

Recessions in Mexico at the Dawn of the Twenty-First Century

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Abstract

This paper uses an episodic approach to contrast the causes, transmission mechanisms, and policy responses involved in Mexico's two recent major recessions in 2001-2003 and 2008-2009 and explain their different characteristics. Both recessions were derived from speculative bubbles in specific sectors in the United States and engendered analogous episodes in the Mexican economy as a result of a high degree of integration. Even so, the former was longer due to exogenous shocks (terrorist attacks and China's accession to the World Trade Organization (WTO)), which exacerbated plummeting manufactures, but the latter more profound due to the effects of the credit collapse. This evidence attests to the limitations of domestic economic policy and the Mexican economy's acute vulnerability to external shocks.

Keywords: Economic recession, economic cycles, adjustment policies, economic indicators, United States.

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INTRODUCTION

Starting in the nineteen-seventies, the Mexican economy endured a series of macroeconomic imbalances that eventually culminated in a series of recessions of varying intensities since the eighties. Chasing economic stabilization and a return to growth, authorities implemented diverse adjustment programs and structural reforms predicated in large part on the

recommendations vouched for by the so-called Washington Consensus.²¹ After years of tireless efforts, Mexico seemed to have reached its goal by the mid-nineties; by then, the macroeconomic fundamentals were solid: the gross domestic product (GDP) growth rate was soaring, the fiscal deficit had fallen to historic lows, inflation was on a persistent downward trend, the current account deficit was being funded by a constant flow of foreign investment, and the flexible exchange rate was able to efficiently absorb the daily shocks raining at the domestic economy (Moreno and Ros, 2009; Kose *et al.*, 2004; Tornell *et al.*, 2003). Seemingly, the crises and recessions were a thing of past. There were even murmurs of the "Mexican moderation" (Sosa, 2008), analogous to the "Great Moderation" of the United States.³

Nevertheless, Mexico was struck by two recessions in the aughts, in 2001-2003 and 2008-2009, vastly different from those suffered in the decades prior, because they both originated in the United States and spread to the Mexican economy through burgeoning economic transactions in the framework of an open economy.⁴ Even so, it is interesting to note that although these two recessions shared their external origin, they manifested in rather different ways in Mexico. The first (hereafter the 2001 recession) lasted longer but was of lesser magnitude; the second (2008 recession) was much shorter, but also more profound (Mejía and Erquizio, 2012).

These episodes reflect an alarming fact: solid macroeconomic fundamentals do not shield an economy from risk, so it is to be expected that negative external shocks could continue engendering new recessions in the future. Against that backdrop, this paper employs a case study approach to contrast the causes, transmission mechanisms, and economic policy responses involved in Mexico's 2001 and 2008 slumps to elucidate the nature of these recessions.

By examining these elements, which have not been explicitly considered in previous studies, the aim is to contribute to the literature, which has in the past tended to focus on recessions considered more severe (1995 and 2008-2009, and concluded, via a variety of indicators, that the former was really the more serious of the two (Loría, 2013) and that it set Mexico on a path to lower long-term growth (Loría and Díaz, 2013).

To achieve this objective, this paper is divided into four sections. The first section sets the stage for the aforementioned differences using a classical cycles approach to characterize the recessions in terms of length and depth; the second describes the state of the economy at the moment the recessions hit (initial conditions). The third section analyzes in detail the causes underlying the recessions in the United States, the mechanisms that spread them to the

Mexican economy, and the domestic policy responses. Finally, the last section provides the key lessons to draw from these experiences and the conclusions of the study.

1. REAL EFFECTS

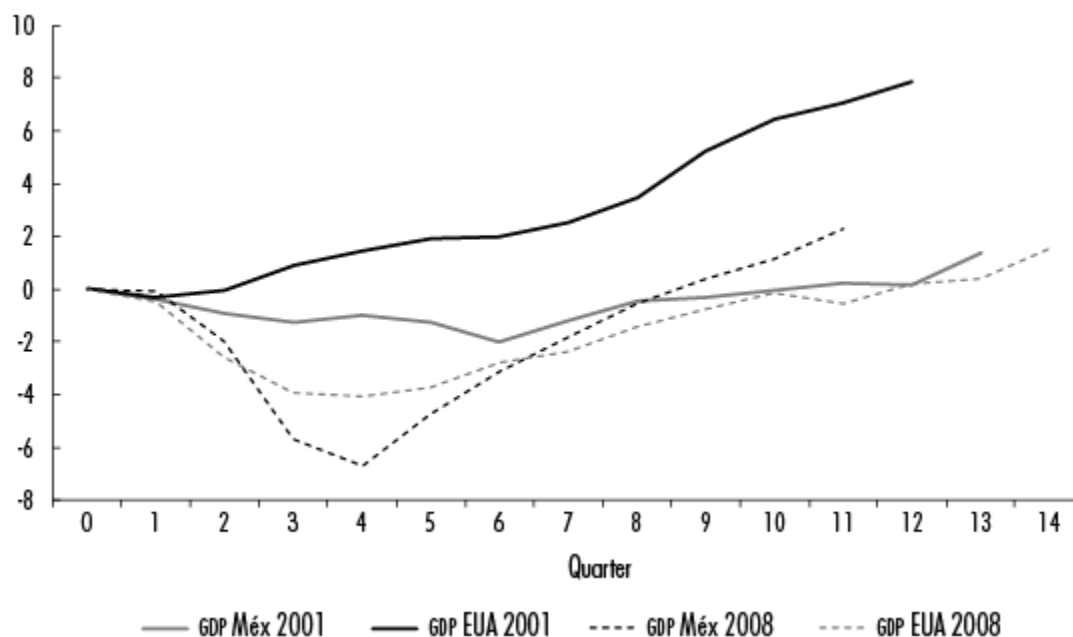
This section sets out to characterize the 2001 and 2008 recessions using the classical business cycles method proposed by Artis *et al.* (1997). This view of economic cycles distinguishes between their various phases (expansion and recession) and introduces a series of "censoring" rules that exclude erratic short-term fluctuations in the movements of the variables analyzed and rather focus on sustained rising and falling to identify the turning points (dates) marking the beginning (peak) and end (valley) of the recession, and vice versa.⁵ Once these points are identified, recessions can then be characterized in terms of their depth (amplitude) and duration. The former is measured as the percentage growth (or lack thereof) of production during the recession with respect to the beginning (peak) value, and the latter refers to the number of periods for which it lasts.

Figure 1 shows the cumulative quarterly decline in GDP in Mexico and the United States in the 2001 and 2008 recessions,⁶ and also reveals the duration of the recessions (minimum cumulative growth rate) and the number of periods required to reverse production losses (when cumulative growth crosses the horizontal axis). In particular, it appears that GDP fell only minimally in the United States in the 2001 recession, with a value of 0.3% in the quarter prior to the commencement of the recession. This figure sits in stark contrast with the Mexican GDP, which accumulated a 2% decrease over six quarters. It is thanks to numbers like this that American production picked up again just two quarters later. On the contrary, the Mexican economy took four quarters after the valley to recover lost production. In both countries, however, the 2008 recession was far more pronounced: the GDP dwindled over four consecutive quarters with a peak cumulative rate of 4.0% and 6.7% in the United States and Mexico, respectively. Although Mexico fell harder, Mexican production rebounded in the Great Recession after just five quarters, while American production took seven.

More specifically, it could be said that the response of the total GDP was determined by the response of the secondary sector and, especially, by manufacturing. As shown in Appendix 1, the pattern of the recessions for the first two is very similar: the first is brief and the second is deeper in the secondary sector, above all in Mexico, which matches what has been reported in the literature (Mejía and Erquizio, 2012).⁷ What's more, in the secondary sector, manufacturing was affected the most because its production processes are highly vertically

integrated worldwide, making it extremely dependent on foreign trade (Kose *et al.*, 2004; Levchenko *et al.*, 2010).

Figure 1. Mexico and the United States: Cumulative GDP Growth (Peak=0)



The date of the peak for each variable is given in Appendix 1.

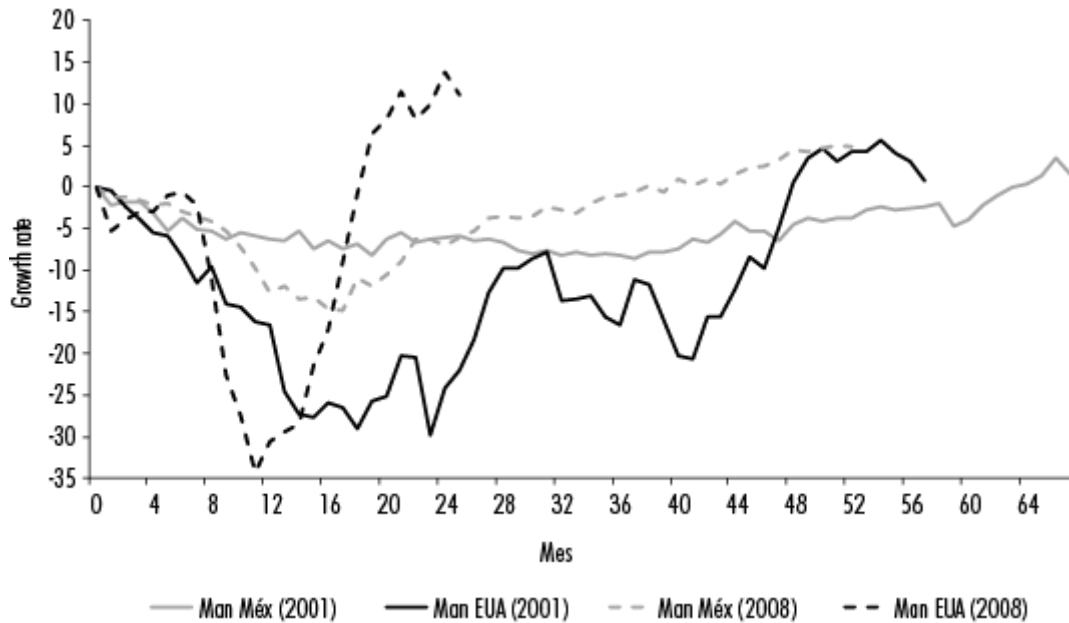
Source: Created by the authors with data from the National Statistics and Geography Institute

(INEGI) (www.inegi.org.mx) and the Bureau of Economic Analysis (www.bea.gov).

As seen in Figure 2, American manufacturing chafed under the effects of the two recessions to a greater extent than manufacturing in Mexico, although recovery was ultimately slower in the latter country. In the 2001 recession, the cumulative decline in manufacturing held steady for around two years, reaching a maximum of 30% in the United States. In Mexico, the sustained drop lasted for about three years, with a maximum cumulative decline of over 8.0%. In both cases, recovery to pre-recession levels only came after a relatively long period of time (approximately four years in the United States and more than five years in Mexico).

Because manufacturing in the two economies is highly integrated, the acute manufacturing recession in the United States explains in large measure the slow recovery of the same sector in Mexico. As will be shown below, the external scenario will help elucidate this dynamic.

Figure 2. Mexico and the United states: Cumulative Manufacturing Production Growth (Peak=0)



The date of the peak for each variable is given in Appendix 1.

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(INEGI) (www.inegi.org.mx) and the Bureau of Economic Analysis (www.bea.gov).

Throughout the Great Recession, manufacturing foundered, albeit briefly, due to the unprecedented collapse of American trade.⁸ The duration and magnitude of the recession were 10 months and 35% in the United States and 16 months and 15% in Mexico. These numbers reveal that Mexican manufacturing ebbed slightly less than American, but if compared to previous declines in the country, it emerges that this drop was nearly twice the magnitude.

2. INITIAL CONDITIONS THE STATE OF THE ECONOMY BEFORE THE RECESSIONS

Before the two recessions, with a few exceptions, the Mexican economy was characterized by two conditions that clearly reflected its strength: stable inflation and reinvigorated

productive activity thanks to the structural reforms of the eighties.⁹To characterize the situation, Table 1 presents the annualized growth rates of a variety of macroeconomic variables in the three years prior to the recessions, the starting year, and during the recession period itself. For the sake of brevity, the overall evolution of the variables tied to the aforementioned macroeconomic fundamentals is highlighted below.

First, the figures suggest that the external environment was favorable. The indicators for American production and imports grew at elevated rates in the three years prior to the 2001 recession,¹⁰ the result, in part, of the prosperity enjoyed by the information and communication technologies (ICT) industry between 1995 and 2000. Consequently, in Mexico, exports, foreign direct investment (FDI), and income from remittances climbed at double-digit rates, even as the real exchange rate underwent a significant revaluation. Finally, capital revenue financed the current account deficit and even allowed Mexico to build up international reserves.

The pre-2008 recession situation was also encouraging. Although the American economy grew at a rate slightly lower than before the 2001 recession, imports grew by 10.1% annually on average. As such, Mexico's international transactions grew at rates higher than the time period 1997-1999, in spite of the constant revaluation of the peso. Accordingly, the balances of accounts abroad and the accumulation of international reserves both swelled significantly.

For its part, when it came to monetary policy, a variety of strategies were wielded (see Martínez *et al.*, 2001), prompting inflation to gradually decline until reaching below double-digits in 2000 (9.5%), while the interest rate followed suit (15.2%). Nevertheless, the different components of credit, still in the aftermath of the 1995 crisis, displayed negative growth rates¹¹ (Hernández and Villagómez, 2013). In turn, in the pre-Great Recession years, the inflation rate had fallen to an average of 3.9% annual, which helped the country meet its 3±1% target set at the end of 2002.¹² As a result, interest rates continued to diminish, creating better conditions for financing. In fact, the amount of credit granted to the private sector in this time period grew at an astonishing rate,¹³ in contrast with the values in the periods prior, as seen in Table 1.

Table 1. State of the Economy Before the 2001-2003 and 2008-2009 Recessions
(Annualized growth rates and percentages of GDP)

<i>Variables</i>	<i>Recession 2001-2003</i>			<i>Recession 2008-2009</i>		
	<i>1997.01-1999.12</i>	<i>2000</i>	<i>2000.08-2003.09</i>	<i>2005.01-2007.12</i>	<i>2008</i>	<i>2008.04-2009.05</i>
<i>External sector</i>						
GDP U.S.A.+	4.6	4.1	1.9	2.6	-0.3	-2.0
U.S.A. imports	8.8	18.0	3.2	10.1	8.3	-5.4
Exports	12.7	22.2	2.1	13.3	7.5	-8.0
FDI	24.8	30.0	31.1	26.2	-7.4	-11.8
Remittances	12.1	11.2	28.7	13.0	-3.4	-6.6
Current account*	-2.8	-3.3	-2.4	-1.1	-1.8	-1.4
Capital account*	3.8	3.6	3.5	1.4	3.1	1.2
International reserves*	6.7	5.9	6.8	7.6	7.7	7.7
Nominal exchange rate	8.3	-1.0	3.7	-1.0	2.1	13.2
Real exchange rate	-8.5	-11.4	-1.0	-0.8	4.5	7.9
<i>Real Variables</i>						
GDP+	4.8	5.3	0.9	3.7	1.4	-1.9
Employment	6.4	6.0	0.5	4.0	2.1	0.0
<i>Monetary, Financial, and Inflation Variables</i>						
Inflation	17.8	9.5	5.9	3.9	5.1	5.7
CETES (treasury certificates) 28 days	22.0	15.2	9.5	7.9	7.7	7.4
Credit	-7.4	-11.7	-9.1	12.0	15.7	10.0
<i>Fiscal Variables</i>						
Total spending	4.5	16.3	6.0	8.0	11.8	7.7
Current	9.5	14.2	6.7	9.4	7.2	9.7
Capital	3.5	26.1	18.4	19.7	31.4	26.0
Physical investment	6.7	23.4	2.2	14.0	11.8	14.5
Fiscal deficit* ^o	-0.8	-0.9	-0.9	0.03	-0.1	-1.2
Public debt*	17.8	16.5	17.7	15.9	14.9	18.8

*Percentages of GDP. + Quarterly data; recessions: 2000.III-2003.III and 2008.I-2009.II. ^oAnnual data for the years 2001-

Finally, fiscal policy had been leaning towards prudent management of spending for decades prior, which brought the deficit down.¹⁴ Essentially, moderate growth of public spending and its various components in conjunction with a significant increase in taxes collected in the three years leading up to the 2001 recession enabled the country to achieve a deficit of 0.8% of GDP and hold it at similar levels, even in the year 2000 (0.9%). Moreover, public debt dropped by a little more than a percentage point of GDP between the two periods, from 17.8% to 16.5%. Along these same lines, fiscal policy management prior to the Great Recession was very similar to years earlier. In fact, as seen in Table 1, the fiscal balance was positive, with an average of 0.03% of GDP in the period 2005-2007, while the share of public debt in GDP dropped to 15.9%.

Broadly speaking, as shown in the numbers above, longstanding efforts to stabilize the economy helped the country attain a solid macroeconomic balance in the years leading up to the two recessions, which is why on these occasions, unlike what happened in decades prior, the roots of the recession would have to be found abroad.

3. CAUSES, TRANSMISSION MECHANISMS, AND ADJUSTMENT POLICIES

The disparate nature of the 2001 and 2008 recessions in Mexico could be attributed in large measure to external factors that exacerbated the former and the credit crisis that worsened the latter in the United States.

3.1 Causes Underlying the American Recessions

The literature generally suggests that crises, usually stemming from recessions, are preceded by booming financial asset prices, such as in the case of 2001, and/or credit, as in the case of 2008.¹⁵ However, it bears pointing out that the 2001 and 2008 recessions in the United States were rooted in multifaceted causes, although a few are more remarkable than others. Worth noting: *i*) an overheated American economy in the nineties translated into a persistent current account deficit and the formation of the so-called "dot-com" bubble and *ii*) the private sector in the United States took on considerable debt. Essentially, the nineties bore witness to the product rising substantially in the United States with the advent and widespread use of computers and telecommunications equipment in productive processes (Jorgenson, 2001), which sparked unprecedented growth in these sectors.

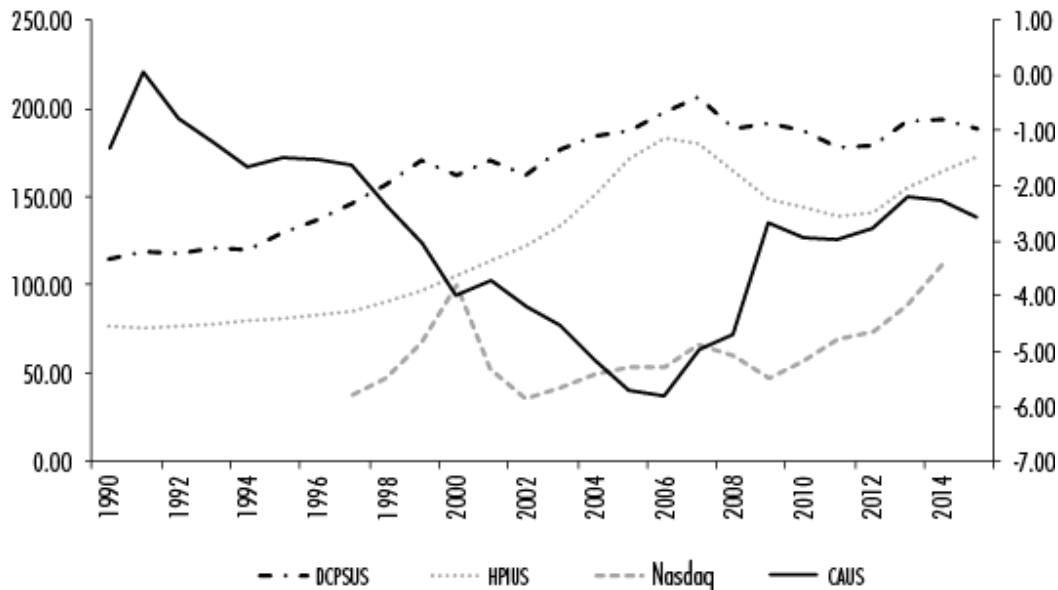
Accordingly, while total gross private investment flourished between 1995 and 2000 at an annual average rate of 8.4%, gross private investment in equipment and software surged at above 12.0%, namely, at a rate three-and-a-half times higher than the gross national product (GNP).¹⁶ Forecasted high returns on investment in these sectors were reflected in skyrocketing share prices for the Nasdaq as compared to the Dow Jones index: the former ballooned 49.8% between 1999 and 2000, with the latter attaining only 13.8% growth in the same time period (see Figure 3).¹⁷

It is important to underscore that the high and thriving investment in the stock market was underwritten in large part by the substantial proliferation of private debt throughout the nineties. In this regard, Figure 3 shows the exponential growth of the share of the domestic credit to private sector in GDP in this period, which multiplied by more than 50%.

This spawned a constant and rising current account deficit in the United States (CAUS, right axis), which by the end of the nineties, had expanded to more than 4% of GDP; although it received favorable financing conditions thanks to the enormous flow of capital from abroad, in particular from several Asian economies (Gruber and Kamin, 2007; Godley, 1999).

The 2001 crisis kicked off when the Nasdaq plunged in April 2000, although its effects were felt mainly by high-tech and telecommunications companies. Between 2000 and 2002, domestic private investment shrunk 5.3%, to the extent that investment in equipment and software also fell by 13.9% in the same time period. For their part, the Nasdaq and Dow Jones contracted by 31.2% and 7.2%, on average, between 2001 and 2002, respectively.

Figure 3. United States: Domestic Credit to Private Sector (DCPS), Current Account Balance (CA), Housing Price Index (HPI) and Nasdaq*



* *DCPSUS and CAUS are percentages of GDP and HPIUS and Nasdaq are indices with base 2000=100.*

Source: Bureau of Economic Analysis (www.bea.gov), S&P Dow Jones (us.spindices.com/index-family/real-estate/sp-corelogic-case-shiller) and Morningstar, Inc. (www.morningstar.com).

However, the recession seeped into other sectors, primarily manufacturing, due to exogenous factors. On the one hand, the September 11, 2001 terrorist attacks in the United States fueled uncertainty and the postponement of greater investment spending and consumption, while at the same time entailing the diversion of resources to national defense, implying a significant cost estimated in the range of 0.6 and 0.8 of American GDP, in addition to contracting trade, with the main industries affected the airline sector and tourism (Sandler and Enders, 2008). On the other hand, China's accession to the World Trade Organization (WTO) at the end of 2001 had a marked impact on global trade, compelling other countries, like those analyzed here, to restructure their productive apparatuses, and interfering with growth during the adjustment period (Yang, 2006). At the end of the day, these factors sunk the manufacturing sector into a profound and long recession, which affected trade and production for its main trade partners.

However, one unique feature of the technology crisis is that it did not contaminate the broader financial system (Liu and Song, 2001; Abreu and Brunnermeier, 2003), so its effects on aggregate economic activity were rather modest (as illustrated in Section 1), primarily impacting the manufacturing sector. Essentially, variables like domestic credit to the private

sector and income per capita and household spending held steady or continued to grow in 2001, although at lesser rates.¹⁸

The following factors were the main causes behind the 2008 crisis: *i*) lax monetary policy, which translated into very low interest rates and *ii*) the formation of a "real estate bubble" stemming from the unprecedented growth of the housing sector that began in the nineties. In particular, the monetary authority drastically cut the federal funds rate from 6.5% in mid-2000 to nearly 1.0% in mid-2003, which drove the tremendous mobilization of capital, aiming to recover lost profitability, including numerous speculative investments in the real estate sector (Villar, 2009). As a result, this business grew enormously throughout the nineties, especially in the latter half. In this process, the substantial expansion of credit, including high-risk, subprime mortgages, played a central role, facilitated and pushed along by deregulation and creative financing techniques that fomented excessive risk-taking (Blanchard, 2009).¹⁹ As such, at the dawn of the crisis, in 2007, private debt reached around 200 percentage points of GDP, a level even higher than the pre-2001 crisis (see Figure 3). Moreover, the estimate is that by 2007, over three-fourths of consumer debt was in the form of mortgage loans (López *et al.*, 2013).

As a result, after mushrooming between 1996 and 2005, housing prices in the United States (HPIUS) began to contract significantly starting in 2006 (see Figure 3). This adjustment in the sector unleashed the crisis, when it became clear that the subprime loans were of extremely poor quality. In 2006, subprime loans accounted for an annual amount of nearly 600 billion dollars, equivalent to 20% of total mortgage loans in the United States. As housing prices plummeted, the non-subprime sector of the mortgage market began to feel the effects (Machinea, 2009). In this way, shrinking housing prices generated a major incentive to default on the loans,²⁰ which in turn ratcheted up the housing supply, and drove prices down even further.

Lack of confidence in the sustainability of the real estate sector led the speculative bubble to break, which subsequently spread to the entire American financial system, characterized by leverage twice the magnitude of what ensued in the 2001 crisis (IMF, 2015). Soon, the biggest financial institutions went bust (Bear Stearns and American Home Mortgage), and others reported substantial losses (Citigroup), or were left with huge amounts of non-recoverable loans on the books (Merrill Lynch), which set off the liquidity crisis, further aggravated by the rising value of the banking system's liabilities market, as well as creditors' demands for stronger guarantees (Murphy, 2008). The losses generated in this vicious cycle on the part of the financial intermediaries translated into a considerable hit for the DCPSUS: from a peak in 2007 equivalent to 206.3% of GDP, to shrinking 18 percentage points of GDP by 2008 and stagnating, a loss that has yet to be fully overcome (see Figure 3).

The massive and widespread default irrevocably crippled the American real estate sector. As such, while the credit granted by the financial sector shrunk by 9.8 percentage points of GDP in 2007-2009, gross domestic housing investments nosedived 43.1% in the same time period. For their part, the Nasdaq and Dow Jones suffered annualized losses of 13.1% and 16.4%, respectively, in 2008-2009.²¹

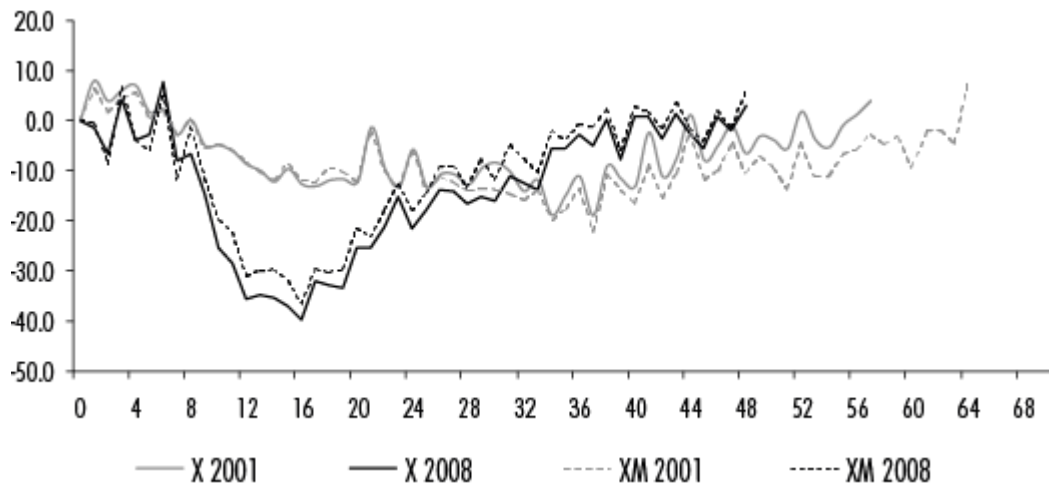
Given the extreme interconnectivity of the financial system and high levels of international leverage, the sudden halt in credit-granting led to the collapse of international demand and helped transmit the crisis to the rest of the economies.

3.2 Transmission Mechanisms to Mexico

International transactions, like exports, FDI, and remittances, constitute the main mechanisms by which one country's specific cycles are transmitted to another, and help these cycles fall into synch with one another (Imbs, 2003; Sayan, 2006). Accordingly, as seen in Table 1, for practical purposes, the growth rate of the U.S.A.'s total GDP kept apace during Mexico's first recession (2000.08-2003.09),²² which caused imports to rise on average (3.2%) and, on the side of Mexico, led to total average growth for exports (2.1%), FDI, and remittances (31.1% and 28.7%, respectively). Nevertheless, the analysis of the cumulative decline of exports shows a very different scenario that reflects the long and protracted erosion of American manufacturing. As seen in Figure 4a, total sales and manufactures sent abroad backslid cumulatively at rates of 18.8% and 22.3% in 37 months and took more than 55 and 64 months, respectively, to recoup. FDI and remittances, for their part, did not fall during this recession (panels b and c).

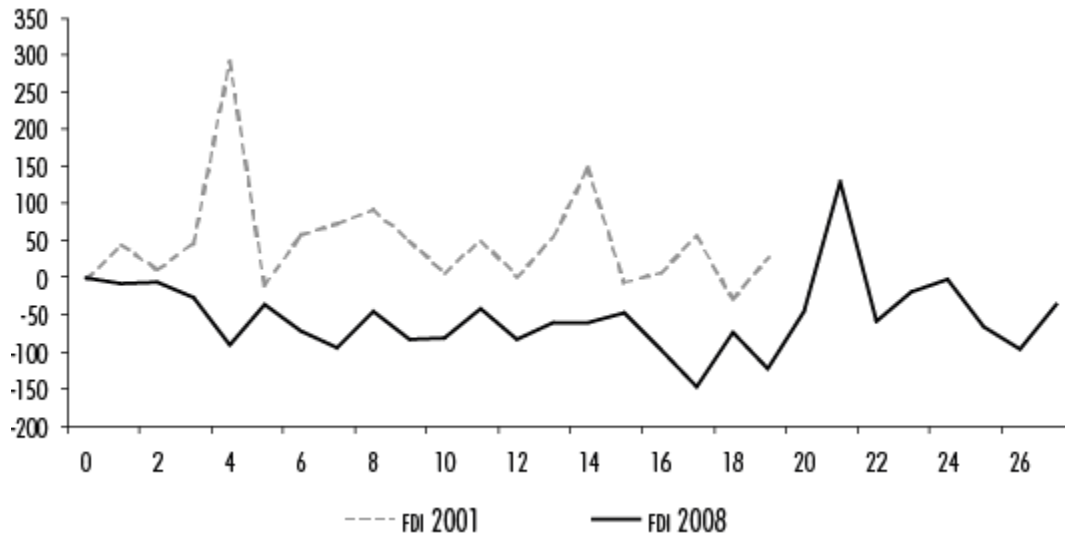
Now, given that in 2000, the share of exports destined for the American market, FDI, and remittances were at 13.6%, 1.7%, and 0.6% of GDP, respectively, and manufacturing exports accounted for more than 80% of the total, it could be affirmed that the 2001 recession was more prolonged in Mexico due, principally, to the profound and sustained downswing in American manufacturing production as a result of the high degree of integration between American production processes and their Mexican counterpart. In this sense, the explanation complements what Galindo and Guerrero (2001) and Tornell *et al.* (2003) wrote, attributing a major role to the appreciation of the peso, which effectively reaped a cumulative value of 9.7% in the first 19 months of the recession, as shown in panel (d) in Figure 4.

Figure 4a. Exports



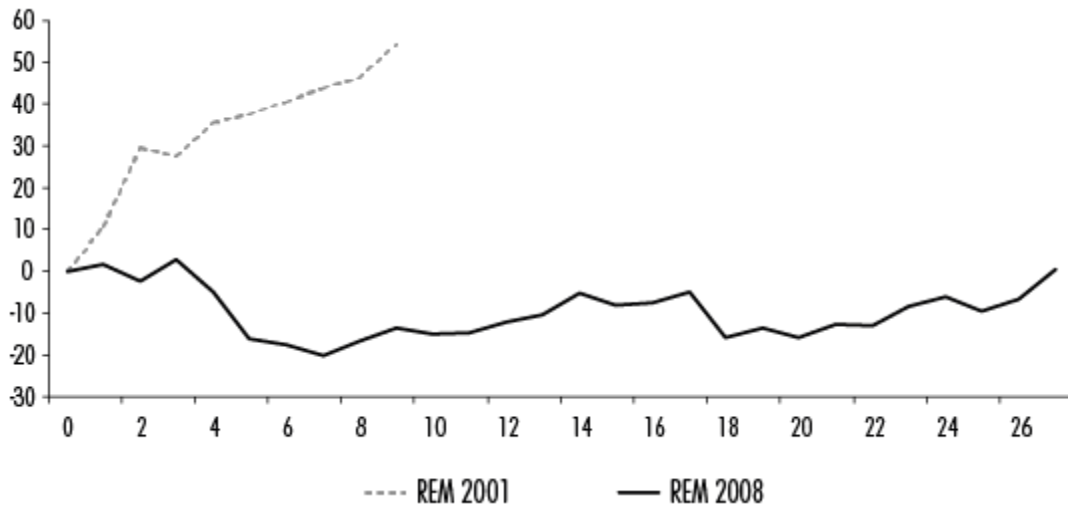
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Figure 4b. Foreign Direct Investment



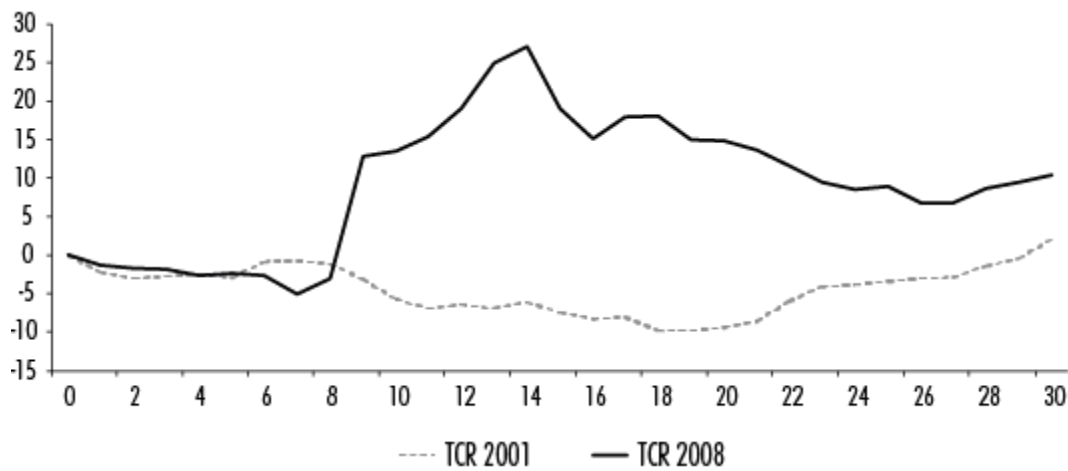
Source: Created by the authors.

Figure 4c. Remittances



Source: Created by the authors.

Figure 4d. Real Exchange Rate



Source: Created by the authors.

On the contrary, the numbers in Table 1 point to a generalized average percentage decrease in productive activity during the 2008 recession, especially in American industry (9.2) and imports (5.4), as well as Mexican exports (8.0) and FDI (11.8) and remittances received (6.6).

Moreover, although for less time than in the recession prior, total Mexican exports and manufactures experienced maximum cumulative decreases of 39.7% and 36.5% in the first 19 months, respectively, which were not partially reversed until 38 months later (panel a) in spite of the cumulative real depreciation of the peso starting in the eighth month after the onset of the recession, with a maximum of 27% in month 24 (panel d). In fact, exports did not completely recover due to flagging international demand, in spite of the peso's constant depreciation, a feature that also sets this recession apart from the previous one. Furthermore, the depth of the decrease in external demand is also reflected in the cumulative cutbacks to FDI and remittances, which hit lows in months 17 and 7 with rates of around 154% and 20%, respectively, which further slowed and delayed recovery to pre-recession levels.

Once again, considering that in 2007, the share of exports to the United States, FDI, and remittances in GDP rose slightly with respect to 2000 figures (20.2, 2.9, and 2.4%, respectively), two main conclusions could be drawn: first, that the variables related to transmission became increasingly important for national production, which made the 2008 recession spread more virulently, not only due to its magnitude but also because the Mexican economy was more vulnerable to external shocks. Second, that due to their weight in the GDP, exports appear to be the most important transmission mechanism in both crises.

3.3 Adjustment Policies in Mexico

Although administrations pivoted later, restrictive policies were initially implemented to deal with the recessions, as had been done in recessions in decades prior, despite the fact that the underlying causes were extremely different. In particular, in response to the 2001 recession, Bank of Mexico adjusted its monetary policy²³ with the intention of counteracting inflationary pressure derived from the external environment and in order to align expectations with the inflation target set, in this way reinforcing its downward trend.²⁴ Although the restrictive policy was relaxed slightly in what was left of 2001, as these variables began to behave more favorably and domestic and foreign demand remained slow, between February 2002 and March 2003, the choice was made to return to an extremely restrictive policy (raising the "corto" seven times) aiming to offset the supply-side pressures arising from cuts to subsidies for managed prices (electricity rates).

Pursuant to the same logic, in 2007 and 2008, the overnight interest rate (*tasa de fondeo*), which replaced the "corto" as a monetary instrument, was raised five times,²⁵ going from 7.25 to 8.25%. The rising interest rate in 2007 responded to a preventive action that sought to counteract disturbances to supply, while the 2008 strategy aimed to contain the effects of

internal and external shocks.²⁶ The significant drop in production over the next months diluted demand pressures and not only put an end to the interest rate-raising policy, even when currency appreciation seemed to have favored the inflation level (Sidaoui *et al.*, 2010), but rather, in line with international strategies, starting in 2009, led to a substantial easing of monetary policy: the target interest rate was lowered between January and July of that year from 7.75 to 4.5%. This was possibly the only occasion when a countercyclical policy was administered over the past three decades.

Fiscal policy, in turn, was handled analogously in both crises. In this way, against the backdrop of a spiraling economic slowdown in the United States and the imminent drop in domestic productive activity, a "preventive" restrictive policy was set in motion in 2001, with successive cuts throughout the year, especially in the realm of physical public investment (-4.9%), with which total spending fell by 1.4% (Banco de México, 2002). However, the fiscal strategy changed course once the total GDP began to recover towards the second half of 2002 thanks to growth in the service sector, even as industry and manufacturing remained depressed.

In that way, even with rates much lower than those in 2000, in the period 2000.08-2003.09, the various areas of public spending grew at different paces (see Table 1). As a result, public debt expanded again to 1997-1999 levels and it was not possible to curb the fiscal deficit any further.

For its part, the fiscal policy chosen to offset the effects of the Great Recession was radically different from any fiscal policy followed before then. For the first time in practically three decades, the government opted for an evidently countercyclical policy (Chávez *et al.*, 2010; Villagómez and Navarro, 2010), pursuant to the international practices of the day. Effectively, programmable spending increased by an annual average of 12.1% during the recession, explained in large part by diverse infrastructure programs and programs to support companies and families,²⁷ including capital spending, which had the highest rate, a strong push for physical investment (14.5% annual average). In short, public spending rose 7.7% on average, with modest growth in non-programmable spending (1.4%).

These government efforts to feed economic activity during the recession, which saw tax revenue sag (5.3 in 2008 and 2.5 in 2008-04-2009.05), had to be funded with public debt. The share of public debt in GDP rose to 18.8% during the recession and bumped up the fiscal deficit by more than 1 percentage point. Although this policy did not bring the economy to the brink of a critical situation, it did impair the public accounts, damage that will have to be undone in the medium term pursuant to legal provisions that compel the government to keep the fiscal deficit close to zero (Chávez *et al.*, 2010; Esquivel, 2012).

CONCLUSIONS

This paper analyzed and contrasted the causes, transmission mechanisms, adjustment policies, and effects of the two recessions the Mexican economy endured in the aughts. Although both are marked by the peculiarity of having originated in the United States, they manifested in very different ways. The 2001 recession was long, especially for the manufacturing sector, and of a lesser magnitude, in contrast with the 2008 recession, shorter, but deeper. The evidence here shows that in the United States, the recession was limited in large part to the technology and information sector and that, although it was associated with the end of the stock market boom, it did not really spread to the real estate sector because it did not reach the banking system. On the contrary, even though the Great Recession was also rooted in a speculative bubble, this time in the real estate sector, when the bubble broke, it happened in the framework of leverage, which led to a credit collapse and, consequently, plummeting demand, leading to a deep recession.

Both recessions spread to Mexico primarily through the sizable amount of trade transactions between the two countries, leading to simultaneous and similar declines in productive activity. The shallower 2001 crisis only caused international transactions to decline modestly, and thus became just a moderate recession in Mexico. Nevertheless, the uncertainty in the wake of the September 11 terrorist attacks coupled with China's accession to the WTO provoked a more prolonged recession for manufacturing and slow recovery to pre-recession levels in both countries. On the contrary, the Great Recession translated into violent and intense cuts to trade, FDI, remittances, and tourism, which hurt other sectors of the Mexican economy.

Adjustment policies, procyclical in the first recession and countercyclical in the second, proved to be of limited utility when it came to counteracting the shocks ailing the national economy in the framework of the global economy. Even so, it must not be forgotten that before these recessions, the Mexican economy enjoyed macroeconomic stability never before seen in earlier decades, with a low fiscal deficit, waning inflation, an affordable current account deficit, and low debt levels. Despite this, the Mexican economy was battered by the two recessions, especially the second, evidencing its fragility in spite of solid fundamentals.

The facts are clear: the phases of the American cycle are immediately reflected in Mexico's economy. Said another way, the dynamics of the latter depend on the former, with little margin to maneuver when it comes to stabilization policy. Accordingly, given the limitations

Mexico faces in mitigating short-term shocks, the central policy concern should be long-term growth.

APPENDIX

Appendix 1. Turning Points in the Great Recession

	<i>Peak</i> <i>(date)</i>	<i>Valley</i> <i>(date)</i>	<i>Duration</i>	<i>Amplitude</i>
<i>2001 Recession</i>				
Mexico				
GDP	2000.III	2002.I	6	-2.0
Secondary	2000.IV	2002.I	6	-3.4
Tertiary	2000.IV	2002.I	5	-1.9
Manufacturing*	2000.7	2003.8	37	-8.7
United States				
GDP	2001.II	2001.III	1	-0.3
Secondary	2000.II	2001.IV	5	-3.1
Tertiary	-	-	-	-
Manufacturing*	1999.11	2001.10	23	-29.8
<i>2008 Recession</i>				
Mexico				
GDP	2008.II	2009.II	4	-6.7
Secondary	2008.I	2009.I	4	-8.7
Tertiary	2008.III	2009.II	3	-7.0
Manufacturing*	2008.1	2009.6	17	-14.8
United States				
GDP	2008.II	2009.II	4	-4.1
Secondary	2007.IV	2009.I	5	-3.1
Tertiary	2008.IV	2009.I	1	-0.2
Manufacturing*	2008.1	2008.12	11	-34.2

*Months.

Source: Created by the authors based on the methodology in Artis et al. (1997).

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Notas

² In broad strokes, the economy opened up to trade and capital flows, the State gradually withdrew from productive activities, public enterprises were privatized, and the market became the principal allocator of resources. See Moreno and Ros (2009) and the references cited therein.

³ Referring to the falling volatility of various macroeconomic indicators (Stock and Watson, 2003).

⁴ Times of recession (and growth) in this period are seen as specific manifestations of the growing synchronization of the two economies’ economic cycles (Gutiérrez et al., 2005; Sosa, 2008).

⁵ The advantage of this method is reflected in the fact that it comes up with turning points very similar to those reported by the United States’ National Bureau of Economic Research, with the additional appeal being that it is based on univariate analysis. For details about the “censoring” rules and applications in the G7 countries, see Artis et al. (1997). For its application in the case of Mexico, see Mejía and Erquizio (2012, Chap. 4) and the references cited therein.

⁶ Appendix 1 introduces the duration and depth of the recessions using various production indicators.

⁷ The American tertiary sector was marginally affected in the two recessions, unlike the tertiary sector in Mexico, which plummeted (7.0%) in the Great Recession (see Appendix 1).

⁸ In the Great Recession, American exports and imports fell off by 15% and 19%, respectively (Levchenko et al., 2010), which had a serious impact on the productive activities of its most important trade partners.

⁹ To the aforementioned are added the autonomy of the Bank of Mexico and its preservation of the power to purchase the national currency (H. Congreso de la Unión, 1993).

¹⁰ In fact, the nineties saw the biggest growth of the American economy, between March 1991 and February 2001, according to the National Bureau of Economic Research. See Section 3.1.

¹¹ Consumer credit was affected the most with a drop of 17.8% followed by housing and companies, declining 16.6% and 14.6%, respectively.

¹² In fact, starting in 2001, the inflation targets strategy was launched, consisting of announced and explicit medium- and long-term targets, aiming to align expectations and in so doing gradually push inflation towards them (Banco de México, 2002).

¹³ Especially consumption and housing, with values above 40% annual average.

¹⁴ Even though this has spurred procyclical spending, which has exacerbated the cyclical fluctuations of the domestic economy, especially during recessions (Burnside and Mescheryakova, 2005). What's more, in 2006, the objective of maintaining zero fiscal deficit was elevated to the constitution, with a few exceptions (see Esquivel, 2012).

¹⁵ Crises are divided into exchange rate, balance of payment, debt, or banking crises, although their specific causes cannot always be precisely identified, and the ways in which they manifest often reflect blended roots. A broader analysis of the anatomy of crises can be found in Claessens and Kose (2013).

¹⁶ Moreover, computer and parts sales rose 42.4% in 1999 and 52.3% in 2000, to the extent that the information and communication technologies industries contributed 6.5% of the United State's GNP and 1.2% to its growth between 1996 and 2000 (Bureau of Economic Analysis, www.bea.gov).

¹⁷ For 2000, data up to October, because negative variations were seen in both indices starting in November (Morningstar, Inc., <http://www.morningstar.com>).

¹⁸ Between 2000 and 2002, domestic credit to the private sector remained high, fluctuating between 160% and 170% of GDP (see Figure 3), to the extent that per capita income, which rose by an annual average rate of 3.4% between 1995 and 2000, reached a mere 0.3% annual rate by 2001, while household spending, which grew at an average of 4.3% between 1995 and 2000, rose by only 2.6% in 2001 (www.bea.gov).

¹⁹ Analyzing the quality of mortgage loans adjusting for type of loan, borrower, and macroeconomic conditions, Demyanyk and Van Hemert (2009) found that quality deteriorated constantly in the six-year lead-up to the crisis.

²⁰ Due to the negative wealth effect generated by the constant depreciation of homes, the mortgage costs became even higher than the market price of the home.

²¹ Figures taken from Morningstar, Inc. (www.morningstar.com) May 23, 2015, and the World Bank (<http://data.worldbank.org/indicator/>) May 14, 2016.

²² Figures as decimals represent the month (quarter) of the given year.

²³ The "corto" (an inflation targeting mechanism) was increased in October and November 2000 and January 2001 (Banco de México, 2001 and 2002).

²⁴ By 2000, the inflation target was set below 10% (9.5 real) and 6.5% by 2001 (Banco de México, 2000 and 2001).

²⁵ Although it formally began to be used in 2008, quarterly monetary policy reports were already starting to reference using the interest rate since 2006, making the "corto" less important (Banco de México, 2006).

²⁶ Among the internal factors include adverse weather conditions for crops, as well as the effects of a higher fiscal burden; external include rising raw materials prices (Banco de México, 2008). ²⁸pan>

²⁷ In particular, the Mexican government implemented a series of economic revival programs including measures to foster production, investment, and employment, such as spending on infrastructure, direct loans, support for small and medium-sized enterprises, and administrative actions to ease the implementation of programs, among other measures (see Villagómez and Navarro, 2010).