effect of foreign investment is achieved through capital flow, which according to the principle of comparative advantage, is mainly directed towards the production of exportable goods. As mentioned previously, the production of these goods uses mostly the abundant and low cost factor, which is assumed to be the unskilled labor in developing countries.

The Neoliberal model

In Latin America and Mexico after the debt crisis in 1992 and with the collapse of the import-substitution model, based primarily on structural changes through protectionist policies, the trade opening models, based on liberal orthodox theories, gained importance. Even the theoreticians of The Economic Commission for Latin America (ECLA), at one time the most enthusiastic promoters of protectionist policies, have begun to favor economic opening strategies economics (Edwards 1993, 1359). Moreover, multilateral financial institutions such as World Bank and the International Monetary Fund have conditioned developing countries to implement economic opening policies in order to receive financial assistance. John Williamson (1990) named “the Washington Consensus” to the ensemble of reforms that multilateral financial institutions and official organism of Washington considered appropriated for countries affected by the debt crisis. The strategies of this economic model of neo-liberal style can be resumed as economic liberalization, deregulation of markets, privatization and fiscal discipline. This model took vital importance in the Latin American sub-continent where structural reforms aimed at opening markets with were applied in depth and at an accelerated pace.

One of the policies implemented was the opening of the capital account, which was accompanied by the liberation of the capital market and the privatization of public enterprises.

These actions aimed to the huge direct foreign investment and portfolio capture in countries affected by the crisis, and in this way reduce their endebtness level and improve their economic growth and income distribution.

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Growth model constrained by the balance of payments

This model was first developed by Thrilwall (1979) and pretended to explain the difference of growth rate between countries. It is based on the idea that developing countries, characterized by low-income elasticity of exports and high-income elasticity of imports, tend to grow at lower rates than developed countries, which have opposite commercial properties. The model shows that a country with a high propensity to import and low-income elasticity of exports tends to fall in trade deficit, which restricts its growth. Trade deficit can be balanced with debt or portfolio investment. The first one is not sustainable in the long term and the second one creates volatility and risks of financial crises. Another way to compensate a trade deficit is incurring devaluation processes of the local currency; nevertheless, this process generates inflation, besides the effect of the devaluation on the current account is diluted in the short term. FDI, on the other hand, does not have high levels of volatility as a portfolio investment and does not accelerate inflation as a devaluation process could do; additionally, it does not destabilize the macroeconomic and does not dilute public expenditure through the payment of interests, as the debt contracting would do.

In this sense, FDI represents a better option to balance the current account deficit and in this way can contribute to suppress constraints to growth.

FDI as a factor of economic polarization

A series of arguments found in literature review about FDI flows, these arguments emphasize that investment flows to developing countries may eventually cause economic inequality. In this sense it is argued that the privatization of state enterprises and FDI release stimulate a series of mergers and acquisitions across borders, creating dominant positions and oligopolistic markets. This practice is paradoxically opposite to one of the basic postulates of liberal theory-competitive markets. Additionally, the possibility of the existence of this economic behavior decreases the market power of small and medium enterprises (SMEs) and leads to deterioration of the domestic industry and concentration of capital.[1] Similarly, the ability of Multinational Corporations (MNCs) to organize transnationally production or change their production bases to benefit from low-wage areas, increases corporate power in relation to the labor power and exerts a downward pressure on wages and working conditions.[2]

Moreover, the race to attract new investment or to hold MNCs may result in subsidy packages, downward pressure on corporate taxes and income taxes, and generally in tax incentives and tax cuts.

This trend has two significant adverse consequences.

[1] Una discusión sobre la expansión y retos de fusiones y adquisiciones transfronterizas se puede ver en United Nations Conference on Trade and Development (UNCTAD), World Investment Report (2000, 15-28).

[2] Una elaboración acerca del balance de poder entre el capital y la mano de obra se puede ver en Held et al. (1999, 278-280).

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First, policies specifically designed to serve the interests of MNCs could cause an evaporation of the tax base that in the end restricts social and redistributive spending (Bailey et al. 1998, 296). Second, the tax preferential treatment and other incentives to induce the flow of FDI can put the local industry at a disadvantage and may cause a distortion affecting domestic investment. Such differences and distortions between the return to domestic and foreign capital can have a strong negative effect on growth, employment and redistribution.

On the other hand, the operation of MNCs can have an impact in different ways the effectiveness of government economic policy and macroeconomic management. Held and others (1999, 276-7) particularly highlight two forms. First, the effectiveness of domestic monetary policy can be compromised when the MNCs earn credits abroad when the domestic interest rate is high, or vice versa, can take advantage of a low rate of interest to finance domestic projects abroad. Second, MNCs can also play a decisive role in the exchange rate policy.

In this sense, although speculators are who normally initiate a speculative attack on a local currency, MNCs and institutional investors may abandon the currency simply as a precaution; however, the pressure they could excerse on the exchange rate may have adverse and irreversible consequences.

Therefore, if Exchange Rate and currency policy of a country are directed to stabilize the macro economy and make more efficient the income, to subsequently undertake redistributive actions and facilitate better allocation of resources, then the erosion and weakening of government policies may jeopardize the income distribution.

In general, the critical arguments of FDI indicate that the increasing bargaining power of MNCs, the race to bring or retain foreign investment, and the erosion of national macroeconomic policy, which can be caused by the actions of MNCs are factors that may adversely affect the income distribution.

Alternative views aimed at study the determinants of FDI argue that geographical aspects influence investment flows. In this regard Redding and Venables (2004) show that firms do not necessarily move their investments to areas characterized by low wages, as liberal theory would suggest, conversely firms may prefer regions with better access to markets and suppliers

Additionally, they show that the geographic characteristics and their influence on the mobility of firms and plants help to explain variations on the per capita income across countries and regions.

In this sense, Ma (2006) shows that the concentration of foreign firms in regions with better access to international markets and suppliers of intermediate goods is significant in explaining wage inequality across regions in China.

Additionally, socioeconomic and demographic factors influence investment flows; thereon, firms may prefer to move their production to regions with better infrastructure and increased supply of skilled labor. Therefore, if we assume that FDI promotes economic growth, this selectivity of investment flows may contribute to increase economic inequality within and between countries (Addison and Almas 2003).

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Another ensemble of critical literature argues that FDI investment with relative biases of technology increases wage dispersion in host countries (Wu 2001.) Additionally, it is noted that foreign firms pay higher wages than the domestic firms to workers with equivalent features, this statement holds even after adding controls on firms and workers in the statistical analysis. This results from higher productivity of foreign firms and concludes that these wage changes help to explain the growing income inequality in countries that have opened trade and deregulated FDI flows (Girma et al. 2001, Martins 2004).

Therefore, geographic, socioeconomic and demographic diversity across regions and countries receiving FDI are perceived as factors that can turn investment flows selective and thus promote economic inequality.

Additionally, the existence of a wage premium in foreign firms and that FDI can have technological biases are factors that can alter the income distribution within and between countries.

Preliminary analysis of Information

Indicators used

In order to assess the relationship between FDI and economic growth and the distribution of intra-and inter-regional income in Mexico, we used four types, four types of indicators by state were used, during the 1996-2006 period. First, FDI, stated in millions of dollars, is integrated with the amounts reported to the national register of foreign investment of the Mexican government; the source is the National Institute of Statistics, Geography and Informatics (INEGI 2008 for its acronym in Spanish).

The FDI per capita is also used; population figures from the National Population Council (CONAPO for its acronym in Spanish) (2008) are used for its calculation. The second includes indicators of economic growth and level of income expressed by GDP in thousands of pesos at 1993 prices and GDP per capita; additionally, both indicators are included in its logarithmic form. GDP is obtained from INEGI (2008) and GDP per capita is obtained by own calculations adding CONAPO population data (2008).

The third indicator is to assess the evolution of income distribution between regions; in this case, an index of regional inequality that in turn uses GDP per capita, which is defined below is used:

$$I_{it} = y_{DFt} - y_{it} \quad (1)$$

Where *I* is the regional income inequity, *i* is the state, *t* the period of time, y_{it} is the GDP per capita for each state in the period *t*, finally y_{DFt} is the GDP per capita log for Mexico city (CDM) in the period of time *t*; the CDM is the state with higher income per capita of the sample during the analyzed period of time.

This index was first used by Chatterji (1992) to determine the trend of the income gap in a sample of countries, most recently has been used by Rodríguez-Oreggia and Costa-i-Font (2002) to assess regional inequality in Mexico, product of public investment. The index is strictly represented in positive numbers because it takes as an entity or reference country that who has higher income per capita, therefore only will exist an element of the sample with difference equal to zero and this is the reference element, the CDM in our example.

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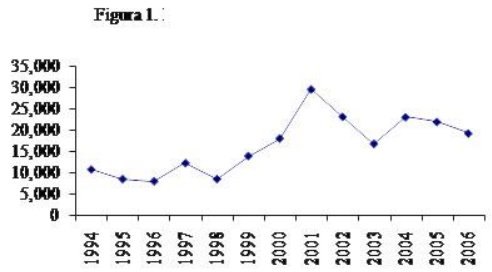
The fourth variable that is incorporated in the analysis is the Gini coefficient and this is used to measure the intra-regional income inequality. Two databases are incorporated, the first is given by own calculations following the procedure suggested by Yao (1999), the sample covers four periods (1994, 1998, 2002 and 2006). The second is obtained from Aguilar (2008), in this case the sample comprises six periods (1994, 1996, 1998, 2000, 2002 and 2004). In both cases, the source of information is the National Household Income and Expenditure (ENIGH for its acronym in Spanish) built by INEGI and published every two years. [3]

Evolution of indicators

In this section, we show descriptively the evolution of the previously mentioned indicators. Figure 1 shows the historical trend of FDI; on it, a remarkable growth between 1994 and 2001, from 10646.9 to 29528.1 million dollars, is observed.

Subsequently FDI flows decrease but remain higher than those recorded in the initial periods.



Graphic 1

Source: Elaborated by the author with information from INEGI (2008)

Chart A1 in the appendix shows the FDI flows, in descendent order, by state. It can be seen that states with greater capture of investment are Mexico City, Nuevo Leon, State of Mexico, Baja California and Chihuahua in that order. These five states capture 84.0 percent of FDI flows to country in the period. Mexico City is by far the largest state attracting investment concentrating the 58.4 percent of the flows; however, the trend is downward since in 1994 it captured 71.4 percent while in 2005 and 2006, the proportion dropped to 44.4 and 53.5 percent respectively.

By contrast, states with lower capture of investment, in descending order are Michoacán, Campeche, Zacatecas, Chiapas and Oaxaca, in whole; they receive only 0.25 percent of the investment flow nationwide.[4]

These data are consistent with the arguments that emphasize geographic and socioeconomic conditions as determinant of FDI.

Of the five states with more investment flows, two of them (Mexico City and Mexico State) are part of the large market represented by the urban area of Valley of Mexico, while the remaining three are north bordering states so they have a better position with respect to the U. S. market.

[3] El ENIGH se publicó por primera vez en 1984, posteriormente se publicó hasta 1989 y a partir de 1992 se ha publicado cada dos años, a excepción de 2004, 2005 y 2006 que se construyó de manera consecutiva.

[4] Cuando se realiza este ejercicio pero considerando IED per cápita los resultados son muy similares. Las entidades con mayor captación de IED por persona son Ciudad de México, Nuevo León, Baja California Norte, Baja California Sur y Chihuahua en ese orden. Es decir, solo se excluye el Estado de México y entra Baja California Sur, quedando cuatro estados norfronterizos y uno del Valle de México. Por otra parte, los estados con menor captación de IED por persona en orden descendente son Hidalgo, Zacatecas, Veracruz, Michoacán y Oaxaca, solo se excluyen dos estados, Chiapas y Campeche y entran Veracruz e Hidalgo, de cualquier forma, los estados de la nueva lista no tienen colindancia con mercados mayores como el de Estados Unidos o el del Valle de México.

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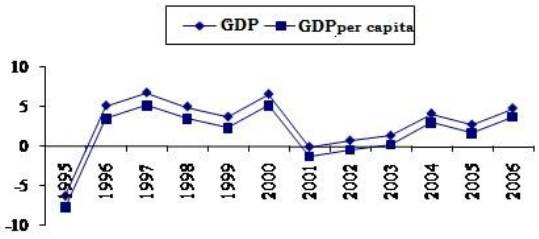
Additionally, Mexico City and Nuevo Leon are the two states with the highest income per capita nationally. In contrast, the five states with the lowest FDI flows do not have a position relatively close to the markets of the United States or Mexico Valley position, while three of them (Michoacan, Oaxaca and Chiapas) are among the five states with lower income per capita nationwide.

That is, FDI in Mexico tends to move to regions with proximity to large markets and increased purchasing power.

With respect to economic growth, Figure 2 shows that this, in terms of GDP and GDP per capita has been relatively unstable and generally slow for an emerging economy. Between 1994 and 2006, the gross growth annual average of GDP and GDP per capita was 3.35 and 1.67 percent respectively.

Figure 2. economic growth of GDP and GDP per capita



Graphic 2

Source: Elaborated by the author with information from INEGI (2008)

Chart A2 shows the GDP and its annual average growth between 1994 and 2006 by state, it can be observed that entities with large FDI flows as Nuevo Leon, Chihuahua and Baja California Norte are among the ten states with the greatest economic growth at a national level.

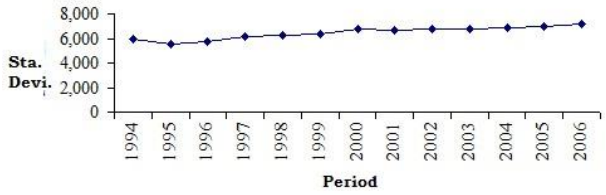
However, it also shows that Mexico City, the state that captures more FDI at the national level, is the second state with the lowest annual economic growth average in the period. Until this stage of the analysis, some evidence that FDI tends to flow to regions with greater access to larger markets and greater purchasing power have been found. Moreover, the preliminary analysis shows no clear evidence that FDI tends to flow to regions with higher economic growth, or, that FDI is associated with higher levels of growth.

Figure 3 shows that the standard deviation of the regional inequality rate (I) tends to increase in the period, which is evidence of growing income inequality between regions in Mexico.

Furthermore, Figure 4 shows that the average Gini coefficient has fallen by state since 1998 and this is evidence that intra-regional inequality tends to decrease. Overall inequality has fallen nationwide since 1998, as shown by the nationwide Gini coefficients in Figure 5.

This indicates that the decrease in intra-regional inequality has had a greater weight than the increase in inter regional inequality resulting in an improvement in general in the income distribution nationwide in recent years.

Figure 3. Standard deviation of regional inequity rate (I)



Graphic 3

Source: Elaborated by the author with information from INEGI (2008) and CONAPO (2008)

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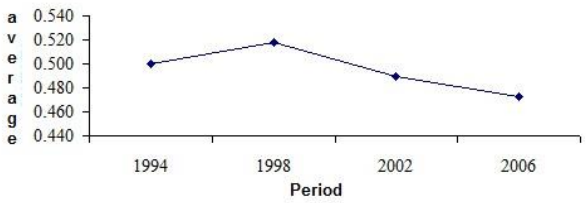
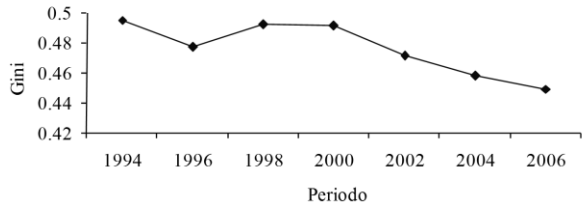
Figure 4. Gini coefficient rate by states



Graphic 4

Source: Elaborated by the author with information from ENIGH of INEGI (several years)

Figura 5. coeficiente de Gini a nivel nacional



Graphic 5

Source: Elaborated by the author with information from ENIGH of INEGI (several years

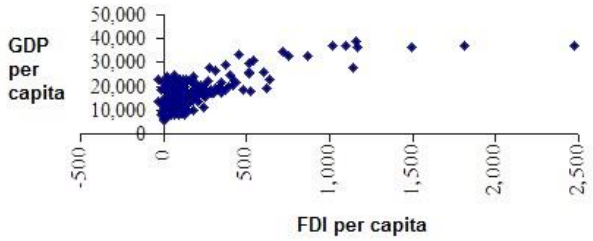
Correlation graphics

Finally, this section presents graphs of correlation between FDI per capita and economic growth and intra-and inter-regional inequality. Per capita numbers of the FDI are used in order to balance the weight of the population per state.

Thus, a state with a small population, which apparently gets little gross investment, may have, in relative terms, high levels of FDI per capita once weighted by population size; a practical example is the case of Aguascalientes. Figure 6 shows a relationship between FDI per capita and GDP per capita, therein some positive correlation between the two variables is appreciated. In addition, Figure 7 shows that the relationship between FDI per capita and GDP growth is not entirely clear or consistent.

This correlation analysis corroborates previous observations in the sense that FDI tends to flow where there is higher income per capita. In other words, more purchasing power, and in the sense that there is no clear evidence that FDI tends to flow towards the states where there is greater economic growth.

Figure 6. relation between FDI per capita and GDP per capita



Graphic 6

Source: Elaborated by the author with information from INEGI (2008) and CONAPO (2008)

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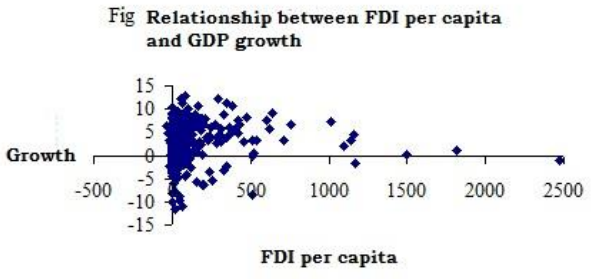
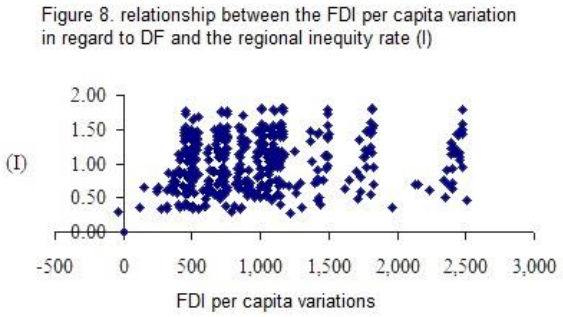


Graphic 7

Source: Elaborated by the author with information from INEGI (2008) and CONAPO (2008)

The relationship between FDI per capita and regional inequality rate is presented in Figure 8. In this case, the FDI difference between regions is taken as an exogenous variable, taking as a reference Mexico City. In this way, it can be seen if the difference of FDI per capita flows between regions has some relation with the difference in per capita income between them. Preliminarily we can observe a slight positive trend in the relationship, reflecting that a greater difference in investment flows between regions is associated with greater inter regional income inequality.

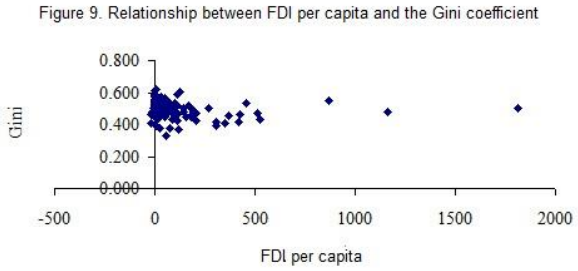


Graphic 8

Source: Elaborated by the author with information from INEGI (2008) and CONAPO (2008)

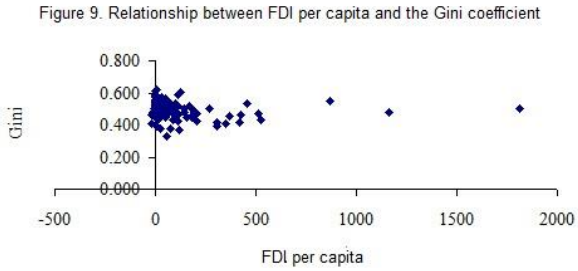
The relationship between FDI and the Gini coefficient are shown in Figures 9 and 10.

In the first one, the database of Gini coefficient is obtained from own calculations and in the second one is obtained from Aguilar (2008), these databases were previously described. In both cases, a linear relationship is observed, although it is unclear whether the relationship has an inverse or positive trend. Consequently, through this preliminary analysis, it is impossible yet to determine clearly, if FDI increases or decreases the intra regional inequality.



Graphic 9

Source: Elaborated by the author with information from INEGI (2008), CONAPO (2008) and ENIGH of INEGI (several years)



Graphic 10

Source: The FDI per cápita is calculated by the author with figures from INEGI (2008) and CONAPO (2008). The IN numbers are obtained from Aguilar (2008).

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Parametric analysis

In this section, we perform a parametric analysis of the relationship of FDI per capita with economic growth and income inequality within and between regions; the analysis is done using panel data techniques and the econometric software Limdep.

The general model is as follows:

$$Y = \alpha_{it} + \beta FDIpc_{it} + u_{it} \quad (2)$$

Where *Y* is the endogenous variable and can be an indicator of economic growth or regional inequality, *FDIpc* is the Foreign Direct Investment per capita and at the same time the explicative variable, the subscripts *t* and *i* indicate year and country respectively, u_{it} represents the residues and is assumed to satisfy the white noise assumptions, α_{it} is the intercept, capture the specific effects for each state and period and can vary for each, depending on the model type used, finally β is a parameter to be estimated.

The estimation process begins with a standard ordinary least squares regression (OLS) assuming $\alpha it = \alpha$, this traditional method, in particular, has the following weaknesses: it assumes that the intercept is the same for regions and periods and does not control for effects specific. To confirm whether the assumption of OLS method is feasible, Lagrange multiplier test (LM) Breusch and Pagan (1980) is applied. This test is based on the residuals of the OLS regression. Under the null hypothesis that $\alpha_{it} = \alpha$ the test is distributed as a $\chi^2$with one degree of freedom (Greene 2003).

If the null hypothesis is rejected, then proceeds the estimation of Equation 2 using two panel methods that take into account the specific nature of the regions and periods.

The first is the fixed effect method (FE), this allows for variations in the intercept by incorporating dummy variables and in this way the specific effects of countries and periods can be taken into account. The second is the method of random effects (RE), in which differences across regions and periods are captured by a composite error term ω_{it} that is described as $\omega_{it} = \varepsilon_i + v_t + u_{it}$ where ε_I is an unobservable term that represents the component of the specific error of regions. V_t is also an unobservable term but in his case represents the component of specific error of periods, and u_{it} is the component of the combined error of time series and cross-sectional series. The RE method assumes that ε_i is not correlated with any explanatory variable in the equation

In order to choose the method of FE and RE, Hausman specification test (1978) is applied. The null hypothesis of this test is that the regressors and the specific random error, not observable, are uncorrelated. If the statistic of the test, based on an asymptotic distribution χ^2, rejects the null hypothesis, then the RE estimator is biased and FE estimator is more appropriate. Each model that points out the connection between FDI and growth and inequality variables is estimated by five different methods, which are OLS, FE with dummies for regions, RE with the specific error component, FE with dummies for regions and periods, and RE with specific error components for regions and periods.

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Additionally, in each model the corresponding tests of Hausman (1978), Breusch, and Pagan (1980) are presented to choose the right method. The results are presented below:

Chart 1 shows the relation between FDI per capita (FDIpc) and the economic growth and income level, the GDP and the GDP per capita (GDPpc) and the logarithms of both are used as exogenous variables for such purposes.

The ML test rejects the null hypothesis that $\alpha_{it} = \alpha$ in the four models, each one with a different explicative variable.

By exploring which of the methods that take into account variations in the coefficients is more appropriate, we found that in all four models, the Hausman test rejects the null hypothesis that the regressor and the specific unobservable random error are uncorrelated. Since this is a strong assumption in the RE method, then we conclude that the FE method is more appropriate. This conclusion applies for the regressions that take into account the specific nature of the regions as well as those that take into account variations in the coefficients of regions and periods. It should be noted that the two regressions in logarithms, while providing for the ML and Hausman tests, do not have significant coefficients when the methods that capture variations in regions and periods are applied.

The first and second equation, that use the GDP and the GDPpc as endogenous variables, are interpreted based on the estimated model using FE with variations in regions and periods to satisfy the respective tests and having significant coefficients.

The equation reveals that a variation of one dollar in the GDPpc is directly associated with a variation of approximately 20.37 million of pesos in the GDP. Equally, the second equation reveals that a variation of one dollar in the FDIpc is directly related with a change of 2.22 pesos in the GDPpc. These results are consistent with those shown in the preliminary analysis and are robust because in the five estimation methods, positive and statistically significative coefficients at the one percent are obtained. With this, it is confirmed that FDI flows more towards regions with higher income per capita. An explanation of this tendency is because in these regions there are access to markets with more acquisitive power, there is greater supply of skilled labor and tends to exist more provision of infrastructure.

Similarly, it is confirmed that GDP tends to concentrate in the regions that boast the highest GDP and this can be explained because in these regions there is greater market potential.

The last two equations, which contain endogenous variables in logarithms, also have positive coefficients, although these are not significant in models that consider variations in regions and periods, as previously commented. This can be interpreted as FDIpc flows are associated with higher economic growth, but the relationship is not entirely robust. To interpret the magnitude of the relationship we take the coefficients of FE method estimates with variations in regions because they are consistent with both evidences presented and in turn are statistically significant.

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A variation of thousand dollars in FDIpc flow is associated with growth of 0.3 percent and 0.2 percent of GDP and GDP pc respectively, i.e. the magnitude of the relationship is small.

Variable		Variaciones en regiones		Variaciones en regiones y periodos	
Endógena	MCO	EF	EA	EF	EA
PIB	180,196.93	29,764.12	31,946.34	20,365.73	22,880.93
	(0.000) *	(0.000) *	(0.000) *	(0.000) *	(0.000) *
ML		(0.000) *		(0.000) *	
Hausman		(0.000) *		(0.000) *	
PIBpc	19.574	4.125	4.513	2.223	2.508
	(0.000) *	(0.000) *	(0.000) *	(0.000) *	(0.000) *
ML		(0.000) *		(0.000) *	
Hausman		(0.000) *		(0.000) *	
LPIB	0.00188	0.00028	0.00030	0.00002	0.00003
	(0.000) *	(0.000) *	(0.000) *	(0.308)	(0.181)
ML		(0.000) *		(0.000) *	
Hausman		(0.001) *		(0.000) *	
LPIBpc	0.00109	0.00017	0.00019	0.00002	0.00003
	(0.000) *	(0.000) *	(0.000) *	(0.165)	(0.051)
ML		(0.000) *		(0.000) *	
Hausman		(0.000) *		(0.000) *	

Chart 1 Relationship between FDI and income levels and economic growth

Notes: exogenous variable is FDI per capita. P values in parentheses. * Statistically significant at 1 percent.

Parametric analysis of inter-regional income inequality is presented in Chart 2. The equation shows the relationship between the endogenous variable *I* with the FDIpc difference of each state in relation to the Mexico City. The five estimates have positive signs and only the estimated FE with variations in regions and states is not significant. This confirms that the larger the difference in investment flows in states with respect to the capital, the widest income gap between regions and the capital. In other words, FDI has a direct relationship with regional inequality.

To interpret the magnitude of the relationship, we use the equation estimated with RE and variations in regions and periods. In this case, we do not take the estimation of FE because the coefficient is not significant, as previously commented, and because the statistic of the Hausman test has a *p*-value of 0.917, which does not allow rejecting the null hypothesis that the regressor and the specific unobservable random error are uncorrelated. A thousand dollar variation in the GDPpc flow difference between the DF and the states is associated with a growth of 0.3 percent in the inter-regional income inequality. That is, the magnitude of the relationship is not strong but it is a robust relationship according to the homogeneity of the results shown in Chart 2 estimates.

Endogenous variable		Variations in regions		Variations in regions and periods	
	MCO	EF	EA	EF	EA
I	0.00019 *	0.00002 *	0.00002 *	0.00002	0.00002 *
	(0.000)	(0.000)	(0.000)	(0.165)	(0.002)
ML		(0.000)		(0.000)	
Hausman		(0.000)		(0.917)	

Chart 2 Ratio of the difference of FDI per capita by state in relation to the CDM and the rate of regional inequality (I)

Notes: exogenous variable is the difference of FDI per capita by state in relation to the CDM. P values in parentheses. * Statistically significant at 1 percent.

Finally, the parametric analysis of the relationship between FDIpc and intra regional inequality, measured through Gini coefficients by state, is presented in Chart 3. The first equation uses the Gini coefficient database of Aguilar (2008), which uses 6 periods between 1994 and 2004, and 32 states, for a total of 192 observations.

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In the five estimates a negative sign of the coefficients is obtained, however none of these coefficients is statistically significant. This suggests that there is a negative relationship between FDI and inequality, i.e. greater FDI flows, lesser inequality within regions; however, this relationship is not robust or systematic. This result confirms the lack of clarity in the trend of the relationship between these two variables shown in Figure 10.

The second equation uses the Gini coefficients database obtained from own calculations by the method of Yao (1999). Although in this database the number of periods and observations used is smaller, the time horizon is longer, compared to the previous database, since it extends from 1994 to 2006.

As in the estimates of the first equation, in this case the coefficients of the five estimates have a negative sign. However, the results are more robust because three of the five estimates have statistically significant coefficients.

To interpret the magnitude of the relation we use the estimation through RE method with variations in regions periods, because it has a significant coefficient and because the Hausman test does not reject the null hypothesis. A thousand dollar increase in the FDI per capita flow in a state is associated with a reduction of 0.042 units in the Gini coefficient.

The interpretation of this result is that in the long term and after 2004, the Gini coefficients in the states continued their downward trend, while FDI remained at relatively stable levels, which allowed the inverse relationship between the two variables to be stronger again.

Variable Endógena	MCO	Variaciones en regiones EF	Variaciones en regiones EA	Variaciones en regiones y periodos EF	Variaciones en regiones y periodos EA
Gini (Aguilar 2008)	-0.00002	-0.00001	-0.00001	0.00000	-0.00001
	(0.284)	(0.562)	(0.451)	(0.927)	(0.634)
ML		(0.000)		(0.000)	
Hausman		(0.882)		(0.365)	
Gini (Yao 1999)	-0.00003	-0.00010 *	-0.00005 **	-0.00006	-0.00004 ¥
	(0.121)	(0.008)	(0.034)	(0.106)	(0.082)
ML		(0.000)		(0.000)	
Hausman		(0.089)		(0.533)	

Chart 3 Relationship between FDI per capita and the Gini coefficient

Notes: exogenous variable is FDI per capita. P values in parentheses. * Statistically significant at 1 percent. ** Statistically significant at 5 percent. ¥ Statistically significant at 10 percent

Conclusions

Through a descriptive analysis and an analysis of panel data for the period between 1994 and 2006 it is shown that FDI tends to flow to regions with higher income per capita and those with a higher GDP.

This result is not consistent with orthodox assumptions expressed in the liberal thesis that form the base of neoliberal policies, because it shows that FDI does not tend to flow to regions with lower income to exploit comparative advantage of unskilled and abundant labor. Instead, FDI tends to flow to regions with higher income per capita, with more market potential and with higher levels of development.

This trend is consistent with arguments that supports the idea that FDI is determined by the supply of skilled labor, proximity to major markets, the availability of infrastructure and, overall, higher levels of development.

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It is also noted that FDI is associated with the growth of GDP and GDP per capita. In this case, the result is consistent with liberal principles, which maintain that investment flows stimulate economic growth. Additionally, the result is consistent with the growth model constrained by the balance of payments, i.e. FDI release the constraints to growth that could result from the current account deficits.

However, it should be noted that the relationship between FDI and growth is not entirely robust because some of the estimates made in the parametric analysis are not significant. Additionally, the magnitude of the relationship is small.

The analysis shows that investment flows are associated with an increase in inequality between regions. In contrast, FDI is associated with a reduction in inequality within regions, and there is evidence that this trend has continued in the long term.

In other words, entities that receive high amounts of FDI get benefits by reducing their internal income inequality but increasing their difference in a matter of income per capita over the entities that receive lower investment flows per capita.

The policies involved in this study are discussed as follows: in marginalized regions is required to improve infrastructure and promote development to attract investment, it is also important that in these areas stimuli and programs to promote FDI flows be created. This can reduce the differences in investment flows between regions, promote more homogeneous growth and reduce inter regional inequality.

In addition, to the extent that a little benefited with investment flows state, start capturing higher amounts of FDI, not only will reduce their income per capita differences with others, but also will reduce its domestic inequality. In order to FDI achieve a greater association with growth, it is important that this flows in such a way that it can create productive chains with the domestic industry, so it can complement and promote production and not to expel existent investment. To achieve this, it is important to identify areas where additional investment is required and create incentive programs for attracting investment in these sectors. For the FDI to strengthen its redistributive effect, mechanism and conditions must be created so this can flow to regions and sectors with abundant non-skilled labor.

Likewise, FDI should be channeled to high intensity productive processes of this factor.

In this way, higher occupancy of unskilled labor is achieved and its cost is raised, which affects an increase in their income through wage rises.

This policy is not advisable in the long term because it does not promote industrialization and training of the workforce, so it should gradually be complemented with policies to attract investment with greater capital intensity

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Appendix

Estado	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
CDM	7,602.9	4,486.4	4,777.0	6,643.8	4,000.6	6,297.6	8,930.8	21,826.6	15,985.9	10,282.1	13,186.1	9,690.4	10,235.1	123,945.3
NLN	937.4	704.5	358.4	2,371.4	672.9	1,540.4	2,364.7	2,043.0	2,069.9	1,277.7	1,160.8	4,825.5	1,590.2	21,916.8
MEX	340.5	611.2	412.1	290.4	747.0	1,409.5	496.2	811.5	734.4	695.1	3,493.4	800.1	1,320.6	12,162.0
BCN	227.1	538.1	427.7	679.4	726.2	1,168.6	984.2	860.3	949.1	785.0	957.7	1,099.7	931.1	10,334.2
CHI	308.4	528.7	536.7	504.0	620.0	605.8	1,081.0	765.6	632.6	726.4	808.2	1,484.7	1,475.9	10,078.0
JCO	64.3	114.4	185.6	202.5	362.1	539.5	1,195.8	462.6	257.3	295.6	515.8	1,238.1	619.6	6,053.2
TAM	362.4	393.7	334.3	283.7	345.7	462.1	488.7	353.9	324.5	336.6	233.3	375.0	502.6	4,796.5
PUE	29.9	25.9	39.2	379.3	37.9	204.5	549.1	461.5	480.9	954.9	724.3	407.3	386.1	4,680.8
SON	107.1	155.4	108.3	159.7	171.1	214.7	416.6	180.0	194.8	123.6	252.8	235.3	286.0	2,605.4
COA	102.3	120.4	147.6	114.4	134.6	224.9	307.5	189.3	190.9	115.3	168.5	147.1	303.9	2,266.7
QUE	141.1	42.0	69.8	73.2	125.1	138.9	161.8	198.4	252.9	51.4	118.2	44.3	153.0	1,570.1
BCS	8.3	20.9	34.6	42.5	46.8	99.5	80.9	155.1	242.3	118.5	140.5	313.5	216.1	1,519.5
GTO	27.4	6.3	9.8	41.0	10.6	144.3	74.4	264.6	161.9	236.7	40.7	295.9	-86.6	1,227.0
SLP	14.8	135.3	89.1	1.1	6.1	208.1	290.0	188.2	10.1	78.4	56.9	125.1	-11.6	1,191.6
MOR	19.4	67.6	51.2	27.4	60.8	148.0	67.4	31.2	106.7	41.2	211.8	-56.4	311.0	1,087.3
QRO	38.6	24.6	25.5	129.2	43.8	98.7	97.1	122.9	13.1	53.2	80.6	152.4	203.6	1,083.3
AGU	28.5	27.1	34.8	18.1	69.1	91.2	81.9	103.7	-14.1	30.8	237.4	101.4	111.2	921.1
DGO	21.5	41.0	20.2	75.2	61.9	24.5	38.0	40.2	80.2	167.2	14.8	19.4	107.5	711.6
VER	10.2	29.0	10.4	3.7	38.2	-73.1	24.3	120.8	165.8	44.0	18.2	191.4	40.0	622.9
NYT	5.6	2.0	3.6	7.6	6.1	28.1	44.8	38.2	19.9	89.6	66.9	104.4	145.7	562.5
SIN	46.2	94.1	28.7	36.0	13.6	41.4	12.2	63.0	22.9	22.2	54.9	20.1	38.5	493.8
YUC	48.1	19.8	48.6	14.2	31.0	41.3	55.5	138.3	3.3	30.5	16.7	-2.1	26.3	471.5
TAB	0.6	1.2	0.0	7.6	0.4	52.9	38.9	8.6	75.7	25.2	150.9	34.9	45.1	442.0
TLA	19.3	11.2	7.3	3.9	8.8	44.8	4.4	13.2	-17.2	28.6	136.5	65.3	9.4	335.5
GRO	7.1	62.6	9.6	4.5	2.6	34.2	10.7	18.3	15.4	54.8	24.7	28.0	31.4	303.9
COL	102.9	3.0	4.0	3.5	4.1	4.3	9.5	2.9	-4.7	11.9	6.9	11.2	64.2	223.7
HGO	0.1	48.3	60.2	2.4	7.6	0.7	-8.4	76.5	4.9	1.7	0.6	-3.7	10.4	201.3
MCN	8.5	48.8	1.2	4.0	4.3	6.3	29.1	7.7	11.8	-11.7	-1.5	59.8	28.9	197.2
CPE	2.1	0.5	0.0	1.8	0.1	4.7	11.4	-21.4	72.4	13.9	47.7	11.5	9.8	154.5
ZAC	13.8	12.2	11.1	13.6	13.6	11.1	12.3	5.5	4.8	0.1	4.9	3.7	15.4	122.1
CHS	0.4	0.4	1.0	0.4	0.4	4.3	2.2	-0.5	2.2	1.4	12.0	1.4	0.8	26.4
OAX	0.1	-2.0	0.3	6.1	0.4	1.1	-0.5	-1.6	4.5	0.5	2.0	4.8	7.5	23.2
Total	10,646.9	8,374.6	7,847.9	12,145.6	8,373.5	13,822.9	17,952.5	29,528.1	23,055.1	16,682.4	22,943.2	21,829.5	19,128.7	212,330.9

Chart A1 FDI flows by state

Source: Elaborated by the author with information from INEGI (2008)

Estado	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Crecimiento Anual
AGU	12,231,148	11,849,158	12,364,455	14,017,592	14,879,652	15,422,063	17,379,943	17,990,532	18,575,599	19,009,211	19,655,803	20,326,718	22,377,765	6.91
QUE	17,543,352	17,011,895	18,471,989	20,720,549	22,593,654	23,677,980	25,379,930	25,403,952	26,106,731	26,218,884	27,642,745	28,755,955	30,710,529	6.25
BCN	34,661,341	32,736,291	35,316,230	39,658,611	41,446,064	44,843,842	49,695,749	48,121,945	47,040,063	48,331,491	52,627,287	55,073,639	58,232,629	5.67
COA	34,900,322	34,674,654	38,548,480	41,796,066	44,176,815	45,547,379	47,589,416	47,329,229	50,021,435	51,904,749	55,075,799	55,899,284	58,385,293	5.61
BCS	6,363,069	6,324,954	6,890,054	7,169,884	7,218,890	7,466,766	7,991,067	8,296,670	8,342,353	8,854,383	9,209,048	9,737,727	10,466,067	5.37
CHI	47,869,351	44,789,564	48,336,760	52,109,000	56,158,501	59,858,813	66,662,053	64,194,559	64,347,751	66,914,298	69,673,443	74,311,642	77,922,807	5.23
QRO	15,544,326	14,779,986	15,798,823	17,505,022	18,656,961	18,521,526	19,556,595	20,680,948	20,902,720	22,071,342	24,066,662	24,651,052	25,251,925	5.20
NLN	78,156,160	73,109,978	76,675,538	83,685,803	89,659,354	94,709,888	101,900,374	101,749,351	105,007,831	108,038,789	115,094,797	118,945,214	126,005,891	5.10
GTO	40,679,335	39,170,110	42,752,964	45,265,432	48,243,149	49,034,309	52,654,119	53,114,721	55,712,033	57,298,086	60,726,148	59,550,880	63,256,582	4.63
TAM	34,648,523	32,703,735	34,564,068	36,488,785	39,392,211	41,845,214	44,971,338	43,829,013	45,403,228	48,009,518	51,816,136	53,307,041	53,668,149	4.57
SON	32,424,060	31,769,399	32,846,523	34,975,297	37,132,658	38,667,816	41,473,855	41,808,649	39,918,866	41,035,854	44,008,814	46,803,233	49,880,154	4.49
PUE	39,212,207	36,006,457	39,218,126	42,614,582	45,899,365	49,733,852	51,878,101	52,440,757	51,789,486	53,368,545	53,612,134	57,077,362	60,242,264	4.47
YUC	15,945,716	14,967,752	15,681,594	16,576,074	17,471,438	18,298,358	19,850,850	20,330,323	20,305,889	20,786,788	22,028,970	23,126,763	23,905,325	4.16
TLA	6,128,809	5,911,068	6,419,042	6,978,644	7,174,920	7,484,239	7,982,424	8,204,025	8,019,761	8,207,336	8,754,969	8,591,603	9,037,957	3.96
SLP	21,883,462	19,450,344	20,641,776	21,914,833	23,269,596	23,931,559	25,379,805	25,402,682	25,614,340	26,816,234	29,009,383	30,175,334	31,837,761	3.79
MEX	124,695,330	113,653,382	122,364,486	133,809,484	140,059,488	145,274,327	155,323,294	157,059,357	155,547,247	155,744,407	162,122,754	169,614,605	179,995,950	3.70
DGO	15,697,509	15,098,133	15,853,028	16,271,355	17,616,652	17,580,676	17,936,577	18,624,954	18,911,401	20,069,588	21,367,519	21,564,262	22,540,101	3.63
ZAC	9,823,746	9,325,335	9,912,948	10,843,509	10,967,881	10,749,192	11,162,431	11,497,004	12,558,597	12,979,474	13,296,467	12,861,135	13,664,877	3.26
COL	6,677,019	6,420,097	6,974,802	7,211,838	7,599,616	8,058,738	8,221,120	7,936,874	8,148,133	8,119,721	8,480,154	8,702,706	9,250,365	3.21
MOR	17,576,202	15,868,569	16,442,653	17,244,049	18,393,677	19,312,674	20,252,175	20,960,379	20,780,359	21,647,213	22,328,865	23,728,865	24,227,548	3.15
JCO	78,432,706	72,254,406	75,531,416	80,212,544	86,371,980	90,029,131	94,957,097	95,357,595	95,672,581	95,431,052	100,187,668	102,395,899	105,868,973	2.91
CHS	21,480,569	21,423,329	21,641,397	22,643,158	23,711,975	24,322,080	25,296,965	25,657,678	26,438,496	26,883,285	28,196,635	27,951,275	28,752,131	2.82
MCN	28,707,113	28,139,186	29,060,747	32,083,900	32,119,859	34,238,313	34,653,284	34,212,018	33,967,225	34,992,459	36,664,794	36,316,198	37,735,095	2.62
CPE	14,171,371	13,673,890	14,340,052	14,771,494	15,129,980	14,759,419	15,960,205	16,714,587	16,901,618	18,208,566	18,617,388	18,388,040	18,334,904	2.45
SIN	26,943,064	26,191,165	26,623,659	27,318,531	28,006,941	28,123,934	30,463,477	31,047,618	30,662,841	30,823,739	32,720,664	33,312,383	34,679,991	2.39
HGO	17,981,146	15,896,509	17,307,836	18,249,321	19,660,753	20,137,324	20,982,870	20,562,808	20,453,496	20,548,638	21,642,815	21,975,220	22,629,063	2.15
VER	55,649,210	54,398,800	55,277,849	57,099,729	58,358,397	58,524,293	60,856,192	60,584,003	60,695,985	61,951,128	65,068,906	66,712,528	69,875,317	2.13
TAB	15,368,852	15,311,803	15,441,928	16,108,259	16,164,313	16,555,805	17,369,708	17,476,237	17,155,826	17,378,859	18,026,329	18,446,670	19,194,318	2.07
NYT	7,774,913	7,804,368	7,184,100	7,274,460	7,792,590	8,092,457	8,263,604	8,541,124	8,351,673	8,011,590	8,503,102	8,707,163	9,471,734	1.82
OAX	19,871,523	19,000,156	19,374,540	19,465,754	20,243,652	20,905,243	21,913,561	22,190,856	21,920,516	22,066,117	22,728,393	23,339,232	24,107,810	1.78
CDM	284,644,326	260,843,580	269,365,159	287,474,479	296,152,634	305,496,146	327,780,835	323,781,924	327,419,925	321,434,229	322,158,904	328,646,952	343,587,732	1.73
QRO	22,449,339	21,394,799	21,642,523	21,886,028	22,853,857	23,561,131	24,188,080	24,336,581	24,098,327	24,327,426	25,012,900	25,336,417	26,081,422	1.35
Total	1,206,135,859	1,131,752,762	1,190,075,545	1,278,744,066	1,334,586,473	1,384,674,487	1,475,927,694	1,473,438,953	1,486,792,332	1,507,449,990	1,570,126,305	1,613,526,997	1,691,168,729	1.35

Chart A2 GDP annual average economic growth by state

Source: Elaborated by the author with information from INEGI (2008)

Angeles G. The relation between foreign direct investment with the growth and inequity of the income: a regional analysis for Mexico. ECORFAN Journal-Mexico 2010, 1-1: 1-16

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Structural equation model for measuring the value of client-companies

OJEDA- Fernando´& SOLARES- Pedro´´*

´ Universidad Anáhuac, Av. Lomas Anáhuac 46, Col. Lomas Anáhuac, Huixquilucan, Edo. de México.
´´ Universidad Iberoamericana, Av. Prolongación Paseo de la Reforma 880. Ciudad de México.

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This work has, like basic objective, to contribute a feasible solution to the problem of how modeling of precise and reliable way the value that has each client, for a certain company, to effect to incorporate the causality of the variables that affect to generate this value. The hypothesis that is postulated, by means of an econometric model can be measured the value of the client, in terms of the yield, the specific weight and the behavior. Construct theoretical: value of the client, was measured with the information of 80 companies pertaining to the segment of the Mexican Bank and that is clients of a National Company, which provides the service to them of telecommunications.

SEM, Model of Measurement, Model of Structure, Value.

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*Correspondence to Author (email: pedro.solares@uia.mx)
† Researcher contributing as first author.

Introduction

In this research work, the concept *client* is attained to a company that acquires services from another. The fact that an individual is a client of a company is not dismissed; even thought, the research is focused on the role played by the *clients* of a supply company. From this point on, whenever the word *client* is written, it will be referring to a company.

Until few years ago, many entrepreneurs thought that losing a client was not important since they could be easily replaced by two. Nowadays reality shows that it is hard to get new clients and even harder to take them from the competition.

A classic example is given when the companies, often, tries all their clients in a standardized way, like if everyone were equals. This is an important mistake, because there are "preferred" and "non-preferred" customers. The "preferred" customers are those who generate high margin utilities with relatively low cost, due to big consume. There are also "non-preferred" clients who buy little, generate different problems and negotiate until the last dollar.

The usual is that, even though the company has "non-´referred" clients who make them loss money, "preferred" clients will be the ones who compensate the losses so the financial outcomes are positive. Nevertheless, what would happen if all the "non-preferred" clients become "preferred"? What would be the impact on the utilities?

Even thought, naturally, the answer to this question depends particularly on each company, the positive impact would be important if improvement points are earned in the income statement only redefining the strategy of customer conversion to the company.

Client number	% over total billing	% contribution benefits
2	19,04%	49,42%
10	20,31%	37,12%
80	41,38%	17,2%
83	11,29%	5,83%
301	7,85%	-9,2%

Chart 1 Example of the client ranking according to benefits and billing percentage.

On chart 1, it is observed how the contribution to benefits of the national telecommunications company (and in a great manner, from the billing) comes from twelve clients (approximately 3, 5 % of the total number of clients), while 301 clients of minor billing cause a loss in the profitability (a 9, 2%)

Does it seem logical to spend the same resources onto the 12 clients who represent almost 40% of the total billing, than to the other 384 who represent only 19 % of the billing?

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If we think in the organizational structure of a company, there are different process and sub process designed in an independent way to the size of the order, so such processes will be very profitable for large orders / customers, but very little otherwise. Examples of the costs that have these threads are, from a business view, the internal logistics or sales management.

Hypothesis

- There is a positive causal effect between company profitability and the income earned per customer.

- There is a positive causal effect between the specific weight[5] of the client and the benefit the company has per segment-client.

- There is a positive causal effect between the specific weight of the client and the income the company has per segment-client.

- There is a positive causal effect between the specific weight of the client and the segmentation of the client per income.

- There is a positive causal effect between the specific weight of the client and the segmentation of the client per benefits.

- There is a positive causal effect between the behavior of the client and the income the company has per client.

- There is a positive causal effect between the behavior of the client and the time as a client of the company.

- There is a positive causal effect between the behavior of the client and the quantity of products and services required from the company.

Objective

General objective

It is intended to demonstrate the importance of applying the structural equations model in the clients' measurement to evaluate strategically the study case.

Specific objective

To validate the functioning of the structural equation model using data of 80 companies from the Mexican Bank that have contracts with a national company for the telecommunication services.

The client value can be defined as the utility income obtained by an organization when it determines the importance of each acquirer or buyer of services and goods that such company trades.

Answer proposal

Equations for measuring the clients' value.

As established previously, the clients' value is directly related with the clients' profitability, with the clients' behavior and with the client's weight, namely:

[5] Specific weight is defined as the ratio between the revenue the customer generates to the company and the revenues generated by all the customers who are in the same segment.

Clients' profitability

It is derived from the benefit generated by the client minus the loss generated by the clients plus the income generated by the clients:

Importance of the clients' benefit = importance of the clients' income – (sale expenses + marketing expenses)

Importance of the clients' income = importance of the payment made by the client for the received good.

Client weight

It is derived from the income per segment level and the benefit per segment level plus the client per income segmentation and the client per benefit segmentation:

Importance of income per segment = importance of the client income regarding the total income of the clients of the same segment.

Importance of benefits per income = Importance of the client benefits regarding the total benefit of the clients of the same segment.

Segmentation per income level = ranking per segment level according to the client's income volume.

Segmentation per benefit level = ranking per segment level according to the client's benefit volume.

Client's behavior

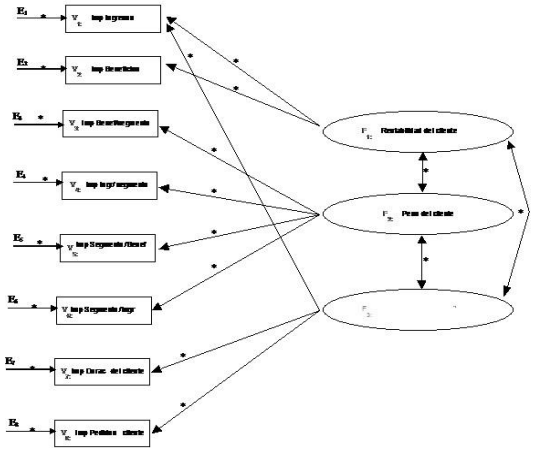
It is derived from the antiqueness of the client and the client's income level plus the client's request both in a year period:

Client's antiqueness = duration of the sale/ buy relation between the company and the client respectively in a given period.

Importance of the client's income = importance of the payment made by the client for the received good.

The following measurement model is a first approximation that allows revealing the causal relationship between variables and through the application of a structural equation model is possible to do the estimation of the cargo factors in the dependent variables: client's profitability, clients' weight and client's behavior with which the presence and grade in which such factors are corresponding to the independent variables can be determined.

From these, the independent variables, which have higher weight than the proposed profitability, weight and behavior of the client variables, can be identified, and thus which variables need to be strengthened. The previous constructs and their causal relations are illustrated in the following figure



Graphic 1 Preliminary cause-effect relations diagram.

The database used consists of 80 observations that has 11 variables, which conformed the 11 measurable attributes of the Commex[6] Company. Three types of data are used. The first one refers to the clients' value regarding his profitability; the second one refers to the clients' value regarding his weight; and the last one refers to the client's value regarding his behavior.

It is assumed a priori that the examined data should provide a comprehension about both the characteristics of their clients' value as well as the relation between their behaviors towards Commex. In the chart 2, a brief description of the database variables is provided, in which they are ranked as dependent and independent, metric and non-metric.

Variable description

Variable type.

Clients' profitability.

V_1, income importance metric

V_2, benefit margin importance metric

Client's weight (portfolio)

V_3, income per segment importance metric.

V_4, income segmentation importance metric.

V_5, benefits per segment importance metric.

V_6, benefits segmentation importance metric.

Client's behavior

V_7, number of designations importance metric.

V_8, delivery speed importance metric.

V_9, market positioning importance (economic) metric.

V_{10}, purchase volume importance metric.

V_{11}, purchase frequency importance metric.

Three specific measures that reflect the measure results of the client's value were obtained:

F1 client profitability

F2 client weight

F3 client behavior

Modelling through structural equations

In order to model the *client's value* for the specific Commex case, we will proceed to develop the seven steps of structural equations modelling, exposed the previous chapter.

First step: development of a theory-based model.

The variables derived from our model are:

[6] The company name COMMEX is fictitious in order to preserve the anonymity of the Mexican telecommunications company from who we have taken their client companies data.

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V_1 = client's income importance, is the valuation (scale: 1= very low, 2= low, 3= normal, 4= high y 5 = very high) to payments made by the client for the good he receives.

V_2 = client's benefits margin importance, is the valuation (scale: one= very low, 2= low, 3= normal, 4= high y 5 = very high) to the payments made by the client for the good he receives minus the expenses generated in the client itself.

V_3 = client's income per segment importance, is the valuation (scale: 1= very low, 2= low, 3= normal, 4= high y 5 = very high) to the client's revenue ratio regarding the total income of a client in regard to the total income of the segment in which the client is.

V_4 = client segmentation by income importance, is the valuation (scale: 1= very low, 2= low, 3= normal, 4= high y 5 = very high) to the weighting of the client segment based on their income concerning other segment based on the income of their underlying clients.

V_5 = client's benefits margin per segment importance, is the valuation (scale: 1= very low, 2= low, 3= normal, 4= high y 5 = very high) to the benefit ratio of a client regarding the total benefit of a segment in which the client is.

V_6 = clients segmentation by benefits, is the valuation (scale: 1= very low, 2= low, 3= normal, 4= high y 5 = very high) to the weighting of the client's segment based on their benefits concerning other segments based on the benefits if their underlying clients.

V_7: Importance of designations, is the valuation (scale: 1= very low, 2= low, 3= normal, 4= high y 5 = very high) to the number of times a person (account executive) is assigned for customer support.

V_8: Delivery speed importance, is the valuation (scale: 1= very low, 2= low, 3= normal, 4= high y 5 = very high) to the response time since the formal service request until the delivery of it to the client.

V_9: position importance, is the valuation (scale: 1= very low, 2= low, 3= normal, 4= high y 5 = very high) to the economic position of the client.

V_{10}: purchase column importance, is the valuation (scale: 1= very low, 2= low, 3= normal, 4= high y 5 = very high) to the number of services purchased by the client.

V_{11}: purchase frequency importance (scale: 1= very low, 2= low, 3= normal, 4= high y 5 = very high) to the number of requests during five semestral periods.

Second step: Construction of a sequence diagram of causal relations

We want to know the effects of V_1 over F_1, the effects of V_2 over F_1, and simultaneously the effects of V_1 over F_3. If we do not consistently estimate them, we would not be sure of representing their "true and isolated" effects. For example, this technique is needed to demonstrate the effects of V_2 on both F_1 and F_3, etc. The following diagram shows trajectories (causal relations) including nomenclatures regarding cargo factors to investigate, as well as the work hypothesis to develop:

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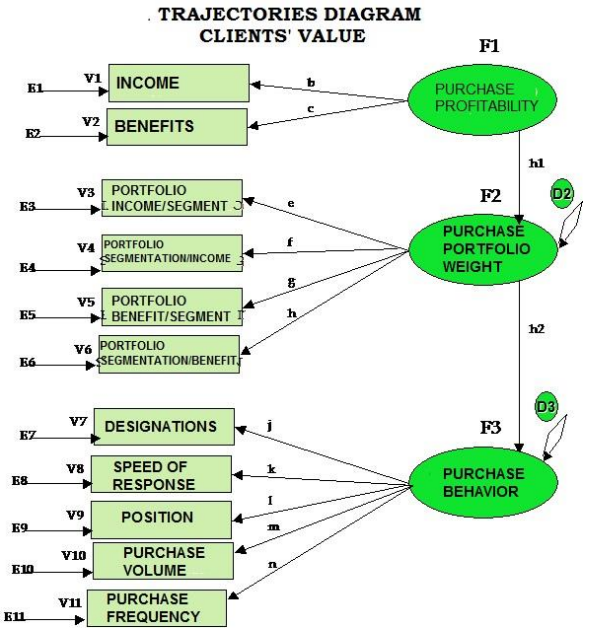

Graphic 2 Causal relations of client measurement diagram

Third step: Model specification in more formal terms

After developing the theoretical model and representing it in a sequence diagram, it will be necessary to specify the model in terms that are more formal, this is made through a series of equations that define (1) the structural equations that link the constructs

(2) The measure model that specifies what variables measure the constructs and (3) a series of matrix that indicate any supposed correlation between constructs and variables. The objective is link operational definitions of the construct to the theory to reach the appropriate empirical contrast.

Structural model

Transferring a sequence diagram to a series of structural equations is a direct proceeding. In the first place, each endogenous construct is the independent variable.

Each endogenous variable (F_j) can be foreseen as an exogenous variable (s) (V_j) as well as other endogenous variable (s). For each expected effect, we estimate a structural coefficient (b_{jm}). Since we know that we will have prediction errors, like in the multiple regression, we include an error margin (E_i) for each equation. The error represents the sum of the effects due to a specification error and a random measure error. In the following chart 3, a description of the structural equations is provided:

V1 =1F1+E1.

V2 =1*F1+E2.

V3 =1F2+E3.

V4 =1*F2+E4.

V5 =1*F2+E5.

V6 =1*F2+E6.

V7 =1F3+E7.

V8 =1*F3+E8.

V9 =1*F3+E9.

V10 =1*F3+E10.

V11=1*F3+E11.

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Factorial analysis

To specify the measurement model, we make the transition from the factorial analysis in which the researcher has no control over which variables describe each factor, to a confirmatory mode, in which the researcher specifies which variables define each construct (factor). The observed variables that we obtain from surveyed are called indicators in the measurement model, because we used to measure or <<indicate >> latent constructs.

Variables	Rentabilidad	Paso	Comportamiento
V_1, importancia de ingresos		$1F_1$	
V_2, importancia margen de beneficios		$1{*}F_1$	
V_3, importancia ingresos por segmento		$1F_2$	
V_4, importancia segmentación de ingresos		$1{*}F_2$	
V_5, importancia beneficios por segmento		$1{*}F_2$	
V_6, importancia segmentación de beneficios		$1{*}F_2$	
V_7, importancia número de designaciones		$1F_3$	
V_8, importancia velocidad de entrega		$1{*}F_3$	
V_9, importancia posición mercado (económico)		$1{*}F_3$	
V_{10}, importancia volumen de compra		$1{*}F_3$	
V_{11}, importancia frecuencia de compra		$1{*}F_3$	

Chart 2 Model of the three constructs measurement

The researcher specifies a measurement model for both the exogenous contracts as well as for endogenous clients. See chart 3.

Forth step: selection of the entry matrix type and the proposed model estimation.

Data introduction

The structural equation model (SEM) uses only the variance-covariance or correlation model as the input data. The program entry is a variance-covariance or correlation matrix of all the indicators used in the model. The measurement model specifies then what indicators correspond to each constructo and the latent construct puntuations are the used in the structural model.

Data entry

With the structural equation model, both the covariance matrix and the correlation matrix are obtained. For the purposes of confirmatory factor analysis, any of the entry matrix can be used. Nevertheless, since the objective is an exploration of the pattern of interrelationships and for reasons of validation facilty, the correlation matrix will be used.

imprf03	impbf03	impraf03	imparf03	impbaf03	impabf03	impnd	impvr	impmf03	impcf03	impfc
1.000										
0.941	1.000									
0.530	0.397	1.000								
0.856	0.738	0.532	1.000							
0.555	0.473	0.933	0.495	1.000						
0.939	0.851	0.593	0.861	0.556	1.000					
0.030	-0.066	0.118	0.047	0.031	0.064	1.000				
0.553	0.415	0.319	0.673	0.270	0.599	-0.022	1.000			
0.908	0.942	0.294	0.676	0.368	0.780	-0.044	0.422	1.000		
0.861	0.818	0.378	0.778	0.387	0.813	-0.012	0.496	0.793	1.000	
0.518	0.471	0.323	0.566	0.289	0.544	0.194	0.399	0.452	0.635	1.000

Chart 3 Correlation matrix of the eleven variables.

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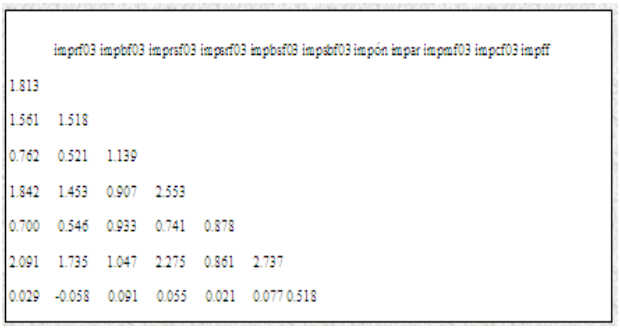


	imprf03	impbf03	imprsf03	impsrf03	impbsf03	impsbf03	impion	impar	impmf03	impcf03	impff
1.813											
1.561	1.518										
0.762	0.521	1.139									
1.842	1.453	0.907	2.553								
0.700	0.546	0.933	0.741	0.878							
2.091	1.735	1.047	2.275	0.861	2.737						
0.029	-0.058	0.091	0.055	0.021	0.077	0.518					

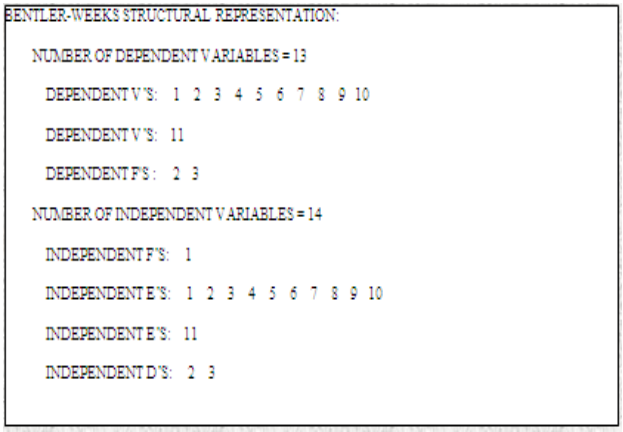
Chart 4 Covariance matrix of the eleven variables

Method of estimation

The size of our simple is 80 observations; the maximum likelihood method is used, which has recently received particular attention because of its insensitivity to non-normality of the data.

For the estimation of the measurment model and the correaltion of the construct, the structural equation program EQS is used. Consider the estimation of the measurement model for the constructs with more than one variable: due to the estimation procedure, the construct must be done "invariable to te scale", which mean that construct indicators must be "standardized" so that the constructs are made comparable.

There are two types of common aproaches to this procedure. In first place, one of the weights of each construct can be anchored to the fixed value 1.0. The second approach is to estimate the variance of the construct directly. With each approach the same estimates are obtained, but for contrasting effects of the theory, the second approach is recommended (the estimated variance of the construct will equal 1 for this study, that is, F1, F2, F3. have variance equal to 1).



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BENTLER-WEEKS STRUCTURAL REPRESENTATION:
  NUMBER OF DEPENDENT VARIABLES = 13
    DEPENDENT V'S:  1  2  3  4  5  6  7  8  9 10
    DEPENDENT V'S:  11
    DEPENDENT F'S:  2  3
  NUMBER OF INDEPENDENT VARIABLES = 14
    INDEPENDENT F'S:  1
    INDEPENDENT E'S:  1  2  3  4  5  6  7  8  9 10
    INDEPENDENT E'S:  11
    INDEPENDENT D'S:  2  3
```

Chart 5 EQS analysis of endogenous and exogenous variables

It can also be seen from Chart 5, that the determinant is positive, which is another necessary condition for the non-singularity of the matrix.

Sixth step: Evaluation of the adjust quality criteria.

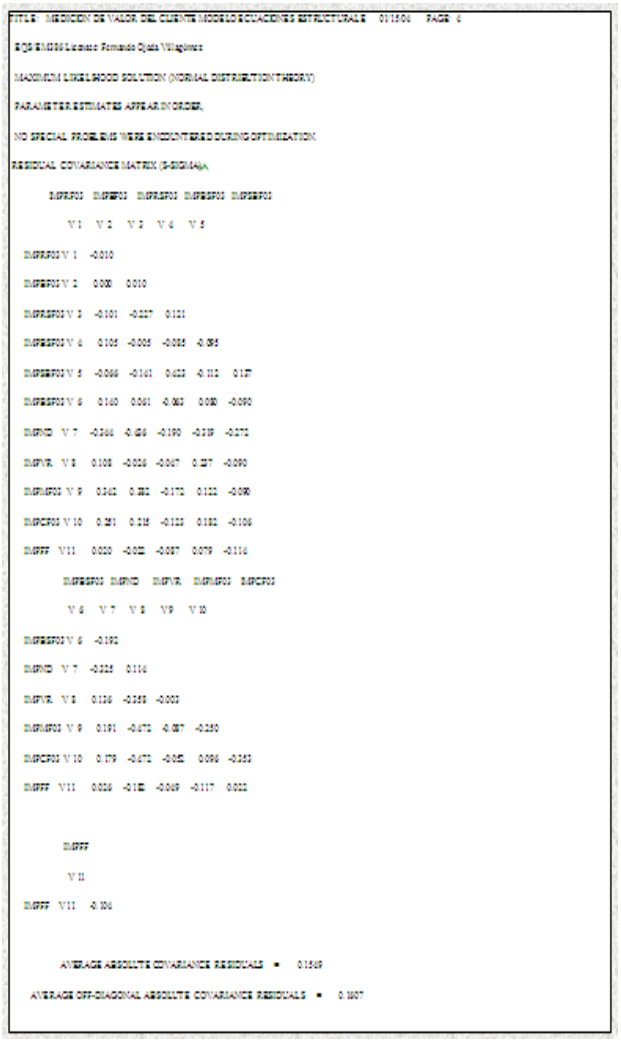
The first step of the results evaluation is an initial inspection of infractor estimations.

Infractor estimations.

The results are examined searching for infractor estimations. They are estimated coefficients in the measurment models as well as in the structuralones which exceed the acceptable limits. The most common examples of infractor estimations are:

- Negative or non significative error varinces for any cosntruct.
- Standarized coefficients that surpasses or are closet o 1,0.
- Very high standard errors associated with any estimated coefficent.

If infractor estimations are found, the researcher must solve in first palce each case before evaluating any specific result from the model.



TITLE: MEDICION DE VALOR DEL CLIENTE MODELO ECUACIONES ESTRUCTURALES 011506 PAGE 6

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MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

PARAMETER ESTIMATES APPEAR IN ORDER.

NO SPECIAL PROBLEMS WERE ENCOUNTERED DURING OPTIMIZATION.

RESIDUAL COVARIANCE MATRIX (S-SIGMA):

	IMPRF03	IMPBF03	IMPRSF03	IMPBSF03	IMPSEF03
	V 1	V 2	V 3	V 4	V 5
IMPRF03 V 1	-0.010				
IMPBF03 V 2	0.000	0.010			
IMPRSF03 V 3	-0.101	-0.227	0.121		
IMPBSF03 V 4	0.105	-0.005	-0.085	-0.095	
IMPSEF03 V 5	-0.066	-0.141	0.423	-0.112	0.137
IMPBSF03 V 6	0.140	0.061	-0.063	0.080	-0.090
IMPND V 7	-0.344	-0.436	-0.190	-0.319	-0.272
IMPVR V 8	0.108	-0.026	-0.047	0.237	-0.090
IMPMF03 V 9	0.342	0.382	-0.172	0.122	-0.090
IMPCF03 V 10	0.251	0.215	-0.123	0.182	-0.106
IMPFF V11	0.020	-0.022	-0.087	0.079	-0.114

	IMPBSF03	IMPND	IMPVR	IMPMF03	IMPCF03
	V 6	V 7	V 8	V 9	V 10
IMPBSF03 V 6	-0.192				
IMPND V 7	-0.325	0.114			
IMPVR V 8	0.136	-0.358	-0.003		
IMPMF03 V 9	0.191	-0.472	-0.087	-0.250	
IMPCF03 V 10	0.179	-0.472	-0.052	0.096	-0.353
IMPFF V11	0.026	-0.182	-0.049	-0.117	0.022

	IMPFF
	V 11
IMPFF V11	-0.104

AVERAGE ABSOLUTE COVARIANCE RESIDUALS = 0.1569

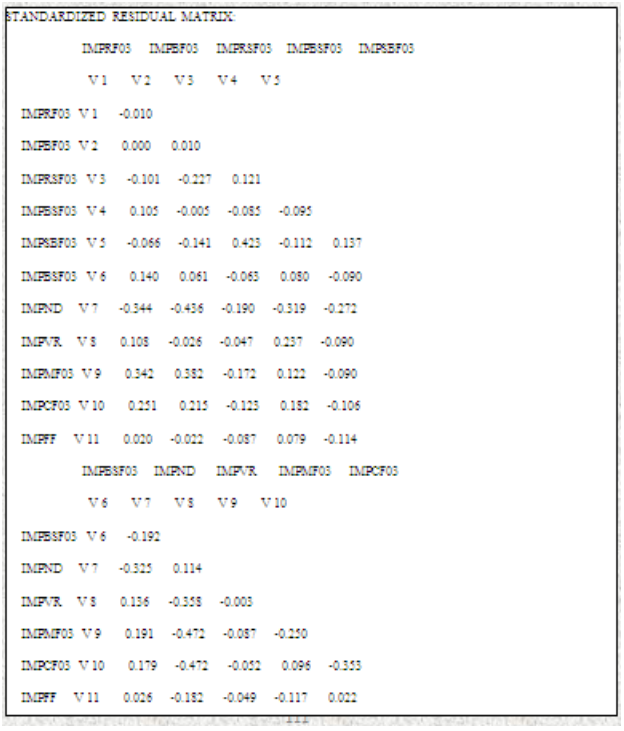
AVERAGE OFF-DIAGONAL ABSOLUTE COVARIANCE RESIDUALS = 0.1607

Chart 6 Analysis of the covariance matrix of S-Sigma

The chart 7 has EQS estimations of the measurement model and of the consdtructs correlations, in which various matters are detected:

- The message *"NO SPECIAL PROBLEMS WERE ENCOUNTERED DURING OPTIMIZATION",* indicates that the EQS program has not detected problems by the lack of the model identification or other numerical difficulties that could have arised, reason why it considers correct the identification to the model that is over identified to proceed to the next revision.

- The values of the difference between the observed matrix and the predicted matrix (S-SIGMA) are Little and are disperse between the variables so the fit to the data is good.



STANDARDIZED RESIDUAL MATRIX:

	IMPRF03	IMPBF03	IMPRSF03	IMPBSF03	IMPSEF03
	V 1	V 2	V 3	V 4	V 5
IMPRF03 V 1	-0.010				
IMPBF03 V 2	0.000	0.010			
IMPRSF03 V 3	-0.101	-0.227	0.121		
IMPBSF03 V 4	0.105	-0.005	-0.085	-0.095	
IMPSEF03 V 5	-0.066	-0.141	0.423	-0.112	0.137
IMPBSF03 V 6	0.140	0.061	-0.063	0.080	-0.090
IMPND V 7	-0.344	-0.436	-0.190	-0.319	-0.272
IMPVR V 8	0.108	-0.026	-0.047	0.237	-0.090
IMPMF03 V 9	0.342	0.382	-0.172	0.122	-0.090
IMPCF03 V 10	0.251	0.215	-0.123	0.182	-0.106
IMPFF V 11	0.020	-0.022	-0.087	0.079	-0.114

	IMPBSF03	IMPND	IMPVR	IMPMF03	IMPCF03
	V 6	V 7	V 8	V 9	V 10
IMPBSF03 V 6	-0.192				
IMPND V 7	-0.325	0.114			
IMPVR V 8	0.136	-0.358	-0.003		
IMPMF03 V 9	0.191	-0.472	-0.087	-0.250	
IMPCF03 V 10	0.179	-0.472	-0.052	0.096	-0.353
IMPFF V 11	0.026	-0.182	-0.049	-0.117	0.022

Chart 7 Analysis of the standardized residual matrix

Within the program it was specified that the analysis would be by correlation and this facilitates their interpretation, and from chart 8, it is concluded that there are not infractor estimations, i.e. there are no values that surpasse the number of one.

From chart 9 it can be apreciated the figure symmetry in regard their standardized residual distribution, so none of the resiaduals have a preoccupation and a good adjust of the model with its estimemd variables in regard to their variance and covariance are seen.

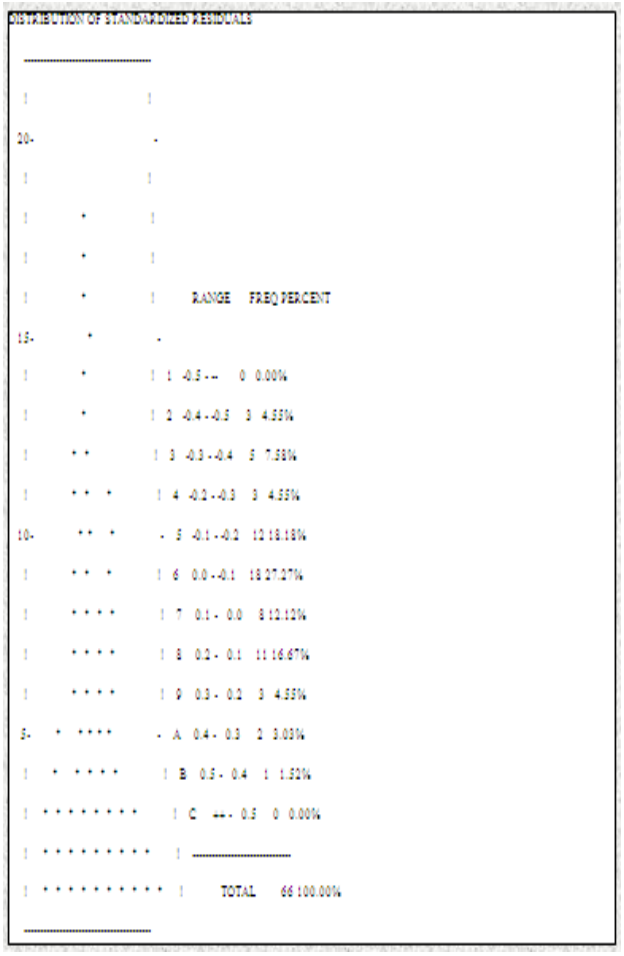


Chart 8 Analysis of the distribution of standardized residuals

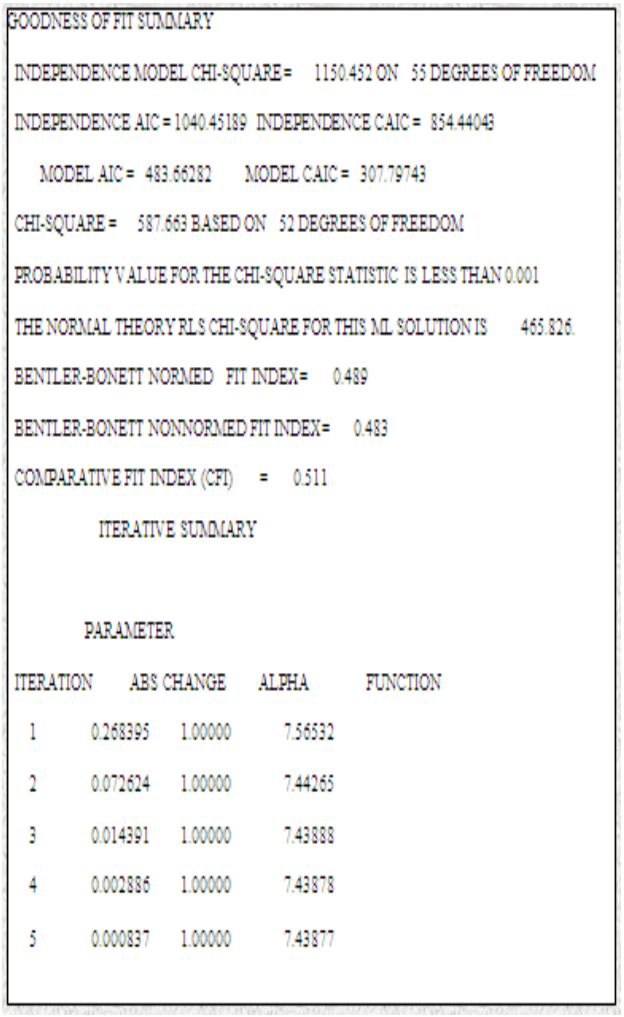
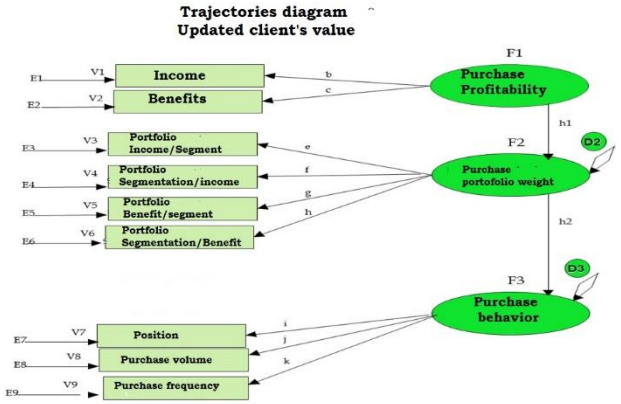


Chart 9 Analysis of the goodness of the fit

The chart 10 shows the estimation of rescaled parameter, in other words, it follows the standardization of latent variables (F's) and residuals (E's) to reach a variance unity, from it can be esteemed that the value of R2 is infractor for the variables: V_7 and V_8, therefore, based on this results those variables are eliminated and we proceed to do the pertinent adjustment of the model, finishing as illustrated in graphic 3.



Graphic 3 Final model meeting the goodness of fit criteria

Also in the chart 10 a strong relationship between profitability and portfolio (estimation equal to 0.898) and the relationship between behavior and portfolio (estimation equals to 0,804) [7].

Seventh step: interpretation and modification of the model.

From the previous steps it can be observed that the model can be adjusted and, in fact, unnecessary data could exist, reason why the entry matrix has been adjusted, this allowed to reach a Cronbach Alpha equal to 0.940, which means a very high reliability.

Moreover, the Bentler rates, standardized and non standarized, were substantially improved, as well as the comparative rate, resulting in 0.55, 0.52 and 0.57, respectively.

[7]While singularity is not reached, collinearity is substantial. (HAIR, 1999)

Conclusions

STANDARDIZED SOLUTION:	R-SQUARED
IMPRF03 =V1 = .971 F1 + .239 E1	.943
IMPBF03 =V2 = .971*F1 + .241 E2	.942
IMPRSF03=V3 = .772 F2 + .636 E3	.595
IMPBSF03=V4 = .810*F2 + .586 E4	.656
IMPSBF03=V5 = .730*F2 + .684 E5	.533
IMPBSF03=V6 = .828*F2 + .560 E6	.686
IMPMF03 =V7 = .813*F3 + .583 E7	.660
IMPCF03 =V8 = .824*F3 + .567 E8	.679
IMPFF =V9 = .736*F3 + .676 E9	.542
CART =F2 = .910*F1 + .415 D2	.828
COMP =F3 = .951*F2 + .308 D3	.905

Chart 10 Analysis of the standard solution

Chart 11 shows that the value of R^2 is not longer infractor for any variables.

Finally, the client value was modeled taking as example a Mexican Company from the telecommunication sector and we achieve to identify, precisely and in a reliable way, the client value in a underlying form to his profitability, weight and behavior, resulting for these data: a storng relationship between profitability and portfolio (estimation equal to 0.91); and a strong relationship between poertfolio and behavior (estimation equals to 0.981)[8].

[8] While singularity is not reached, collinearity is substantial (HAIR, 1999)

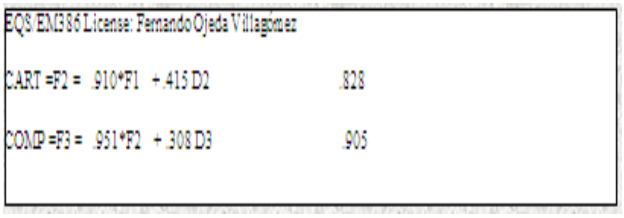


Chart 11 Realtionship among independent variables

From the working hypotheses of value proposed through the model interpretation it is concluded that: there is a high grade of direct relation between the portfolio weight and the client profitability (estimation value equal to 0.910); and that there is a high grade of direct relation between the client's behavior and the client's portfolio.

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Article **ECORFAN Journal-Mexico**
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Currency exposure coverage of ICA S.A.B. of C.V. using Fractal methodology

ESPINOZA-GÓMEZ, Luis Éric' and PALAFOX-BADILLO, Oscar''

'Universidad Mayor Real y Pontificia de San Francisco Xavier de Chuquisaca, Sucre, Bolivia.
''Universidad Tecnologica de Mexico.Departamento de Administración de Negocios

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The present anylisis was made in order to obtain the basis of the financial performance and the risk level of Empresas ICA S.A.B. of C.V. due to the importance of the enterprise in the Mexican economy, based on financial models and data given by the Mexican Stock Exchange, the Bank of Mexico and Bloomberg.Empresas ICA is a company that offers engineering, construction services and infrastructure development based in Mexico founded in 1947 and subsequently extended in Latin America, USA, Europe and Asia.ICA is involved in projects such as the construction of highways, airports, office buildings, shopping centers, manufacturing facilities and housing projects. Also operates water distribution and treatment systems, highways, mines aggregates, ports and parking facilities. Between 2012 and 2015 the value of capitalization of ICA was reduced by 69% since it is in financial trouble, adding a net 46 billion pesos of debt; as a result of this impact has focused on selling their assets to improve its liquidity, looking to generate 40 billion pesos.

Coverage, Exposure, Currency, Engineering, Construction.

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Introduction

The international medium of exchange in a currency other than domestic, it is trough the foreing exchange market that is the purchase and sale of different national currencies, it is function is to transfer the purchasing power of de currency of a country to another. To determine the currency have the following financial model:

$$D = \left[\frac{\log Dd}{\ln Di}\right]^{1/2} + \pi \quad (1)$$

Where D stands for "Currency" is the result sougth, log Dd is the logarithm of direct currency, Dd lim is the limit of direct currency, ln is the natural Di indirect currency, ½ is long-term call brauniano, ¾ is put gold short-term average, with ∂/∂I antilog 0.25 value of orden "n", d/dI is differential order "n", and π in inflation.

Realizing the clearance of our base formula taking the Lagrange model has the following formula.

$$D = \left[\frac{\log Dd\ (\ln Di)}{\pi}\right]^{1/2} \quad (2)$$

Performing always clear formula based on the model Lagrange model lim is obtained.

$$D = \left[\frac{\lim Dd\ (ə1\ Di)}{\pi}\right]^{1/2} \quad (3)$$

Performing always clear formula based on the model Lagrange model Koch Principe is obtained.

$$D = \left[\frac{½\ Dd[\ ½\frac{d}{dI} + ¾\left(\frac{d}{dII}\right)]Di}{\pi}\right]^{0.25\ \partial/\partial I} \quad (4)$$

Start with the first part substitute values into the model:

$$D = \left[\frac{\log 0.0576\ (\ln 17.3993)}{2.6}\right]^{1/2} = 0.7159 \quad (5)$$

$$D = \left[\frac{((0.618)\ 0.0576)\ ((0.75)\ 17.3395)}{2.6}\right]^{\frac{1}{2}} = 0.42195 \quad (6)$$

$$D = \left[\frac{½\ 0.0576[\ ½(0.5) + ¾\ (1)]Di}{2.6}\right]^{0.25\ (0.5)} = 0.8136 \quad (7)$$

$\Sigma D = 1.95$
$D_{Average} = 0.65$

Exposure

Exposure to currency risk arises in all kinds of both domestic and foreign companies. Both assets, liabilities and cash flows of an economic entity are subject to currency risk and measured for a period.

Exposure to currency risk of the cash flows is generally long term, ie a year or 12 months. For the calculation of Exposure is presented the original financial model:

$$E = \left[\frac{12(Tc-\pi)^{\frac{1}{2}}}{\pi-(3/4)}\right]^{Ac} \quad (8)$$

Where E stands for "Exposure" is the desired result, 12 is the risk in number of months in a year that has long-term, Tc is the exchange rate, π is inflation, ½ is call long-term brauniano, ¾ is put average gold short term, AC are the outstanding shares, 12 log is the logarithm of the long-term, ln π is the natural pi, lim Tc is the limit of the exchange rate, d/dI π is the differential order "n" in pi, brauniano ½ Tc is the exchange rate, π is half golden ¾ of pi, ∂/∂n is the antilog of order "n" value of 0.75 and 0.25.

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Realizing the clearance of our base model taking the Lagrange model has the following formula.

$$E = \left[\frac{12\ log\ TC - \ln \pi}{\pi/3/4}\right]^{½Ac} \quad (9)$$

Performing always clear model based on the model Lagrange model lim is obtained.

$$E = \left[\frac{12\ (lim\ TC - \mathrm{d/dI}\,\pi)½}{\pi/3/4}\right]^{Ac} \quad (10)$$

Performing always clear model based on the model Lagrange, Koch Model is obtained.

$$E = \left[\frac{12\ (½\ TC) - ¾\,\pi}{\pi/0.75}\right]^{0.25\partial/\partial I} \quad (11)$$

We substitute the values in the next model:

$$E = \left[\frac{12\ log\ (17.3993) - \ln\ (2.6)}{(2.6)/(.75)}\right]^{.5(6.0735)} = \left[\frac{(14.88637) - (0.95551)}{(3.4666)}\right]^{.5(6.0735)} \quad (12)$$

$$E = [4.01859]^{3.0367} 68.2952 \quad (13)$$

$$E = \left[\frac{12(lim\ (17.3993) - (.0576)/(17.3993)(2.6))0.5}{(2.6)/(0.75)}\right]^{(6.0735)} = \left[\frac{(34.27715) - (.00127326))0.5}{(1.95)}\right]^{(6.0735)} \quad (14)$$

$$E = [17.210565]^{(6.0735)} 32.033 \quad (15)$$

$$E = \left[\frac{12\ ((0.5)\ 17.3993) - (0.75)(2.6)}{(2.6)/0.75}\right]^{0.25\partial/\partial I} = \left[\frac{(104.3958) - (1.95)}{(3.4666)}\right]^{0.25\partial/\partial I} \quad (16)$$

$$E = [29.5522]^{0.25\partial/\partial I} \quad (17)$$

Coverage

It is ke cover of a risk in the short term equivalent 0 to 6 months. They are operations aimed at eliminating or reducing the risk of a financial asset or liability in a company or an individual. To determine the coverage, have the following financial model:

$$C = \left[\frac{6(\pi)^{3/4}}{Tc^{1/2}}\right]^{Ac} \quad (18)$$

Where C stands for "Coverage" is the desired result, 6 or log 6 in the maximum number of months for the short-term, 6 lim is the limit of 6 months of short-term coverage, in Π is the natural pi, ½ is call long term brauniano, ¾ is put average short gold term, AC are the outstanding shares of the company, d/dI is differential order "n", with ∂/∂II antilog 0.25 value of orden "n", with ∂/∂I antilog 0.75 value of orden "n" and π is inflation.

Realizing the clearance of our base model taking the Lagrange model has the following model.

$$C = \left[\frac{log6(ln\pi)^{3/4}}{Tc/^{1/2}}\right]^{Ac} \quad (19)$$

Performing always clear formula based on the model Lagrange, lim modelis obtained.

$$C = \left[\frac{lim6(d/dI\pi)^{3/4}}{Tc/^{1/2}}\right]^{Ac} \quad (20)$$

Performing always clear formula based on the model Lagranjiano model Koch Principe is obtained.

$$C = \left[\frac{½6(¾\pi)^{0.75\ \partial/\partial I}}{Tc/^{0.25\ \partial/\partial II}}\right]^{Ac} \quad (21)$$

We substitute the values in the next model:

$$C = \left[\frac{\log 6(\ln 2.6)^{3/4}}{\frac{17.3395}{1/2}}\right]^{607357582} = \left[\frac{(0.618)\,6(0.5(2.6))^{3/4}}{\frac{17.3395}{1/2}}\right]^{607357582} = \left[\frac{(1/2)6(0.5)^{3/4}}{\frac{17.3395}{1/2}}\right]^{607357582} \quad (22)$$

Risk

It is the risk that have to change a currency. This is the fixed change (constant) and flexible (it has a 3% risk) or fluctuating (smoothing or logarithm) the latter can be infinite (it recedes negative sing is cost/loss) or finite (advances is a sing positive that is the profit or surplus). For the calculation of RISK is presented the original financial model:

$$R = \int_{\alpha 0}^{RB} B + \int_{\alpha 1}^{RM} B + \int_{\propto 2}^{RA} B + \varepsilon^2 \quad (23)$$

Realizing the clearance of our base formula taking the Lagranjiano model has the following model.

$$R = \left[\frac{\log \int_0^{RB(\alpha 0)} B + \ln \int_0^{RM(\alpha 1)} B}{\int_0^{RA(\alpha 2)} B}\right]^{\varepsilon^2} \quad (24)$$

Performing always clear formula based on the model Lagranjiano, lim model is obtained.

$$R = \left[\frac{\lim \int_0^{RB(\alpha 0)} B + \frac{d}{d_1}\int_0^{RM(\alpha 1)} B}{\int_0^{RA(\alpha 2)} B}\right]^{\varepsilon^2} \quad (25)$$

Performing always clear formula based on the model Lagranjiano, Koch model is obtained.

$$R = \left[\frac{\frac{1}{2}\int_0^{RB(\alpha 0)} B + \frac{3}{4}\int_0^{RM(\alpha 1)} B}{\int_0^{RA(\alpha 2)} B}\right]^{\varepsilon^2} \quad (26)$$

We substitute the values in the next model:

$$R = \left[\frac{\log \int_0^{0.33(0.066)} 2.429 + \ln \int_0^{0.66(0.066)} 2.429}{\int_0^{0.99(0.066)} 2.429}\right]^{0.5^2} = \left[\frac{0.618 \int_0^{0.33(0.066)} 2.429 + 0.5 \int_0^{0.66(0.066)} 2.429}{\int_0^{0.99(0.066)} 2.429}\right]^{0.5^2} \quad (27)$$

$$R = \left[\frac{\frac{1}{2}\int_0^{0.33(0.066)} 2.429 + \frac{3}{4}\int_0^{0.66(0.066)} 2.429}{\int_0^{0.99(0.066)} 2.429}\right]^{0.5^2} \quad (28)$$

Conclusions

When gathering the main financial variables obtained in real-time for ICA, S.A.B. DE C.V. will begin to replace each value models that were developed both in the original model like models methodology fractal such as the management of currency where the greatest risk factor is the impact of inflation.

This foreign exchange risk is the result of uncertainty generated by fluctuations in future in exchange rate values as well as also the value of the national currency. This is clear that currently investors have opted to perform Exchange rate hedges in order to cover lost important due to the weakness of the peso against the dollar each time more is it comes worse more, this is a reflection on the depreciation of 9.6% of the Mexican peso against the dollar so far in the year.

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Systematization of the recommendations of the external evaluations to the Mexican federal programs

VERDUZCO- Alfonso' & FLORES-Pedro''

'Universidad del Mayab Carretera Mérida-Progreso KM 15.5 AP 96, Cordemex, 97130 Mérida, Yucatan, Mexico.
''Instituto Tecnologico de Estudios Superiores Monterrey Av. Eugenio Garza Sada Sur 2501, Tecnologico, 64849 Monterrey, Nuevo Leon, Mexico

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This investigation focuses to explain the way in how the external evaluations of the subject federal programs to operation rules are made from 2006 in Mexico, and the treatment that occurs to the results of these evaluations. With the result of the analysis, a system model considers to improve this situation, to effect of which the hundreds of million weights that are reversed in the heading of the evaluation have one better utility. One concludes that, by means of an integrated information system, the dependencies and organizations can work of coordinated form to obtain a superior aim in the transparency and the surrender of accounts. For it, it is necessary to develop new instruments of control integrated of the resources for the external evaluations of the subject federal programs to operation rules that allow to improve the performance of these programs and to obtain a greater utility to the used money to evaluate their exercise and its results.

System Model, PS, LFPRH, PFSRO, THIRST.

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Introduction

External evaluation of the federal program subject to operation norms in Mexico.

Initially we'll start with the established on the article 78 of the Budget and Fiscal Responsibility Federal Law (LFPRH for its acronym in Spanish), which establishes literally that: " the sub-offices, or the entities through their respective sector coordinator sub-office, should do a result evaluation of the programs subject to operation norms, directed by academic and research institutions or specialized organisms, national or international, who have recognition and experience in the respective subjects of the program. "[9]

A federal program subject to operation norms (PFSRO for its acronym in Spanish) is the one who integrates in his conceptualization a series if dispositions that allow him to secure an efficient, effective, opportune, equitable and transparent application of public resources[10]. These dispositions are: objectives the program meant to achieve; general guidelines, coverage scope, definition of the target population, operation specific guidelines, required institutional coordination, program-budget reports; monitoring and control schemes; and gathering mechanisms of complaints and denunciations.

Who pays the external evaluation for each PFSRO? According to the established in the article 54 of the PEF-2006[11]; in the article 26, fraction II, third paragraph of the PEF-2007[12]; in the article 24, fraction IV of the PEF-2008[13], and in the article 27, fraction VII, of the PEF.2009, it is indicated that the sub-offices and entities must: "cover the cost of the evaluation of the program operated or coordinated by them with charge to their budget and according to the payment mechanism that is determined"[14]

It is worth mention that the Budget and Fiscal Responsibility Law was published on the Diario Oficial de la Federacion (Oficial Diary of the Federation) in march 30 2006 and, according to the first and second transitory articles, the new law entered into force in April 1th 2006 and the Federal Public Expenditure, Accounting and Budget Law and all the dispositions contrary to this law were respectively abrogated.

Afterwards, at the Official Diary of the Federation, in October 1 2007, the Budget and Fiscal Responsibility Law was published again with various modifications.

[9] Ley Federal de Presupuesto y Responsabilidad Hacendaria, (Budget and Fiscal Responsibilty Federal Law) published on Diario Oficial de la Federación (DOF) in march 30, 2006.

[10] Artículo 2, fracción XLV de la Ley Federal de Presupuesto y Responsabilidad Hacendaria, publicada en el DOF el 01 de octubre de 2007.

[11] Decreto de Presupuesto de Egresos de la Federación para el Ejercicio Fiscal de 2006, publicado en el DOF el 22 de diciembre de 2005.

[12] Decreto de Presupuesto de Egresos de la Federación para el Ejercicio Fiscal de 2007, publicado en el DOF el 28 de diciembre de 2006.

[13] Decreto de Presupuesto de Egresos de la Federación para el Ejercicio Fiscal de 2008, publicado en el DOF el 13 de diciembre de 2007.

[14] Decreto de Presupuesto de Egresos de la Federación para el Ejercicio Fiscal de 2009, publicado en el DOF 28-11-2008.

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Among them the article 110 excelled preponderantly, this one incorporates the concept of *performance evaluation* that widened the evaluation scope, reaching now public policies, federal programs and the performance of the institutions responsible for carrying them out.[15] Finally, the article 27 of the PEF-2009 already refers to the article 110 and 111 of the Budget and Fiscal Responsibility Federal Law[16], to do evaluations in a wider context.

This rough analysis from 2006 to 2009 shows the evolution suffered by the dispositions established on the Decrees of Expenditure Budget of the Federation to determine, first, the obligatory nature that the sub-offices and entities, who execute federal programs subject to operation norms, have to do result evaluations to those programs; second, the determination if using part of its budget to cover the cost of the evaluation on their federal programs; and third, since 2009 and according to the changes on the Budget Federal Law, the realization of performance evaluations to cover now public policies, the respective programs and the institution responsible of operating these federal programs.

Now we are going to focus on the fundamental aspect of this research, proposing the following question: on the LFPRH and /or the various decrees of the PEF, is it determined WHAT to do with the evaluation results, as well as WHO and HOW? Again, starting from the present LFPRH, the article 111 establish that:

"The Secretariat and the Public Service, on the scope of their respective competences, will verify periodically, at least bimonthly, the collection and execution results of the program and budgets of the sub-offices and entities, based on the performance evaluation system, among others, to identify the efficiency, economy, effectiveness and quality of the Federal Public Management and the social impact of the exercise of public expenditure, as well as to apply the conducting measures. The sub-offices will have the same obligation and with the same objectives regarding their coordinated entities.

The performance evaluation system mentioned on the previous paragraph will be obligatory to the expenditure executors. This system will include indicator to evaluate the results presented in the bimonthly reports, broken down by month, highlighting the quality of public goods and services, the citizen satisfaction and the fulfillment of the criteria established in the second paragraph of the article 1 of this Law[17]

Within the PEF-2006, in the article 54, fraction IV, subparagraph *b*, it is indicated that the sub-offices and entities, through their sectorial coordinator, must:

"… Present the result evaluation of each program to the Budget and Public Account commission of the Chamber, to the Secretariat and to the Public Function, at the latest the last business day of September, in order that the results are considered in the process of review and approval of the Expenditure Budget of the Federation for the next fiscal year."

[15] Ley Federal de Presupuesto y Responsabilidad Hacendaria, publicada en el Diario Oficial de la Federación el 01 de agosto de 2007.

[16] Ley Federal de Presupuesto y Responsabilidad Hacendaria, publicada en el Diario Oficial de la Federación el 31 de diciembre de 2008.

[17] Loc. cit.

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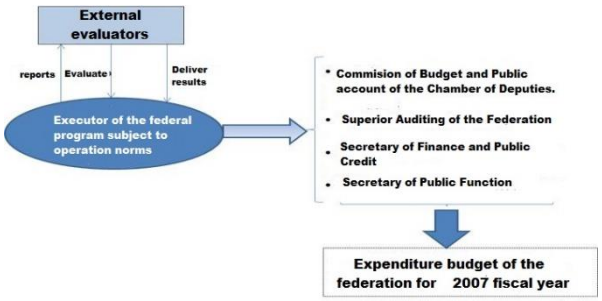
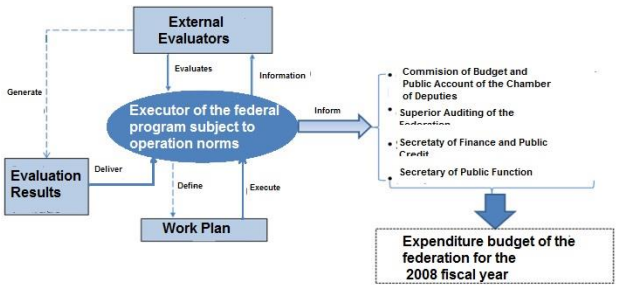


Graphic 1 Relation of actors on the result evaluation of the PFSRO for 2006

For the next PEF decrees, criteria that are more precise were defined. On the PEF-2007, in its article 26, fraction III, it is indicated that, the sub-offices and entities must establish on their respective websites:

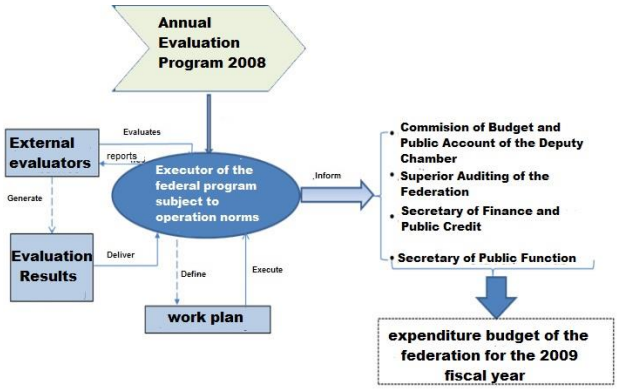
"…A specific section where the main results of the evaluation plan and work program are set to give attention to the marked points on it"



Graphic 2 Relation of actors on the result evaluation for PFSRO 2007

In the PEF-2008, new modalities are included. In the article 24, subparagraph II, it textually says: "II. Continue and, whenever it is necessary, conclude the established in the annual program corresponding to the year 2007.

The sub-offices and entities must elaborate a work plan to monitor the main results of the evaluations and integrate aspects that could be improved in the agreements of commitment to improving management for results if held."



Graphic 3 Relation of actors on the result evaluation of the PFSRO for 2008

Finally, in the PEF.2009, the article 27 is very revealing. On it, the following key concepts are mentioned: indicators for programs results; monitoring progress on the goals of the indicators; indicators matrix for results; the concept of result-based budget is endorsed; the medium term program (MTP); the evaluation program 2007.2008 and 2009.

In this decree, it is indicated textually that: "the sub-offices and entities must elaborate a work program to monitor during 2009 the main results of the evaluations they have and integrate the aspects that could be improved in the public policies design and the corresponding programs. The commitments are formalized through specific tools; the progress and the results achieved will be reported through a performance evaluation system and will be published in the terms of the applicable dispositions.

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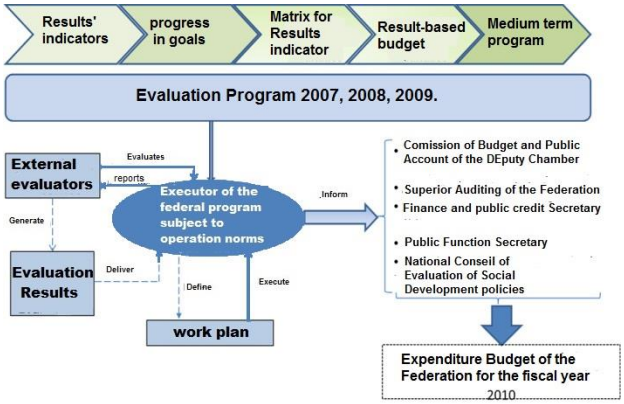
The information obtained from monitoring the improvement commitments and assessments, corresponding to the fiscal exercises from 2007 to 2009, will be considered as part of a gradual and progressive process, during 2009 and for the budgetary processes of the fiscal exercise 2010 and subsequently" Two fundamental aspects in the text of Article 27 can be determined.

On one hand, new mechanism and tools to define, in the short term, the Expenditure Budget of the Federation for 2010 with close guidance to results obtained from evaluations and that are reported as progress in the indicators goals defined in the results matrix.

On the other hand, the monitoring mechanism for the evaluation results are preserved, besides continuing the implementation of improvement commitments of 2007 to 2009.



Graphic 3 Relation of actors on the result evaluation for PFSRO 2009

Proposed in a schematic form the previous normativity, we can conclude that if there are guidelines that indicate WHAT must be done with the evaluations and WHO must do it.

However, nowadays, the missing elements are the HOW use the results of these external evaluations to obtain the maximum benefit of the resources invested implementing it, and the DIFFUSION of the control revision that demands the implementation of the HOW.

Besides the complexity of the system has arisen in the Performance Evaluation System (PES), with results to check in the short term.

The external evaluations of the federal programs subject to operation norms in the Social Development Secretariat

We will focus, first, on the treatment the Social Development Secretariat (SEDESOL for its acronym in Spanish) gives to the external evaluation of their Social Programs (SP) and, afterwards, will analyze how various sub-offices can be integrated to get the most benefit of the conclusions and finds reported by these external evaluations. Later, a comprehensive proposal for all those agencies of the Federal Government in charge of operating federal programs subject to operation norms will be described (APF for its acronym in Spanish)

The SEDESOL is used as a framework since it is the entity in charge directing the social policy of the country with more experience to evaluate the social programs. Therefore, inside its technical-administrative structure, the means to analyze the results of the external evaluation, obtained from each social program, were implemented.

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These activities were designated to the Monitoring and Evaluation General Management Office, attached to Prospective, planning and Evaluation Sub-secretariat, which, among other functions, has the faculty to "norm, coordinate and supervise the monitoring and external evaluations of social programs, carried out by academic institutions and other specialized of the social type, in regard to the programs and actions financed with resources from the Expenditure Budget of the Federation of Administrative Field corresponding to Social Development. "[18] Nevertheless, since the publication of the Social Development General Law (SDGL) precise legal criteria regarding the evaluation of social program were defined.

In this law there is a whole chapter about the Evaluation of the Social Development Policy.[19]. The contributions given by the SEDESOL in a certain time to the Social Programs Evaluation, until then SDGL, generated various mechanisms to propose later, within the National Council for the Evaluation of Social Development Policy (CONEVAL for its acronym in Spanish), the principles of systematic evaluation of federal programs aimed at social policy. (In this point, it is worth mention that the harmonization of the concepts of federal programs subject to operation norms and social programs).

In part, both are synonyms since a social program is subject to operation rules. Specifically, the federal programs are a subset of the federal program subject to operations norms.

When the program PROGRESA was put in action in 1997, the gradual strategy for planning its coverage strategy was seized in order to do an experimental impact evaluation.

Since 2000 the external evaluation is institutionalized as obligatory when the Operation Norms for federal programs are established within the Expenditure Budget of the Federation decree.

Between 2000 and 2006 exercises of external evaluation were carried out, which results were reported annually to the congress, among them, the Milk Supply Social Program (LICONSA for its acronym in Spanish) the Food Supply Program (DICONSA for its acronym in Spanish), Countervailing Actions to Reduce the Backwardness in Initial and Basic Education (CONAFE for its acronym in Spanish), Employment Support Program (STPS for its acronym in Spanish) the Health Protection System (Seguro Popular-Popular Insurance) and the Habitat Program (SEDESOL for its acronym in Spanish).

Before the creation of the CONEVAL, the SEDESOL had to fulfill the requirements established in the article 54 of the PEF.2006, applying their own criteria and methodology to do the evaluation of the social programs. Afterwards, it has to fulfill the pointed by the Fifth title of the SDGL and, mainly, the established in the articles 3, 4, and 5 of the Decree in which the National Council of Evaluation of the Social Development Policy[20]. Which were the criteria and methodology to do the evaluation of the results of social programs?

[18] Reglamento Interior de la Secretaría de Desarrollo Social, publicado en el Diario Oficial de la Federación el 19 de julio de 2004.

[19] Ley General de Desarrollo Social, publicada en el Diario Oficial de la Federación el 20 de enero de 2004.

[20] Decreto por el que se regula el Consejo Nacional de Evaluación de la Política de Desarrollo Social, publicado en el Diario Oficial de la Federación el 24 de agosto de 2005.

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Basically, the results of the evaluations handed by external consultant were revised. Those consultants were hired in a direct way by each executor of the social program, (LICONSA, DICONSA, FONART, etc., on other words, each entity sectioned in Social Development, as well as decentralized, like OPORTUNIDADES)

From reviews on products, carious meetings were generated to determine some work commitments to meet those critical factors that were revealed in the evaluation.

Evaluations commonly involved tasks such as document review of the social program, specifically everything concerning normative documents; institutional publications; information about their information systems; internal regulations; laboral policies; organization handbooks, strategically plans, relationships with national and international institutions, such as CEPAL, World Bank, IDB, UNAM and others; and a review of its historical performance precedents.

Personal interviews with several public servants of the unit evaluated were held, mainly in the areas of planning, budgeting, management and operation; and field visits were made to make various surveys. With the information gathered, desk studies were developed to analyze and synthesize data, techniques as SWOT and evidence of operational failures that the social program had, were collected.

The innovative and important part of certain deliverables was a section where the evaluator specified some recommendations that, to his judgment, could improve the performance of the social program in various points, although without specifying if the implementation of the recommendation was located within the scope of the faculties defined for the responsible unit or within the sphere of competence of other sub-office or entity of the APF. A relevant fact was that the Section Coordinator sent a copy of the products delivered to the external evaluator to the Evaluation Division Federal Program of the SFP, which was only filed without incorporate benefit.

At this point, it is worth pose a new question. How expensive is it for the APF performing evaluations of Federal Programs Subject to Operation Norms? The CONEVAL specifies that the expenses on Social Development show a growing tendency in the last two decades, with an increase of the 276% in real terms, from 1990 to 2007. It went from 537 billion pesos in 1996 to 1,136,000,000 in 2007.[21]

The following chart shows the evolution of expenditure on major functions in social development, based on the classification of the Expenditure Budget of the Federation (PEF for its acronym on Spanish) which shows that the largest growth has been in the education and health sectors, compared with provisions and social assistance.[22]

[21] Assessment Report of the Social Development Policy in Mexico 2008. Published by the Council National Evaluation of Social Development Policy; pg. 60. Mexico, D. F.

[22] Loc. Cit.

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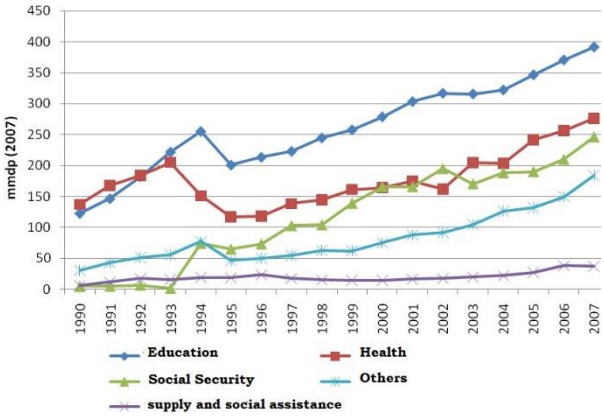

Graphic 4 Social expenditure by functional classification in Mexico 1990-2007 (Billions of pesos of 2007)

Chart 1 shows that in 2007 the Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA for its acronym in spanish); the Secretariat of Public Education (SEP) and the Health Secretariat (SSA) were the units that coordinated the largest number of federal social programs

Dependen-ce	Number of programs	Porcentage of total programs	Allocated budget 2007 (Millions of pesos)	Total budget porcentage	Average program budget (millions of pesos)
SAGARPA	38	21.2	36,518.3	22.9	961
SEP	28	15.6	7,327.1	4.6	261.7
SSA	27	15.1	26,179.9	16.4	969.6
SEDESOL	20	11.2	58,168.7	36.5	2,908.4
SHCP	18	10.1	7,184.9	4.5	399.2
SEMARNAT	14	7.8	9,083.8	5.7	647.4
SE	8	4.5	4,799.7	3.0	600
STPS	7	3.9	201.4	0.1	28.8
SEGOB	7	3.9	649.4	0.4	92.8
SRA	5	2.8	1,913.1	1.2	382.6
CONACYT	3	1.7	N. D.	N. D.	N. D.
SFP	2	1.1	N. D.	N. D.	N. D.
IMSS	1	0.6	5,487.6	3.4	5,487.6
SCT	1	0.6	1,667.5	1.0	1,667.5
Total	179	100	159,161.4	100	1,201

Chart 1 Programs and budget by unit [23]

Chart 1 also shows the set of federal social programs to which more than 159 billion pesos were assigned in the PEF-2007. 76 percent of the budget is focused on 85 programs conducted by SEDESOL, SSA and SAGARPA

Of all programs, about 25 percent of programs are in the agricultural and livestock service, 14 percent of programs are directed to education, science and technology, 12 percent to the promotion of economic or productive activity and 7 percent to infrastructure.[24] With these data, it can be made a rough estimate of the cost of the conduction of evaluations to PFSRO for the federation. If we consider that an evaluation has determined cost, which depends on the prestige of the provider or institution, on the evaluation's duration and in the degree of depth and extent to be attained, then a range of external evaluations' cost can be defined, according to the fraction it represents in regard to average budget assigned to each program, i.e.:

Average program budget (millions of pesos)	Fraction of the budget assigent to the pay-ment of assesment	Evaluation Cost (Pesos)
1,201	0.0001	120,100.00
1,201	0.0002	240,200.00
1,201	0.0003	360,300.00
1,201	0.0005	600,500.00
1,201	0.0008	960,800.00
1,201	0.001	1,201,000.00
1,201	0.003	3,603,000.00
1,201	0.01	12,010,000.00

Chart 2 Empirical evaluation of the cost external evaluation would have

[23] Note:. Allocated budget refers to the year 2007. The budget of Opportunities and Temporary Employment Program (PET) is distributed among the various agencies that operate them, however, for purposes of the Inventory-CONEVAL 2007 were grouped into SEDESOL. Source: Inventory-CONEVAL 2007.

[24] Assessment Report of the Social Development Policy in Mexico 2008 Published by the National Council for the Evaluation of Social Development Policy.; pgs. 74-75. Mexico, D. F.

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If the cost of an evaluation is around 240 thousand and less than 400 thousand pesos, it can be suspected that the results obtained from the evaluation would be poor compared to what it would be expected to obtain. A fair price would be above the 500 thousand pesos and less than one million 300 thousand pesos.

Beyond this limit, the price becomes prohibitive, even though the possibility of establishing an award to do an evaluation for 3, 4 or more million pesos.[25] Assuming now an average price of one million pesos for evaluation, only for the programs presented in Chart 1, the total cost would be around 1279 million pesos, only for the fiscal year of 2007. Again, a new question can be proposed: What are the expected benefits for great costs in external evaluations? The CONEVAL, analyzed 85 reports of external evaluations, done in 2006, of equal number of programs, and elaborated a synthesis for each program and a general synthesis that pointed the main findings in the evaluations about federal programs. In the elaborated program, nine recommendations are shown:

- Elaborate operation rules (or applicable normativity) that reflect more clearly the objectives and logic and inner consistency of the program.
- Define clearly the target population.
- Ensure the existence of sufficient and trained staff for the operation and monitoring of the program.
- Encourage the observance of deadlines.
- Stimulate the effective coordination among institutions, federations and states and among programs to strengthen the benefits given.
- Improve the quality of goods and services given by the programs
- Increase the diffusion and promotion of the programs.
- Implement effective mechanism of budgetary control.
- Generate and use evaluation and monitoring systems with information about useful and reliable results indicators.

The value of these recommendations is its effective implementation to align social programs to the fulfillment of its social goal, using the federal public resources budgeted based on legality, honesty, efficiency, effectiveness, economy, rationality, austerity, transparence, control, accountability and gender equity criteria. As described in the second paragraph of the article 1 of the LFPRH.

Proposal to take full advantage of the recommendations and findings reported in external evaluations

The scheme presented in graphic 4 can be redefined, so it is considered the inclusion of one more actor, the Internal Control Organ (ICO) attached to the unit responsible for operating the social program.

[25] For the precise amounts of the costs that departments and agencies that have disbursed since 2000, will be necessary to concentrate and analyze hiring of studies and research conducted under heading 3308, also considering the conventions that are agreed without considering the Law Acquisitions, Leases and Services of the Public Sector.

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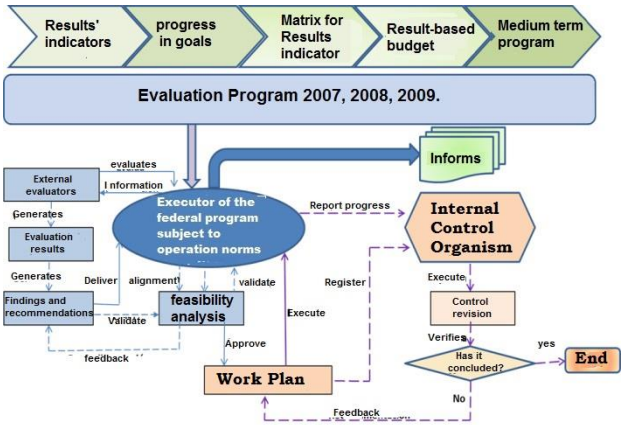

Graphic 5 Monitoring of the recommendations of external evaluations model

For different evaluations, this database allows identifying those recurrent recommendations and serves as historical sustenance for new evaluators. Once defined the feasible recommendations, we proceed to determine the work plan to the attention of the Recommendations of the External Evaluation (PTRE). This plan will contain the areas and the responsible to attend the implementation stages of the recommendations; the start and end dates: the actions to develop, and the progress status.

By a definition of semaphores, the responsible qualify the progress of the actions (green, in time; yellow, with a non-significant delay; and red, critical action that requires special attention by the executors). The plan would be registered in the Information System SISEREE. The ICO, meanwhile, can monitor the PTRE in the Information System so it can schedule a series of Control Reviews only for the cases in which various activities are in red status.

In this way, it is not necessary to Project working sessions to check the progress, except for those where it is necessary to support the Work Program with some feedback. The conclusion of working cycle occurs when, on the one hand, managers qualify all their actions with a green status, to indicate their conclusion; while, on the other hand, the ICO validates the status proceeding to give closure to each action effectively terminated. It can be seen that the work plan is not static but is updated with new recommendations that report the following external evaluations and with the actions that are culminated. From a procedural and control point of view, performing these actions is consistent and solves the HOW; but, in order to achieve an effective incorporation of these actions within the Federal Public Management, is required to analyze the implications of inter-institutional coordination and, overall, modifications to the regulations in force to incorporate the necessary policies of information exchange, verification and DIFFUSION. These possibilities are described in the following paragraphs.

Incorporating the OIC is proposed in order to be the reviewer element of the work plan generated from the recommendations of external evaluation, besides it serves as a feedback and monitoring element. The systemic model of recommendation monitoring of the external evaluations, schematized in the graphic 6, has the virtue of being easy to implement without assigning more staff to the current organizational structures. From the systemic model proposed, an integrator information system (SISEREE, acronym for Sistema de Seguimiento a las Recomendaciones de las Evaluaciones Externas) to electronically manage the interrelationships between the various actors can be developed.

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On the one hand, external evaluators can incorporate to the information system, through internet, the recommendations that, in his opinion, are the most pertinent to make more efficient the social program. Then, using a scheme of dynamic evaluator-institution feedback, the responsible for operating the social programs validate these proposals and analyze the feasibility of its implementation, considering the normativity, time, and existent resources. Some proposal will be rejected in this stage for different considerations, even though they are also registered to serve as feedback for future evaluations. The accepted ones will be aligned to the institutional goals of the Unit and PND. This two steps generate a Recommendations Database (RDB), which will contain feasible, non-feasible, attended and in progress of implementation recommendations.

For various evaluations, this database allows identifying those recurrent recommendations and serves as historical support for new evaluators. Once defined the feasible recommendations, we proceed to determine the work plan in order to meet the recommendations of the recommendation of the External Evaluations (PTRE for its acronym in Spanish). This plan will contain the areas and the responsible to attend the implementation stages of the recommendations; the start and end dates: the actions to develop, and the progress status

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Extrapolation of the recommendation-monitoring model of the external evaluations in different agencies of the APF

The main operative necessity that is presented id the standardized definition of the Information System SISEREE, the realization of which would be carried out by the SFP, in such a way that, in a first phase, the system would be applied only by the entity. Nevertheless, the long-term solution is the creation of a centralized system in the SFP.

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As well as the SHCP has its Applicative Portal (PASH), it is necessary that the SFP defines and centralize the monitoring programs. From this plan also emerges the proposal that the progress in the fulfilment of the indicator goals must arise from a system like the suggested one.

A complementary element to this schema is the definition, also by the SFP, of the Control Review to the recommendation-monitoring model, which must include the Monitoring bonds, instructions for filling and labor policies. With these materials the ICO, s can plan various Control Reviews on the Annual Operating Plan. Nevertheless, the fundamental part of the proposal lies on the changes of the normativity that must be projected, i.e. on one hand, the article 7, fraction VI of the Transparency and Access to Governmental Public Information Federal Law[26]. Which indicates that the goals and objectives of the management units must be published according to their operative programs; however, none of the fractions defined in this Article 7 states that the obligated parties must publish the results of external evaluations of their operational programs. Therefore, it is worth to express some questions. In which of all the fractions is the obligatorily of publishing the results of external evaluations established?

What do you do with these results? And, more importantly, what treatment does these findings receive by the audit institutions, such as internal organizations of Control, Public Commissioners, the SFP and the Superior Audit of the Federation?

A fraction similar to the X of the mentioned article should exist within the Transparence Federal Law; but giving it an orientation to the results of external evaluations.

If the Transparence and Access to the Governmental Public Information Law[27] is revised now. It can be determined that there is no dispositions of the mandatory publications of the results of external evaluations for the programs subject to operation norms. Therefore, an article similar to the 17th of the Regulations of the Federal Law of Transparency, but directed to the treatment given to the results of external evaluations that are practiced to federal programs subject to operation norms.

The article 7, fraction XIII, indicates that the following items must be published: "All contracts that have taken place in terms of applicable legislation, detailing each contract:

- The public Works acquired or leased goods and hired services; in the case of studies or researches the specific topic must be pointed out…"

Moreover, the fraction XV of the same article 7 indicates that the following items must be published: "the reports that, legally, the obligated subjects generate". On the other hand, the article 21 of the Regulations of the Federal Law of Transparency and Access to governmental public information says that: "the sub-offices and entities must publish on their websites, the information relative to the contracts celebrated in matter of acquisitions, leasing, services, public works and other services related to these ones."

[26] Federal Law of Transparency and Access to Public Government Information, published in the Official Journal of the Federation on June 6, 2006.

27 Regulations of the Federal Law of Transparency and Access to Public Government Information, published in Official Gazette on June 11, 2003.

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These articles must be modified to give more weight to the DIFFUSION of the evaluation results, whose costs justify its review by the audit institutions and society in general.

Finally, as a complement, the SHCP, the CONEVAL and the SHCP are working in a coordinated way to analyze the evaluations adding elements such as: the justification of strategic goals, their alignment with the Development National Plan, with the strategy of "Living Well", and with the sectored programs; with the identifications of goals and indicators; with its framing within the established norms; its linking with budgetary programs, and complementarities and overlaps. It is pertinent to enrich this work with the gradual evolution of the performance of sub-offices and entities through the evaluations required annually by the law in force.

Conclusions

- The field of external evaluations of federal programs is new in Mexico, which opens up a field for systemic applied research, by the diversity of the areas involved: macroeconomy, systems engineering, mathemathics, econometry, politics, multivariate analysis, statistics and others.

- The standarization of the external evaluation processes are required so the costs involved in its implementation are unified.

- The standarization implies that the evaluations must contemplate mechanism for the comparation of their results through time.

- Social poilicy must be accompanied of comprehensive solutions to take advantage of the information generated in the exercise of social programs.

- The most important conclusion is the necessity of using Information Systems that integrate information generated by the different sub-offices and entities of the Federal public management, in order to create unified databases with the more relevant information from recommendations and findings of the Federal Programs.

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Institutional policy and economic development in Mexico

TOMTA –Danielle*† & CHIATCHOUA-Cesaire

Instituto Politecnico Nacional, Unidad Profesional Adolfo López Mateos, Av Juan de Dios Bátiz S/N, Gustavo A. Madero, Residencial La Escalera, 07738 Ciudad de México, Distrito Federal, México

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The idea of the present work arises from the fact that the countries of the world are looking every day for the way to turn their productive apparatus more efficient and competitive. In the last years, several countries have limited the participation of the State in the process of allocation of economic resources, nevertheless, it is necessary to mention that the reduction of the this participation of the State has been replaced in the greater measurement by institutional policies in favor of the economic development of the country. Independently of the economic position that occupies a country or a region that consists of the respect to the property rights, the conditions of access to the judicial system for the overcoming of commercial differences, and the mechanisms of creation and application of the laws. In Mexico, I could realize the impact that the Law of foreign investment has had on the development and the growth of the manufacturing sector of the country.

LIE, Investment, SME's, Finances

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*Correspondence to Author (tomtayvie@hotmail.com)
† Researcher contributing as first author.

Introduction

To comprehend the global economic growth, is not enough to analyze the economic policies of the last decades or the external shocks to which a region or a country has been exposed. It is necessary to go further and consider the persistent factors that have affected the regional economic performance through history, among others geography, natural resources, income distribution, etc. Among the main factors of Latin American economic performance, the role played by institutions in regional economic growth is cited. Hence, the interest in analyzing the impact that this institutional policy has had on the economic development of Mexico. It is noteworthy that one of the objectives of each government is to ensure the welfare of its people, and to achieve this, is important to design policies in an effort to meet these needs through investments, infarstructre, health and protection centers, not to mention more than a few.

In order to assess better the impact of the institutional policy on economic development, this paper is divided into three main sessions. The first one provides a brief review of institutional policy, analyzing the theoretical foundations and their classification. The second session discusses theoretically the concept of economic development and its relationship with institutional policy. In the third session an analysis is done by taking an example of institutional policy (Foreign Investment Law) and its impact on a sector of the economy (manufacturing).

Institutional Policy

The role of the state in the development process has changed substantially in recent decades.

According to the conception of the classical economists that prevailed in the decades of the 50s and 60s, government involvement was predominantly to stimulate the transfer of production factors from traditional sectors with low productivity, low technology and diminishing returns to modern sectors with high-productivity and increasing returns. [28] In other words, from agriculture to industry, and from rural areas to urban areas.

Rigidities were observed regarding these transfers: lack of adequate infrastructure, lack of information and lack of market. Therefore, and according to this trend, the market alone could not promote growth and it was necessary the state intervention. In addition to fulfill with its sovereign functions (for example, security, justice, education and health), the State acted in the economic life through the direct control of the production and distribution of a great amount of goods and services. In various contries, the State was also responsible of managing financial institutions, and controlling trade and capital flows between national economy and the whole world[29].

The matter of the State has a special attention on the institutions play in order to explain the political or economic results that are studied.

[28] Montes-Llamas, G. (2000) "Las reformas institucionales y el desarrollo del sector rural Latinoamericano." Pontificia Universidad Javeriana. Seminario Internacional, Bogota, Colombia. Disponible en la World Wide Web: http://bibliotecavirtual.clacso.org.ar/ar/libros/rjave/paneles/montes.pdf

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In fact, the institutionalism emerges as a reaction to the theorethical approaches that privilege the individual as responsible for how the systems operate. This states that the set of all existing institutions is what determines the actions of individuals, not vice versa. The persons who try to explain how institutions emerge and evolve are also considered part of the institutionalist current.

In this context "institutions" refers to the rules, application mechanisms and organizations related to economic transactions (World Bank, 2001). Among other elements, institutionality consists then in the respect of the property rights, the condition of access to the judicial systems in order to solve commercial differences, and mechanisms of creation and application of the law.

This varies from country to country, depending on the combination of several factors: the structural factors with specified cultural, political and social dimensions and the cyclical factors which may be relatively transitory.

Theoretical Foundations of Institutional Policy

The historical, sociological and rational choice approaches stand out in the theoretical debate on the origin and institutional change (Hall y Taylor 1996).

The historical institutionalism: it refers to formal and informal proceedings, routines, norms and conventions embedded in the organizational structures of political community or market (as a place). Those institutions are the result of power fights between actors that have higer or lower assimetry degrees in hteir accses to resources.

In this approach, the ideas and it diffusion also play an important role in the determination of political or economic results.

Moreover, in many cases, those resuts are consequences not expected by the actor who imposed their institutional arrangements.

Talking about institutional change within this historical framework, it's worth to mention that the institional stability is applied as a resistance to change, imposed by the institutions themselves who limit the reforme options that are available to actors. In fact, different institutional trajectories are explained by inherited past conditions. For example, capabilities of the State into a particular historical moment can affect public policy options at a later time.

Nevertheless, the possibility that some important institutional change occurs always remains open.

The sociological institutionalism: defines institutions as systems of symbols, cognitive maps and moral patterns that provide "frameworks of meaning" to guide the human action. It has a strong cognitive dimension recognizing that the categories and mental models are indispensable for the action / response and for the interpretation / recognition of the world around us.

This approach suggests that the institutions not only condition human behavior but also affect individual preferences and identities. From this point of view, the specifically cultural, organizations adopt new institutions when they increase the social legitimacy of these, according to what is considered socially appropriate.

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The rational choice institutionalism: is the most influent in the northamerican academy and defines institutions as those arrangements that provide certainty, information, facilitate coordination and, consequently reduce transaction costs.

Society finds in them mechanisms that give structure to the individuals' options, who at the same time act as rational agents analyzing the cost/benefit and behaving strategically to maximize their welfare. For rationalists, the strategic interaction is what determines the political or economic outcomes, and institutions are the result of a voluntary agreement between relevant actors, in contrast to the historical approach. Existing institutions are the product of a competitive selection process where only those that offer more benefits to society may persist.

Concluding, we can say that irrespective of the countries, which could be emerging or advanced, the institutions are based on many theories, in other words, the previously cited approaches are in the institutional policy of a country.

Classification of institutional policy

There are different types of institutions according to its formalization in law (Ayala, 2001), its level of hierarchy (Williamson, 2000) and its analysis area. From this perspective, Ayala (2001) classifies them in: formal institutions and informal institutions.

He includes those institutions that represent rules written in the laws and regulations expressly created by individuals to address specific problems of economic, social and politic coordination in the first group.

It also notes that the implementation and enforcement of these is mandatory requiring coercive power for their enforcement so these institutions are referred to the field of public order. On the other hand, he refers to informal institutions as those unwritten rules that accumulate over time and are part of the so-called customs and traditions.

Both high-icome and low-income countries lie on informal institutions, mainly, to facilitate transactions. However, these institutions are relatively more important in poor countries where formal institutions are less developed.

Besides, poor people in developed countries have often limited availability to formal institutions. Meanwhile Williamson (2000) propose a classification based on different inheritance levels with an alternative to the classification along the formality of institutions.

Level	Example	Change frecuency	Effect
Institutions related to the social structure of a society (Level 1)	mainly informal institutions like traditions, social norms. exogenous.	too long horizons (from 100 to 1000 years) but that may change in time of crisis or stock	defines how the society conducts themselves
institutions related to the game rules	mainly formal regulations, that define property rights and juridic system. exogenous and endogenous	long term horizon (from 10 to 100 years)	defines the global institu-tional envi-ronment
institucions related to the game (level 3)	definition of government rules to the private structures of a country and contractual relationships, for example, contracts, agreements. Exogenous.	medium term horizon (from 1 to 10 years)	leads to the construction of organizations
institutions related to the assignment of mechanisms (level 4)	rules related to resour-ce allocation. p / e control of capital flows, trade regimes and social security systems	short term and continuous horizon	Product and price adjustment agreements and incentives

Chart 1 Classification of institutions according to hierarchies

Source: Jütting based on Williamson, (2000)

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The different levels of institutions are presented in the table above and more tan exclusives they are interconected.

Higher levels impose restrictions on lower levels and there is a feedback from the lowest to the highest levels.

According to the last approach, litterature clasiffies institutions according to the differences among various analysis areas. The 4 categories more used in literature are:

Economic institutions: authors normally give rise to the rules that define the production, allocation and distribution of goods and services, including markets (Bowles, 1998).

Political institutions: studies of political institutions usually employ variables that detail elections, electoral rules, types of political system, composition of the opposition and government parties, control, balance and politic stability measures. (Beck et al, 2002).

Legal institutions: Studies related to laws and institutions refer to the type of legal systems, the definition and implementation of property and inheritance rights.

Social institutions: they are focused on the access to health, educationa and social insurance agreements, and they have impact on gender equity and how to govern, more generally, the relation between economic actors.

As mentioned, a diversity of opinion is noted with respect to the classification of institutions. The following section relates theoretically institutional policy and economic development.

Institutional policy and economic development

According to the typology developed by Dani Rodrik and Arvind Subramanian[30], the scope of the analysis of institutions is wide, this includes market-making institutions that safeguard property rights, legitimation of market institutions that provide social assistance and insurance, organize redistribution and manage conflict, and institutions that regulate and stabilize the market.

This analysis scope is obviously very important and recent empirical studies support the theory developed in particular by Douglass North, winner of a Nobel Prize in economics, which says that institutions are vital to economic development and differences in their quality contributes to the explanation of development voids due to its effect on the operation of markets. Regarding the product market, determines the degree of competitive pressure and innovation efforts.

The labor markets influence the reorganizations as well as income and outcomes. They have an impact on capital allocation and funding of investment and development.

Therefore, is not surprising that the role of institutions is prominent in the analysis of the causes of the financial crisis and its high cost in terms of economic development and of the lessons being drawn from recent disruptions in the financial system

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The Inter-American Development Bank, in an econometric evaluation, points out that 60% of the income gap between Latin American countries and developed countries is attributable to the quality of the institutional structure (BID, 2000). The importance of this factor is even greater when compared with the situation in Southeast Asia since it is the cause of up to 80% of the difference in terms of income. The institution with the highest governance can explain the high rates of economic development as mentioned by Kaufmann, Kraay and Mastruzzi (2003).

Several authors have analyzed the influence of political and property rights in economic growth in many countries and have concluded that the respect for the law has a significant effect on the average income and the income of the poorest 20% of the population, while political participation seems not to influence mainly on the income (Dollar and Kraay 2000). The previous conclusion is limited, since in a good democratic system, administrative responsibility can be controlled by voters, corruption could be reduced, public function could be improved, and therefore, economic growth may occur. (Adserá, Boix y Payne, 2003).

The quality of the institutional structure may also affect social conflicts. Rodrik notes a relationship between external shocks, social conflict and development. By the way, when external shocks that usually affect some sectors and favor other occur, the existence of a weak institutional structure does not allow handling conflict from the benefits distribution, which leads to possibly postpone the necessary programs to face the situation, including fiscal adjustment or a depreciation of the real exchange rate (Rodrik, 1999 y Gaviria y otros, 2000).

In regard to the labor market, it is generally recognized that rigid institutions have a negative long-term impact. However, in the short term, strong rigidities in redundancy rules cause a decrease in employment and consequently a small increase in unemployment when economic conditions deteriorate[31].

In this regard, Djankov and others. (2002) state that the deficiency of quality of institutional structure and economic development are the effects of excessive bureaucracy, discretionary power and corruption (It's a serious problem that affects the legitimacy of the system and even the viability of the democratic regime) produced in the size of the informal sector.

Some studies reveal, in regad to the magnitude of the informal sector, that their main determinants are discretion in tax policy, labor market regulations and public sector efficiency[32].

[31] Noyer, C. (2009), "Challenges and strategies for promoting economic growth" Institutional Arrangements and Economic Growth, Mexico.

[32] Johnson,S; Kaufmann, D; y Zoido L,P. (1998) "Regulatory Discretion and the unofficial economy. The American Economic Review, Vol 88 No.2,pp.387-392.

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Institutional Policy on the Economic Development: example of the law of foreign direct investment in the development of the manufacturing sector.

The liberalization process in Mexico has gone through many stages that began with the Industrialization Model through Import Substitution (ISI for its acronym in Spanish), to later reach the signatures of the Free Trade Agreements (FTA) that began with Mexico's entry into the World Trade Organization (WTO) going through the different foreign investment laws, which will open the doors to the outside world. During this session, the impact of institutional policies in favour of foreign investment law on the economic development of manufacturing sector will be analyzed.

The regulatory framework: Foreign Investment law.

The history of Mexican economic liberalization has been affected by the adoption of institutional policies through the publication of two laws on foreign investment.

One component of the process of economic globalization is the FDI, the possibilities it creates for the various economies are numerous: internationalization of the domestic economy, creation of jobs, exposure to new ideas, technologies and work practices that can be set in the host country of investment, are just some of the advantages offered (Ramírez; 2002). Thus, his decision is the result of a complex process that differs in many aspects from the decisions that determine the decision to investment locally.

Unlike indirect foreign investment that is a portfolio investment, FDI is when a company located in a country makes a direct investment in the market for a third either acquiring an existing company in the market or otherwise proceeding to create a new entity. Williamson (1990) states that an attitude that limits the entry of FDI is considered irrational. Such investments can provide necessary capital, technology and expertise, either producing necessary goods for the domestic market or contributing to new exports. The acquisition of technology and its diffusion promotes productivity growth.

Many countries have adopted policies for attracting foreign investment. Mexico has not been left behind in this process, adopting two laws that have profoundly affected the entire economy in general and the manufacturing sector in particular

The first law called "Law to Promote Mexican Investment and Regulate Foreign Investment" was published on March 9, 1973 in the Official Gazette (DOF for its acronym in Spanish). Twenty years later, this law is reformulated and called foreign investment law, and is published in th DOF on December 27, 1993. The latter has undergone amendments by the decrees published in the Official Gazette on May 12, 1995, June 17, 1995, December 24, 1996, the 23 January 1998, 19 January 999 and June 4, 2001.

The regulations of the Foreign Investment Law (LIE for its acronym in Spanish) and the National Registry of Foreign Investment is specified by the dispositions of the law published in the Official Gazette on September 8, 1998.

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The 1973 law, of public interest and general enforcement in the Republic, had the objective of promoting Mexican investment and regulate foreign investment to encourage fair and balanced development and strengthen economic independence.

When comparing the two laws, it can be said that their difference lies in the fact that the LIE of 1993 eliminates sectoral restrictions and performance requirements, except for reserved activities, contained by the Law to Promote Mexican Investment and Regulate Foreign Investment of 1973. Gomez and Aguilar (2005) mention that the law of 1993 is a law aligned with the Washington consensus to deregulate and allow the freest possible market functioning and that allowed the entry of goods and services and capital from abroad to the capital flow. Capital flows from abroad has affected economic development in all sectors, some more than others, like in the case of the manufacturing sector.

Mexican manufacturing sector

The manufacturing sector in Mexico is considered as the main engine of economic growth and industrial development of the country so it is valuable to present briefly the manufacturing sector and its contribution to national economic development. This national economic development can be assessed in terms of productivity or growth. In recent year the industrial and foreign trade policies in Mexico have been focused on the promotion of manufacturing exportation due to the importance that this sector has on the economy. Because of this, other variables were altered: demand (consumption, gross fixed capital formation (GFCF), exports), supply (production, imports), the productive structure, employment and productivity in this sector.

In the early eighties, the change generated favorable results, but as time went by, especially with the entry into force of NAFTA, a decoupling between industrial policy and the actual situation of the sector is presented, observing an industrial policy that lacks of goals and strategies that meet the needs of the labor process of industry in Mexico, in every region of the country. The economic policy of the country has left behind the sector with a lag between main macroeconomic variables and requirements of this industry to the sectoral and regional levels. Despite this, the manufacturing sector has not lost its place in the national economic development.

In the next paragraphs the contribution of this sector is analyzed to Mexican economic growth 1980-2005 in order to see their evolution over the past 25 years, emphasizing the following variables: The Gross Domestic Product (GDP), imports, exports and employment. This time frame was chosen in order to observe and analyze the behavior of FDI flows before and after the second reform of the foreign investment law.

The share of manufacturing to GDP represents an average of 18%, which is still very relevant considering that this is a single sector. The variation of the annual averages of manufacturing GDP over 25 years reveals that this variation reached its lowest point in 1983 with -8.42% and then grow to its highest point in 1996 that is, three years after the second reform of the foreign investment law.

Talking about employment in this sector, labor productivity has been improved compared to the number of persons employed in the same sector. From 1980 to 2006, labor productivity has always been higher, except for the years 1980 to 1982 and from 1997 to 1998.

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Finally, in terms of analysis on exports and imports of Mexican manufacturing, percentage changes in the annual averages show a trade balance surplus during the periods of 1982-1985, 1986-1988 and from 1994 to 1997. The results of a study by Tomta (2009) revealed the presence of a technological spill in terms of increased labor productivity in the manufacturing sector because of FDI flows entering Mexico through TNCs.

From the above it is clear that a country or region that has its institutional policies well-established according to the needs of its citizens is undoubtedly a successful country.

Conclusion

There are many persistent factors affecting regional economic performance throughout its history, including geography, natural resources, income distribution, etc. Institutions are postulated as one of these factors; hence the State has placed special emphasis on the role of institutions in explaining the political and economic outcomes that are studied. In fact, institutionalism emerges as a reaction to the theoretical approaches that emphasize the individual as responsible for the way the systems operate. Regardless the economic level of a country, the institutionalism consists on the respect for property rights, the conditions of access to the judicial system in order to overcome trade disputes, and the mechanisms of creation and application of the law.

The application of good corporate policies are accompanied by good economic development, development that affects all areas of economy, with better jobs, higher standards of living of the population, better infrastructure accompanied by new technologies that allow the companies to gain competitive advantage.

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Effects of human capital formation in the generation of employment: an analysis of the state of Hidalgo

JUAREZ- Carmen*†

Universidad Politécnica de Tulancingo, Calle Ingenierias # 100. Col. Huapalcalco, C.P. 43629, Tulancingo, Hidalgo, Mexico.

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The present research does an empirical analysis of the endogenous growth theory using human capital as a source of growth for Hidalgo State. This analysis takes into account human capital factors such education and healthcare. The econometric evaluation uses a regression model with panel data. Estimation results suggest that the three levels of education have a positive and significant relation with formal employment, in almost all of the cases. However, the higher results are those obtained for medium high educational level, since every equation estimated for this variable got positive and significant results, and there are no changes in signs or significance even in the addition of medical care variables. Medium high educational level has potential and presents conclusive evidence that every educational level generates employment; however, it can do it with larger effects.

Human Capital, Education, Use, Work.

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*Correspondence to Author (email: cgjuarez@hotmail.com)
† Researcher contributing as first author.

Introduction

The state of Hidalgo presents some problems not only in economic backwardness, since it occupies places of little relevance on indicators like gross domestic product or marginality index, but also in unemployment and because it has been proven that by forming human capital these differences can be reduced an analysis indicating the effect of human capital formation on formal employment is considered useful.

The results of a research that analyzes different aspects corresponding to human capital formation in Hidalgo and its effect on job creation are presented in this article. This paper presents theoretical and empirical evidence for about 90 percent of the municipalities of the state of Hidalgo.

The theoretical foundations are based on the endogenous theory of economic growth, while a regression model of data panel establishes the empirical evidence, with information from the Statistical Yearbooks of the state published for the period 1996 - 2006 by the INEGI, information is taken for 73 municipalities in the state of Hidalgo.

Under the hypothesis that if in the state of Hidalgo factors (education and health) determining the formation of human capital are increased, employment generation and its mobility and thus to poverty reduction are favoured.

The variables analyzed in this study are; enrollment in elementary, medium and high school, graduates of elementary, medium and high school, and teachers of elementary, medium and high school, institutions of elementary, medium and high school, doctors and medical units.

The dependent variable is the formal employment that is represented by the beneficiaries.

A regression model with data panel is posed for the empirical study of the variables behavior in this analysis, defining the fixed effects as the method of econometric estimation and analyzing the results.

The results show that the variable of human capital formation with highest effect is the high school education; it has potential, in addition to promising results with regard to employment, this variable shows positive and grobust results in all the estimations obtained

The article is organized as follows, first the theory and the hypothesis are proposed, in the second part the characteristics of information which includes the descriptive analysis of each one, are listed; the third part describes roughly the econometric model where the data panel is described, and the results are shown; the fourth part analyzes the results obtained from the estimation and in the end the conclusion and recommendations are exposed.

Theory and hypothesis approach.

Human capital is defined as the ensemble of productive capabilities acquiered by individuals through knowledge accumulation, whether general or specific, this capital is intangible and individual, according to Paul Romer (1986) and Robert Lucas (1988) human capital is formed through formal and informal education and the education acquired in the work.

The human capital theory is relevant because of the existent causal relationship between human capital formation and economic growth.

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The models of the endogenous type that take human capital as a source of growth, warns that this variable is the most important since its contribution to generate growth can be turned into development and generate richness for the nations.

Since people must be the origin and purpose of organizations and governments, these are often interested in specialize them and provide them more and better services, to the extent that people have access to these services will be to extent that human capital is generated.

Therefore, it is assumed that if an economic unit, in this case the State of Hidalgo, invests in and improves factors of human capital formation, taking in this case two fundamental factors such as health and education, it will be desiging the path to improve their own economic conditions and with this the capability of generating economic development.

The necessity of doing an empirical research for the State of Hidalgo emerges before the theoretical evidence that answers the following questions: does the human capital formation really favor the generation and mobility of employment and thus improve the socio-economic situation of people?

Descriptive analysis of information

Population: it is the number of people by town and its variation during the period of time of the study (1996 – 2006).

The National Institute of Statistics, Geography and Informatics (INEGI for its acronym in Spanish) publishes this information based on Census of Population and Housing 1995, General Census of Population and Housing 2000 and the II Census of population and housing 22005.

The period of time sutidied is 1996-2006 for all towns, in this ten years population by town and its variations ares presented.

Education: four educative levels are studied; preschool, elementary school, medium school and high school and four variables for each one of them: enrollment, graduated, teaching staff and schools.

The information is gathered from the Secretariat of Public Education (SEP for its acronym in Spanish) and the Department of Statistics of the Education Institute of Hidalgo.

Elementary education

The elemantary education includes: general, indigenous, communitary and particular courses.

Medium education

The medium education contains: communitary, general, technique, for workers, telesecundaria (a model of medium school applied in Mexico that uses the television broadcast to give lesson to people of the countryside) and industrial, agricultural and livestock, and agro-industrial technique medium schools.

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Upper médium education (high school graduation and medium pregade)

High school, in adition to public and private high school in tegrated to the Universidad Autonoma del Estado de Hidalgo (a Public University), includes the technological and agricultural and livestock high school, CETIS, CBTIS, CONALEP that also offer the opportunity of continuing a pregrade education, also the Telebachilerato (a model of high school applied in Mexico that uses the television broadcast to give lesson to people of the countryside), Colegio de Bachilleres and the CECand TEH. In this section, the graduated of medium professional formerly called Capaciation for work and highschool graduation are included since both have a period of three years of study.

In recent years, preschool education is part of basic education increasing it to a total of 12 years, 3 years of preschool, 6 of elementary school, 3 of medium school and 3 of high school, totaling 15 years of instruction.

Enrollment: it refers to all students enrolled in different educative levels, for the period of study (1996 – 2006). Through this period basic education has concentrated more than fufty percent of the enrollment, nevertheless, since 1996 until 2006 enrollment in elementary school has decreased a 5%.

Graduated: it refers to students who had finished successfully the school grades in its different levels.

Graduated are distributed by level in the following way: preschool 29%. Elementary school 33%, medium school 26% and high school 11%.

The level that has more graduated number is elementary school, in addition to have a constant behavior. Meanwhile high school and high school education have increased the number of alumni throughout the period at 43.35% and 87% respectively.

Regarding graduation rates, in 1996 it was 14% and has increased, in 2006 it has reached 36.6, namely for every 100 enrolled students, 36 obtain a diploma in elementary school. The graduation rates for high school have been stable, rising in 1.5% since 1996 to 2006. Medium school had had a 22% graduarion rated during this period.

Teaching staff: it is considered as the ensemble of teachers before a group, including management and administrative staff who have a group. During the studied period, elementary school has had the largest number of teachers, for 2006 there were 16,000 elementary school teachers while other levels together had a total of 19,050.

Educational institutions: this paragraph refers to the shifts that are offered at every school and not just the physical building.

The State of Hidalgo has 7143 educational institutions according to the Annual Yearbook 2006, in the diferent educational levels, of which the majority is divided between preschools and elementary school, while medium and high school have lees number of institutions.

Each elementary school has an average of 119 students; medium schools have an average of 149 students. Behavior for the aforementioned institutions has no significant changes during the period of study while the high school level observed an increase from 260 students per school in 1996 to 364 in 2006.

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Health: this section is divided in rightholders, doctors and medical units by town and its variation through this studied period.

Rightholders: this concept is applied to the set of people who by law are entitled to receive benefits in kind or money by the health insurance institutions, this is, direct insured or contributors, retirees and family members of both beneficiaries. There are 92645 pensioners statewide. This population is obtained from reports of the health institutions, Head of Planning and Finance of the Mexican Social Security Institute (IMSS for its acronym in Spanish) in Hidalgo, Social Security and Services of the State Employes Institute (ISSSTE for its acronym in Spanish) Delegation of the State and the Medical Subdirectorate of the General Hospital of Tula by PEMEX.

The total number of insured has increased in 373,274 since 1996 until 2006, which means an increase of 65.33% beneficiaries. In total, there are 944,641 beneficiaries in the state, representing 40.27% of the total population. During this research, the beneficiares variable is used as the variable that we use to gauge the state as the variable that tells us the indicator of employment in the state.

Doctors: This section includes general practitioners, specialists, residents, interns and dentists working in a public institution (IMSS, ISSSTE and PEMEX) or social assistance (SSAH[33], Hospital del Niño DIF and Mexican Red Cross).

During the period, there is a 53% increase on the medical staff, in 2006 was reported that a doctor attends an average of 729 service users of the health sector per year and the state has one doctor for every 680 inhabitants. It should be noted that the private medicine has 241 doctors of which 149 are specialists.

Econometric model

Dimensions and characteristics of data panel

The statistical information that makes up the panel data presented in this research is obtained from the Statistical Yearbook of the State of Hidalgo elaborated by INEGI (National Institute of Statistics and Geography) for the period 1996-2006.

The state of Hidalgo has 84 municipalities, but 11 of them had to be omitted since they did not have the needed information for the elaboration of this database, this because they are little communities with less than 1000 inhabitants, therefore the sample is reduced to 73 municipalities.

The analyzed variables are population, health, and as an endogenous variable a proxy is used, which is beneficiaries; uniting all available information is obtained a balanced panel that has 12045 data for 73 municipalities during the period 1996-2006. There is the same number of periods and the same number of variables for each municipality within the panel.

The model

There is a panel consisting of 803 observations, which represent the analysis of 73 municipalities over eleven years.

[33] Servicios de Salud de Hidalgo

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Therefore, it is considered appropriate to use a regression model with panel data. Regression models with panel data have many adavantages, the first one is that it allows grouping data in time series and trancersal series making it possible to analyse transversal units' movement in time over time, hence shows a high degree of efficiency and allow a greater approximation to reality. It should be mentioned that panel data models do not use multicollinearity, homoscedasticity and serial correlation as standard tests. However, they should be evaluated using the Lagrange Multiplier (LM) test that follows an asymptotic distribution χ^2 and is applied to large samples under conventional significance levels (1%, 5%, 10%) and serves to prove hypotheses derived from models of linear and nonlinear regression.

The Hausman specification test (1978) should also be applied and the hypothesis of this test is that there is no correlation between the error term and regressor variables (autocorrelation test). Like the LM test, it presents a distribution χ^2 and is applied under conventional significance levels. If the null hypothesis is rejected and it is determined that there is a correlation between the error term and the regressors, the fixed effects method is preferred over random effects method. Both methods are explained in the next paragraphs.

Additionally, in this study statistical tests such as $F - fisher$ and $t - student$ are used.

The analysis consists of four sets of explanatory variables; the first set is the population for each municipality through eleven years, the second set is formed by education indicators, third is the set containing the health information and finally a fourth block representing the employment proxy which is beneficiary's population.

The analysis begins by using variables of education and then and then health variables are added. Employment variable is also included as this is a crucial indicator.

Analysis of Results

In order to show the effect of the formation of human capital through education (at their different levels) and the main indicators of social heatlh, chart 1 shows a summary of the results of the estimates.

The estimate helps us determine the effect of enrollment and graduates of elementary, medium and high school levels in formal employment, represented by beneficiaries.

The effect of the number of doctors and hospitals is also analyzed, in other words health spending on beneficiaries

It is noted that the variable that best affects to formal employment is the high school level enrollment, of all estimated models this is the variable that gets the highest setting.

Furthermore, it is observed that the parameter obtained with the number of high school graduates $ebach$ has less effect.

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Adding variables to the model, the effects on elementary and medium school levels decreases because they change sign or lose significance, even a negative effect is registered on the formal employment with graduates of elementary education, which can be interpreted as being less robust. While high school education keeps a positive sign, stating its importance.

The parameters that remained positive and significant, when the doctor variable was included, were the high school level. this means that the variable is robust and consistent.

Numbers in parentheses are P values obtained for each variable, do not forget that the significance level is 1%, 5% and 10%.

	MEF con Matrícula	*MEF con Egresados*	*MEF con Matrícula y Médicos*	*MEF con Matrícula y Médicos*	*MEF con Médicos y Unidades Médicas*
mprim	0.115 (0.899)				
*m*sec	0.475 (0.014)				
mbach	1.203 (0.000)				
eprim		-0.257 (0.000)			
*e*sec		0.655 (0.009)			
ebach		0.595 (0.046)			
mprim			0.223 (0.001)		
*m*sec			-0.435 (0.837)		
mbach			1.067 (0.000)		
meds			35.66 (0.000)		
eprim				-0.115 (0.086)	
*e*sec				0.150 (0.545)	
ebach				0.694 (0.015)	
meds				46.774 (0.000)	
meds					47.438 (0.000)
umeds					15.698 (0.193)
R^2	0.96	0.96	0.96	0.96	0.96
Observaciones	803	803	803	803	803
Municipios	73	73	73	73	73

Chart 1 Summary of Results for Method of Fixed Effects

The results lead to the following conclusions:

Elementary school enrollment

Elementary education is positively associated with formal employment, 16 of every 100 inhabitan attend to elementary school and according to the results an increase in one percentage unit in elementary school enrollment increased by 0.115 percentage units formal employment. In other words, it is necessary to raise elementary school enrollment by 22 of every 100 people to increase one beneficiarie per hundred in formal employment.

Medium school enrollment

There is a relationship between this variable and formal employment. On average 7 out of 100 people attend high school, according to the estimate, before an increase in one student per hundred inhabitants in medium education enrollment, formal employment increases by 0.476 percent and increasing enrollment on 2, ie 9 of 100 inhabitants attend medium school, the beneficiaries increases by 1 for every hundred inhabitants. Not all elementary school graduated are part of the medium education enrollment.

High school enrollment

This variable has a positive and significant parameter for all estimates demonstrating consistency for this level.

On average 3 out of 100 people enrolled in some degree of high school education. It is concluded that, from the estimate, rising enrollment by one unit, which is 4 out of 100 inhabitants enrolled in high school, formal employment can be increased in 1.2 beneficiaries for every 100 inhabitans.

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In other words, this level has potential and generates more employment; therefore, it is a great opportunity to reduce poverty

Graduates of elementary education

On average, three out of every 100 people graduate from elementary school for 2006.

The estimate shows a negative parameter indicating that there is an inverse relationship with formal employment, the latter diminishes; recalling, in the analysis above primary education gets a positive parameter and adding variables this tends to be weak besides that loses significance.

Graduates of medium education

On average, there are two medium school graduates per 100 inhabitants. According to the estimate, the increase in one percentage unit of high school graduates results in an increase of 0.655 percent units of beneficiaries. It is necessary to increase in 4 out of 100 inhabitants the number of graduates to increase formal employment in one percentage unit.

Graduates of high school education

It is estimated that for every 100 inhabitants there is only 1 high school graduate, if it were possible to increase, ie the graduation of one more inhabitant increases the number of formal employees in 0.595 units. Graduations should be increased to 3 out if 100 inhabitants in order to increase employment in the formal one unit.

Doctors. Doctors are related positively and significantly with formal employment, a 47.438 parameter is obtained, there is on average one doctor for every thousand inhabitants, the beneficiaries variable increases in 47 units per thousand inhabitants.

Medical units. There is an average of 5 hopstials registered in the State of Hidalgo (clinics, hospitals and health houses are included) for every 10000 inhabitants. Therefore, an increase of one more clinic, ie six clinics per 10,000 inhabitants, means an increase in formal employment of 15 units per 10 thousand inhabitants.

Conclusions

In this research, we have tried to analyze the theory of human capital through empirical evidence, to prove the hypothesis that in the State of Hidalgo the increase in the factors determining the formation of human capital favors the generation and mobility of employment, and hence reducing poverty.

Remember that the determinants of human capital used for this project are education and health. Certainly, education is the primary factor in the formation of human capital, and considered by some authors as a source of growth.

It is necessary to establish the following assumptions:

- The portion of state spending that goes to education is called human capital formation

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- Investment in human capital expects positive returns measured by its productivity, Gary Becker (1964).

- Presents increasing and constant returns, and, along with production, have increasing returns to scale, Barro (1990).

- Is positively related to productive investment and negatively related to population growth. [34].

- - Human capital is intensive in human capital; therefore, its accumulation requires only of himself, Usawa (1965) and Lucas (1988).

- Reduces poverty.

According to economic activity in the state, the most industrialized areas are Ciudad Sahagun, Pachuca, Tepeji del Rio, Tizayuca, Tula andTulancingo, in them, the largest proportion of economic activities of the three sectors is concentrated, and the remaining municipalities are engaged only to primary activities agriculture, livestock and mining.

The economically active population works in their majority into services 50.9%, 24.9% in industry, and 24.2% in agriculture. State GDP is composed as follows. 9.0% comes from the agricultural and livestock sector, 35.7% from industry and 55.3% from the services sector.

GDP per capita is about 9,234 pesos per year in 2004.

The statistical information available shows that the population in recent years grows about 22 thousand a year with a lower tendency each year; we can say that the population growth is stopped, which favors the factor productivity.

Regarding human capital formation, shows that elementary education concentrates mostly enrollment, teaching staff and educative institutions, followed at a considerable distance by medium education and lastly by high school.

The empirical evidence presented tells us that there is a relationship between the variables of human capital formation and formal employment, all were positive (except for elementary school graduates) and in most cases statistically significant, therefore it is a robust results model that can be applied to the analysis of the reality of the state.

The estimates presented in the last chapter show that investment in education does indeed get positive returns, although this result tends to be stronger in high school education. The empirical evidence is overwhelming for the high school level concerning employment generation; parameters remain positive and significant even when health variables are added. Medium school education consists of all, general, tele, industrial, technical schools, etc. and represents 7 to 9 years of education. by law all people should have the basic education including elementary and medium.

High school education means up to 12 years of education, it includes all public and private schools incorporated in the "Universidad Autonoma del Estado de Hidalgo", all forms of technical high school and job training.

[34] According to the AK endogenous growth model and the extended Solow model.

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According to the availability of statistical information that has been presented throughout the document, it can be seen that both medium education and high school education have deficiencies that can be remedied, and therefore, have high growth potential and consequently improve formal employment in the state.

Starting with enrollment, since by law it is the duty and right of Mexicans have basic education and statistics show that enrollment in medium schools represents 44% of basic education enrollment.

Is necessary to find a mechanism to make secondary education enrollment increase because that means an increase in high school education and a significant increase in formal employment would be achieved. The estimate shows that an increase by 1.2 percentage units in the average high school enrollment is needed to increase a beneficiary per 100 inhabitants. If the gap between enrollments in elementary and medium school is reduced and continuity is promoted to high school, formal employmentwould markedly increase.

Estimates for health variables indicate that positive effects occur, the effect is greater for medical variable that for medical units, they have positive and significant parameters, hence the investment in health presents the expected returns to human capital formation and thus in the generation of formal employment.

According to Neo Keynesian theory, skilled workforce improves generation technology through innovation etc., meanwhile the unskilled labor does not necessarily reduce income inequality.

Therefore, it is logical that elementary education obtains as low and even negative parameters in generating employment. It should be mentioned that due to the characteristics of high school education and medium education that are responsible for training students for work since most of the high schools are technical school and job training so it is necessary to increase the investment in education sector. The human capital theory assumes that the more skilled the workforce is the less poverty will be.

The endogenous theory determines that human capital is the most robust source of economic growth. in endogenous theory Romer, Lucas and Barro ensure that investment in human capital makes physical capital more productive due to specialization. On their part, this research demonstrates that by high school education growth can be generated in Hidalgo because is potentially the largest generator of formal employment, confirming the endogenous growth theory with human capital.

Due to the effects of specialization and learning technological progress can be given and, with it, a decrease in poverty. Remember that it is assumed that the level of education is correlated with the increase in productive investment

The state manages different federal programs such as the PRONABES scholarship program and Opportunities program; however, these are not sufficient to achieve minimum goals, as it should be the completition of basic education by state residents. It is necessary to monitor planning and distribution of these supports to reachh efficients results and achhieve the purposes for which they were created.

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Usawa and Luke state that economic growth depends on the education sector and it is the decision of state the amount and quality of education, in this sense the state government should act as a central planner, determining a growth target and establishing the necessary human capital to achieve growth targets.

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Tourism opportunity for economic growth

PERALTA- Enrique*†

Instituto Nacional de Administración Pública. Calle Atocha, 106 - 28012 Madrid

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It is an article we raised the processes of identification of the Tourism in Mexico with the world its main causes and effects in economic, social, cultural, political and the other spheres by social relations of production of this Capitalist System.

Tourism, Free Time, Balance of payments, Culture

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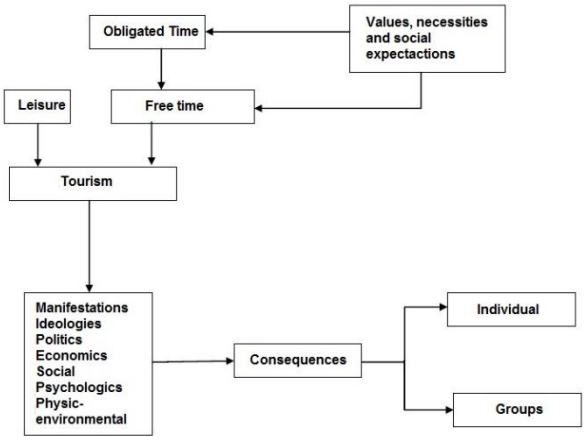
*Correspondence to Author (email: endapeca@hotmail.com)
† Researcher contributing as first author.

Conceptualization.[35]
Tourism is a social phenomenon that transcends from another social phenomenon: The Institutionalization of Leisure. Tourism as a phenomenon has essence and a set of events that interrelate and interact between themselves.

These manifestations are matters: ideological, political, economic, social, psychological, physical, environmental and cultural in general.

l. Process for the conceptualization of tourism.



Graphic 1

Introduction

Our country is in a severe economic crisis, which is seriously disrupting in the social sphere, to reverse this situation is required to reactivate the production process, generating in the first instance the well-paid employment.

Current policy does not favor job creation.

It is necessary that government halts and reverses the effects caused by neoliberal economic policies that favors high concentration of capital and hinders productive reactivation. Tourism as an economic activity has contributions to increase income or better redistribution.

Positive effects of tourism to the economy [36]

A first important effect of productive activity is tourism foreign exchange earnings, revenues from international tourism, allow having solvency for funding exports and imports, or for use in servicing external debt financing.

The growth of the sector can incorporate to the economic activity unemployed people or entering the labor market. These new jobs require less investment compared to that required in other sectors of the economy. Normally the employment generated by the tourism is originated in visitor spending and, thus, these are generated not only in the own tourism "sector", but such spending gives rise to additional jobs for the multiplier effect of related activities such as infrastructure development, construction, expansion, renovation and equipping of hotels, amusement centers, trade, etc. It is estimated that in the tourism sector for every direct job about four indirect jobs are created.

Employment in this sector is 30 percent better paid than the national average. The contribution to regional development means, in countries like ours, decentralize economic activity, income and wealth.

[35] Sergio Molina. Turismo Metodología para su planificación. pp. 11-14

[36] Miguel Acerenza**.** Administración del Turismo pp. 69-78

Tourism drives economic and socially disadvantaged zones or regions through the transfer of financial resources in the country, as the ability to redistribute income and multiplier effects of tourist spending in the region. Tourism also leverages renewable resources when exploitation thereof is made incorporating conservation criteria. Another important effect is the tourism as expansion factor of the domestic market. Regardless of the increased consumption of agricultural products, it is clear that the tourist makes further spending on domestic purchase, equivalent to a real export. We conclude by considering the previous points that tourism as a sustainable economic activity has an important multiplier effect overall national economy.

Negative effects of tourism to the economy.

Economic policy that our country has taken to enter globalization world, without a real plannification, has caused severe problems that affect the sector, and if not treated from the root, will lead to stangnation in the short-term. The first problem is the manipulation of policies by investement groups (as in the case of hotel industry in Quintana Roo).

Economic and financial benefits to increasingly reduced groups, as already mentioned, hinders productive reactivation. Another important negative effect is the loss of political power and government agencies management. It should be prevented that the tourist influx exercises over a wide range of items, an additional demand capable of paying high prices. As this demand is generally eventual and productive structure is relatively inelastic because of their limited capitalization, strong inflationary trend is created in the region.

This inflationary effect is detrimental to the national economy and especially the lower income groups and a negative effect from the social point of view.

Also little scientific research of the tourism essence. Moreover, a host country becomes dependent in relation to countries that issue more tourists, the decisions that guide the growth and tourism development are subject to the interests of the issuing country.

Tourism has both positive and negative effects as well as a series of contradictions that must be controlled. In this context the scientific planning of tourism is seen as an ideal tool to rationalize economic activity in the sector and linking it to the global development process in economic and social spheres.

Need for scientific planning.[37]

Experience in national planning in the sector has located or identified problems affecting the achievement of pre-established results. Like the variables listed below:

- Discontinuity in growth policies. Changes in the group in power causes modifications on guidelines and the content of plans and programs.

- High staff turnover of those responsible for driving the planning process. In the period when only a party governs, changes in operating tables planning models occurs.

- Poor statistical information. Lack of a database not only wide but also with reliable information.

[37] Sergio Molina**.** Op.cet. pp. 32-36

This hinders the achievement of planning, since it decides and acts in accordance with partial facts.

- An administrative reform that have not answered as that. It is needed a politic reform that carries an economic reform and both finishes in an administrative reform.

Socials effects.[38]

Perhaps among all the potential effects of a project or program of investment in tourism, the social are the most contentious and evaluate them represents a problem of criteria and orientations.

Demographic: Mainly in depressed areas, a project may cause significant demographic movements by attracting higher income and better living conditions.

In some cases, this brings future consequences that manifest distinct benefits for employment creation and increase of income. But in other creates intricate social problems that are reflected in higher levels of criminality, marginalization, etc. especially when the investment program does not satisfy (as is common) the demand for jobs or when moving from the implementation to operating phase, leaving a large number of workers unemployed without giving them any remunerative occupation. Such conditions should be anticipated to evaluate the project, so we must check whether its solution is contemplated or not.

Cultural: Culture is basically the set of events that a social formation creates to confront and transform their socioeconomic reality. In this sense, tourism is an agent of contact between cultures that express different forms of behavior, techniques and tools from different backgrounds and social groups.

Modifications involving such contact through tourism can be positive to the host society (if it benefits the majority of its members) or negative. The social assessment should find out and make a judgment. Furthermore, and in the cultural sphere, the phenomenological manifestations of the ancestors of these social formations, can be altered, deformed or even disappear as a result of tourism. This would apply to the depredations and distortions caused in archaeological sites to make them "touristics".

Sites in which tourism brings looters who rob the country its historical riches and part of same attraction that motivates tourist flows are usual.

An investment program that does not provide the protection of the national heritage should be evaluated in the consequences that represents.

Educative: educative conditions can also be altered in favor or against populations suffering a transformations asa reults of a tourism program.

His physical part or necessary equipment (included in many cases within the "habitat") is improved on numerous occasions for being part of the general works for the cities of services. Likewise, local people are driven to increase their education, this is achieved in a large number of individuals when it is set as target within the investment program.

[38] Edgar A Hernández Díaz. Proyectos Turísticos. pp.198-200

Training is one of the most important topics in any project and contributes in some way to raise the educational level in the area as long as the workers are native of it and are offered constant development.

Health: Some projects includes within its investements, funds for basic works through which the sanitary conditions improve in the area where it is located. In some cases, a recondition of the natural environment with positive results for the local flora and fauna is reached. However, in this sense (and only in tourist heavy investment programs) infrastructure, complemented with medical and assistance services stations, are the most done, which by itself have great importance, mainly in marginalized regions.

Among the experienced and potential negative effects of a tourism project we can write down the environmental pollution, the introduction, via tourism, unhealthy habits, etc. In any case it is convenient to socially evaluate a tourism programs analaysing these elements.

Other effects

Creating a "Tourist Image": There are many areas and even countries that are not known in major international tourism markets. Through significant investment projects for the supply of services, "image" of the country or region strengthens, which ultimately derives not only in larger tourist flows to it, but even in the development of public recognition. So economic expectations are improved, for the various activities located in the project area this is a subjective element, but that is manifested in concrete actions within reality and must be considered when evaluating a project.

Effects on the conditions of dependency: Countries with limited industrialization tend to depend economically of developed nations. A large tourism project can create or reinforce to a semi-industrialized society, ties of dependence by various means.

This fact, although in some cases generates direct benefits in the short term (especially higher income), in the long term has a social cost. It is convenient to take into account the relationships between nations or regional economic groups to which might lead a specific project.

Its evaluation in this field, although it belongs to the executive areas, does not prevent the corresponding dimensions in the technical area to be made.

What do we expect?

- Overcoming the dependency status.
- Systematic planning of tourism.
- Reinvestment of profits of foreign companies.
- Image of Mexican tourism to the world.
- Negative effects control.

	2007 (Millions of dollars)	2008 (Millions of dollars)
international visitors	92.2	91.4
income	12901	15289
average expenses	750.6	761
balance	4522.9	4763
Total	45.3 %	27.8 %

Balance of trade	2007	2008
Exports	271597.4	290123.8
imports	281574.2	307230.5
balance	9976.8	17106.7

Chart 1

2007	2008
2,180,000	2,227,000**

Chart 2

Conclusions

Tourism in Mexico requires a new conceptualization and post_industrial planning with a holistic approach under the general systems theory; this activity can be an important catalyst for economic growth in Mexico considering the statement will allow overcoming the state of dependency that keeps the sector regarding the biggest issuer.

It is relevant to note that Mexico should through a serious law compel foreign investors to reinvest at least 20% of net profits that their companies generate in our country.

Another important point is dimension to a reality the tourist image of Mexico to the world, promoting with in a strict sense our tourism development. In terms of controlling the negative effects on our industry scientific planning will in most cases prevent them.

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General explanation of the subject and explain why it is important.

What is your added value with respect to other techniques?

Clearly focus each of its features

Clearly explain the problem to be solved and the central hypothesis.

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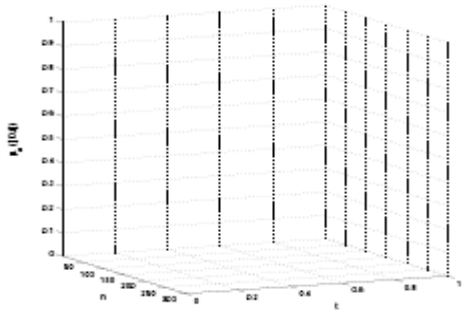

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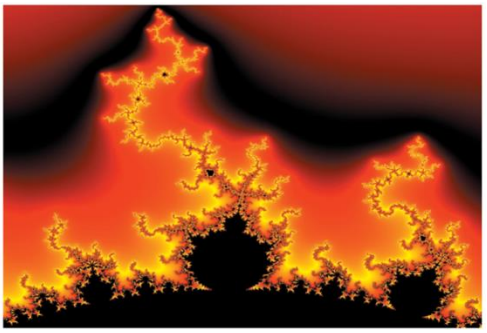

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For the use of equations, noted as follows:

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Develop give the meaning of the variables in linear writing and important is the comparison of the used criteria.

Results

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Tables and adequate sources thanks to indicate if they were funded by any institution, University or company.

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Explain clearly the results and possibilities of improvement.

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