

Problemas del
DESARROLLO

REVISTA
LATINOAMERICANA
DE ECONOMÍA

Problemas del desarrollo

ISSN: 0301-7036

Universidad Nacional Autónoma de México, Instituto de
Investigaciones Económicas

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Gasto público, índice de competitividad y política social en México

Problemas del desarrollo, vol. 49, núm. 192, 2018, Enero-Marzo, pp. 109-138

Universidad Nacional Autónoma de México, Instituto de Investigaciones Económicas

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PUBLIC SPENDING, THE COMPETITIVENESS INDEX, AND SOCIAL POLICY IN MEXICO

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Date received: March 22, 2017. Date accepted: August 4, 2017.

Abstract

This paper was drafted using the Social Competitiveness Index (SCI) compiled by the United Nations Development Program (UNDP-Mexico) to analyze progress and/or backsliding in the areas of healthcare, education, and job income in the Mexican Republic's 32 states over the time period 2005-2014. The aim was also to use panel data techniques to evaluate the relationship between the SCI and public spending, finding that public spending on social issues was negatively related to the SCI (elasticity was -0.5764%). In conjunction with that, it was demonstrated that a lack of social competitiveness existed alongside growth in public spending, leading to the conclusion that the social policy was ineffective, on top of an economic policy that only drove scant growth in production.

Keywords: Social Competitiveness Index, Human Development Index, social public spending, econometric model.

INTRODUCTION²

In 2012, the United Nations Development Program (UNDP) in Mexico published the Social Competitiveness Index (SCI), supplementing the traditional Human Development Index (HDI). The objective was simple: measure welfare via the behavior of the job market. The SCI enabled an assessment of how the states in Mexico have evolved in three fields related to the employed population: health, education, and job income. It is a measure that elucidates whether there is a connection between economic and social performance. The maximum value of the index is one, so states that move closer to that value over time are said to be socially competitive, while those that fall toward zero are said to be socially uncompetitive.

Based on the way it is compiled, the SCI can aid in social policy assessment, because thanks to this index, it is possible to understand whether the annual increases in public spending announced by the government truly meet the goal of improving social welfare. It can be used to answer the following question: Does greater social spending lead to improvements in the SCI? The working hypothesis posited here is that the social policy implemented has failed to meet the goal of substantially improving healthcare, education, and job income. As such, the suggestion is to redesign social policy with an eye to creating authentic material and human wealth for the vast majority of people.

With that in mind, the main objective of this paper is to describe state social competitiveness (or lack thereof) in Mexico in the time period 2005-2014; moreover, it investigates the relationship between social public spending (as an approximate indicator of social policy) and the SCI, controlling for variables considered to affect the latter indicator, like: population size, production of goods and services, public investment, public spending on personal services, federal contributions, and gross fixed capital formation (as indicators of the economic conditions and economic policy).

In this regard, the first section of the paper defines the SCI and explains how the UNDP compiles it. This section also talks about the HDI and the reasons why it is appropriate to use the SCI to measure the scope of social policy. The second section clarifies from where the data were collected, explains the aggregate and individual evolution of the states where the SCI is concerned, and includes a brief analysis of the evolution of public spending associated with the three dimensions of the index. The third section describes the econometric method chosen and the results of the estimates. Finally, the last section discusses the findings and furnishes some conclusions based on the diagnosis.

1. SOCIAL COMPETITIVENESS OR LACK THEREOF: HOW IS IT MEASURED?

As mentioned earlier, the SCI complements the HDI, considering human development from the job standpoint. The SCI reveals society's potential to generate welfare for its members via certain labor market conditions related to basic capacity-building (PNUD, 2012, p. 8). According to the UNDP, (2012, p. 3), "(...) the capacities essential to individual development should be the following: being able to enjoy a long and healthy life, having access to individually and socially valuable knowledge, and the chance to earn a decent living via the necessary resources, as well as participate actively in community life."

The SCI is composed of three sub-indices:³ 1) healthcare services access index (ISL), 2) education and absence of child labor index (IEL), 3) income and job benefits index (IIL). The ISL indicator tackles access to healthcare services (the percentage of the total employed population with some sort of healthcare, whether public or private, through their job. It reflects the impact of employment on the health of the employee and his or her family). The IEL indicators refer to average years of schooling (revealing the degree of readiness of individuals to face the labor market requirements) and the absence of child labor (proportion of the employed population aged between 12 and 15 years old; showing those individuals in the typical age of attending primary education whose potential to continue their studies has to be combined with the time they work a job). The IIL indicators represent job income (measured by job income per capita in American dollar purchasing power parity) and job benefits (proportion of the total employed population collecting some type of job benefit).

The value of the SCI ranges between one and zero. It is constructed using the following fundamental equation:

$$\text{Index} = \frac{\text{effective value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}}$$

Three points to consider here. First, the IEL gives two-thirds of the weight to years of schooling and one-third to the lack of child labor. Second, the IIL is calculated using job income and job benefits, with each given one half of the weight. Third, the IIL is calculated using the log of job income per capita.

The maximum and minimum values for each component are:

Table 1. Values Considered for Each Component of the SCI

<i>Component</i>	<i>Maximum value</i>	<i>Minimum value</i>
Access to healthcare	100	0
Absence of child labor	100	0
Average years of schooling	13.2	0
Job benefits	100	0
Job income per capita (PPP dollars)	27 945	42

Source: Created by UNDP (2012, p. 81).

With the foregoing clarified, the ISL is calculated pursuant to the fundamental equation, considering the healthcare access indicator. The IEL is calculated as follows: 1) use the fundamental equation, add the average number of years of school (called le); 2) the absence of child labor indicator is done as follows:

$$Tl_i = 1 - Z_i$$

Where Tl_i is the absence of child labor for the unit of analysis i and Z_i is the relative share of the employed population between the ages of 12 and 15 for the unit of analysis i ; 3) finally, the equation below is used to obtain the IEL:

$$IEL = \left[\frac{2}{3}(le) + \frac{1}{3}(Tl) \right]$$

The IIL is calculated by applying the fundamental equation with the adjusted job income per capita indicator (IL) and the job benefits (PL) index. The equation is as follows:

$$IIL = \left[\frac{1}{2}(IL) + \frac{1}{2}(PL) \right]$$

Calculated using the ISL, IEL, and IIL components, the SCI is a weighted sum, using the following expression:

$$ICS = \left[(0.35)ISL + (0.45)IEL + (0.20)IIL \right]$$

Note that greater weight is given to education and health, as the SCI is most focused on the social piece. In the end, it is

a good approach to state welfare.

In this research, the choice was made to use the SCI in place of the HDI, because the UNDP (2012, p. 11) clarifies that the former is a complement to the latter, by virtue of the fact that it provides information on how labor conditions fuel welfare. Moreover, the SCI is published annually and quarterly for all of the states and 32 cities (although in this study, for econometric reasons, not all of the available information was used, basically because some quarterly information was lacking for several variables assumed to explain progress or backsliding on the SCI).

On another note, the SCI in the income component is much more attractive than the HDI to evaluate the impact of changes in the GDP (or economic dynamics), because the former draws on job income per capita, while the second uses GDP per capita. The UNDP (2012, p. 16) recognizes that the SCI is a good instrument to gain insight into the human development trends over time, as it enables an identification of the relative ranking of the states, and, even more importantly, facilitates evaluation of private and public policy actions, to the extent that it relates aspects like the ability to attract capital and generate sustained economic growth with characteristics of employment.⁴ Finally, another one of the reasons why the choice was made not to use the HDI is that there are already enough studies in Mexico that do use it, notably, López *et al.* (2003), Esquivel *et al.* (2003), De La Torre (2005), Limas (2011), De la Cruz and Núñez (2013), Urrutia de la Torre and Mejía (2014), and Hernández *et al.* (2015).

2. SOCIAL UNCOMPETITIVENESS AND PUBLIC SOCIAL SPENDING IN MEXICO

This section analyzes the evolution of the aggregate SCI and the SCI by state (as well as its three components). It also offers a classification by using as a reference the states as a function of the growth or degrowth on this indicator. Pursuant to the overall objective and hypothesis of this paper, the evolution of public spending on social matters is analyzed and the correlation between this spending and SCI is demonstrated.

The variables used in the research were (national level and state level): SCI, ISL, IEL, and IIL, defined in the above section, borrowed from the UNDP (2015). The variable of POB (population) was taken from the National Population Council (Conapo), and it is an estimate of the population halfway through each year. The variable of GDP (gross domestic product) was taken from the National Statistics and Geography Institute's (INEGI) database of Economic Information (BIE), in millions of 2008 pesos. INV_PUB (public investment) was gathered from the INEGI-BIE in thousands of pesos from 2008. GSP (public spending on personal services), a variable measured in thousands of pesos from 2008, was taken from INEGI-BIE. INVP (private investment) is gross fixed capital formation, a variable measured in millions of pesos from 2008, obtained from INEGI-BIE.

PARTI28 (federal participations), was the variable obtained from INEGI-BIE in millions of 2008 pesos. These participations refer to the resources that the federation pays out to the states for belonging to the country and they are non-conditional transfers.

APOR33 (federal contributions) are a variable obtained from INEGI-BIE in millions of 2008 pesos. They are the resources the federation allots to the states conditionally, and they must be spent on education, health, basic infrastructure, financial fortification, public safety, food programs, and welfare, as well as education infrastructure.

SALUD (federal health spending) is one of the base funds for federal contributions that must be used for paying for improving healthcare services, reflected in millions of 2008 pesos, obtained from INEGI-BIE.

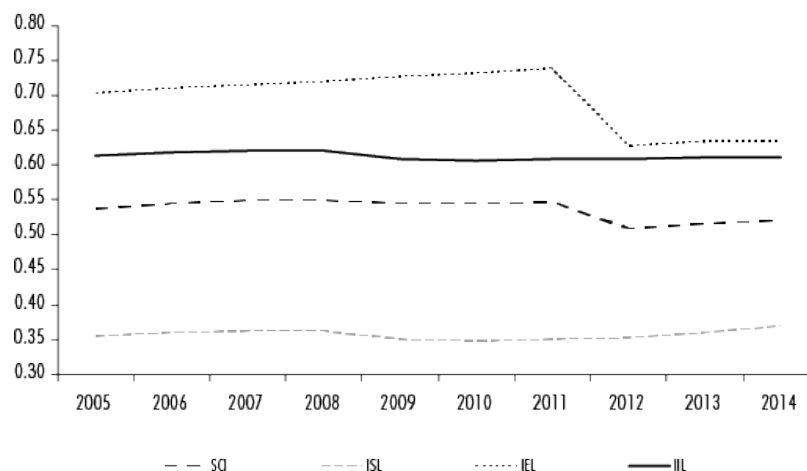
ESCUELA (federal education spending) is one of the base funds for federal contributions that must be used for paying for improving primary and normal education services, reflected in millions of 2008 pesos, obtained from INEGI-BIE.

Finally, INF_SOCIAL (federal spending on social infrastructure) is one of the base funds for federal contributions that must be used for paying for social infrastructure, reflected in millions of 2008 pesos, obtained from INEGI-BIE. With respect to this latter variable, Mexico City was not allocated any funding in the time period 2005-2013, so the unit was used as a placeholder in each of these years (see full database at https://www.researchgate.net/profile/Isaac_Sanchez-Juarez).

2.1 Evolution of the SCI and Each of its Three Components

The first stylized fact is that the SCI in levels was, on average, stagnated in Mexico over the ten years of the study. From a value of 0.5384 in 2005, it ended up at 0.5212 in 2014. Its annual average growth rate was -0.32%. The "peak" value of the index was reached in 2008 (0.5496), in the midst of full-fledged economic crisis. Looking at the overall track record, the fall between 2011 and 2012 was especially notable. In broad strokes, it could be asserted that the country has not witnessed any real improvement in social conditions. The index was not close to one in any of the years, and in fact was far from that maximum potential value, hovering around 0.5. The index summarizes a relatively low wage situation, problems with accessing healthcare services, and deficient educational attainment, revealing that something is not quite right with the current social and economic policy (with respect to the previous, see Cordera, 2010; Dautrey, 2013; and CEFP, 2015).

Figure 1. Evolution of the SCI and its Components in Mexico, 2005-2014



Source: Created by the author using data from UNDP (2015) for the time period 2005-2014. It is important to clarify that this series differs from the series previously published by the UNDP (2012), which included the years 2005-2011.

The ISL was the component of the SCI that performed the worst, average a value of 0.3574 over the period of study. The ISL did not increase in any substantial way over time, confirming a paucity of access to healthcare. On average, the IIL value was 0.6124, backsliding in 2008, 2009, and 2010, which is when the economic crisis happened. The IEL averaged a value of 0.6944, so it was the component that behaved the strongest in the time period of study, reaching a peak value in 2011 (0.7387), at which point it began to decline again, leading the SCI to shrink in those same years, because this component is weighted with 45%. The ISL and IIL revealed social uncompetitiveness in Mexico, recalling that these components are weighted at 35% and 20%, respectively.⁵

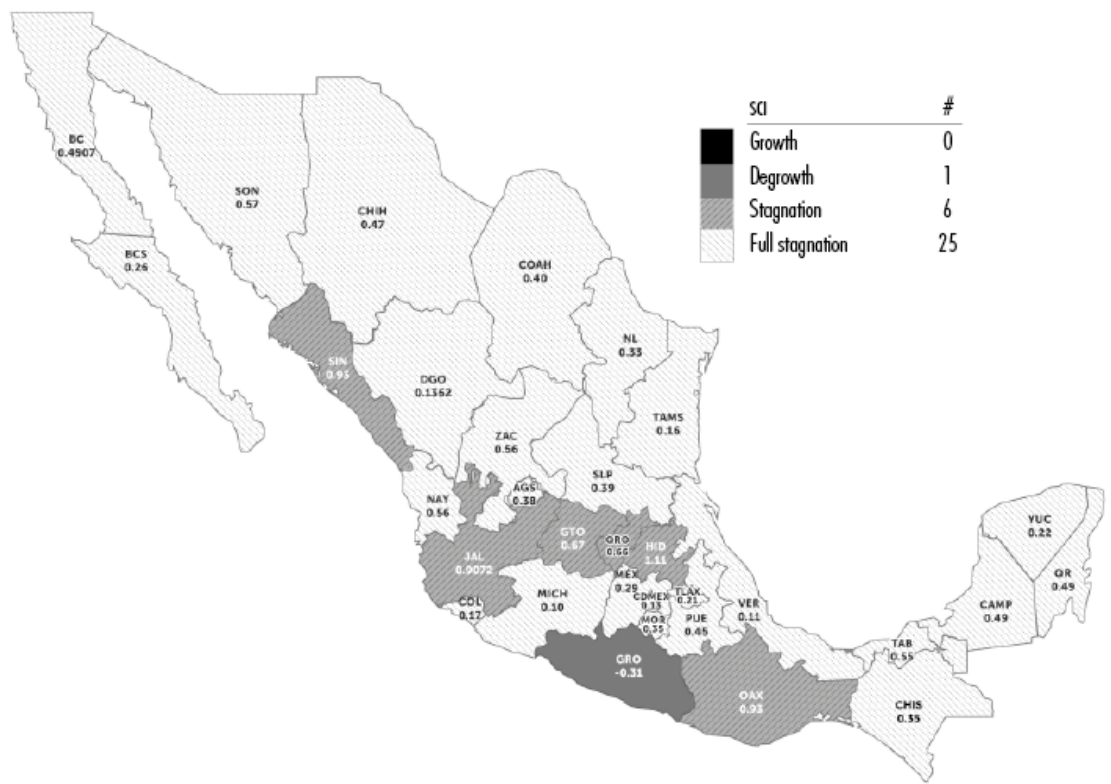
Now, Map 1 divides the country into four categories by virtue of the annual average SCI growth rate.⁶ In this regard, the first finding is that of the 32 states, 25 are wholly stagnated, six show signs of stagnation, one declined (Guerrero -0.31%), and none grew close to or above 2%. The stagnated states were as follows: Hidalgo (1.10%), Sinaloa (0.93%), Oaxaca (0.93%), Jalisco (0.90%), Guanajuato (0.67%), and Querétaro (0.66%). The fully stagnated states were: Michoacán (0.11%), Veracruz (0.11%), Mexico City (0.13%), Durango (0.14%), Tamaulipas (0.16%), and Colima (0.17%). Some 81% of the states in Mexico experienced poor performance on the social indicator being considered here.

Analyzing the annual average growth rate of each of the components, it was found that ten states recorded a declining ISL (Colima, Chiapas, Mexico City, Durango, Guerrero, Michoacán, Tamaulipas, Tlaxcala, Veracruz, and Yucatán). Stagnation was observed for this component in the states of Hidalgo, Jalisco, Oaxaca, and Sinaloa (1.7, 1.1, 1.4, and 1.2%, respectively). The rest of the states exhibited full stagnation.

Looking at the IEL component, no state went backwards, but there was stagnation in 21 states; the rest of the states displayed full stagnation. The worst-performing component was the IIL, which backslid in 16 states (Aguascalientes, Colima, Mexico City, Durango, Guerrero, State of Mexico, Michoacán, Morelos, Nuevo León, Oaxaca, Quintana Roo, San Luis Potosí, Tamaulipas, Tlaxcala, Veracruz, and Zacatecas). In the rest, there was full stagnation (partially bound up in the falling purchasing power of wages and burgeoning flexibility in the job market; for further references, see Anguiano and Ortiz, 2013; and Mancera, 2015).

Table 2 summarizes the classification of the states by virtue of absolute value of the SCI and its components. The following is worth noting: 1) Guerrero, Oaxaca, and Chiapas consistently occupy the last three spots on the ranking. These states are located in the southeast of Mexico and are characterized by high levels of social marginalization; 2) The states of Nuevo León and Coahuila hover near the top of the list. These states are located on the northern border; 3) With the exception of the IEL component, Mexico City is not ranked in the top five. The expectation would be that because it is home to such a large population and garners so much of the public and private resource pie, it should be always among the top spots.

Map 1. Classification by Virtue of SCI Growth Rate (2005-2014)



Source: Created by the author using data from UNDP (2015).

Table 2. Ranking of the States in the SCI and its 2005 and 2014 Components

	<i>ISL</i>		<i>IEL</i>		<i>IIL</i>		<i>CSI</i>	
	<i>2005</i>	<i>2014</i>	<i>2005</i>	<i>2014</i>	<i>2005</i>	<i>2014</i>	<i>2005</i>	<i>2014</i>
1	NL	NL	CDMEX	CDMEX	NL	COAH	NL	NL
2	COAH	COAH	NL	NL	COAH	CHIH	COAH	COAH
3	CHIH	CHIH	COAH	SON	BC	NL	CHIH	CHIH
4	BCS	BC	BCS	COAH	CHIH	BC	BCS	BC
5	BC	BCS	SON	AGS	BCS	BCS	BC	BCS
6	AGS	SON	BC	BC	TAMS	SON	CDMEX	SON
7	TAMS	AGS	AGS	BCS	SON	QR	TAMS	AGS
8	SON	TAMS	TAMS	TAMS	CDMEX	AGS	AGS	CDMEX
9	CDMEX	QR	MÉX	SIN	QR	TAMS	SON	TAMS
10	QR	QRO	CHIH	QRO	AGS	CDMEX	QR	QR
11	QRO	CDMEX	COL	CHIH	QRO	QRO	QRO	QRO
12	DGO	SIN	QR	MÉX	COL	JAL	DGO	SINA
13	COL	JAL	MOR	QR	DGO	SIN	COL	JAL
14	SIN	DGO	QRO	JAL	SIN	COL	SIN	DGO
15	MÉX	COL	SIN	MOR	YUC	DGO	MÉX	COL
16	JAL	MÉX	DGO	COL	JAL	TAB	JAL	MÉX
17	SLP	GTO	TAB	TLAX	MÉX	YUC	SLP	CAMP
18	YUC	SLP	TLAX	TAB	TAB	CAMP	CAMP	GTO
19	CAMP	CAMP	NAY	NAY	GTO	GTO	YUC	TAB
20	GTO	TAB	JAL	CAMP	CAMP	MÉX	TAB	SLP
21	TAB	YUC	CAMP	DGO	SLP	NAY	GTO	YUC
22	NAY	NAY	SLP	SLP	NAY	SLP	NAY	NAY
23	VER	ZAC	YUC	HID	MOR	HID	MOR	MOR
24	ZAC	MOR	HID	YUC	VER	VER	VER	ZAC
25	MOR	VER	GTO	ZAC	ZAC	ZAC	ZAC	VER
26	TLAX	HID	VER	GTO	TLAX	MICH	TLAX	HID
27	PUE	TLAX	ZAC	PUE	MICH	TLAX	MICH	TLAX
28	MICH	PUE	PUE	VER	HID	MOR	PUE	PUE
29	HID	MICH	MICH	MICH	PUE	PUE	HID	MICH
30	GRO	OAX	GRO	GRO	GRO	CHIS	GRO	GRO
31	CHIS	GRO	OAX	OAX	CHIS	GRO	CHIS	OAX
32	OAX	CHIS	CHIS	CHIS	OAX	OAX	OAX	CHIS

Nuevo León (NL), Coahuila (COAH), Chihuahua (CHIH), Baja California (BC), Baja California Sur (BCS), Sonora (SON), Aguascalientes (AGS), Mexico City (CDMEX), Tamaulipas (TAMS), Quintana Roo (QR), Querétaro (QR), Sinaloa (SIN), Jalisco (JAL), Durango (DGO), Colima (COL), State of Mexico (MÉX), Campeche (CAMP), Guanajuato (GTO), Tabasco (TAB), San Luis Potosí (SLP), Yucatán (YUC), Nayarit (NAY), Morelos (MOR), Zacatecas (ZAC), Veracruz (VER), Hidalgo (HID), Tlaxcala (TLAX), Puebla (PUE), Michoacán (MICH), Guerrero (GRO), Oaxaca (OAX), Chiapas (CHIS).

Source: Created by the author using data from UNDP (2015).

Looking at the SCI, in both the first year and in the last, Nuevo León was ranked first with values of 0.6820 and 0.7049, respectively. The second state was Coahuila with values of 0.6749 and 0.7022. The third-most “competitive” state was Chihuahua with values of 0.6482 and 0.6791. It is important to remark that all three of these states are located along the northern border of Mexico, characterized by the presence of export manufacturing companies, openness to foreign trade, and strong ties to the United States economy. The other three states on the northern border have also done well, with Baja California ranked fifth in 2005 with a value of 0.6418. Baja California improved in 2014 to the fourth position, with a value of 0.6740; Sonora was ranked ninth with a value of 0.6217 in 2005, but the state improved by 2014 to be ranked sixth with a value of 0.6579. Tamaulipas fell down in the ranking, from seventh in 2005 with a value of 0.6278 to ninth in 2014 with a value of 0.6377 (the state most affected by safety issues) (for more information in this regard, see De León Palomo, 2008).

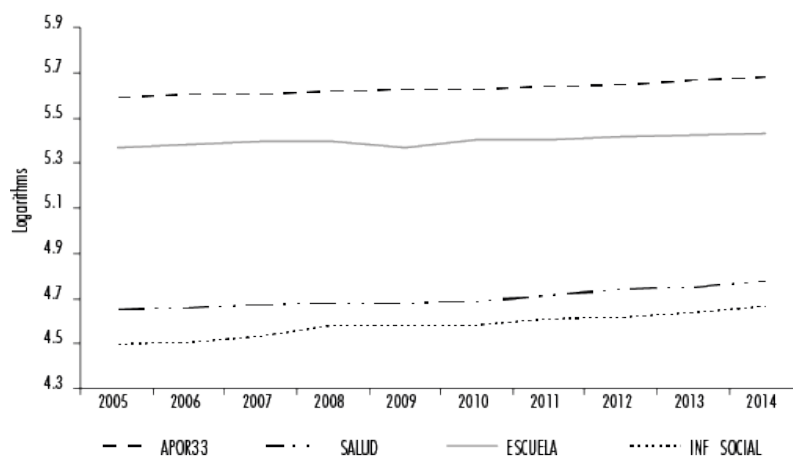
Baja California Sur in the north and Quintana Roo in the south are two other states that have behaved relatively favorably. Add to that Mexico City, Aguascalientes, and Querétaro in the central region of the country. The 22 remaining states behaved in a way that reinforced their social uncompetitiveness. Whatever the case may be, even the best-positioned state in the country was far away from a score of one, confirming that Mexico is lagging behind when it comes to social matters.

2.2 Evolution of Public Social Spending

From 2005 to 2014, federal contributions to social spending for the states and municipalities grew by 1.95% on annual average.⁷ In 2005, these contributions amounted to 392.860 billion pesos, as compared to 476.650 billion pesos in 2014, meaning the increase over this ten-year period was significant. For this research, of the eight funds that comprise the contributions, three were used: education, health, and social infrastructure. The multiple contribution, municipal fortification, technology and adult education, public safety, and state fortification funds were left out. Of the three funds considered to be directly related to the SCI, the largest is the fund for education, followed distantly by the funds for health and social infrastructure.

On average between 2005 and 2014, the fund for education accounted for 73.5% of the total contributions (without considering the other five funds mentioned above), health represented 14.2%, and social infrastructure the remaining 12.3%. Looking at the annual average growth rate for the study period, the social infrastructure fund grew the most (3.97%), followed by health (2.88%), and education (1.47%). Just like what happened with total contributions, the trend for the three component series was upward, although it fell between 2008 and 2009. For education, the fund rose from 249.569 to 232.488 billion pesos; health went from 47.690 to 47.617 billion pesos; and social infrastructure from 38.298 to 38.178 billion pesos (this component in 2010 also declined to 38.018 billion pesos).

Figure 2. Evolution of Federal Contributions and Three of the Social Components, Mexico, 2005-2014



Source: Created by the author using information from the INEGI Economic Information Database.

To determine whether the growth in public social spending is sufficient or not, the annual average growth rate of the national population was considered to be 1.06%. This leads to the conclusion that the growth in public social spending is sufficient, because it was 0.9% higher, even though it would be better for it to be at least 2% higher (which was indeed the case in the component of social infrastructure and was nearly the case for healthcare). Up until this point, what emerges, with the aggregate data, is evidence for the lack of social competitiveness and increase in public social spending above demographic growth.

Just as was the case with the SCI, a classification was done for APOR33, taking as a base its growth. The outcome is

summarized in Map 2.⁸ It is clear that no state experienced degrowth: the state of Campeche was classified as full stagnation (0.05%), Baja California, San Luis Potosí, and Tamaulipas were classified as stagnated, while the remaining 28 grew satisfactorily. It should be noted that the problem is not necessarily due to financial resources. These findings could have several explanations, such as: 1) public spending is not used appropriately for the tasks for which it is allotted; 2) the government spending figures are in fact lower than what is being recorded, or there are leaks; 3) there are other factors driving SCI outcomes, which are qualitative for both formal and informal institutions.

Comparing Map 1 with Map 2, there appear to be noteworthy contrasts. For the SCI, most of the states are fully stagnated (25), but for public social spending approximated via contributions, most of the states display growth (28). On another note, looking at public social spending, no state exhibited degrowth, but for the SCI, at least one state did. Analyzing growth in healthcare spending, some states showed notable growth, like Zacatecas with 6.72%. Chiapas stands out in the case of social infrastructure spending, with growth of 8.44%. Education spending grew the least of the three, especially in Campeche, with degrowth of 0.30% and the State of Mexico with growth of 3.91%.

Table 3 displays the classification of states pursuant to APOR33 and its components. The following is of note: 1) the top-ranked states were Colima and Baja California sur; 2) State of Mexico, Mexico City, Veracruz, Chiapas, and Jalisco were the states constantly ranked in the top places; 3) Chiapas is the state to which the authorities have channeled a significant amount of financial resources to improving social conditions, which is why it is ranked among the top places; nevertheless, it has not matched up with improvements in the SCI; 4) the states of Guerrero and Oaxaca were also ranked in the top ten in terms of volume of resources, but it was not mirrored in improvements in the SCI; 5) the states along Mexico's northern border (Baja California, Sonora, Chihuahua, Coahuila, Nuevo León, and Tamaulipas) are in intermediate positions in terms of the resources they receive but have performed better in the SCI as compared to those receiving greater amounts of funds but located geographically in the southeast.

Looking at amounts, the state with the highest social spending was State of Mexico, with 36.819 billion pesos in 2005 and 50.023 billion in 2014. Mexico City received 30.654 billion pesos in 2005 and 35.582 billion in 2014. This reflects the centralism prevailing in the country. Chiapas, in 2005, received 20.257 billion pesos. In 2014, it received 28.928 billion. Baja California Sur was the state that received the lowest amount of resources, with 3.144 billion and 3.726 billion pesos, respectively (the foregoing is the result of the Fiscal Coordination Act and the formula designed by the federal authorities to allot resources to the states and municipalities).

Map 2. Classification by Virtue of the Growth Rate (2005-2014) for APOR33



Source: Created by the author using data from UNDP (2015).

Table 3. Ranking by Virtue of APOR33 and its Social Components 2005-2014

	<i>SALUD</i>		<i>ESCUELA</i>		<i>INF_SOC</i>		<i>APOR33</i>	
	2005	2014	2005	2014	2005*	2014	2005	2014
1	MÉX	MÉX	CDMEX	MÉX	CHIS	CHIS	MÉX	MÉX
2	JAL	VER	MÉX	CDMEX	VER	VER	CDMEX	CDMEX
3	VER	JAL	VER	VER	OAX	OAX	VER	VER
4	CDMEX	CDMEX	JAL	JAL	MÉX	GRO	CHIS	CHIS
5	GRO	GRO	CHIS	CHIS	PUP	PUP	JAL	JAL
6	CHIS	CHIS	GRO	PUP	GRO	MÉX	GRO	PUP
7	OAX	OAX	OAX	OAX	MICH	MICH	OAX	OAX
8	PUP	PUP	MICH	GTO	GTO	GTO	PUP	GRO
9	GTO	MICH	PUP	GRO	SLP	SLP	MICH	GTO
10	TAMS	GTO	GTO	MICH	HID	HID	GTO	MICH
11	MICH	HID	TAMS	NL	JAL	JAL	NL	NL
12	HID	TAMS	HID	TAMS	TAB	YUC	TAMS	TAMS
13	NL	NL	NL	CHIH	YUC	TAB	HID	CHIH
14	SON	SIN	BC	BC	CHIH	CHIH	CHIH	HID
15	CHIH	TAB	SLP	HID	ZAC	DGO	BC	BC
16	SIN	CHIH	COAH	SLP	TAMS	ZAC	SLP	SLP
17	TAB	SON	CHIH	COAH	DGO	CDMEX	SIN	SIN
18	DGO	BC	SIN	SIN	SIN	TAMS	COAH	COAH
19	YUC	DGO	SON	SON	QRO	SIN	SON	SON
20	BC	ZAC	TAB	TAB	MOR	NL	TAB	TAB
21	SLP	SLP	DGO	DGO	SON	CAMP	DGO	DGO
22	COAH	YUC	ZAC	ZAC	CAMP	QR	YUC	YUC
23	QRO	QRO	YUC	YUC	NL	QRO	ZAC	ZAC
24	MOR	COAH	MOR	MOR	NAY	TLAX	QRO	MOR
25	CAMP	MOR	QRO	QRO	TLAX	MOR	MOR	QRO
26	QR	AGS	NAY	NAY	COAH	NAY	CAMP	NAY
27	ZAC	NAY	QR	QR	BC	SON	NAY	QR
28	NAY	QR	CAMP	TLAX	QR	COAH	QR	TLAX
29	AGS	CAMP	TLAX	AGS	AGS	BC	TLAX	AGS
30	TLAX	TLAX	AGS	CAMP	COL	AGS	AGS	CAMP
31	COL	COL	BCS	BCS	BCS	BCS	COL	COL
32	BCS	BCS	COL	COL	-	COL	BCS	BCS

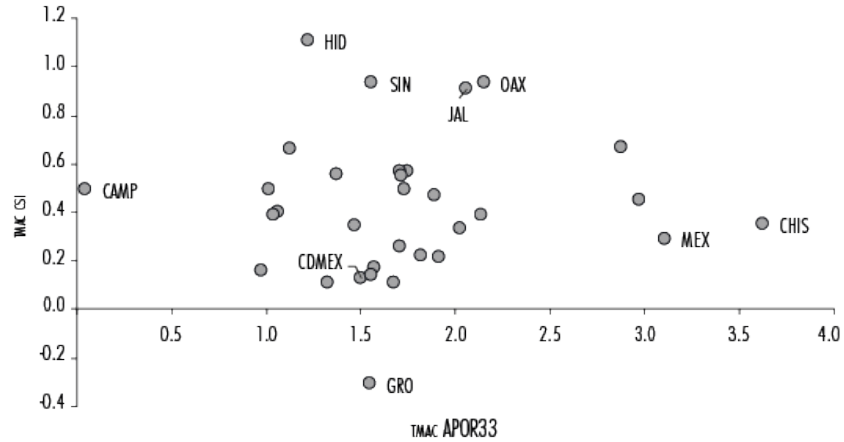
*In 2005, Mexico City did not report values for INF_SOC, so the ranking is for 31 states in that year.

Source: Created by the author using data from the INEGI Economic Information Database.

Comparing the annual average growth rates of the SCI and APOR33, Figure 3 was designed. Among these rates there is a positive correlation coefficient, but it is depreciable, coming in at 0.02. Chiapas stands out, recording 3.63% growth in APOR33 and 0.35% in the SCI. Hidalgo, Sinaloa, Oaxaca, and Jalisco were the state with the greatest relative growth in the SCI (1.11, 0.93, 0.93, and 0.91%, respectively), but it was not so for federal contributions. The state of Guerrero exhibited degrowth in the SCI (-0.31%) and growth in APOR33 (1.55%). Mexico City, the most important state in

economic terms, infrastructure, and social services, recorded growth of 1.50% in APOR33 and 0.13% in the SCI. In Campeche, the growth rate for the APOR33 was 0.05% and for the SCI 0.49%. The evidence seems to point to a negative relationship between public spending in the social sphere and the SCI.

Figure 3. Annual Average Growth Rates of the SCI and APOR33, Mexico, 2005-2014



Source: Created by the author.

3. THE STATISTICAL RELATIONSHIP BETWEEN PUBLIC SOCIAL SPENDING AND THE SCI IN MEXICO

3.1 Econometric Specification

To determine the statistical correlation between public social spending and the SCI, the information available was collected into panel data, pursuant to the idea of controlling for unobserved heterogeneity and dealing with the endogeneity bias. Specifically, regressions were performed with random and fixed effects, estimated using LOS and dynamic regressions with the Generalized Method of Moments (GMM) (for technical notes, see Arellano and Bond, 1991; Islam, 1995; Bazzi and Clemens, 2013).

Five models were posited:

$$1) ICS = f(APOR33, INV_PUB, GSP, PARTI28, CRISIS)$$

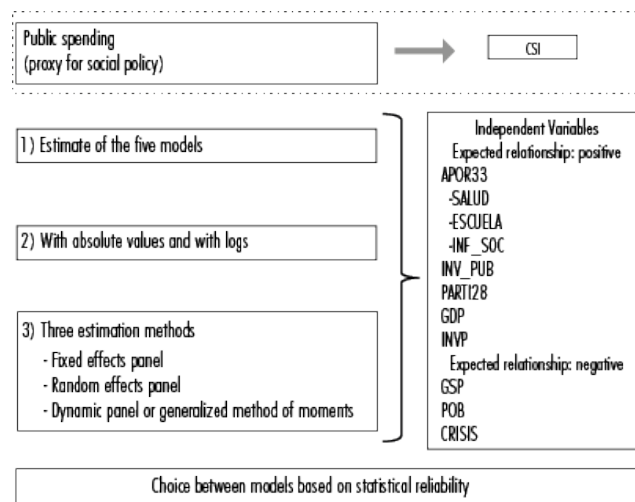
$$2) ICS = f(APOR33, INV_PUB, GSP, PARTI28, PIB, POB, INVP, CRISIS)$$

$$3) ICS = f(SALUD, ESCUELA, INF_SOC, INV_PUB, GSP, PARTI28, CRISIS)$$

$$4) ICS = f(SALUD, ESCUELA, INF_SOC, INV_PUB, GSP, PARTI28, PIB, POB, INVP, CRISIS)$$

$$5) ICS = f(APOR33, PARTI28, CRISIS)$$

Diagram 1. Method used to Evaluate the Research Hypothesis



Source: Created by the author.

In all of the cases, the study worked with absolute values and logs. The variable CRISIS was added to all of the equations, a fictitious variable that takes the value of one for the years 2007, 2008, and 2009, capturing the effect of the international economic crisis. It is considered that the relationship between the dependent and independent variable is positive, except for population, for which a negative sign is anticipated by virtue of the fact that as the population grows, there are greater needs to be met when it comes to accessing healthcare, providing education, and job income. It is also assumed that the relationship between SCI and public spending on personal services should be negative, by virtue of the fact that this sort of spending can take away from truly substantive tasks that would really improve social and economic conditions.

3.2 Results of the Estimates

After making the estimates pursuant to the procedure described in Diagram 1, it was found that the tests in which the logarithms were used were better than those using the absolute values of the variables, for the fixed and random effects panels and the MGM (this is because using logarithms reduces the spread and the risk of observing non-constant variance of the random conditional disturbance of the values of the endogenous variable). It should be pointed out that once the best estimate was determined, the process proceeded to add in the variable CRISIS, aiming to assess its weight in the behavior of the SCI. In Table 4 are the results of estimating the five models with the method that produced the best result (the rest of the estimates are not reported here, but are available the interested reader at <https://www.researchgate.net/profile/Isaac_Sanchez-Juarez>.⁹

The following conclusions were obtained:

1. In the first, second, and fifth model, the coefficient associated to social contributions was statistically significant with a negative sign. The third and fourth models decomposed the contributions into three branches related to the SCI, and the result remained the same, leading to the conclusion that increases in public spending do match up with reductions in the SCI. This indicates the possibility of failing social policy. It is not enough to merely boost public social spending to improve the SCI (see table 4).
2. In models one, two, and five, the fictitious variable to consider the effect of the crisis proved to be statistically significant and displayed the expected sign. This result reveals the importance of economic stability to making social progress.
3. The population coefficient resulted positive and statistically significant in models three and fourth, contrary to what was expected. As part of this result, there is certain to be the presence of positive external economies, the product of agglomeration. Population growth plays in favor of access to education, healthcare, and job income. This is easily understandable looking at the social progress of large cities versus small rural communities.

Table 4. Base Econometric Analysis

Dependent Variable Log SCI

Variable (logs)	EA ^a Model 1	EA ^a Model 2	EF ^a Model 3	EF ^a Model 4	EA ^a Model 5
APOR33	-0.4830* (-19.42)	-0.5764* (-16.70)	-	-	-0.4402* (-18.68)
SALUD	-	-	-0.1455* (-3.52)	-0.1004* (-2.67)	-
ESCUELA	-	-	-0.2691* (-8.15)	-0.3826* (-10.30)	-
INF_SOC	-	-	-0.0456* (-8.66)	-0.0524* (-9.78)	-
INV_PUB	0.0352* (4.23)	0.0110 (1.21)	0.0420* (5.16)	0.0285* (3.03)	-
GSP	0.0225** (2.11)	-0.0120 (-1.18)	0.0208*** (1.83)	0.0064 (0.60)	-
PARTI28	0.3447* (14.44)	0.0491 (1.40)	0.2770* (9.30)	-0.0002 (-0.00)	0.3616* (16.68)
GDP	-	0.1382* (9.00)	-	0.0998* (6.18)	-
POB	-	0.2874* (7.20)	-	0.2779* (6.72)	-
INVP	-	0.0048 (0.35)	-	-0.0137 (-0.90)	-
CRISIS	-0.0384*	-0.0186*** (-1.47)			-0.0292** (-2.06)
#observations	320	320	320	320	320
Adjusted R ²	0.51	0.65	0.60	0.68	0.49

Notes: In parentheses, the t statistic. Standard errors are heteroscedastic and consistent with autocorrelation. *significant at 1%, ** significant at 5%, and *** significant at 10%. REa: Random Effects in the time period. FEa: Fixed effects in the time period.

Source: Created by the author

4. The economy, measured by the coefficient obtained from the GDP, turned out to be statistically significant and positive. Economic growth translates into social competitiveness. This result is extremely valuable for public policy design, because it is about not only allotting resources to conditional transfers, and spending on health, education, and infrastructure. It is also a matter of fostering a dynamic economy that creates opportunities and income. If economy policy continues to be focused on stability, without growth, it will be very hard to reverse this social uncompetitiveness (to contrast this result, see Campos and Monroy-Gómez-Franco, 2016).

5. The public investment coefficient in models one, three, and four turned out to be positive and statistically significant. In this way, the recommendation is to strengthen infrastructure creation, like building roads, hospitals recreation centers, airports, ports, schools, and more. Spending on this line item must be constantly on the rise.

6. Looking at the public spending on personal services (GSP) and private investment (INVP) variables, no conclusions could be drawn, because depending on the model estimated, there was either a negative or positive sign in the relationship. Something similar was true of the participations, which in three cases exhibited a positive and statistically significant sign but in one did not. In this latter case, the sign of the relationship was negative but not statistically significant.

7. Spending on healthcare, education, and social infrastructure reflect the same as the aggregate variable APOR33, where increases (which there have been, as described in the second section), match up with reductions in the SCI.

Rather than merely increasing the spending in these areas, the idea is to make better use of available resources. It is very common in Mexican society to see that education and public health services are not running well, due not to lack of budget, but rather because the budget is being siphoned off elsewhere or there is a lack of commitment to quality on the part of the employees, administrators, and people in charge of these important tasks.

Should public spending be increased more to improve education, health, and job income in Mexico? The response based on the results is yes (due to the relationship found between the SCI and public investment), but also not necessarily (due to the relationship revealed between the SCI and social contributions), meaning that it would be better to make better use of resources to focus them toward improving the quality of public social services, as well as garner stronger commitment from the agents involved in the institutions in charge of tackling these problems. Social uncompetitiveness is not only a resource problem. It requires targeting programs, improving them, and changing the welfare approach that currently prevails. Social policy ought not to be conceived of solely as a mechanism to contain poverty (Gallardo and Martínez, 2012). Looking at wages and working conditions, the road map must involve boosting economic growth to create opportunities and efficiently regulate the job market to the benefit of business owners and workers, giving rise to a solid domestic market.

DISCUSSION AND CONCLUSIONS

Mexico and its states lagged significantly on social matters over the period of study, given that the social competitiveness indicator in 2014 was just 0.5212 out of a maximum of one; as indicated in the respective section, most states proved to be socially uncompetitive (on health, education, and job income), despite the fact that public spending targeting these areas on the national agenda grew 1.95% on average annually. What's more, public spending on healthcare grew 2.88%, on education 1.47%, and on social infrastructure, 3.97% on annual average.

This paper went over the description of the statistical analysis, for which five models were posited with panel data technique estimates. This was helpful to determine that public social spending (the contributions) displayed a negative correlation with the SCI (-0.4830 in the first model, -0.5764 in the second, and -0.4402 in the fifth), a result that held true across the branches of health, education, and social infrastructure. On another note, the public investment variable was positively related to the SCI, which is useful for public policy design, because it suggests strengthening construction and maintenance of schools, hospitals, parks, roads, and in general, infrastructure that breathes momentum into both the economic and social environment (more evidence as to the importance of fiscal policy to Mexico's growth is found in Srithongrung and Sánchez-Juárez; Sánchez-Juárez *et al.*, 2016).

With respect to the rest of the variables, it was demonstrated that GDP and population are positively correlated with the SCI. This implies a link and degree of synchronization between economic and social policy. Fostering economic growth is a good way to improve social conditions, as economic growth drives job creation, opportunity, and incomes (see Torres and Rojas, 2015). Keeping an eye on economic conditions is vital to improving the SCI, reinforced by the fact that the fictitious variable to capture the effect of the 2007 to 2009 crisis displayed a negative and statistically significant coefficient. Authorities ought to strive to attenuate the economic cycle and guarantee long prosperity periods, alongside creating conditions for high and sustained economic growth.

Official information was evaluated to demonstrate that there are failings in social policy, approximated by public spending (see also, Neer *et al.*, 2013; Huesca and Calderón, 2015). Over ten years, no significant improvements have been made in health, education, or salaries (see Castillo and Arzate, 2013; CEF, 2015; Molina and Bracamontes, 2016). This adds up to a failed economic policy, which has failed to reverse low growth (average GDP per capita growth rate of 1.2% between 2005 and 2014). In essence, the country and the states are far from being socially competitive. In fact, it could be asserted that uncompetitiveness is the prevailing status quo, as there is no single state in which one could speak of a successful social policy.

Considering the foregoing, what Mexico needs to do is synch up its economic and social policies and foster well-rounded development, respectful of key human rights, and constantly evaluating its execution and reach. It is pressing to do away with the utter lack of protection in all realms of individual and collective life. It is time to move toward creating a social protection system that is universal and inclusive of everyone. Because the task is not only about serving the neediest, the middle class needs support, too, to create equal conditions in all of the states in the country.

Normally, there is an insistence that social policy ought only to involve raising spending, particularly in developed countries, as the argument goes that spending has fallen as a result of the liberal economic reforms pushed through at the beginning of the nineteen-eighties (Flores and Nieto, 2014). Although true that in the time period 1940-1981, social spending has fallen, here it is demonstrated that it is still growing, but just at a lower rate, and that its relationship with the SCI is negative, which is why social spending (contributions) itself is not necessarily the problem. Dautrey (2013, p. 28) found that raising spending alone is essentially not enough, because between 1995 and 2000, better results were achieved with lower spending than between 2001 and 2006, because in the first time period, the economic conditions were more favorable. It should also be considered that the people responsible for economic policy have concentrated on price stability and fiscal balance, leaving income distribution and the welfare state on a secondary plane, meaning that the vagaries of social welfare have come to be reliant more on the economic cycle than on any social strategy (Dautrey, 2013, p. 35).

Where macroeconomic policy is concerned, it is time to institute reforms, because fiscal and monetary policy have historically centered exclusively on budgetary austerity and inflation control, curtail economic growth and employment

opportunities in the country, and seriously impeding social development (for more on fiscal policy for growth, see Ros, 2013 and Moreno-Brid, 2016; on monetary policy, see Mántey de Anguiano, 2007 and Romero, 2014; and, for a discussion on the changes needed in the macroeconomic arena, see Ortiz, 2007 and Sánchez-Juárez and Moreno-Brid, 2016).

Finally, to the above is added the ineffectiveness of a series of governmental administrations as a result of rampant corruption, sheer incompetence, clientelism, and bureaucracy, not to mention that when it comes to social matters, just as in so many other areas of public life in Mexico, the state has failed to define a policy that transcends beyond the six-year presidential terms.

ACKNOWLEDGMENTS

The author would like to thank the anonymous members of the jury for their comments, which helped improve this document.

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² This research was conducted thanks to funding provided by the National Science and Technology Council (Conacyt) in Mexico. The master's thesis in Social Sciences, "Subnational Policy and Competitiveness in Mexico, 2005-2014," by the master's student Claudia Abril Ronquillo,

directed by the author, is a byproduct of the research provided here.

³ This description is based on the UNDP technical notes (2012, pp. 80-84).

⁴ Several papers have underscored the importance of employment to human development, including Doyal and Gough (1991), Narayan et al. (2000), and Nussbaum (2000) (cited by the UNDP, 2012). The ILO (2016) asserted the following: "work is the way out of poverty for poor households and that the expansion of productive and decent employment is the way economies grow and diversify. For countries at all levels of development, an adequate supply of jobs is the foundation of sustained and growing prosperity, inclusion and social cohesion. Where jobs are scarce or available livelihoods leave households in poverty there is less growth, less security and less human and economic development."

⁵ For research purposes, the choice was made, as a function of the construction and weighting of the SCI, a value below 0.65 is indicative of social uncompetitiveness. Uncompetitiveness is also revealed at the national level, with annual average degrowth for this indicator.

⁶ The categories created obey the following principles: 1) degrowth, when the annual average change in the SCI is negative; 2) growth, when the change is more than 2%, which is enough to help a state boost its social competitiveness over time; 3) stagnation, when the change is between 0.6% and 1.11%, the latter being the maximum rate recorded by a state; and 4) full stagnation, when the changes are between 0 and 0.59%.

⁷ In Mexico, the states' fiscal dependency was 83.1% on average in 2014. In fact, the contributions represent on average 78% of the state budgets (García and Illades, 2016). As such, this paper is considering the maximum of social spending that a state can make.

⁸ Just as before, four categories were created: growth (growth rate of social spending measured by APOR33 is above 1.06%, which was the average population growth rate in Mexico), degrowth (when the changes were negative), stagnation (when the growth was less than 1.06%, but higher than 0.3%), and full stagnation (when growth was between 0 and 0.2%).

⁹ Using the MGM, the sign for the relationship between contributions and the social competitiveness index was positive. This result was ruled out because it did not match the preliminary descriptive evidence. This was a personal decision of the researcher to opt for the results of the estimates with random and fixed effects.

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PROBLEMAS DEL DESARROLLO. REVISTA LATINOAMERICANA DE ECONOMÍA, Volume 49, Number 192, January-March is a quarterly publication by the Universidad Nacional Autónoma de México, Ciudad Universitaria, Coyoacán, CP 04510, México, D.F. by Instituto de Investigaciones Económicas, Circuito Mario de la Cueva, Ciudad Universitaria, Coyoacán, CP 04510, México, D.F. Tel (52 55) 56 23 01 05 and (52 55) 56 24 23 39, fax (52 55) 56 23 00 97, www.probdes.iiec.unam.mx, revprode@unam.mx. Journal Editor: Alicia Girón González. Reservation of rights to exclusive use of the title: 04-2012-070613560300-203, ISSN: pending. Person responsible for the latest update of this issue: Minerva García, Circuito Maestro Mario de la Cueva s/n, Ciudad Universitaria, Coyoacán, CP 04510, México D.F., latest update: Feb 23th, 2018.

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