Dynamics of tax collection in Mexico during January 2018-February 2022

Dinámica de la Recaudación Fiscal en México durante Enero 2018- Febrero 2022

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Abstract:

After the current economic crisis derived from the global pandemic, the deterioration that the Mexican economy had already been showing worsened and with the measures implemented such as confinement and the austerity policy, it is prudent to analyse the behaviour of tax collection during the last years. Therefore, in the present work, the dynamics of the federal collection to the economic dynamics reflected in the Global Index of Economic Activity (IGAE) and Private Consumption in the period 2018.01 is studied through the X-12 trend-cycle decomposition. -2022.02. The results allow us to conclude that the poor performance of the economic activity is prior to the pandemic and that it worsened even more during the period, while for tax collection this was not the case, it even reached its historical maximum points in 2021; which implied a very contractionary fiscal policy and for this reason, the recovery of our country has been so short.

Keywords:

Economic activity, Tax collection, Contractionary fiscal policy, decomposition, trend-cycle

Resumen:

Tras la crisis económica actual derivada por la pandemia mundial, se agravo más el deterioro que ya venía presentando la economía mexicana y con las medidas implementadas como el confinamiento y la política de austeridad resulta prudente analizar el comportamiento de la recaudación fiscal durante los últimos cuatro años. Por lo que en el presente trabajo se estudia mediante la descomposición tendencia-ciclo X-12 la dinámica de la recaudación federal con respecto a la dinámica económica reflejada en el Índice Global de Actividad Económica (IGAE) y en el Consumo Privado en el periodo 2018.01-2022.02. Los resultados permiten concluir que el desempeño deficiente de la actividad económica es previo a la pandemia y que empeoro aún más durante el periodo, mientras que para la recaudación fiscal no fue así, incluso llego alcanzar sus puntos máximos históricos en 2021; lo que implicó una política fiscal muy contractiva y por ello ha sido tan corta la recuperación de nuestro país.

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Palabras Clave:

Actividad económica, Recaudación fiscal, Política fiscal contractiva, Descomposición, Tendencia-ciclo

Introduction

According to the theory, the main purpose of any tax system is to generate sufficient resources to finance the supply of public goods and services, likewise, tax collection represents the main source of income for a State. In this sense, taxes are considered instruments of great importance for a nation that seeks to promote economic growth and development.

Mexico has been characterized as one of the countries with the lowest tax collection and with a capacity to pay taxes vulnerable to external changes. And after the severe economic and health crisis that the country continues to go through derived from COVID-19, it is important to know what changes it has presented, its behaviour prior to the

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pandemic, and how the great economic slowdown affected it due to measures such as the total closure of companies and schools as well as the austerity policy. So, the objective of this work is to identify and to analyse the dynamics of national tax collection making comparisons with economic activity from January 2018- February 2022 using the decomposition of trend-cycle series as a methodology.

It begins by giving a context of tax collection during this period, and a brief recount of the measures that the country implemented in the face of the health crisis in 2020. Then, the results of the seasonally adjusted decomposition are presented with the component obtained from the trend-cycle for eight monthly series, four of national indicators referring to economic activity and four figures expressed in millions of pesos on tax collection. Identifying the severity of their declines and the intensity of their recoveries. Followed by a review where indices of said series are compared. Finally, the conclusions on the management of tax collection in this period of crisis and its most recent behaviour are presented.

Tax collection in Mexico in 2020.

Currently, two years after the global pandemic, many economies have suffered the consequences and Mexico has not been the exception. The monetary needs to attend to the health emergency are increasing, coupled with the fact that there were already poor fiscal conditions, which must also be adapted to new technologies and their impact on many companies.

According to the publication of the Organization for Economic Cooperation and Development (OECD) on tax statistics that talks about the impact of the Covid-19 disease on the tax revenue of OECD countries, it points to a slight increase of 0.1 percentage points in the tax-GDP ratio and suggest that it was due to the government support of each nation that protected employment and reduced the bankruptcy of companies. Well, even though its support in tax matters affected collection by reducing fiscal obligations and lowering tax rates, in addition to the fact that the drop-in economic activity also affected having a smaller labour force, a decrease in household consumption and profits of companies; The report indicates that one of the highest increases in the tax revenue-GDP ratio in 2020 was registered in Mexico with 1.6 percentage points. (OCDE, 2021).

Also, a statement issued by the Tax Administration Service (SAT), tells us that tax collection showed real growth of 0.8 percent compared to what was collected in 2019, where increases of one real percent in the Income Tax stand out (IT) and 2.3 percent in the Value Added Tax (VAT) compared to last year. In addition, tax revenues represented 14.5 percent as a proportion of GDP, the highest of the last ten years for GDP. (SAT, 2021).

Policy measures in Mexico in the face of the health crisis.

The modifications applied to the economic policy occurred because it was subject to meeting new needs that could moderate the impact of the crisis, these changes were applied according to the strategies and recommendations of the World Health Organization (WHO). As it was at the time, the confinement and total closures of jobs, schools, and establishments.

According to (Provecio, 2020) the countries with more developed strategies included among their measures, budget appropriations to the health system, support for the income of people who had to stay at home, postponed the collection of taxes for the benefit of households and companies, as well as the reduction of payments for public procedures in government. While Mexico as well as many countries of the American Continent began their actions mid-March, and the most important measures of economic policy in Mexico were presented until April.

During April 2020, the President of the Republic presented a budgetary austerity program in which it was decreed not to use 75% of the available budget for general services and materials and supplies; except 38 programs and priority actions such as pensions for the elderly, scholarships for students and emphasized the exceptional treatment for the National Guard and the Secretary of Health. (SEGOB, 2020). In May of the same year, he reiterated the rigorous austerity measures, not a fiscal reform as well as not contracting additional public debt.

Seasonal decomposition of series.

The seasonal decomposition procedure divides a time series into its seasonal components, S_t, a combined cycle and trend component, TC_t, and a remainder component. R_t. The purpose of the decomposition is to isolate the various components so that they can be viewed individually for analysis or forecasting without the influence of noise or seasonality. According to (Hyndman, 2013), an additive decomposition like the following occurs if the magnitude of the seasonal fluctuations or the variation around the trend-cycle do not change with the level of the time series: $S_t T_t R_t$

$$Y_t = TC_t + S_t + R_t$$

If, on the other hand, the change in the seasonal component or around the trend cycle is proportional to the general level of the series, the multiplicative decomposition is more appropriate.

$$Y_t = TC_t, S_t, R_t$$

They mention that when the seasonal component is removed from the original data, "seasonally adjusted" data results that include the remaining component and the trend cycle component, so they do not seem slight, and the rises/falls can be misleading. But if turning points are

sought to analyse the different changes, it is more appropriate to use the trend-cycle component. To carry out this decomposition there are several methods such as Techniques X13, X12, X11, and X11.2 of the US Census Agency; TRAMO, "Time Series Regression with ARIMA Noise, Missing Observations, and Outliers", SEATS, "Signal Extraction in ARIMA Time Series", etc. For this work, the EViews 12 software was used to decompose the monthly series to obtain the trend-cycle component using the X12 method of the U.S. Census Bureau.

Dynamics of tax collection in Mexico through cycle-trends.

Taxes are characterized by the obligation that taxpayers have to make their payment from time to time, these revenues come mainly from Income Tax (IT), Value Added Tax (VAT) and Special Taxes on products and services (STPS) so they are variables to be analysed. For the development of this work, monthly data obtained from the Public Finance Timely Statistics of the Ministry of Finance and Public Credit during the period January 2018-February 2022 were used.

The trend-cycle component of tax revenue (TR) in Mexico showed increases until February 2020 and despite the serious fall it suffered in June 2020, in December of the same year it presented its maximum value followed by an upward trend, reaching its historical maximum. in June 2021, but from then on there is a decrease of 8 months (Graph 1).

Graph 1.
Trend-cycle component of Tax Revenue 2018.01-2022.02.
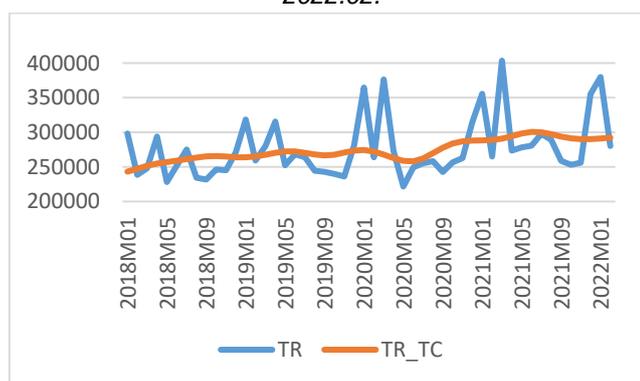
Source: Own elaboration from trend-cycle series

The value added tax series showed a regular performance in 2018 and 2019, it presented a maximum in January 2020 and in June it registered a minimum, which implied a decrease of 13.46 percent. With this, the recovery that began in the seventh month of 2020 lasts until the seventh month of 2021, when it reached its maximum historical value. However, in the last seven months, it presented a decrease, which places the VAT collection of February 2022 at the levels of October 2020 (Graph 2).

Graph 2.
Trend-cycle component of Value Added Tax 2018.01-2022.02.
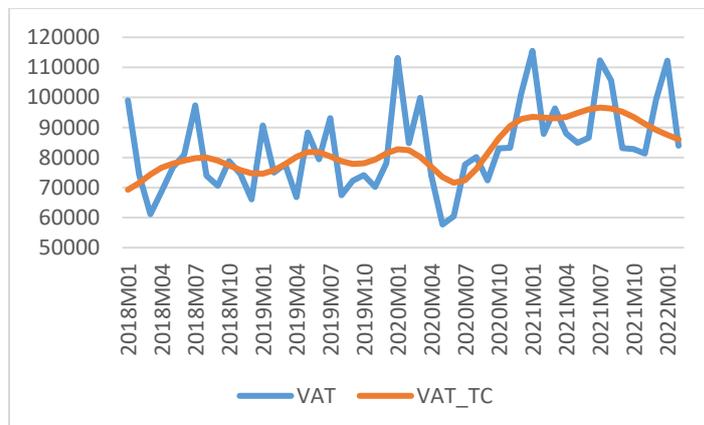
Source: Own elaboration from trend-cycle series.

The Income Tax (IT) series has a seasonal component at the beginning of each year. Following the trend-cycle series, it is observed that its historical minimum value was prior to the pandemic, in January 2018 and it is in May 2019 when it begins to increase, its maximum value was reached in February 2022. Which means that the series has been on the rise these four years (Graph 3).

Graph 3.
*Trend-cycle component of Income Tax 2018.01-2022.02.*
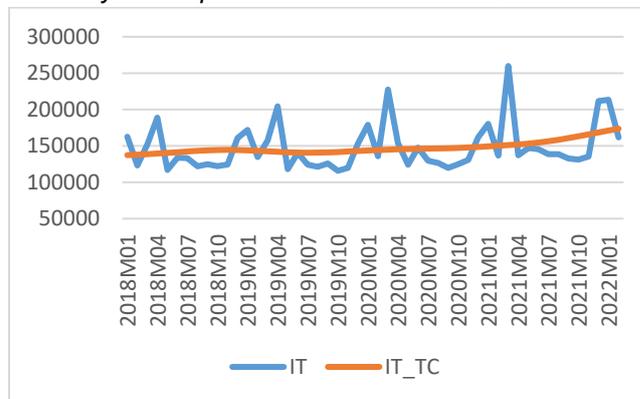
Source: Own elaboration from trend-cycle series.

The collection for special taxes on products and services (STPS) showed a poor performance in May 2018, in November 2019 its collection increased and in the following five months (December-April) it fell, and began a recovery until October 2020; with decreases until the last data in February 2022; thus, this last cycle trend data is the lowest in the period 2018.01-2022.02 (Graph 4).

Graph 4.

Trend-cycle component of Special Taxes on products and services
2018.01-2022.02.
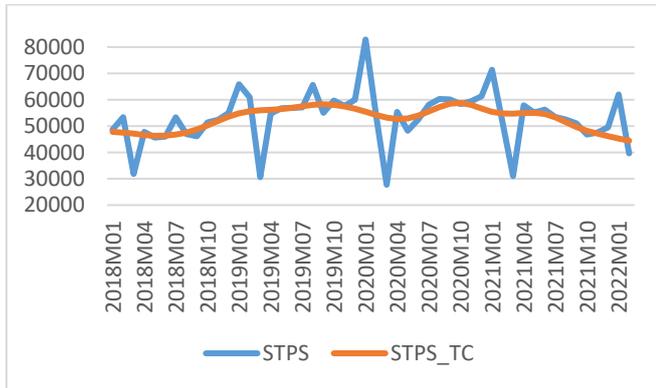
Source: Own elaboration from trend-cycle series.

Economic activity in contrast to tax collection.

Economic activity has an influence on tax collection since economic development implies more demand for public spending and greater tax capacity to obey that demand, so it is important to know part of its behaviour and be able to contrast it with the tax collection series.

The cycle-trends of the following indicators of economic activity indicate the economic difficulties due to the pandemic as they presented falls in mid-2020 with intensities from 27 percent in gross fixed investment to six percent in the global index of employed personnel. In May and July 2021, recoveries were recorded in fixed investment, industrial activity and in the global index of employed personnel, while in private consumption it occurred until February 2022.

Recoveries with semi-durations of 11 to 20 months with intensities of two percent to 18 percent, but without exceeding the levels reached in 2018 and 2019. Gross fixed investment, and industrial activity registered a nine-month decline, the overall employed personnel index also showed a seven-month decline, and private consumption increased (Table 1).

While tax collection did not decrease as much, it recovered and exceeded levels of previous years. Both tax revenues such as Special Taxes on Products and Services (STPS) and VAT increased at the beginning of 2020, and Income tax (IT) collection increased in the last month. Said series registered drops in April and June 2020 with semi-durations of 4-5 months and with low intensities of up to five percent. With the exception of Income tax, which did not decrease and was a rising series during the period.

Following the brief declines, they recovered above previous levels with all-time highs in the sixth and seventh months of 2021 (Revenue Tax and Value Added Tax); in

the tenth month of 2020 (STPS), and in the second month of 2022 (IT), which implies intensities from 12 percent to 35 percent. However, the latest tax revenue, STPS, and VAT regimes recorded a decline for eight, 16, and seven months, respectively, while ISR was on the rise (Table 2)
.

Dynamics of tax collection with respect to the economic dynamics reflected in the Global Index of Economic Activity (IGAE) and private consumption.

Private consumption presented its historical maximum in June 2019; similar to industrial activity, a year later it had a decrease of 16 percent when it registered its historical minimum value in June 2020; its recovery lasts 20 months with a maximum in February 2022, a figure that did not reach the levels obtained in 2018-2019 (Graph 5).

Graph 5.
Trend-cycle component of the Private Consumption index
2018.01-2022.02.
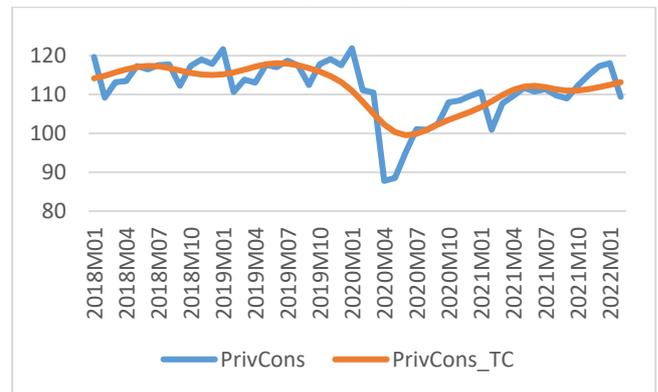
Source: Own elaboration from trend-cycle series.

According to the following ratios of STPS and VAT indices with the private consumption index, it is observed that the collection index for special taxes on products is falling with respect to the private consumption index. After a minimum was recorded in June 2018, it began to increase until reaching the highest figure in the series in September 2020, data from which it began to decrease and presented its historical minimum point in February 2022, which implied a 17-month decline (Graph 6).

Table 1.
Dynamics of national indicators, duration of recovery and last regime (01.2018-02.2022)

Variable	Maximum registration after 2018	Month	Year	Minimum subsequent registration	Month	Year	Semi-duration	Inten-sity	Maximum registration in 2021-2022	Month	Year	Semi-duration	Inten-sity	Last regime
Gross fixed investment	111.5470362	6	18	81.0541827	6	20	24m	-0.27	95.3710863	5	21	11m	0.177	Decrease 9 m
Private consumption	118.0562184	6	19	99.5403839	6	20	12m	-0.16	113.178591	2	22	20m	0.137	Rise
Industrial Activity	105.9420495	5	18	88.4083601	5	20	24 m	-0.17	100.103988	5	21	12m	0.132	Decrease 9 m
Global Index of Employed Personnel	111.467322	6	19	104.533802	7	20	13m	-0.06	106.856178	7	21	12m	0.022	Decrease 7m

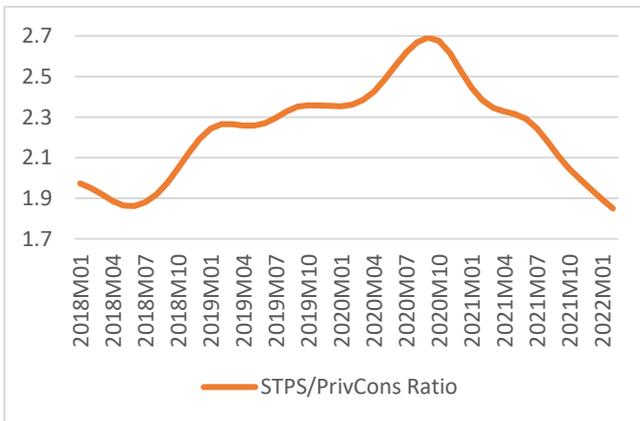*Source: Own elaboration from trend-cycle series.*

Table 2.
National data dynamics, duration of recovery, and last regime. (01.2018-02.2022)

Variable	Maximum registration		Minimum registration				Recovery				Last regime
	Month	Year	Month	Year	Semi-duration	Inten-sity	Month	Year	Semi-duration	Inten-sity	Decrease/rise
Tax Revenue	2	20	6	20	4m	-0.05	6	21	12m	0.165	Decrease 8m
VAT	1	20	6	20	5m	-0.13	7	21	11m	0.349	Decrease 7m
ISR	12	20	1	18	37m	-0.08	2	22	50m	0.265	Rise 50 m
IEPS	11	19	4	20	5m	-0.08	10	20	5m	0.117	Decrease 16m

Source: Source: Own elaboration from trend-cycle series.

Graph 6
Trend-cycle component of the STPS/PrivCons ratio
2018.01-2022.02

Source: Source: Own elaboration from trend-cycle series.

Graph 7
*Trend-cycle component of the VAT/PrivCons ratio*
2018.01-2022.02.

Source: Source: Own elaboration from trend-cycle series.

And the rate of collection via VAT with respect to private consumption showed an increase at the end of 2019 until it presented its historical maximum in March 2020, four months later it decreased and an attempt was made to recover in August 2021; however, it has decreased in the last 14 months (Graph 7).
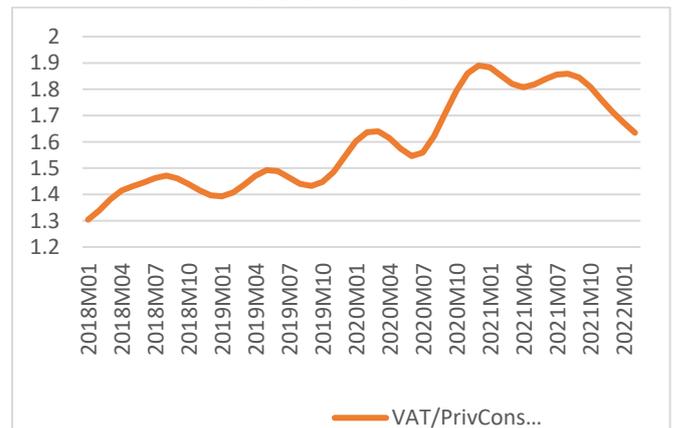
On the other hand, analysing the Global Index of Economic Activity (GIEA) that shows the evolution of the economic activity of the country, with monthly frequency. In June 2018 it reached its historical maximum, it maintained a regular performance. Precisely two years later, in June 2020 it registered a large decrease from which it took 11 months to recover, with an increase in May 2021, but it still has not managed to recover the levels that

it managed in previous years, in addition to showing a decrease of nine months in its latest data (Graph 8).

Graph 8
Trend-cycle component of the Global Index of Economic Activity (GIEA)
2018.01-2022.02.
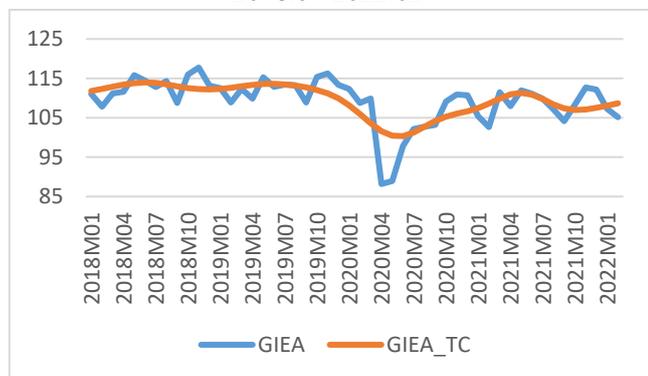
Source: Own elaboration from trend-cycle series.

The Income Tax index increased considerably with respect to the global index of economic activity. In 2018 and 2019, prior to the pandemic, they presented very low levels. In June 2020 it reached a maximum and a year later it suffered a decrease in June 2021, and from there it registered increases in the last nine months (Graph 9).

Graph 9
Trend-cycle component of IT/IGAE ratio.
2018.01-2022.02.
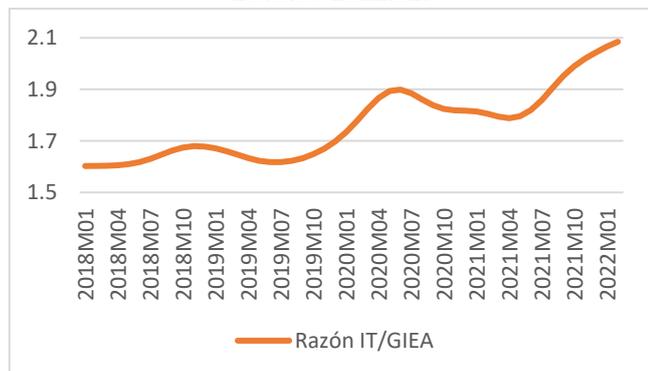
Source: Own elaboration from trend-cycle series.

Meanwhile, the tax revenue index (RT) with respect to the GIEA also presented increases and implied the same as the previous ratio, at least until it reached its historical maximum in the eighth month of 2021; had slight decreases in the last six months (Graph 10).

Graph 10
RT/GIEA ratio trend-cycle component.
2018.01-2022.02.
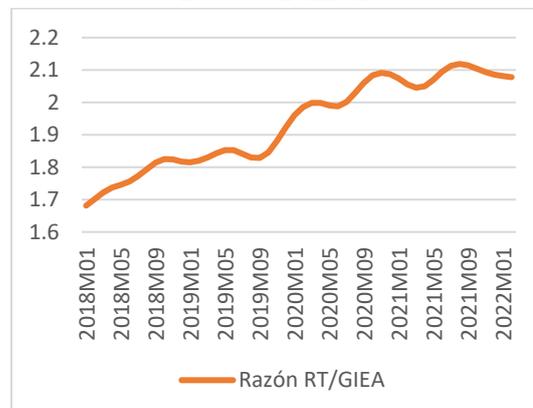
Source: Own elaboration from trend-cycle series.

Conclusions

According to the decomposition of the trend-cycle component, it is concluded that economic activity falls too much but the same does not happen with tax collection, which has implied a very contractionary fiscal policy and therefore the recovery of our country has been so short.

The series of gross fixed investment, the global index of employed personnel and industrial activity, as well as the GIEA, were unable to sustain their recovery, much less exceed their pre-pandemic levels and registered decreases from seven to nine months, except for private consumption, which registered a rise in the last month. Regarding tax collection, after brief falls with slight intensities, they showed recoveries in 2021 that considerably exceeded levels registered in 2018. In their latest records, Tax revenue (eight months), IEPS (16 months) and VAT (seven months) presented decreases., but the Income Tax series always showed increases during the period studied.

The increase indicated by the OECD in tax collection during 2020, despite the health and economic crisis that began, was not due to government support for citizens in tax matters, and the negative effects on tax collection occurred in sector terms. At least not in Mexico, where the measures against the crisis did not help the community, rather it was due to the contractionary policy, by reducing spending with the so-called austerity policy and the increase in tax revenues. Regardless of how much economic activity was falling, Mexico did not stop collecting.

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