



**International Seminar on Early Warning and Business Cycle Indicators**

**14 to 16 December 2009  
Scheveningen, The Netherlands**

*Tracking the Mexican business cycle*

**Yuriko Yabuta  
Mexico**



# **Tracking the Mexican Business Cycle**

Yuriko Yabuta

National Institute of Statistics and Geography (INEGI)

*International Seminar on Early Warning and Business Cycle Indicators  
14-16 December 2009, Scheveningen, The Netherlands*

*Session: The role of Composite Indicators in tracking Business Cycles*

## **Introduction**

This paper describes INEGI's experience in providing short-term indicators to track the Mexican business cycle.

It is divided in four parts:

- a) The first one refers to an assessment of the supply of economic indicators in Mexico.
- b) The second is related to particular economic indicators, which have been very useful for tracking the economic activity and to foresee some possible trends.
- c) Then, the usefulness of the System of Composite Indicators: Coincident and Leading.
- d) Finally, issues related to dissemination will be addressed.

## **Assessment of economic indicators supply**

For a long time, the INEGI has produced and disseminated several key indicators to measure conjuncture changes in the economy's real sector (See Table 1).

From surveys, monthly figures on manufacturing, construction, retail and wholesale trade, non financial private services, as well as employment and unemployment data are obtained.

Monthly statistics on mining and international merchandise trade are derived from administrative registers; national accounts provide indicators on industrial production, an indicator of the global economic activity which I will discuss further on, and fixed capital formation. This three are monthly disseminated. Gross Domestic Product at constant and current prices as well as supply and demand of goods and services are quarterly published.

There are also two sentiment surveys. The first, on consumer confidence, began to be collected in 2003 and the survey on manufacturing management opinion began in 2007. Up to now, the resulting data have shown a high sensitivity to emerging economic factors throughout time. Therefore they are considered good leading indicators. The results are disseminated during the first week after the reference month.

Seasonally adjusted series of the above mentioned indicators are provided monthly and quarterly. The System of Composite Indicators is monthly disseminated sixty nine days after the reference period.

Table 1  
Main Economic Indicators for the Real Sector

Indicator	Frequency	Timeliness 1/
<b><i>From surveys:</i></b>		
Manufacturing Industry	Monthly	57
Main Construction companies	Monthly	58
Retail and Wholesale establishments	Monthly	53
Non-financial private services	Monthly	53
Employment and Unemployment	Monthly	22
<b><i>Sentiment surveys:</i></b>		
Consumer Confidence	Monthly	5
Opinion Indicators of Manufacturing Sector	Monthly	3
<b><i>From administrative registers:</i></b>		
Mining Statistics	Monthly	58
International Trade Balance	Monthly	22
<b><i>From National Accounts:</i></b>		
Industrial Production Index	Monthly	42
Economic Activity Global Indicator	Monthly	55
Gross Domestic Product at constant prices	Quarterly	50
Gross Domestic Product at current prices	Quarterly	55
Gross Fixed Capital Formation	Monthly	72
Global Supply and Demand of Goods and Services	Quarterly	80
<b><i>Econometric methods:</i></b>		
Seasonally adjusted series	Monthly and quarterly	
System of Composite Indicators: Coincident and Leading	Monthly	69

1/ Days after de end of the reference period.

A preliminary analysis was made in order to find if the Institute was meeting user needs to track the business cycle. The main conclusions were the following:

- a) It was agreed that the set of indicators for the real sector could be considered as acceptable since their frequency and timeliness are in line with the International Monetary Fund's Special Data Dissemination Standard Program (SDDS). But, timeliness improvement and more breakdowns were desirable.
- b) The need for rapid estimates of the economic activity was recognized.
- c) A priority emerged: guiding users to help them make a correct interpretation of statistics.

Since accurate tracking of the economic activity is a core target for the INEGI and also because we had to respond to the recent financial crisis, it was decided to carry out important changes both in the production of statistics and in the dissemination of economic indicators.

- a) In the short term, some actions were performed in order to reduce the length of the production processes: an integration of concepts and classifications among surveys from the methodological point of view, and the introduction of questionnaire response by the internet and an administrative re-engineering, from the operational matters.
- b) Since timeliness improvement of traditional indicators has its limits, it was decided to begin the study to obtain some rapid estimates through econometric models. The econometric team was enhanced and right now they are working, as a first step, researching, obtaining and comparing estimates versus real-time figures. Later on it will be assessed if these estimates may be disseminated.

The econometric team is also in charge of obtaining the seasonally adjusted series, which have increased from 300 to 600 during the last eleven months.

- a) There is another important issue to mention. The enforcement of the statistics production through administrative registers as a long term activity since it involves many statistics producers rather than just the national institute.

In 2006 the new Law of the National System of Statistical and Geographical Information became into force. Among many other important aspects, it gave to the INEGI autonomy (independence) from the federal government, and the responsibility of coordinating the National Information System (statistics and geography).

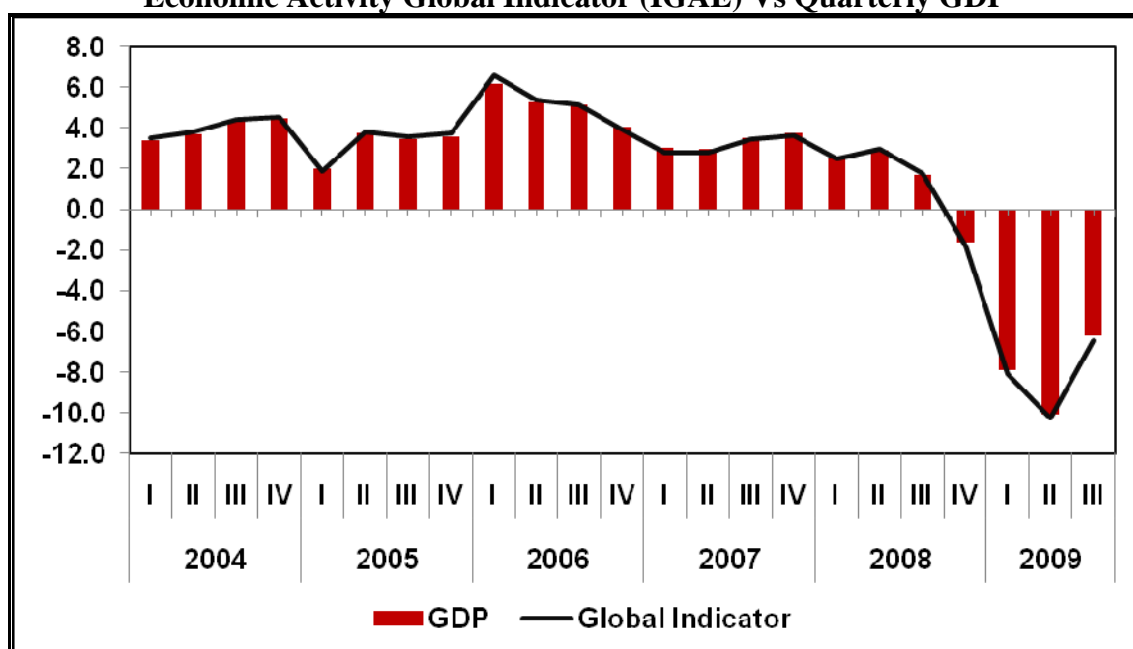
In this context, there have been official agreements with Federal and Local Governments and an Economic Statistics Committee has been established with the participation of the Ministry of Finance, the Ministry of Economy, the Bank of Mexico and the INEGI with the mandate of establishing the strategies for the production of economic statistics.

### Usefulness of particular economic indicators.

The economic activity global indicator (called IGAE in Spanish) is a monthly approximation to the GDP. Its coverage is of 84 percent of GDP in the base year (2003) and its compilation uses the same GDP methodology.

The indicator does not include forestry, fishing, hunting, and some services, but it gives a good monthly leading signal for quarterly GDP. Obtaining averages of the IGAE monthly values it can be observed a high correlation between both indicators. This has become a very much expected indicator by the users.

Graphic 1  
Economic Activity Global Indicator (IGAE) Vs Quarterly GDP



The sentiment surveys deserve a special mention. These provide interesting qualitative indicators. The survey on establishment measures expectations of manufacturing business managers on orders, production, occupied personnel, input delivery timeliness and input inventories of their firms. It also provides information on producer confidence about how they consider the current moment to invest, and about the current and future economic situation of the firm and of the country.

The second survey, which is conducted in households, gives information about consumer confidence on the current and future situation of the household and of the country, and also on the possibility to purchase durable goods compared with the previous year.

The indicators provided are assumed to be leading ones, but it should be mentioned that they might be contaminated with other kind of factors as political, social or those related with natural disasters, for example. Therefore, when analysis is made, these factors must be considered in order to track the business cycle appropriately.

## **Usefulness of the Composite Indicators.**

The main idea in 1998 when the INEGI began to construct a system of composite indicators was to consider different interacting markets that determine the economic activity situation (real, financial and labor).

These indicators summarize and show common patterns of the economic series trend turning points in a clearer and more convincing way than any other individual component (because part of the variability of each component is adjusted, mainly). The methodology used is based on that originally developed by the National Bureau of Economic Research.

The system is composed by two indicators: the Coincident and the Leading.

The coincident indicator has a similar performance to the business cycle. It is constructed based on the following:

- a) An estimation of monthly Gross Domestic Product, which is a monthly disaggregation of quarterly GDP, according with the performance of a related variable that in this case is the IGAE.

Two sectoral indicators:

- b) Industrial production;
- c) Retail sales;

Two labor market indicators:

- d) Workers registered in the Mexican Institute of Social Security (this is an approximation of formal employment);
- e) An indicator on working conditions obtained from the unemployment and underemployment data.

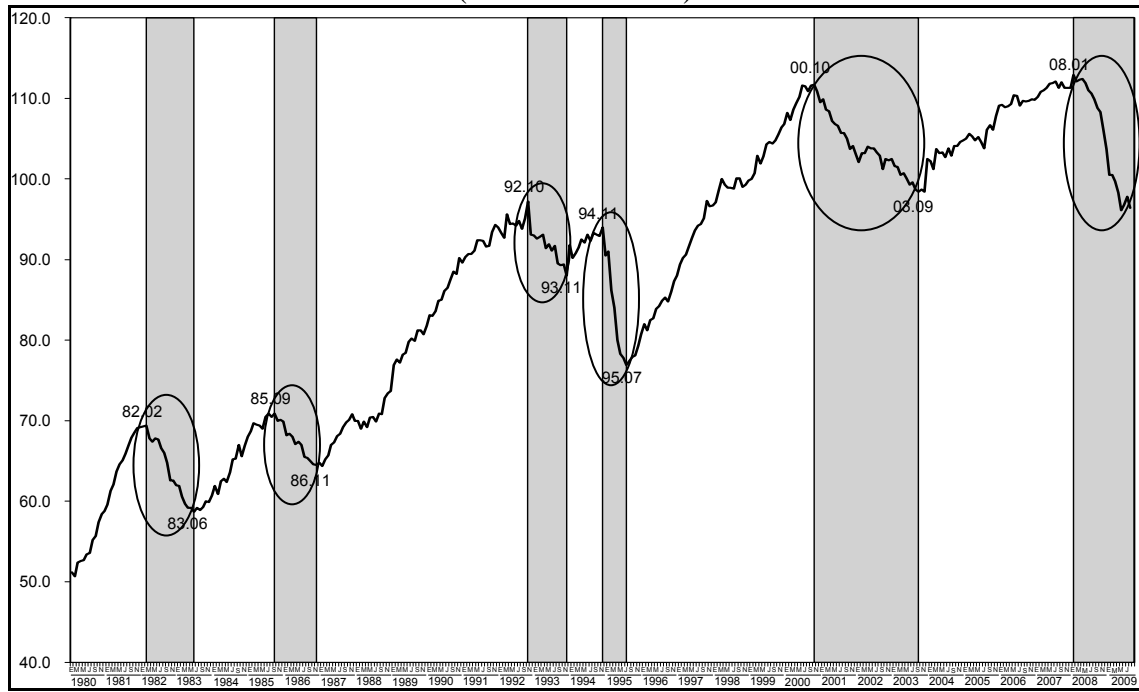
The leading indicator seeks to show in advance the direction of the coincident indicator. It considers the following variables:

- a) The real exchange rate;
- b) The price of one of the most important export goods for Mexico: the Oil;
- c) The Price Index of the Mexican stock exchange;
- d) Worked hours in manufacturing industry;
- e) The interest rate;
- f) The production volume of the construction industry.

The coincident indicator shows the Mexican economic history for almost 30 years. Following this criterion, six recessions are identified. The first four are considered to be caused by internal problems and a decrease of the oil price.

On the contrary, the last two recessions were due to external factors. By the end of 2000 the world demand presented a slowdown which led to a contraction of the Mexican commercial flows. In 2008 it was the well known financial crisis.

Graphic 2  
**The Coincident Indicator Performance**  
 (Base 2003 = 100)

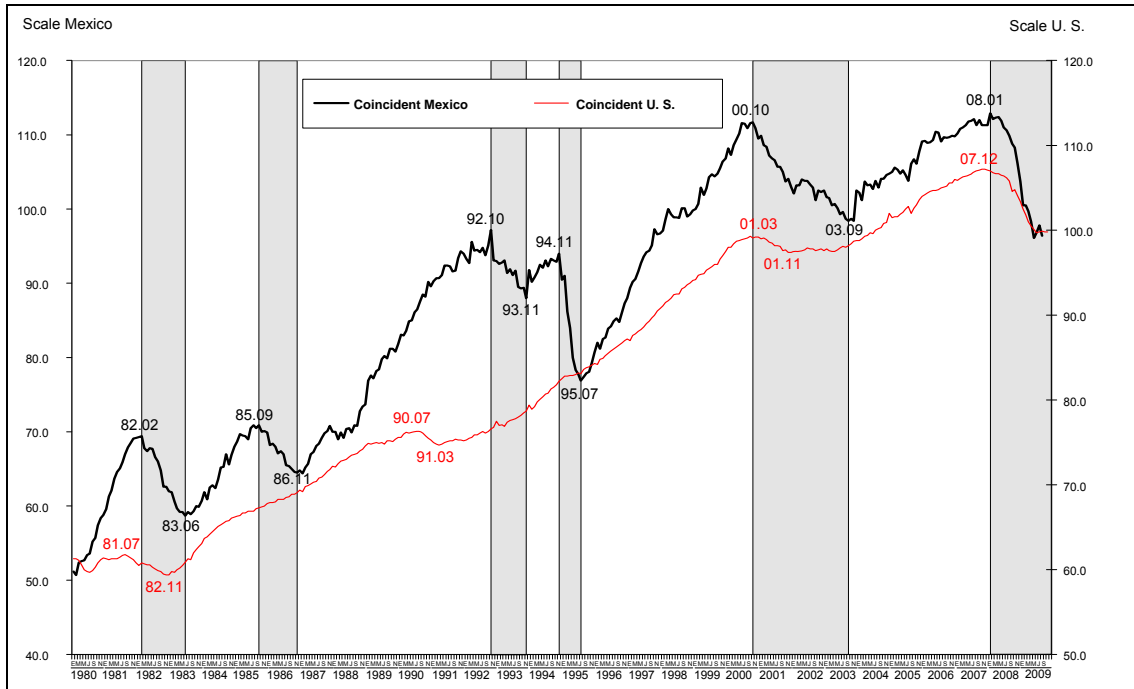


Recessions have taken place with different intensity but what is a fact is that each time the pressure over unemployment is higher, because of the increase in the population at an annual rate of 1% approximately.

In the next graphic it can be seen as never before that the Mexican business cycle coincides with the United States business cycle. The relationship has narrowed in the last years due to exports, remittances by Mexican emigrants to the U.S. and the reception of foreign tourism. Therefore it is observed that the Mexican cycle depends on the U.S. cycle in the last year.



**Graphic 3  
Coincident Indicators: Mexico-United States**



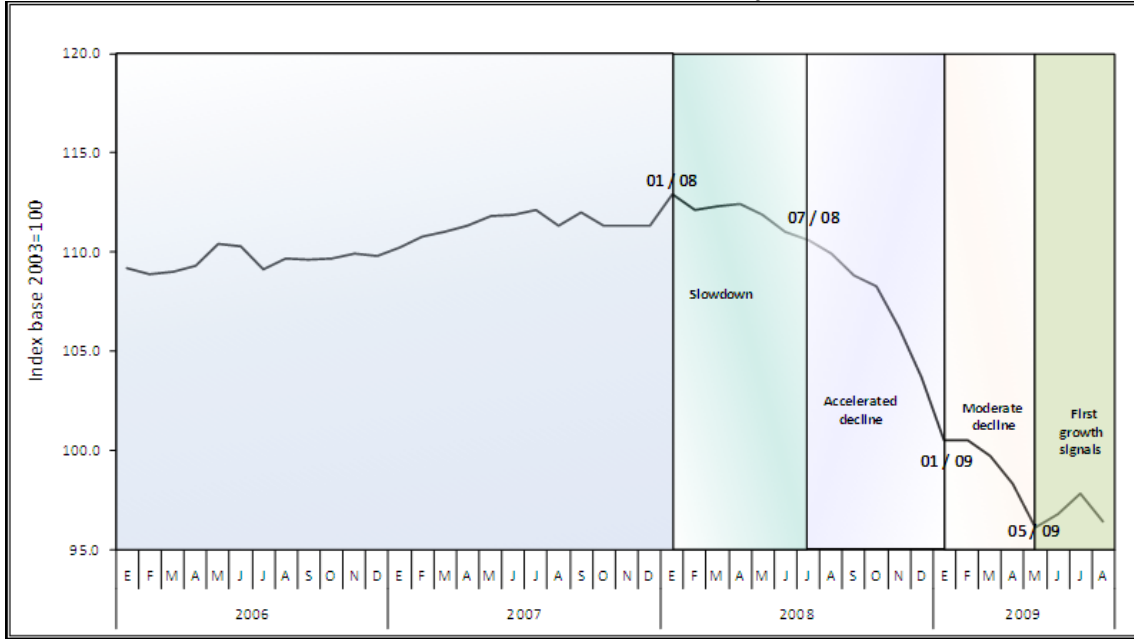
Considering the three deepest recessions, the coincident indicator establishes that recession in 1982-1983 lasted sixteen months, in 1994-1995 8 months and in the last recession, it seems with the last available information that we had a turning point in May coming up with a length of sixteen months of recession. It is convenient to mention that this point might still change, but at least it is noticed a trend variation.

**Figure 1  
Recessive Phase Length according to The Coincident Indicator  
Turning Points**

<b>Recession</b>	<b>Length (months)</b>	<b>Beginning</b>	<b>Finish</b>
Recession 1982-1983	16	March 1982	Jun 1983
Recession 1994-1995	8	December 1994	July 1995
Recession 2008-2009	16	February 2008	May 2009 (?)

Focusing on the last recession and based on the coincident indicator, three stages can be distinguished in the recession: one of slowdown, another of accelerated decline, and the next, of moderate decline. Since May, first signals of growth were observed.

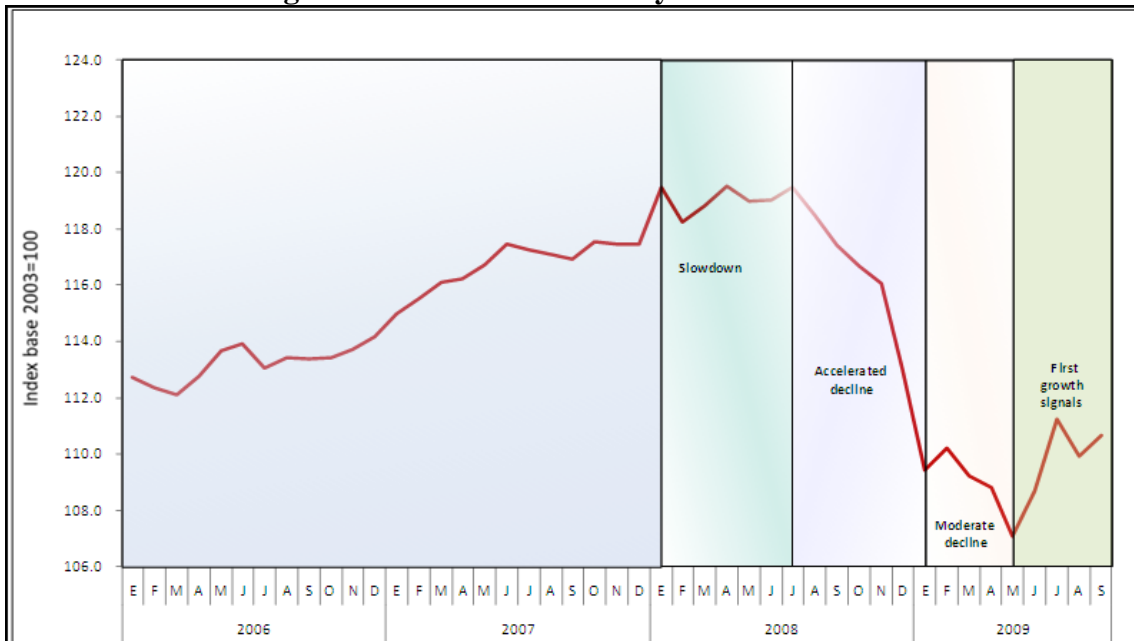
**Graphic 4  
Coincident Indicator in the last years**



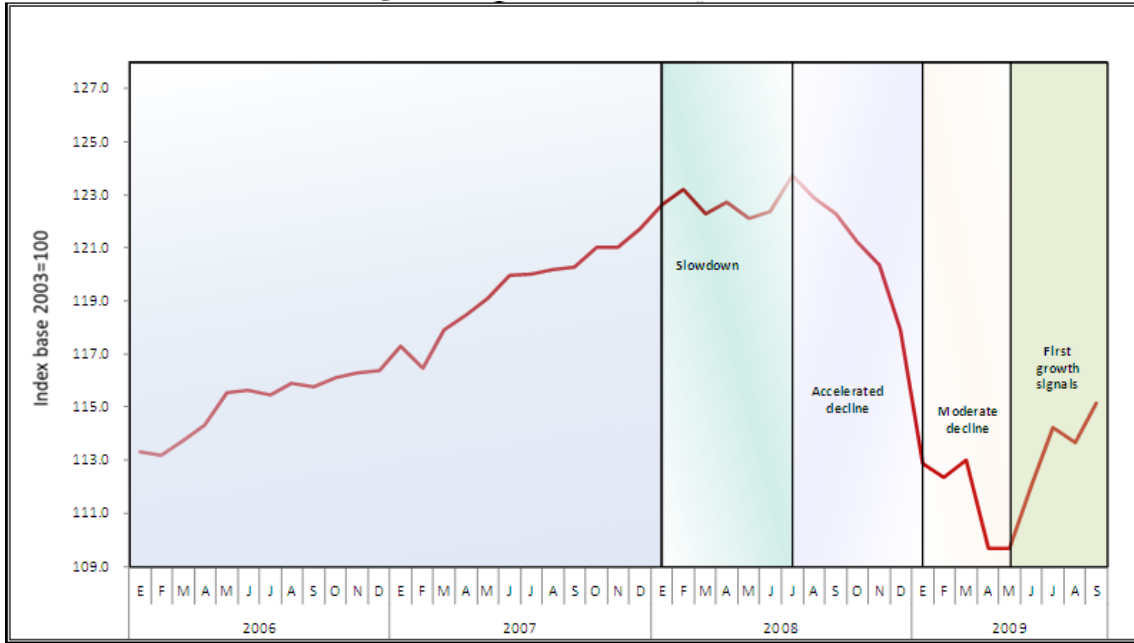
Having in mind these dates, the performance of key variables was revised and, in general, it was found congruence with these stages.

The following graphic show the performance of the economic activity global indicator: slowdown, accelerated decline, moderate decline and first growth signals. The same is with the industrial activity, specifically with manufacturing which is highly related to the U.S. demand mainly through our exports of vehicles (See graphic 6).

**Graphic 5  
Stages in the Economic Activity Global Indicator**

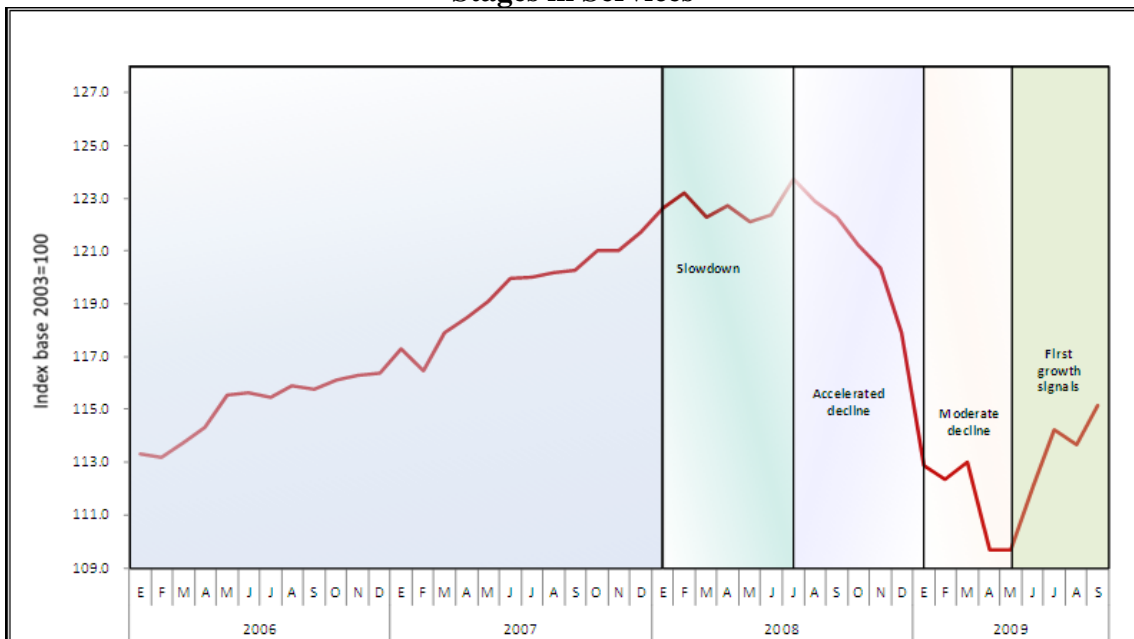


**Graphic 6  
Stages in the Industrial Production**



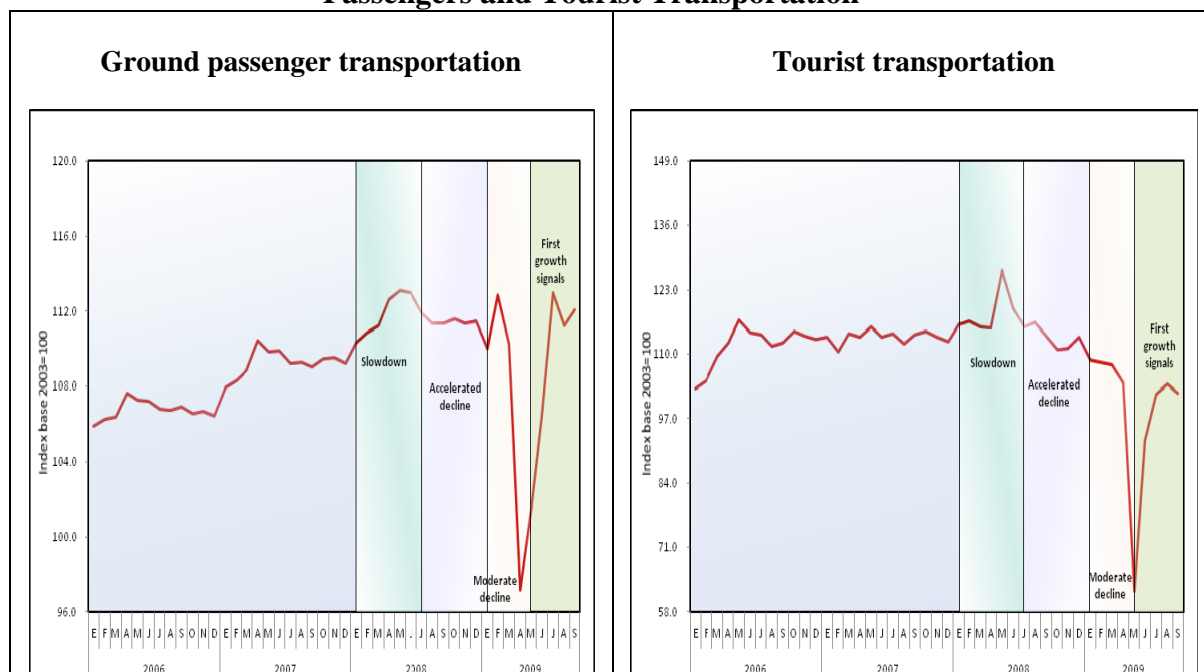
Services also show congruence with these phases. A particular reference must be made to what happened in last April and May in Mexico due to the influenza outbreak. The Mexican government implemented precautionary measures to avoid its spreading. Therefore public places were closed for almost a week especially in Mexico City, for example, cinemas, bars, nightclubs, restaurants, department stores, supermarkets, schools, etc. In addition to this, both national and foreign tourism paralyzed.

**Graphic 7  
Stages in Services**



The economic impact is reflected in the following graphics that show passengers and tourist transportation with significant falls in April and May, respectively.

Graphics 8 and 9  
**Passengers and Tourist Transportation**



Another way to analyze the stages is through a “semaphore or alert system”. The following shows the performance of the economic activity global indicator and its main sectors divided in the three stages of the recession and the first growth signals one. The figures correspond to the average of seasonally adjusted monthly changes in each phase.

Yellow color is used to indicate negative or positive growth in the range between (-)0.95% and 0.95%. Red color is used for a decrease higher than or equal to (-)0.95%. And green color for a growth greater than or equal to 0.95%. At the beginning of the recession we saw yellow color mainly. Then the color turned to red in the accelerated decline stage, in the next one the predominating color was yellow again, and in the growth stage the green color appeared.

Figure 2  
**Semaphore: Performance of the IGAE during the recession**

Sector	Slowdown Jan 2008 - Jul 2008	Accelerated decline Aug 2008 - Jan 2009	Moderate decline Feb 2009 - May 2009	First growth signals Jun 2009 - Sep 2009
<b>ECONOMIC ACTIVITY GLOBAL INDICATOR</b>	0.2	(1.5)	(0.5)	0.8
<b>PRIMARY</b>	1.9	(0.4)	(0.3)	(0.8)
<b>INDUSTRY</b>	(0.2)	(1.4)	(0.3)	0.4
<b>SERVICES</b>	0.2	(1.5)	(0.7)	1.2

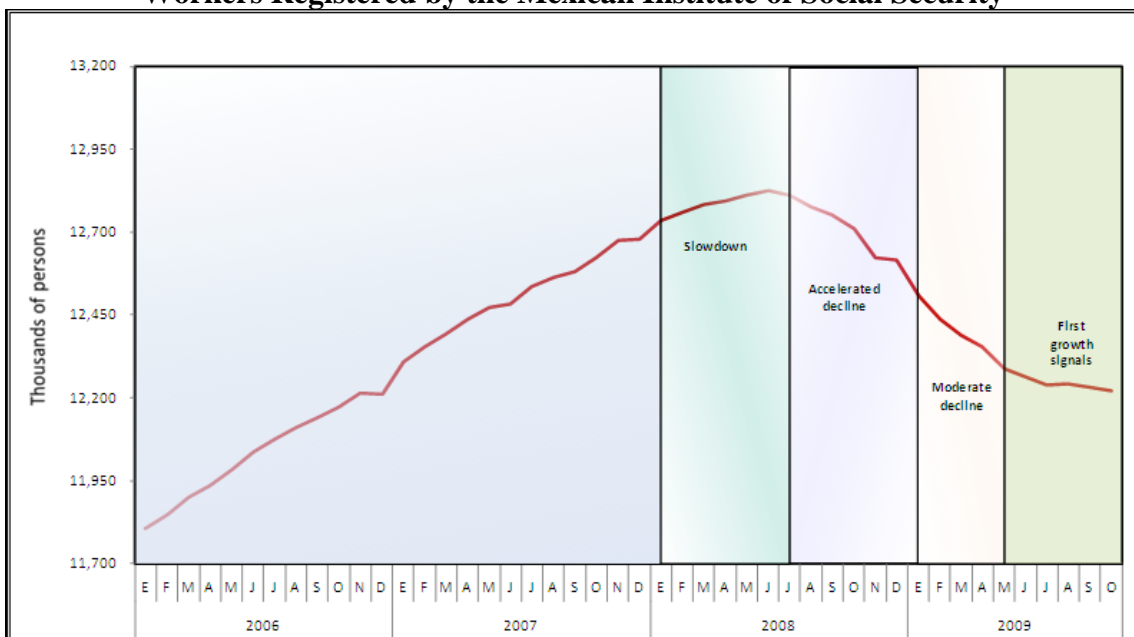
The manufacturing subsectors (NAICS) are also presented as an example; the performance is the same.

Figure 3  
**Semaphore: Performance of seasonally adjusted Manufacturing Index**

ITEM DESCRIPTION	Slowdown Jan 2008 - Jul 2008	Accelerated decline Aug 2008 - Jan 2009	Moderate decline Feb 2009 - May 2009	First growth signals Jun 2009 - Sep 2009
<b>SUBSECTOR</b>				
311 Food Manufacturing	0.1	(0.1)	(0.2)	0.4
312 Beverage and Tobacco Product Manufacturing	0.2	0.2	(0.1)	0.9
313 Textile Mills	(1.1)	(2.2)	0.1	(0.9)
314 Textile Product Mills	(0.7)	(0.9)	(2.6)	(0.9)
315 Apparel Manufacturing	(0.2)	(1.8)	(0.6)	0.4
316 Leather and Allied Product Manufacturing	(0.7)	(1.9)	(0.6)	1.6
321 Wood Product Manufacturing	(0.1)	(0.8)	(1.6)	2.7
322 Paper Manufacturing	0.3	(0.3)	0.3	(0.4)
323 Printing and Related Support Activities	(0.3)	0.0	(0.5)	0.1
324 Petroleum and Coal Products Manufacturing	0.3	(0.3)	(0.8)	1.6
325 Chemical Manufacturing	(0.4)	0.0	(0.4)	0.0
326 Plastics and Rubber Products Manufacturing	(0.4)	(1.7)	(0.7)	1.2
327 Nonmetallic Mineral Product Manufacturing	(0.5)	(1.3)	(0.3)	(0.1)
331 Primary Metal Manufacturing	(0.3)	(2.9)	(1.6)	1.4
332 Fabricated Metal Product Manufacturing	(0.3)	(3.0)	0.4	(1.6)
333 Machinery Manufacturing	(0.7)	(2.7)	(2.6)	1.9
334 Computer and Electronic Product Manufacturing	(2.3)	(2.6)	(1.4)	(1.2)
335 Electrical Equipment, Appliance and Component Manufacturing	0.8	(1.4)	(2.1)	0.1
336 Transportation Equipment Manufacturing	(0.2)	(7.4)	0.0	5.6
337 Furniture and Related Product Manufacturing	(1.1)	(1.6)	(0.4)	2.0
339 Miscellaneous Manufacturing	0.3	(1.0)	(0.4)	(1.0)
<b>Red, % change ≤ (-)0.95</b>	<b>3</b>	<b>13</b>	<b>6</b>	<b>3</b>
<b>Yellow, % change &gt; (-)0.95 but &lt; 0.95</b>	<b>18</b>	<b>8</b>	<b>15</b>	<b>10</b>
<b>Green, % change ≥ 0.95</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>8</b>
<b>Total number of subsectors</b>	<b>21</b>	<b>21</b>	<b>21</b>	<b>21</b>

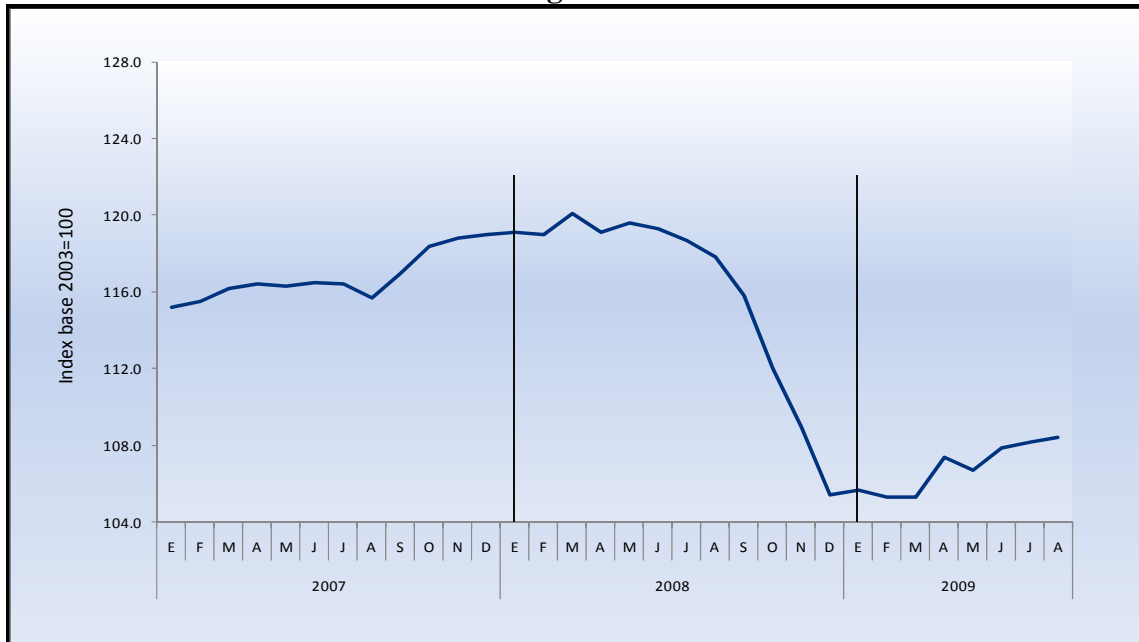
It was also found general congruence with the behavior of the number of workers registered in the social security. But there is not a recovery in employment yet.

Graphic 10  
**Workers Registered by the Mexican Institute of Social Security**



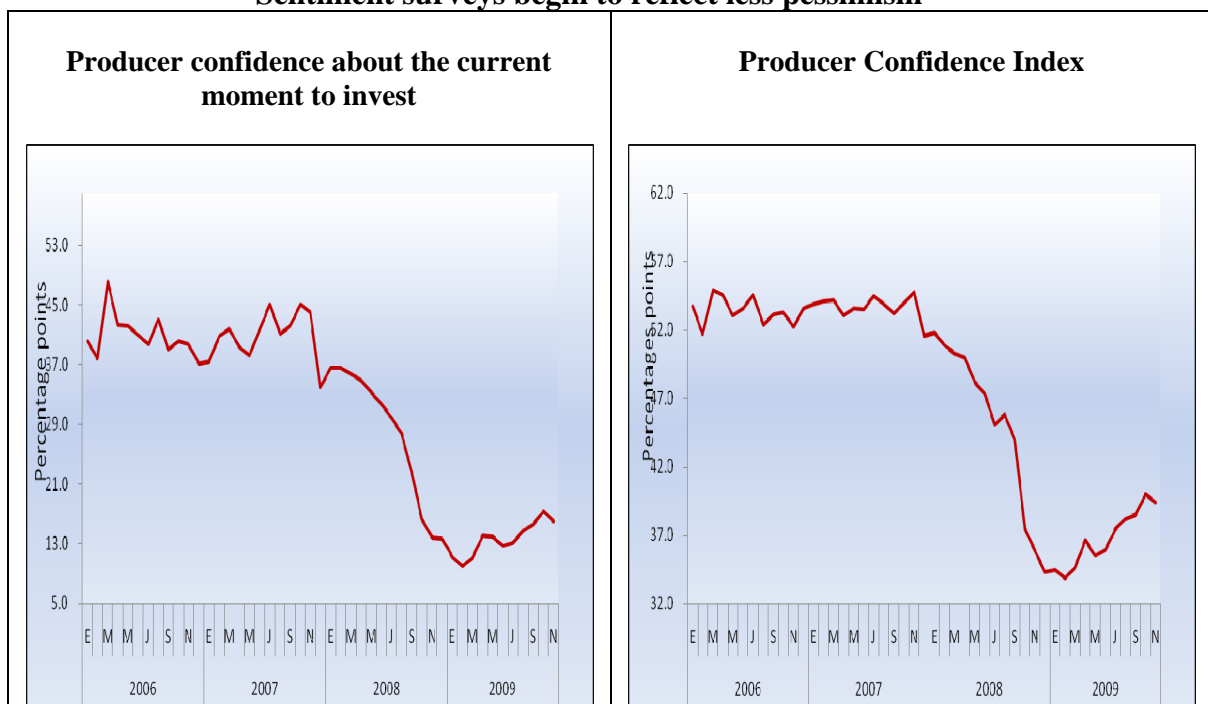
Along with the coincident indicator there is a leading indicator which shows a slight recovery in the coming months given the available information. However the turning point is not clear yet.

Graphic 11  
**Leading indicator**



Moving on to the sentiment surveys, they begin to reflect less pessimism. The indicator of whether the producer considers the current moment suitable to invest or not, has begun its recovery. The same is with producer confidence.

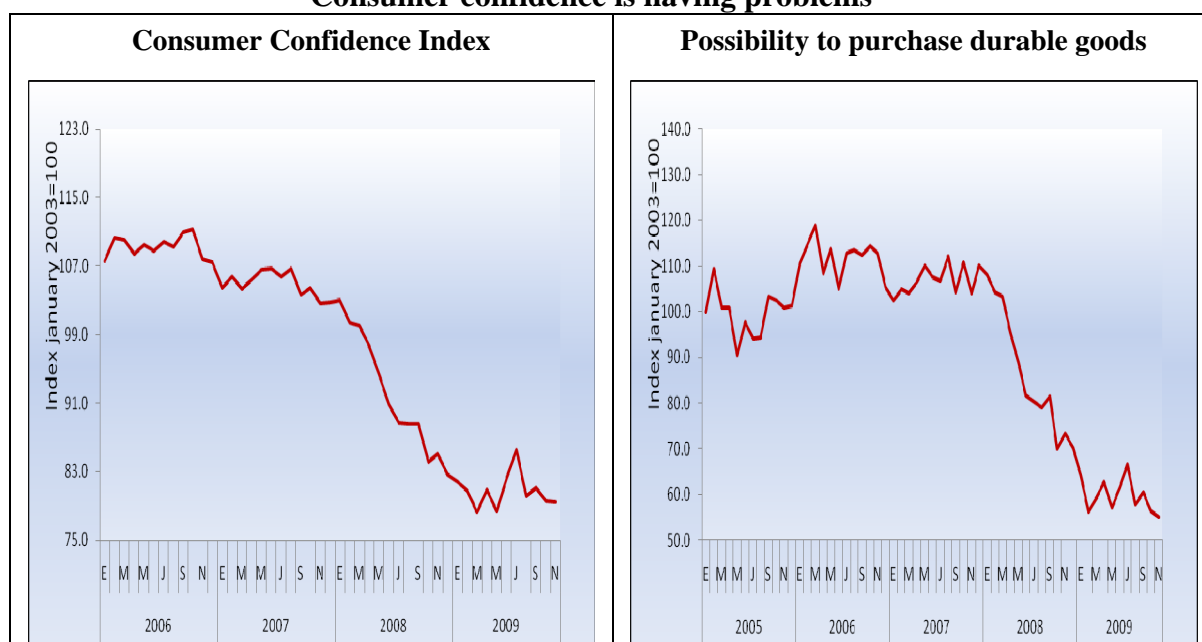
Graphics 12 and 13  
**Sentiment surveys begin to reflect less pessimism**



Relating to the consumer confidence, the index was recovering in Jun and July. But there has been a slowdown in the last two months due to the process for approving the next year government's budget by the Congress. Congressmen and leaders of several political parties, as well as businesses associations made a strong campaign against proposals to increase taxes on income and consumption. The media contributed to this disagreement. So, this indicator reflected the issue. Despite the claims the taxes increases were approved to come into force next year.

The graphic about the possibility to purchase durable goods reflects the consumer concern in the last months.

Graphics 14 and 15  
**Consumer confidence is having problems**



In summary, all these indicators have allowed to track the Mexican business cycle.

### Dissemination

Statistics production has its difficulty, but dissemination also has an important role. If statistics are not well disseminated, they might lose their usefulness. In this context, there is a special issue to mention: seasonally adjusted versus original data.

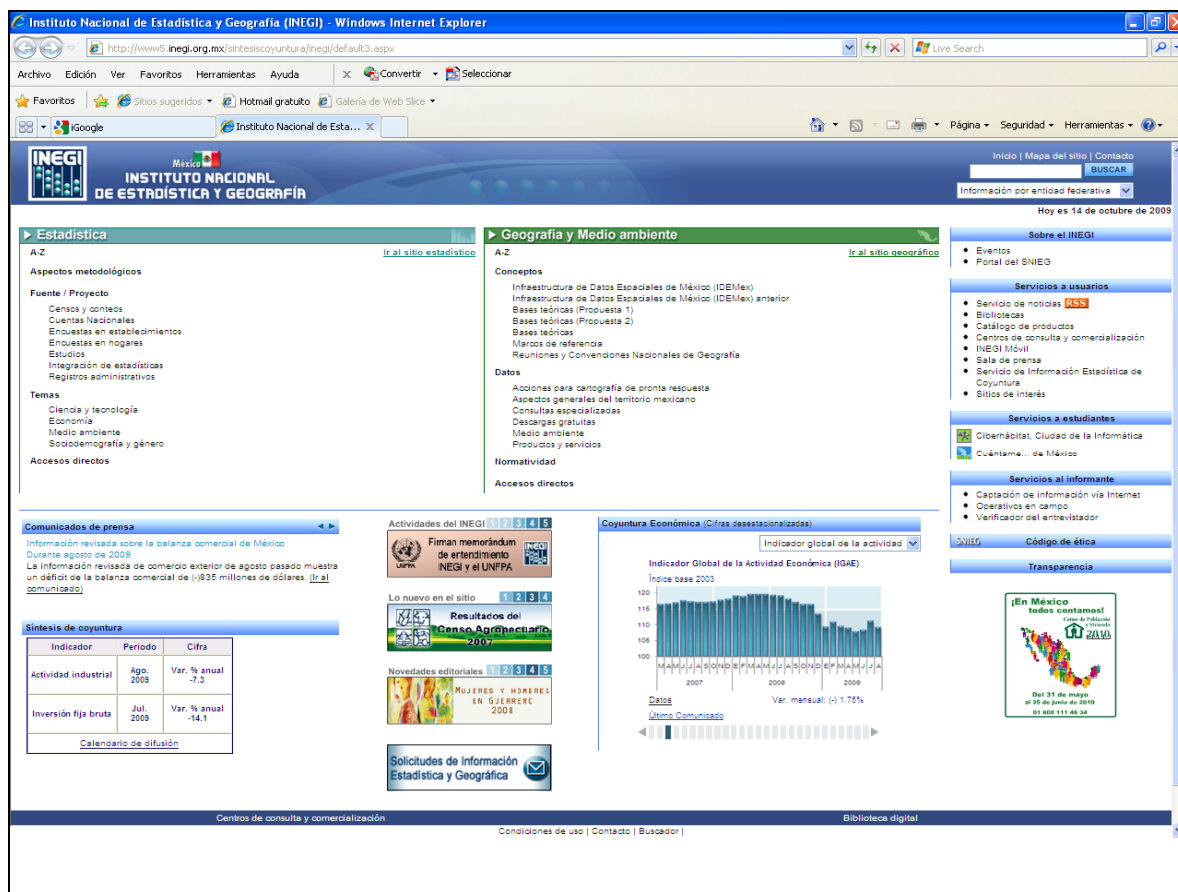
By tradition, people in Mexico are used to make annual comparisons on original time series. Maybe because the concepts of seasonally and trading days adjustments are not easy to understand. But the beginning of the financial crisis represented an opportunity to emphasize the adjusted figures in press releases, showing and explaining their usefulness. Therefore, a greater number of graphics with seasonally adjusted series were introduced and emphasized. The daily newspapers monitoring showed that specialized analysts began to work with this figures.

From this experience the need arose to guide to public servants, analysts, media and users in general towards a correct interpretation of statistics. In addition to the careful writing in press releases, the President of the INEGI began a set of conferences with strategic users to provide guidance in the adequate interpretation of seasonally adjusted

short term economic indicators, the sentiment statistics and the composite indicators provided by the institute.

On INEGI's homepage users can access to the economic indicators immediately. On the left-down corner press bulletins and a summary of the last released indicators are located. Also, graphics showing seasonally adjusted data have recently been posted.

Figure 4  
The INEGI's Website



Monthly and quarterly data are disseminated through a year in advance release calendar. Metadata and methodologies are posted on this website. Electronic publications, hard copies, CD's, data bases and on-line systems are also available. The last two are the most used.

To finish, it must be said that this financial crisis has obliged us to awake and revise if statistical offices are doing their job appropriately. It is likely that almost everyone found that far from the degree of accomplishment there will be always something to improve.