Detecting a Pre-Covid Fall in the Trend Growth of the Mexican Economy: Extended Version

Stefano Lord[1] and Felipe Meza*[2 3]

[1]University of Wisconsin-Madison
[2]Centro de Análisis e Investigación Económica
[3]Instituto Tecnológico Autónomo de México

January 2022

Abstract

Mexico grew -0.1% in 2019. That rate is well below the average between 1980 and 2018, which is 2.4%. Our hypothesis is that the Mexican economy suffered a pre-Covid fall in its *trend* growth. To validate the hypothesis we proceed as follows: i) analyze the dynamics of some macroeconomic variables in the first year of the current (2018-2024) and the three previous presidential terms; ii) measure the change in the trend in economic activity and estimate the probability of the economy being in a low growth regime (in a statistical sense) using a three-state Markov switching model; iii) estimate a multivariate regime Markov switching model with the growth of five variables. We summarize our findings into two main results: i) there is a common pattern in macro variables in the first year of a new administration. The main distinguishing feature of the current administration is the reversal of the trade balance in 2019; ii) Mexico moved towards a low growth regime at the end of 2018. We propose, without establishing causality, that the source of the fall in trend growth comes from large changes in economic policy in 2018 and 2019. These changes translated into a negative shock to trend growth. We list four alternative hypotheses. We propose a test for theories explaining the change in 2019: to explain simultaneously the fall in growth and the change of sign of the trade balance. Our theory could account for both facts.

JEL classification code: C22, C32, E21, E65.

Keywords: Mexican economy, trend, growth, potential output, Markov switching model

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*Corresponding author. Contact information: Av. Camino a Sta. Teresa 930, Ciudad de México, C.P. 10700, México. Email: felipe.meza@itam.mx. Any error is our own responsibility.

1 Introduction

Mexico grew -0.1% in 2019, well below the average between 1980 and 2018, which is 2.4%. The research question of this document is whether Mexico experienced a pre-Covid fall in trend growth. To assess the hypothesis we do three exercises. First, we carry out an event study analysis for a set of macroeconomic variables in the first year of a new government for the current (2018-2024) and three most recent administrations. Second, we measure the change in the *trend* of economic activity and estimate the probability of being in a low growth regime using a three-state Markov switching model. The trend we measure can be interpreted as potential output. Therefore, we are testing whether there was a fall in potential output growth in 2019. Third, we complement our previous analysis using a multivariate regime switching model for the simple growth of five macroeconomic variables.

We have three results. First, there is a common pattern in macro variables in the first year of a new administration. The main distinguishing feature of the current administration (2018-2024) is the reversal of the trade balance in 2019 from deficit to surplus. Second, the regime switching model estimated with the change in the trend of economic activity shows that Mexico reached a state of low growth in September 2018. Third, the multivariate switching model estimated with the annual simple growth of five variables shows that Mexico reached a state of low growth in December 2018.

The previous results lead inevitably to the following question: Why did the Mexican economy switch to a low growth regime?

In this paper we do not attempt to answer this question. We do propose a hypothesis, and present alternative ones. Our main hypothesis is that changes in policy in 2018 and 2019 led to the fall in trend growth. Below we list four alternative hypotheses on the source of this change in growth.

The fall in growth is correlated with the presidential election victory of Andrés Manuel López Obrador (abbreviated as AMLO) in July 2018. AMLO announced the cancellation of the construction of the new Mexico City airport (NAICM being the acronym in Spanish) in October 2018. He took office in December 2018. We propose that the source of the negative shock to trend comes from the cancellation of the NAICM, and the beginning of the blocking of the Energy Reform passed in the previous presidential administration.

Finally, we propose a test for theories explaining the fall in growth in 2019: to explain simultaneously the fall in growth and the change of sign of the trade balance.

The contribution of this paper is that, to the best of our knowledge, it is the first one to present evidence that the Mexican economy recently suffered a fall in trend growth. Lower trend growth would produce a negative wealth effect on the economy, thus reducing the growth of consumption and, given the fall in spending, a change in sign in the trade balance from deficit to surplus.

2 Literature Review

Major electoral processes in emerging market economies may be associated with important changes in the dynamics of macroeconomic variables because of large changes in policy. This is the argument in Aguiar and Gopinath (2007): Emerging market economies tend to be more volatile due to large changes in fiscal, monetary and trade policies, and are prone to presenting reversals in the current account, known as "sudden stops". As we show below, a distinguishing characteristic of 2019 is the reversal of the trade balance. Therefore Mexican data are consistent with the theory in Aguiar and Gopinath (2007). These authors discuss the implications of a small open economy being affected by transitory versus permanent productivity shocks. A permanent shock refers to a shock to the trend of the economy. A negative shock to the trend yields a sudden reversal of the current account.

The existing literature regarding the implications of political regimes and institutions on economic growth is large. For example, Przeworski and Limongi (1993) find that political institutions are an important determinant of economic growth. Alesina and Perotti (1994) find that political instability reduces the incentives to save and invest and therefore reduces growth. Also, political regime changes, being associated with sociopolitical instability, should be periods of low growth. Haggard et al. (1990) document that countries in transition perform worse in terms of many economic indicators than established democracies. In a broader sense, North (1987) argues that the quality of institutions is positively related with economic activity. Political regime changes that reduce the quality of institutions affect growth.

3 Event Analysis of First Years of Government

We present the data for four monthly macroeconomic indicators for the year before and after the current (2018-2024) and three previous presidential terms started. We plot data for the terms of Vicente Fox Quesada (VFQ, 2000-06), Felipe Calderón Hinojosa (FCH, 2006-12), Enrique Peña Nieto (EPN, 2012-18), and Andrés Manuel López Obrador (AMLO, 2018-24). The variables are: i) the annual growth rate of the Global Economic Activity Indicator monthly index (in Spanish abbreviated as IGAE), ii) the annual growth rate of the gross fixed capital formation monthly index (IMFBCF in Spanish), iii) the annual growth rate of the private consumption monthly index (IMCPMI in Spanish), and iv) the monthly level of the trade balance in millions of dollars. The indexes i) to iii) were deseasonalized by the source, INEGI, which is Mexico's national statistical agency. The trade balance data come from Mexico's central bank, Banco de México, and have been deseasonalized by the source.

We plot the values of the means pre and post the beginning of each presidential term for the four variables. In Figures 1 to 4 we plot the values of each variable twelve months before the beginning of each presidential term, and of the first twelve months of each administration. In each graph the vertical axis refers to December, the month in which each president took office. Horizontal dashed lines represent the means twelve months before (December-November), and twelve months after taking office (December-November).

3.1 Global Economic Activity Indicator

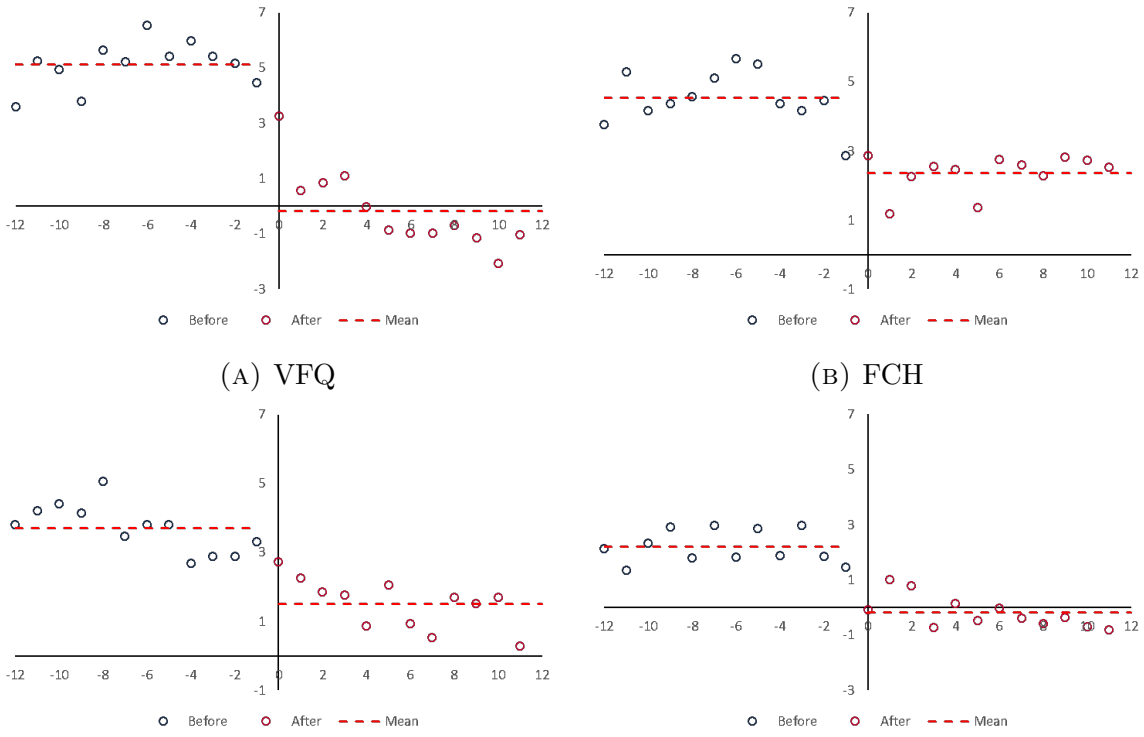
We find that the annual percentage change of IGAE is lower, on average 2 percentage points, after the first year of government for each one of the presidential terms analyzed. A similar fact has been reported for real GDP. This is expected, as IGAE tracks GDP very closely by construction.

At the same time, we highlight that only in the first year of the VFQ and AMLO presidential terms we observe negative growth rates.

The first year of VFQ suffered an exogenous shock that came from abroad: the Dot-com Recession in 2001 in the United States.

This is not true for the first year of the AMLO administration: there was no recession in the United States in 2019. When talking about recessions in the United States, we refer to the dates of business cycle contractions calculated by the NBER.[1]

For each presidential term, the arithmetic mean of the annual percent growth rate previous to the first year of a new government is, respectively, 5.11, 4.53, 3.71, and 2.19. The mean after the beginning of a new government is, respectively, -0.17, 2.36, 1.51, and -0.18. There is evidence of lower economic activity in the first year of government. Figure 1 presents the data for each presidential term.



(A) VFQ (B) FCH

(C) EPN (D) AMLO

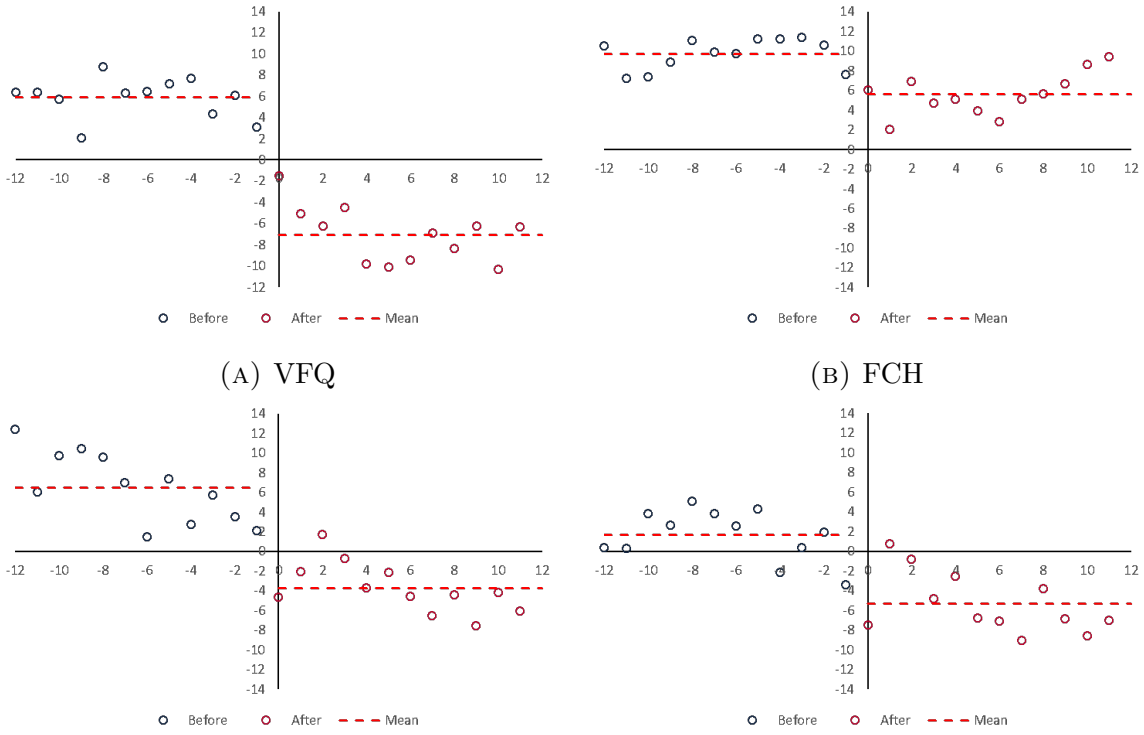
FIGURE 1. ANNUAL PERCENT VARIATION OF IGAE

The previous finding on the characterization of first years of government, should be considered a stylized fact. That is, we are not making a causal statement regarding the beginning of a first year of government.

[1]We are aware of alternative explanations for the Mexican slowdown in 2019. We will list them below.

3.2 Gross Fixed Capital Formation Indicator

Regarding investment, there is a first year reduction of its annual percent growth rate for each presidential term analyzed. The mean pre first year is, respectively, 5.87, 9.73, 6.50, and 1.64. During the first year we observe a mean of, respectively, -7.06, 5.59, -3.72, and -5.34. In *qualitative* terms, this is identical to what we found for IGAE: There is a fall in the first year. *Quantitatively*, there is one difference with respect to results for IGAE: There were *negative* growth rates for investment in the case of VFQ, EPN and AMLO, i.e in three out of four of the presidential terms. Figure 2 presents the data.



(A) VFQ (B) FCH

(C) EPN (D) AMLO

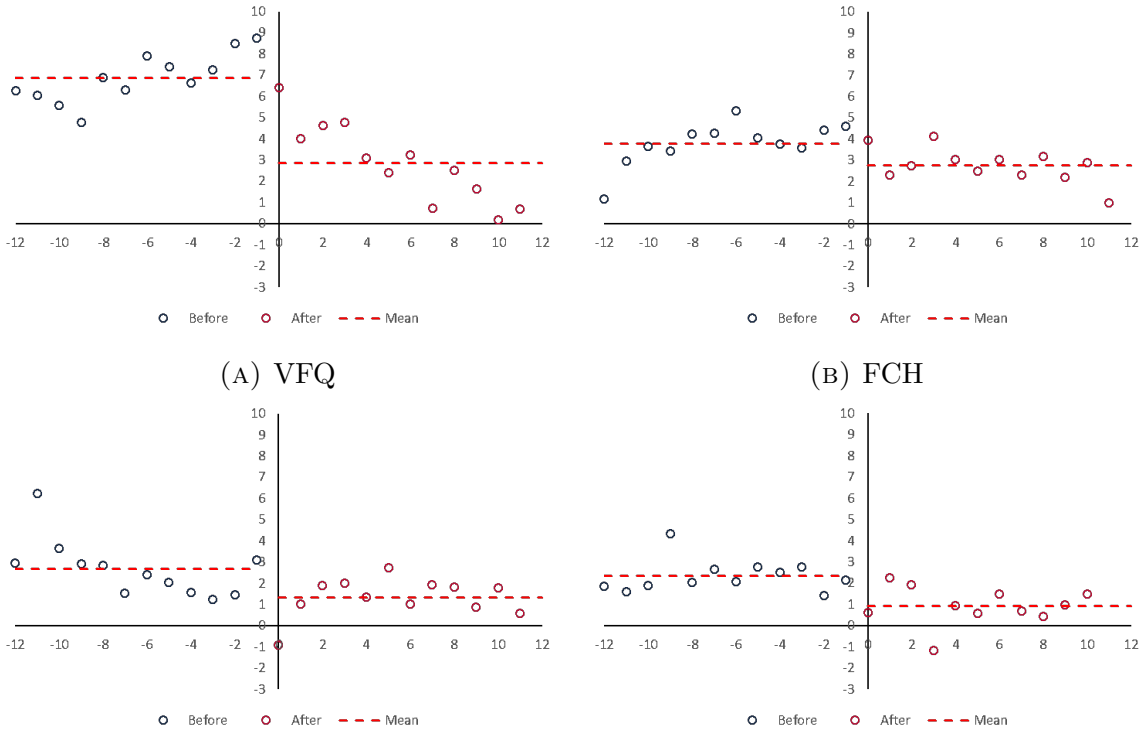
FIGURE 2. ANNUAL PERCENT VARIATION OF INVESTMENT INDEX

3.3 Consumption Indicator

In terms of the annual percent growth rate of consumption, the average during the first year is smaller than the mean previous to the beginning of each government. The mean before each government's first year is, respectively, 6.86, 3.79, 2.66, and 2.33. The mean corresponding to the first year of each government is, respectively, 2.86, 2.76, 1.34, and 0.93. Qualitatively, results are similar to those for IGAE: There is a fall in the consumption growth rate in the first year of government. Figure 3 presents the corresponding data.

3.4 Trade Balance

The main difference between the first year of the AMLO administration and previous ones resides in the change in sign of the trade balance from deficit to surplus. This does not happen



(A) VFQ (B) FCH

(C) EPN (D) AMLO

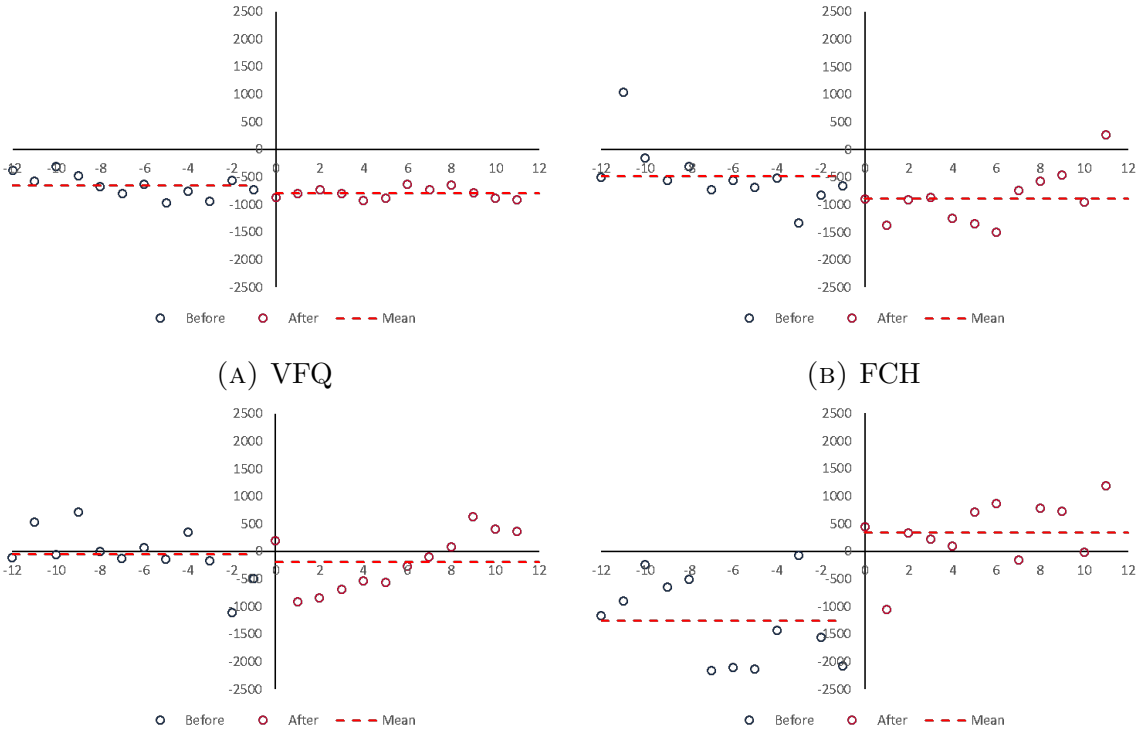
FIGURE 3. ANNUAL PERCENT VARIATION OF CONSUMPTION INDEX

in any other first year of government. We analyze the level of the monthly trade balance. The average value of the trade balance previous to the first year of each government is, respectively, -652.5, -482.0, -44.9, and -1250.7 million dollars, respectively. During the first year, the average value of the trade balance is, respectively, -802.2, -886.5, -184.1, and 349.7. There is a small difference in the average value of the trade balance before and after the beginning of the terms of VFQ and FCH. In the case of EPN there is upwards variation in the trade balance over time once his term started. But it is not enough to produce a sizable difference in means pre and post his taking office. In the case of AMLO, the trade balance jumps from deficit to surplus.

The sudden change in sign of the trade balance is indicative of shocks to, or changes in, the economy. We plot the trade balance (in levels) in millions of dollars in Figure 5. We marked with a box the years 1995, 2001, 2009 and 2019. In those years there was negative growth of annual GDP. They correspond to the aftermath of the abandonment of the exchange rate regime in 1994, the Dot-com Crisis coming from the US, the Global Financial Crisis coming from the US, and the first year of government of the AMLO administration. Comparing these years with the corresponding previous ones, there was a change from deficit to surplus in all of them, excluding 2001. Our interpretation of these data is that the forces that hit the economy in these years led to a reduction in the growth rate of spending, thus producing the reversal in the trade balance.

4 Regimes of Economic Activity

Our goal in this section is to detect changes in economic activity regimes, from a statistical point of view.



(A) VFQ (B) FCH

(C) EPN (D) AMLO

FIGURE 4. TRADE BALANCE, IN MILLIONS OF DOLLARS

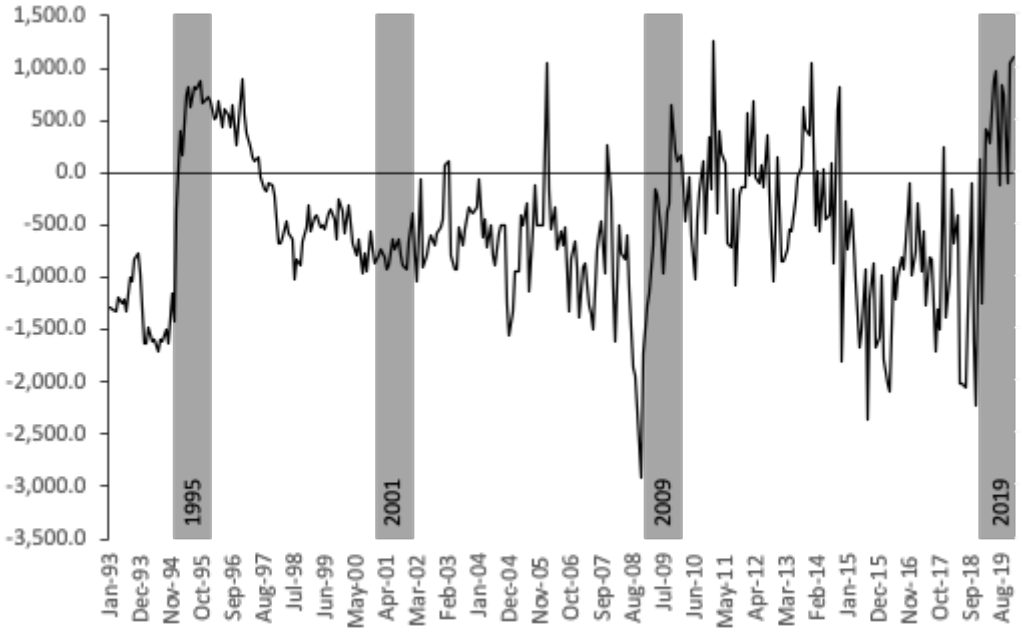


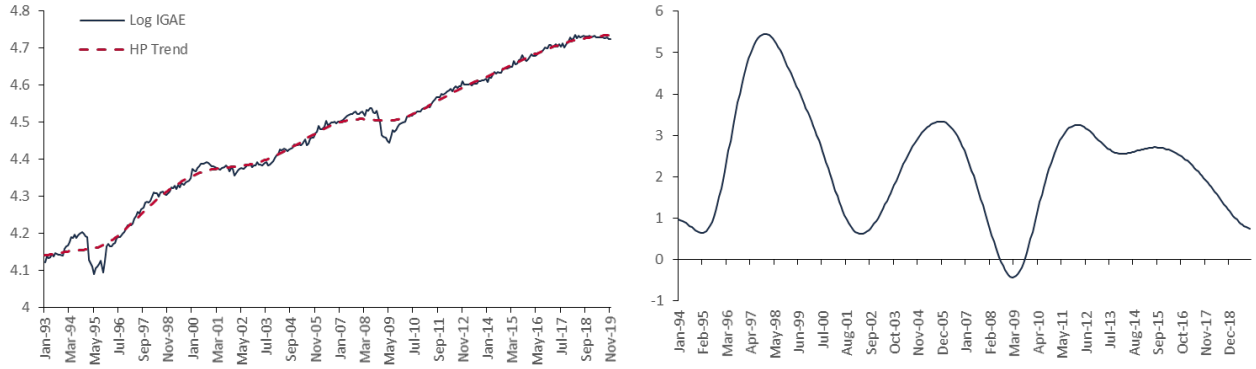
FIGURE 5. TRADE BALANCE, IN MILLIONS OF DOLLARS

4.1 Univariate Model

We follow Hamilton (1994) to use an endogenous regime time series model for the trend growth present in IGAE. The sample is January 1993 to December 2019. We exclude from our study the year 2020, because data that include the COVID-19 shock require more analysis.

To obtain the annual growth rate of the trend of the economy, we proceed in two steps. First,

we decompose the logarithm of IGAE into its cycle and trend components using the Hodrick-Prescott (HP) filter with a value for the smoothing parameter of $\lambda = 14400$.[2] Second, we take the difference between the $t+12$ and t observations of the trend, which approximates its annual growth rate. Figure 6a presents IGAE (solid line) and its trend component (dashed line). Figure 6b presents the annual difference of the trend component.



(A) IGAE AND ITS TREND (B) ANNUAL GROWTH RATE OF THE TREND

FIGURE 6. IGAE, TREND, AND ANNUAL GROWTH RATE OF THE TREND

We now turn to detecting whether the economy went into a regime of low *trend* growth in 2019. As mentioned earlier, we use a regime switching model. The baseline model allows for three possible regimes or states of the economy, namely: i) low growth, ii) medium growth, and iii) high growth. The econometric specification is

$$\tau_{t+12} - \tau_t = \alpha_{S_t} + \varepsilon_t, \quad \varepsilon_t \sim \mathcal{N}\left(0, \sigma^2_{S_t}\right), \tag{1}$$

with

$$S_t = \begin{cases} 1 & \text{if annual growth rate is low} \\ 2 & \text{if annual growth rate is medium} \\ 3 & \text{if annual growth rate is high.} \end{cases}$$

This specification says that the annual growth rate of the trend is a constant α. Its value depends on which state S_t the economy is in. We allow the variance of the random component ε to also depend on the state.

Table 1 presents the estimates of the parameters of the baseline model. The mean associated with the low growth rate is 0.22%, while medium and high growth rates are 2.65% and 4.02%, respectively. Additionally, the low annual growth rate regime has a variance that is approximately seven times larger than the ones of the other regimes.

Regime	Mean	Variance
Low annual growth	0.22***	1.27***
Medium annual growth	2.65***	0.17***
High annual growth	4.02***	0.19***

*** stands for a p-value of $p \leq 0.01$, ** for $p \leq 0.05$, and * for $p \leq 0.10$.

TABLE 1: CONDITIONAL MOMENTS OF GROWTH RATE OF IGAE TREND ACROSS REGIMES

We compute the regime probabilities and the corresponding average duration. The model produces the probabilities of being in a particular regime at each point in time.[3] Figure 7

[2] This is the value typically used for monthly data.

[3] We computed the filtered probabilities using `Stata`.

presents the time series of the probabilities of being in a low, medium and high growth rate regime. The model detects 4 episodes of low growth regimes: i) 1994-1995, the collapse of the exchange rate regime; ii) 2000-2001, the Dot-com Crisis coming from the US; iii) 2008-2009, the Global Financial Crisis coming from the US; and iv) 2018-2019. The average duration of the low growth regime is 15.79 months.

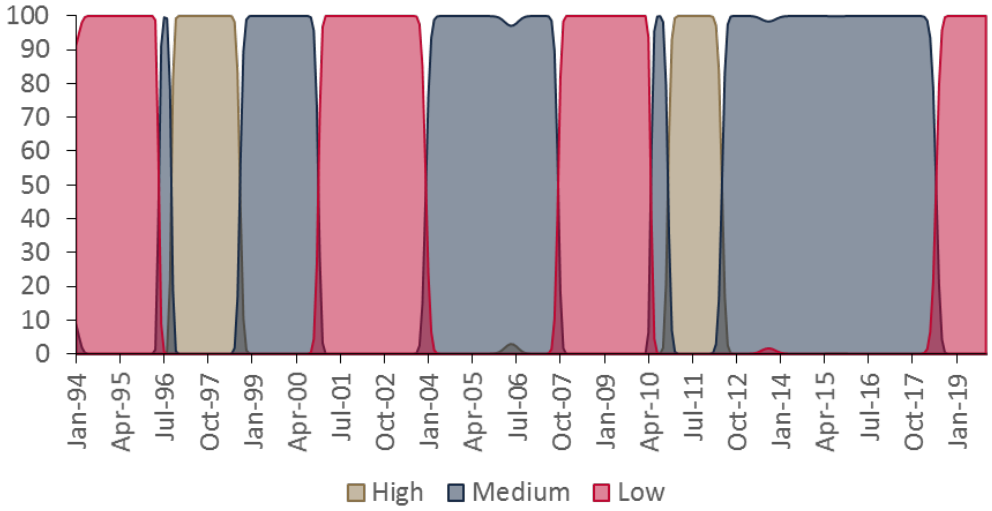


FIGURE 7. PROBABILITIES (IN %) OF BEING IN A SPECIFIC REGIME OF ECONOMIC ACTIVITY

Regarding the episode in 2018-2019, the probability of being in the low state regime reached values above 95% in September 2018. In terms of economic policy announcements, this happened one month before the announcement of the cancellation of the NAICM by then president-elect AMLO. The cancellation had been a point of debate during the presidential campaign leading to the election day in July 2018.

4.1.1 Alternative Filters

The HP filter is a widely used method to decompose a time series into trend and cycle. For example, Banco de México, Mexico's central bank, uses a modified version to compute the cycle component. This component is by construction the deviation from trend, and is interpreted as the output gap, i.e. the distance with respect to potential output. INEGI, Mexico's national statistical institute, uses the HP filter to construct its system of cyclical indicators. INEGI is following the methodology of the OECD. This is mentioned for example in INEGI (2020).[4]

At the same time, since its creation the HP filter has been thoroughly analyzed and criticisms have been made, as can be seen by reviewing the related literature. Hamilton (2018) makes critiques to the standard HP filter. His critiques focus in part on filtered values at the end of a sample. This critique is relevant for our work as we focus on 2019 and it is the end of our sample.

As a robustness test for the baseline estimation, we adjust the filter following Ravn and Uhlig (2002). We calculate a new trend and estimate the model as before.[5]

[4]INEGI uses deseasonalized data as we do plus it eliminates atypical observations.

[5]These new results for the annual growth rate of the trend are very similar up to 2013 to those consistent with the Banco de México data in its Quarterly Reports.

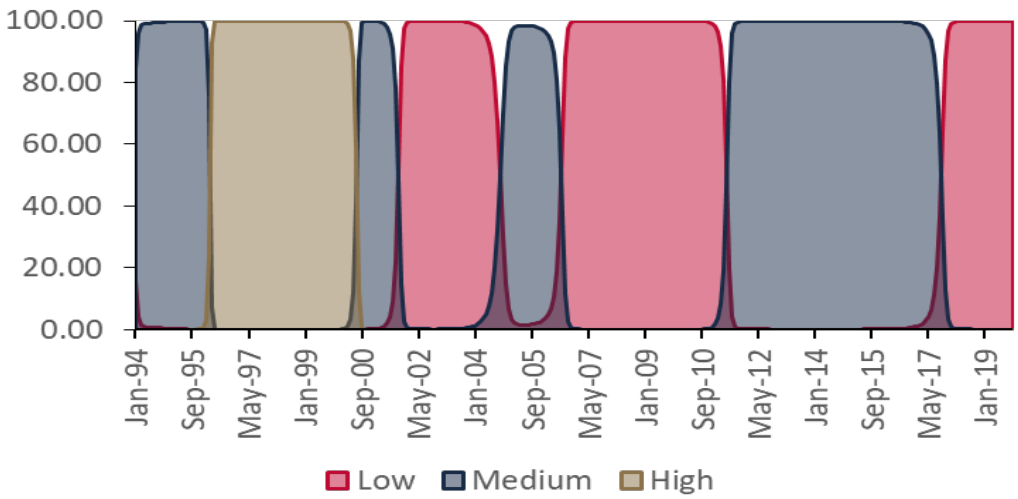


FIGURE 8. PROBABILITIES (IN %) OF BEING IN A SPECIFIC REGIME OF ECONOMIC ACTIVITY, TREND CALCULATED WITH RAVN-UHLIG MODIFIED HP FILTER

Estimation results lead us to prefer our benchmark specification. Figure 8 presents the time series of the probabilities of being in a low, medium and high growth rate regime using the trend produced by the alternative HP filter. The model detects three episodes of low growth regimes. The drawback is that 1995 is considered a medium growth regime. It should be considered a low growth regime, as the 1995 contraction is one of the most severe ones in Mexican history.

We also repeat our regime estimation using the filter in Hamilton (2018), finding that it detects the 1995, 2001 and 2009 periods of low growth *with a lag*, compared to our benchmark specification. We have three findings. First, the Hamilton *trend* is much more volatile than the previous trends we measured.[6] Second, our regime estimation based on the Hamilton trend detects periods of low growth in 1995, 2001 and 2009 with a lag of approximately 12 months. The low growth regimes that we detect with this alternative start later and end later, compared to the benchmark and the Ravn-Uhlig alternative. Third, the estimation yields an increase of the probability of being in a low growth regime from 0% in November 2019 to 12% in December 2019. The estimation does not produce a high probability of being in a low regime throughout 2019, but the probability increases substantially at the end of 2019. Our conclusion is that the Hamilton trend and our estimation procedure detect, with a lag compared to the benchmark, a transition to a low growth regime at the end of 2019.

4.2 Multivariate Model

As a complementary exercise, we use Perlin (2015) to estimate a vector regime switching model with five time series: i) the annual percent change in IGAE, ii) the annual percent change in the investment index, iii) the annual percent change in the private consumption index, iv) the annual percent change in the industrial activity indicator (IMAI in Spanish, seasonally adjusted by INEGI), and v) the absolute annual difference in the trade balance. The data in levels start in January 1993 and end in December 2019. The frequency of the observations is monthly. Except for industrial production, we are using the same variables as in Section 3.

This exercise is complementary because of three reasons. First, even though the simple HP

[6]Hamilton (2018) presents two alternatives. We used them both, finding that there is almost no difference.

filter is widely used, as we said above it has been criticized in the related literature. Second, given the difficulty of measuring the trend of an economy, this second set of calculations uses a simpler indicator, annual growth rates (except for the trade balance). Thus, we cannot strictly say that we are measuring a fall in the growth rate of the *trend*. But we will find that the simple annual growth rates of these indicators fell jointly into a regime of low growth. Third, we are carrying out a broader characterization of the regimes of the Mexican economy by using information from other variables that measure investment, consumption, industrial activity and trade.

We included both IGAE and IMAI because the time series present different behaviors. Given that IGAE includes a measure of industrial activity, a question is whether we should also include IMAI. The annual growth rates of both indicators display a correlation of 96%. We decided to include both variables because the growth rate of IMAI is more volatile than the one for IGAE: its standard devation is 40% larger. Another characteristic of the growth rate of IMAI is that it is persistently lower than the one of IGAE after 2009. The reason for that is an interesting question in itself. It probably has to do with a persistently lower growth rate of industrial production in the US after 2009.

The econometric specification is given by

$$\begin{bmatrix} y_{1,t} \\ y_{2,t} \\ y_{3,t} \\ y_{4,t} \\ y_{5,t} \end{bmatrix} = \begin{bmatrix} \alpha_{1,S_t} \\ \alpha_{2,S_t} \\ \alpha_{3,S_t} \\ \alpha_{4,S_t} \\ \alpha_{5,S_t} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1,t} \\ \varepsilon_{2,t} \\ \varepsilon_{3,t} \\ \varepsilon_{4,t} \\ \varepsilon_{5,t} \end{bmatrix}, \quad \begin{bmatrix} \varepsilon_{1,t} \\ \varepsilon_{2,t} \\ \varepsilon_{3,t} \\ \varepsilon_{4,t} \\ \varepsilon_{5,t} \end{bmatrix} \sim \mathcal{N}\left(\mathbf{0}, \mathbf{\Omega}_{S_t}\right), \tag{2}$$

with

$$S_t = \begin{cases} 1 & \text{if annual growth rate is low} \\ 2 & \text{if annual growth rate is medium} \\ 3 & \text{if annual growth rate is high.} \end{cases}$$

In this case $\mathbf{\Omega}_{S_t}$ represents a (5×5) state-dependent diagonal matrix.[7]

The main result is that this complementary multivariate method measures a probability above 95% of being in a low growth regime starting in December 2018. This date is two months after the cancellation of the NAICM airport and coincides with the beginning of the current adminstration. This result matches our univariate analysis using the HP filter, in the sense that 2019 is detected as a year in which the economy reached a low growth regime.[8] For completeness we also report the estimated means and variances in each regime. Table 2 presents the estimates of the means for each state and variable. Table 3 presents the variances for each state.

The average growth rates of IGAE, investment, consumption and industrial production are lower in the low growth regime than in the medium growth regime. They are larger in the high growth regime. Regarding the change in the trade balance, the estimates yield positive values. The interpretation is that on average the three regimes display reductions in trade deficits.[9] Although not statistically significant, the low growth regime has the largest change in the trade balance among the three regimes, which can be consistent with reversals from trade deficit to surplus in the low growth regime.

[7] For the trade balance we refer to regimes for the absolute change.

[8] We report the filtered probabilities.

[9] Of course, they could also reflect increases in trade surpluses, or changes from deficit to surplus.

Variable[1]	Low	Medium	High
IGAE	-2.99***	2.22***	5.40***
Investment	1.81	2.35***	5.68***
Consumption	1.88	2.68***	5.11***
Industrial production	-5.04***	1.06***	5.71***
Annual difference in trade balance	130.01	18.52	72.66

1/ Annual % change unless otherwise indicated.
***$p \leq 0.01$, **$p \leq 0.05$, and *$p \leq 0.10$.

TABLE 2: CONDITIONAL MEANS ACROSS REGIMES

Variable[1]	Low	Medium	High
IGAE	9.01***	1.05***	2.68***
Investment	285.68***	19.41***	79.43***
Consumption	38.93***	1.61***	4.21***
Industrial production	20.35***	2.15***	11.31***
Annual difference in trade balance	1,659,486***	629,754***	392,939***

1/ Annual % change unless otherwise indicated.
*** $p \leq 0.01$, **$p \leq 0.05$, and *$p \leq 0.10$.

TABLE 3: CONDITIONAL VARIANCES ACROSS REGIMES

In terms of variances, the low growth regime has the highest volatilty for all variables compared to the other regimes. The medium growth regime is the more stable as variances of all variables, except for the trade balance, take their minimum values.

Figure 9 presents the probabilities of being in each regime.

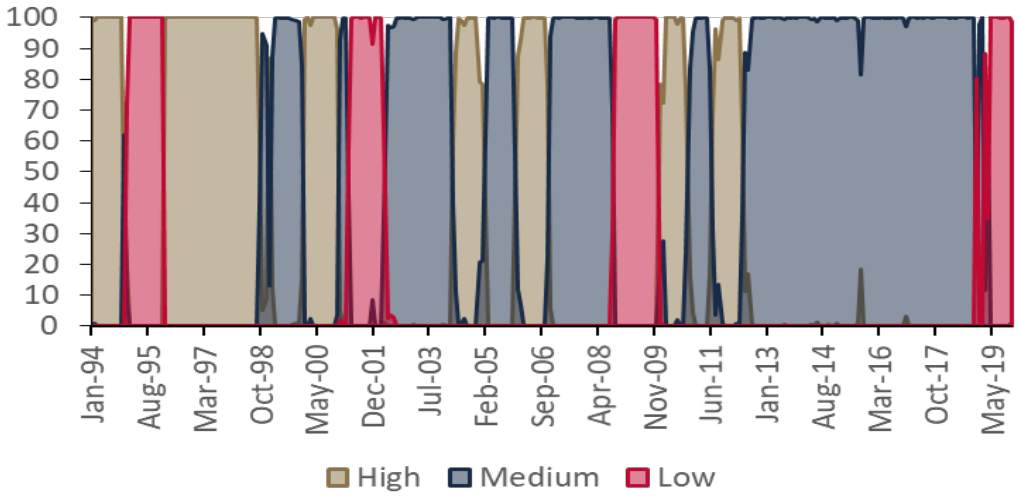


FIGURE 9. REGIMES OF ECONOMIC ACTIVITY, MULTIVARIATE MARKOV VAR

The model captures as low growth regimes the periods corresponding to the aftermath of the exchange rate crisis of 1994, the 2000-2001 Dot-com Crisis in the US, the 2008-2009 Global Financial Crisis in the US, and 2018-2019. The average duration of the low growth regime is 14 months. The most recent low growth regime began on December 2018, two months after the cancellation of NAICM, and coinciding with the start of the current presidential term.

5 Our Hypothesis on the Fall in Growth in 2019, and Four Alternative Ones

The previous results lead inevitably to the following question: Why did the Mexican economy switch to a low growth regime? That is the result in our analysis using changes in the HP trend and in the one with simple growth rates.

We do not attempt to answer this question. We do discuss a hypothesis, and present alternative ones.

We propose that the source of the negative shock to trend (or to growth, in the case of the multivariate exercise) comes from the cancellation of the NAICM, and the beginning of the blocking of the Energy Reform passed in the previous presidential term. Regarding changes in the energy sector, we refer to two actions taken by the federal administration. First, in December 2018 the federal government asked the energy regulator to cancel oil field auctions that had been programmed as part of the energy reform of the previous administration.[10] Second, there was a renegotiation of contracts between the federal electricity company CFE (acronym in Spanish) and private firms that built pipelines supplying it with natural gas. This renegotiation was announced in February 2019.[11] These two policy decisions were the beginning of a strenghtening of the role of the state in the energy sector, going in the opposite direction to the reform that led to private investment in it.

The government also took policy measures that may result in lower quality and access to health and education, and lower female labor force participation, thus reducing growth.

The mechanism would be the following: The cancellation of the NAICM and the blocking of the Energy Reform led to a fall in future income for the economy, thus reducing the growth of spending in 2019. Even though we do not have a structural dynamic model that includes explicitly both decisions, it is clear that in a dynamic model with consumer choice a fall in future sources of income reduces consumption today. Additionally, policy decisions that led to a larger allocation of resources to unproductive projects would lead to lower investment, as the overall future productivity of the economy would fall. Several infrastructure projects of the current government have been criticized for being started without an adequate evaluation.[12]

Moreover, a fall in consumption and investment today would also yield a fall in imports, and therefore a change in sign in the trade balance. Therefore this theory could account simultaneously for both lower growth and the reversal of the trade balance from deficit to surplus in 2019.

We list four alternative hypotheses on the fall in growth. These hypotheses have been mentioned by economists, all referring to events contemporaneous or previous to 2019:

1. First year effect: Government spending takes place gradually in first years of government as new administrations follow a learning curve.

2. Weak manufacturing activity in the US in 2019.

[10] See Solís (2018), in Spanish.

[11] See Monroy (2019), in Spanish.

[12] We refer to the construction of an oil refinery in Dos Bocas, Tabasco, of a train in the Mayan peninsula, and of an airport in Santa Lucia, State of Mexico. That airport would have a lower capacity compared to NAICM, plus questions remain about its contribution to Mexico's connectivity.

3. Contractionary monetary policy in Mexico before and during 2019.

4. The election of Donald Trump as president of the US, given that as candidate he threatened to pull the US out of the North American Free Trade Agreement (NAFTA). This threat showed that any trade agreement between Mexico and the US could be cancelled, and thus had a negative impact on the Mexican economy.

An important question for future research is to analyze whether these four theories and ours can match the data qualitatively, and to measure how much of the fall in growth they can account for. As discussed earlier, our theory could match the data in qualitative terms.

To finalize, we propose a test for theories explaining the fall in growth in 2019: to explain simultaneously the fall in growth and the change of sign of the trade balance.

6 Conclusions

We have three results. First, there is a common pattern in macro variables in the first year of a new administration. The main distinguishing feature of the current administration (2018-2024) is the reversal of the trade balance in 2019. Second, the regime switching model estimated with the change in the trend of economic activity shows that Mexico reached a state of low growth in September 2018. Third, the multivariate switching model estimated with the annual growth of five variables shows that Mexico reached a state of low growth in December 2018.

We proposed that the source of the negative shock to growth comes from the cancellation of the NAICM in 2018, and actions taken in the energy sector in 2018 and 2019 which were the beginning of a policy of broader participation of the government in the energy sector. We briefly described four alternative hypotheses on the source of the fall in growth.

Finally, we proposed a test for theories explaining the fall in growth in 2019: to explain simultaneously the fall in growth and the change of sign of the trade balance. Our theory could explain both facts simultaneously, at least in a qualitative sense.

To recover faster growth, which is crucial for the economy and for public finances, Mexico needs changes in economic policy that lead to better and more access to education and health, better and more labor market opportunities for women, and to a large increase in private investment.

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