Decomposing Supply and Demand Driven Inflation in Mexico: Evidence from Sectoral Analysis

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Abstract

We decompose Mexico's inflation into supply- and demand-driven components across 31 CPI sectors from 2006 to 2024. To identify which sectors create inflation swings versus steady pressure, we construct an importance score combining correlation with aggregate inflation and average contribution size. Food ranks highest for both inflation types. This differs from developed economies where services dominate demand inflation. Mexican services contribute 24% on average but fluctuate little, acting as a persistent floor that explains slow disinflation since 2023. Housing plays almost no role despite representing 18% of the CPI basket because prices there barely move. Structural VAR analysis validates these patterns: demand inflation responds to domestic monetary expansions while supply inflation reacts to global supply chain disruptions.

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1. Introduction

Central banks face a recurring challenge when prices rise: tighten policy to reduce demand or accommodate supply constraints? The answer depends on what drives inflation. Excess demand requires monetary tightening; supply disruptions often lie beyond central bank control. Mexico's experience over the past two decades illustrates this tension. Inflation fell during the 2008 Global Financial Crisis and again during early COVID-19, but the drivers differed. The first reflected collapsing global demand. The second involved sectoral disruptions across the economy. The 2022 surge brought yet another pattern, driven largely by commodity price spikes and supply chain bottlenecks after Russia's invasion of Ukraine.

Standard inflation measures don't distinguish demand from supply pressures. We use a simple approach from microeconomic theory: when demand rises, both prices and quantities increase; when supply falls, prices rise but quantities drop. This sign pattern, applied to 31 CPI sectors from November 2006 to July 2024, separates the two forces (Shapiro, 2024). We group sectors into five categories: food, energy, housing, manufacturing, and services. Sectoral reallocation matters for aggregate inflation dynamics (Ferrante et al., 2023).

To identify which sectors create inflation swings versus steady pressure, we construct an importance score from two components: how closely each sector's contribution tracks aggregate inflation and its average size. Food ranks highest for both demand and supply inflation. Services behave differently. They contribute 24% on average to demand inflation but barely fluctuate, unlike food or energy. This stability explains why disinflation has proceeded slowly since 2023 even as Banco de México raised rates 725 basis points. The pattern contrasts with developed economies, where services typically drive demand inflation (Shapiro, 2024).

Structural VAR analysis tests whether the decomposition captures genuine economic forces. Demand inflation responds to domestic monetary expansions measured by Mexico's Divisia M2 growth. Supply inflation reacts to global supply chain disruptions captured by the Federal Reserve Bank of New York's Global Supply Chain Pressure Index (Benigno et al., 2022). The asymmetry between these responses confirms the methodology separates distinct mechanisms rather than statistical noise.

The framework tracks inflation sources in real time, helping policymakers in emerging economies calibrate their responses. Central banks with similar sectoral data could apply this approach.

2. Methodology

2.1. Decomposition Framework

We follow Shapiro (2024) to decompose Mexico's headline inflation into supply- and demand-driven components. The identification builds on microeconomic theory: demand shifts move prices and quantities in the same direction along upward-sloping supply curves, while supply shifts move them in opposite directions along downward-sloping demand curves.

For each of 31 sectors in the National Consumer Price Index, we estimate a rolling-window VAR model:

$$p_{i,t} = \sum_{j=1}^{12} \gamma_j^{pp} p_{i,t-j} + \sum_{j=1}^{12} \gamma_j^{pq} q_{i,t-j} + C^p + \nu_{i,t}^p \tag{1}$$

$$q_{i,t} = \sum_{j=1}^{12} \gamma_j^{qp} p_{i,t-j} + \sum_{j=1}^{12} \gamma_j^{qq} q_{i,t-j} + C^q + \nu_{i,t}^q \tag{2}$$

where p and q denote log prices and quantities for sector i. VARs use rolling windows of 42 months with 12 lags from December 2006 to July 2024. Results are robust to alternative window lengths of 36 and 48 months and to lag specifications of 6 and 18 months. The sectoral importance rankings in Table 1 remain unchanged across these specifications. Quantity data come from the Monthly Industrial Activity Index for goods-producing sectors and the Global Indicator of Economic Activity for primary and services sectors, disaggregated by the 2018 NAICS. Price data come from the INPC. The sign-based identification requires estimation at the sector level; the five categories in Table 1 are an expository aggregation applied after decomposition, following Banco de México's standard inflation groupings. Estimating directly on five broad aggregates would suppress cross-sectoral heterogeneity and allow large sectors to mechanically dominate the classification. As a robustness check, we also estimated the model using approximately 50 sectors over a shorter sample; qualitative results are unchanged.[1]

[1] All series are indexed to 2018=100 and expressed in natural logarithms.

When residuals have the same sign, we classify the shock as demand-driven; when residuals have opposite signs, we classify it as supply-driven. Monthly sectoral contributions equal $\lambda_{i,t} = \omega_{i,t}\pi_{i,t,t-1}$, where $\omega_{i,t}$ is the sector weight in the INPC. Total monthly contributions are $\pi^s_{t,t-1} = \sum_i \lambda^s_{i,t}$. Annual contributions use backward chain-linking as in Shapiro (2024): $\pi^s_{t,t-12} = \prod_{k=0}^{11}\left(1 + \pi^s_{t-k,t-k-1}\right) - 1$.

2.2. Sectoral Importance Metric

To identify which sectors drive inflation volatility, we compute an importance score for each sector:

$$\text{Importance}^s_i = |\text{Corr}(\lambda^s_{i,t}, \pi^s_t)| \times \overline{\lambda^s_{i,t}}$$

where $\lambda^s_{i,t}$ is sector i's contribution to shock type s at time t, π^s_t is aggregate inflation of type s, and $\overline{\lambda^s_{i,t}}$ is the average contribution. This metric combines correlation to gauge co-movement with aggregate inflation and average contribution to capture persistent effects. We use absolute correlation to measure importance regardless of sign. We aggregate sectors into five categories: food, energy, services, manufacturing, and housing.

2.3. SVAR Specification

We test the decomposition using an open economy SVAR model with block structure. Variables are ordered by exogeneity: Global Supply Chain Pressure Index (Benigno et al., 2022), international oil prices, U.S. consumer price index, U.S. industrial production, U.S. Divisia M2 index, demand-driven inflation, supply-driven inflation, unemployment-to-vacancy ratio, IGAE, Mexican Divisia M2, and nominal exchange rate. All variables except the UV ratio and GSCPI are in annual growth rates. This ordering follows standard practice for identifying monetary policy shocks in small open economies (Kim and Roubini, 2000) and assumes external variables remain unaffected by domestic shocks contemporaneously.

Restrictions apply only to the impact matrix A_0, using a recursive structure where more exogenous variables are ordered first (Kim and Roubini, 2000). The block structure takes the form $z_t = [z'_{1t}\ z'_{2t}]'$ and $A_0 = \begin{bmatrix} A_{11} & A_{12} \\ 0 & A_{22} \end{bmatrix}$, where z_{1t} contains external variables and z_{2t} contains domestic variables.

We adopt Divisia monetary aggregates instead of short-term interest rates to better capture monetary policy actions in the U.S., especially during zero lower bound periods (Chen and Valcarcel, 2021, 2025). The Mexican Divisia M2 index comes from Colunga-Ramos and Valcarcel (2024). Monthly dummy variables for April, May, and June 2020, plus April and May 2021, account for temporary COVID-19 shocks. These months were selected when IGAE growth fell outside the historical mean plus or minus three standard deviations.

3. Sectoral Sources of Inflation Volatility

Table 1 reports the sectoral importance decomposition for both demand- and supply-driven inflation. Food dominates both types, with importance scores of 0.591 for demand-driven and 0.533 for supply-driven inflation. This sector shows strong correlation with aggregate inflation and large average contributions in both cases. This pattern distinguishes Mexico from advanced economies where services drive demand-side inflation (Shapiro, 2024).

Table 1: Sectoral Importance for Supply- and Demand-Driven Inflation

	Demand-Driven Inflation			Supply-Driven Inflation		
Sector	Corr.	Avg.	Import.	Corr.	Avg.	Import.
Food	0.756	0.782	0.591	0.771	0.691	0.533
Energy	0.612	0.508	0.311	0.570	0.468	0.267
Services	0.463	0.555	0.257	0.218	0.449	0.098
Manufacturing	0.691	0.302	0.209	0.356	0.281	0.100
Housing	0.330	0.164	0.054	−0.082	0.218	0.018

Note: Importance score equals absolute correlation times average contribution. Sample covers November 2006 to July 2024. Correlation indicates co-movement with supply- or demand-driven inflation; average contribution is mean percentage point contribution over the sample.

Energy plays a symmetric role with importance scores of 0.311 for demand and 0.267 for supply. In most advanced economies, energy acts as a supply-shock sector. Mexico differs because the country produces oil for global markets while also consuming it domestically. The correlation between energy and demand-driven inflation reaches 0.612, meaning gasoline and electricity consumption patterns amplify cyclical inflation pressures.

Services contribute an average of 0.555 percentage points to demand-driven inflation but show only moderate correlation with aggregate inflation at 0.463. Food and energy contributions swing sharply in response to shocks; services inflation declines slowly and maintains upward pressure on core CPI. This moderate correlation of 0.463 means services respond to aggregate demand with a lag, consistent with wage indexation and price stickiness in labor-intensive sectors (Nakamura and Steinsson, 2008).

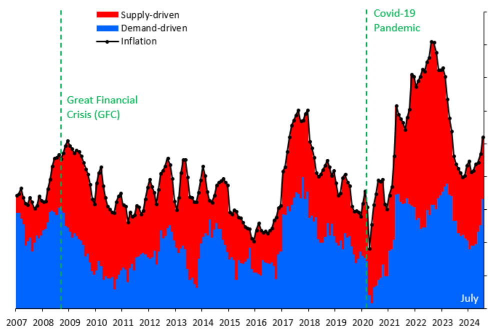
Manufacturing sectors show modest importance scores of 0.209 for demand and 0.100 for supply but relatively high correlation with demand-driven inflation at 0.691. Manufacturing prices move procyclically with aggregate demand despite contributing smaller absolute amounts to inflation. Mexico's integration into global value chains explains the lower supply-side importance: inventory adjustments and substitution partially absorb supply disruptions.

Housing barely matters for either inflation type, with scores of 0.054 for demand and 0.018 for supply. This occurs despite housing representing 18.05% of the CPI basket according to INEGI methodology. Housing contributes little because its correlation with aggregate inflation is low (0.330) and its average contribution is small (0.164 percentage points). Housing also shows a negative correlation with supply-driven inflation at -0.082: supply shocks contract real incomes and reduce rental demand, which dampens rent inflation. This differs sharply from the United States, where shelter costs represent the largest component of core CPI and respond strongly to monetary policy (Shapiro, 2024).

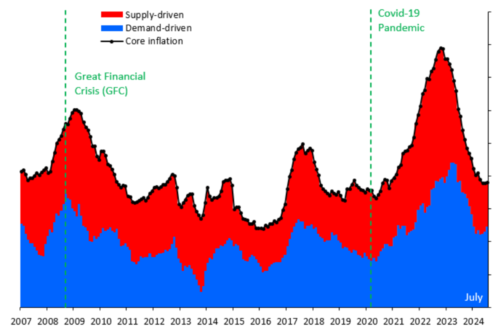
The decomposition reveals three challenges for monetary policy in Mexico. Food dominance in both demand and supply shocks creates inflation swings only partially controllable through interest rate policy. Services prices adjust sluggishly, so disinflation requires sustained demand restraint. Traditional monetary channels operating through mortgage costs and housing wealth effects work less effectively in Mexico than in advanced economies (Bernanke and Gertler, 1995).

4. Three Validation Episodes

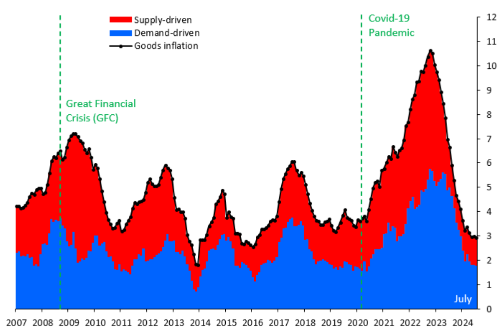
Figure 1 displays the decomposition of headline, core, goods, and services inflation into supply- and demand-driven components. We examine three episodes where the decomposition provided policy-relevant information that aggregate measures missed.



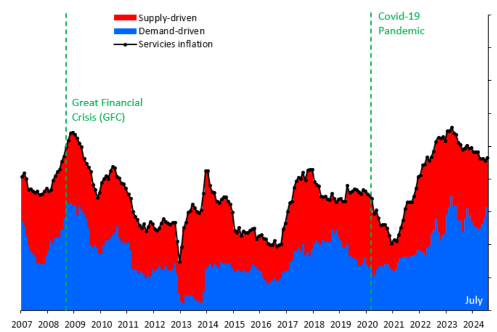
(a) Headline inflation



(b) Core inflation



(c) Goods inflation



(d) Services inflation

Figure 1: Inflation decomposition in Mexico by component type

4.1. COVID-19 and the Global Financial Crisis

In May 2020, headline inflation stood at 2.56%. This moderate level offered no clear guidance: should Banco de México ease to support the economy or remain cautious given positive inflation? The decomposition showed supply-driven inflation at 2.39% with demand-driven inflation collapsed to 0.17%. This 93.4% supply share aligned with observable conditions: global supply chains faced severe disruptions while Mexican GDP fell 8.5% in Q2 2020. Banco de México eased rates from 7.00% to 4.25% during 2020, supporting collapsed demand while accepting that supply-driven inflation lay beyond monetary policy's reach.

The Global Financial Crisis provides an earlier test case. In September 2008, headline inflation reached 5.47%, with the demand-driven component at 3.12% and the supply-driven component at 2.35%. Over the following eighteen months, demand-driven inflation fell to 1.84% by March 2010. Supply-driven inflation declined less, settling at 1.92%. Mexico's heavy reliance on U.S. manufacturing amplified the demand collapse. Exports fell 26% year-over-year in early 2009, and industrial production contracted 9.8%.

Food prices accounted for most of the demand-side decline, as Table 1 would predict. Households cut discretionary spending, and food demand contracted alongside broader economic activity. Energy moved differently. Global oil prices reached $147 per barrel in July 2008 before falling to $34 by December. This price swing first raised and then lowered energy's contribution to inflation. Banco de México held rates at 8.25% through late 2008 despite weakening demand, citing concerns about peso depreciation and inflation expectations. The decomposition would have supported earlier easing. By October 2008, demand-driven inflation had already begun falling, while the energy-driven supply pressures were unwinding. Banco de México eventually cut rates to 4.50% by July 2009.

4.2. The 2021-2024 Inflation Surge

Inflation decreased in early 2020 when mobility restrictions contracted demand sharply. By 2021, pressures began building again from global fiscal stimulus and rebounding economic activity. The sectoral patterns split: services demand plummeted during lockdowns while goods faced supply disruptions from trade bottlenecks.

The inflationary surge intensified in 2022 with the Russia-Ukraine conflict. Supply-driven inflation peaked at 4.5% in mid-2022 and demand-driven inflation remained at 2.5%. Food and energy together contributed about 3.5

percentage points to supply-driven inflation at the peak. Since 2023, supply-side pressures have eased to 1.9% by July 2024 while demand-side pressures have persisted at 3.3%.

By June 2024, headline inflation had declined from 8.11% to 4.70%, and markets were pricing in further easing following Banco de México's initial rate cut in March 2024 from 11.25% to 11.00%. The decomposition told a different story: demand-driven inflation stood at 2.53%, above the long-run average of 2.06%. What looked like disinflation reflected external supply normalization, with the supply component falling to 2.17%. Since domestic demand pressures remained uncontained, headline inflation surged to 5.22% one month later. The demand component jumped from 2.53% to 3.32% while the supply component continued falling to 1.89%. Banco de México held the rate at 11.00% through the June 27 meeting and resumed cutting only in August 2024.

4.3. The Goods-Services Divergence

Goods inflation fell from 8.25% to 3.19% during 2023-2024, a decline of 5.06 percentage points. Services inflation barely moved, falling only from 5.01% to 4.71%. The decomposition showed the mechanism. Goods disinflation was driven by supply-side factors: the supply component fell from 3.52% to 1.20%, reflecting external normalization of global supply chains, shipping costs, and peso appreciation. Services showed demand-side persistence. The services demand component increased from 2.55% to 2.67% despite 12 months of policy rates at 11.25% (March 2023 to March 2024) followed by a prolonged hold at 11.00%.

Observable facts validate this identification. Goods inflation is externally determined: global supply chains normalized independently of Mexican policy. Services demand is driven by domestic labor markets where minimum wages increased 88% in real terms from 2019-2023, formal employment remained strong, and unit labor costs rose 1.8 times faster than productivity in manufacturing and 1.5 times in services.

5. SVAR Validation

Figure 2 shows responses to a domestic monetary expansion measured as a one standard deviation increase in Mexico's Divisia M2 growth. Demand-driven inflation rises by approximately 0.10 percentage points and peaks at month 6, lasting for 15 months. Supply-driven inflation remains statistically indistinguishable from zero throughout the impulse response horizon. This asymmetry confirms that the sign-restriction methodology separates the two inflation types rather than capturing measurement error or mixed shocks.

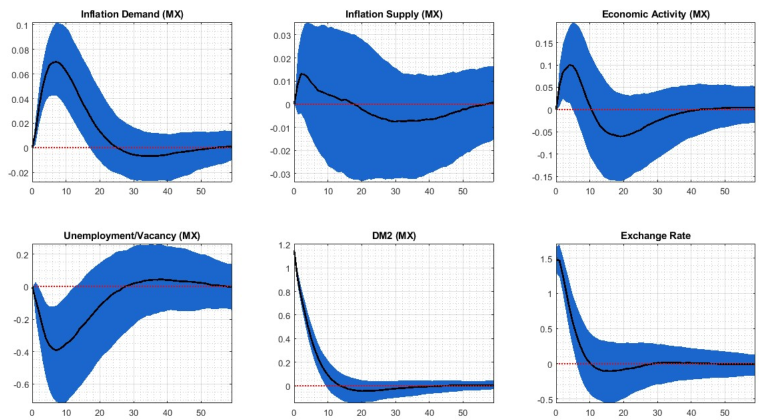


Figure 2: Impulse responses to a one-standard-deviation increase in Mexico's Divisia M2 growth. Shaded areas represent 68% confidence intervals.

Economic activity expands for roughly six months; the UV ratio declines for about a year; the peso depreciates for approximately six months. These patterns match standard monetary channels (Christiano et al., 1999). The UV ratio decline signals labor market tightening, the channel through which monetary policy affects demand-driven inflation: lower interest rates stimulate activity, tighten labor markets, raise wage pressures, and feed into services prices. Supply-driven inflation barely responds, meaning exchange rate pass-through operates through demand channels rather than mechanical cost pass-through.

Figure 3 shows responses to a global supply shock measured as a one standard deviation increase in the GSCPI index. Supply-driven inflation rises by approximately 0.08 percentage points on impact and remains elevated for over two years. Demand-driven inflation increases by only 0.03 percentage points with an 8-9 month lag. This delayed, modest response likely reflects a substitution effect: when supply disruptions constrain availability of certain goods, consumers shift expenditure toward unconstrained sectors and raise measured demand-driven inflation slightly. The pattern appears in U.S. data as well (Shapiro, 2024).

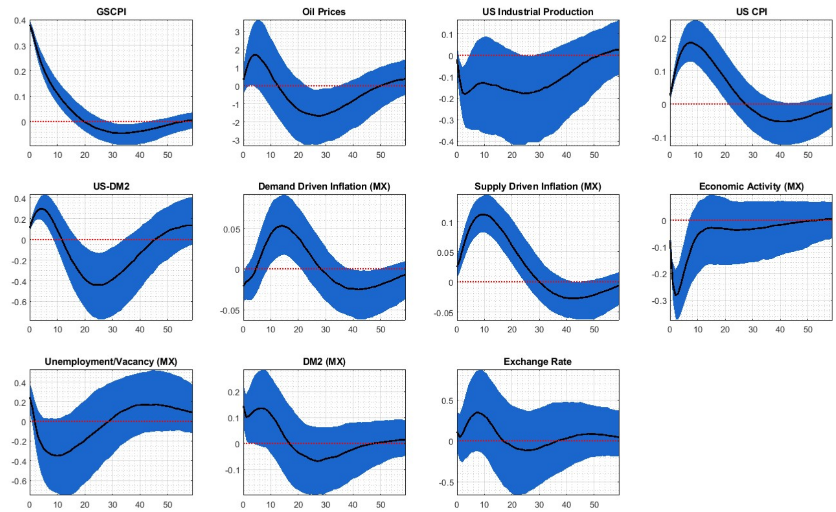


Figure 3: Impulse responses to a one-standard-deviation increase in the Global Supply Chain Pressure Index. Shaded areas represent 68% confidence intervals.

The sectoral composition of supply shocks explains their persistence. Table 1 shows that food and energy account for 80% of supply-driven inflation importance. Both sectors experienced sustained disruptions during 2021-2022: global shipping bottlenecks raised food import costs, while the Russia-Ukraine conflict elevated energy prices. These shocks dissipated slowly because they reflected physical capacity constraints that monetary tightening could not resolve. Banco de México's 725-basis-point rate hiking cycle during 2021-2023 had limited immediate effect for this reason.

For the United States, the GSCPI shock reduces industrial production growth for several months while increasing CPI inflation. U.S. Divisia M2 growth increases during the first 8 months, consistent with the Federal Reserve's accommodative stance during the initial phase of supply disruptions. This monetary expansion may have partially propagated to Mexico through trade and financial linkages and contributed to the lagged increase in Mexican demand-driven inflation. An important asymmetry emerges: Mexico's monetary policy directly influences only domestic demand-driven inflation, while global supply shocks and U.S. monetary policy jointly determine Mexican inflation outcomes (Kim and Roubini, 2000).

6. Conclusion

This paper decomposes Mexican inflation into supply- and demand-driven components and evaluates their responses to structural shocks. Three sectoral patterns are observed. Food's dominance in both channels creates inflation swings only partially controllable through interest rate policy. This contrasts with advanced economies where services drive demand-side inflation. Services prices adjust slowly, so disinflation requires sustained demand restraint. Housing's negligible contribution, despite its 18% CPI weight, means that monetary channels operating through mortgage costs and housing wealth effects work less effectively in Mexico than in advanced economies (Bernanke and Gertler, 1995).

The SVAR analysis confirms the decomposition captures distinct mechanisms. Demand-driven inflation responds to domestic monetary expansions while remaining insensitive to global supply shocks. Supply-driven inflation reacts to GSCPI shocks but not to monetary policy (Shapiro, 2024).

The analysis reveals both the reach and limits of monetary policy in Mexico. Interest rates effectively restrain demand-driven inflation but offer limited traction against supply shocks in food and energy. Sustaining low inflation will require additional policies on, for instance, agricultural productivity growth to stabilize food prices, energy infrastructure investment to reduce supply bottlenecks, and continued exchange rate flexibility to cushion external shocks.

Appendix A. Robustness to Alternative Rolling Window Specifications

The baseline specification constructs supply- and demand-driven inflation measures using rolling VAR models estimated with windows of 42 monthly observations and 12 lags. Given the relatively short window length, it is useful to examine whether the results are sensitive to alternative rolling-window specifications with larger estimation samples.

To this end, we recompute the inflation decompositions using alternative rolling-window configurations. In particular, we estimate the reduced-form VAR models using windows of 60 observations with 12 lags, and windows of 60 observations with 6 lags. These exercises increase the number of effective observations and reduce the parameter-to-observation ratio in each estimation window.

We perform this exercise for headline inflation, core inflation, goods inflation, and services inflation. Figure A.4 compares the resulting inflation decompositions across specifications. Each row corresponds to a different inflation measure (headline, core, goods, and services), while each column corresponds to an alternative rolling-window specification: the baseline model with 42 observations and 12 lags, a specification with 60 observations and 12 lags, and a specification with 60 observations and 6 lags.

Overall, the resulting supply- and demand-driven inflation measures remain qualitatively similar across specifications. Increasing the window length and modifying the lag structure produces only minor quantitative differences and does not alter the main patterns discussed in the main text. These results indicate that the inflation decomposition is robust to alternative rolling-window choices and to a lower parameter-to-observation ratio in the VAR estimation. As an additional check, we re-estimated the sector-level VARs using a Bayesian approach with a Normal-Wishart prior; the resulting decompositions are indistinguishable from those reported here.

Appendix B. External Validation Using U.S. Supply and Demand Shocks

To further validate the interpretation of the supply- and demand-driven inflation measures used in the main text, we perform an additional exercise based on an alternative identification strategy. Specifically, we identify external demand and supply shocks originating in the United States using a structural VAR (SVAR) with sign restrictions.[2]

The purpose of this exercise is not to identify domestic Mexican shocks, but rather to examine how Mexican variables respond to externally identified U.S. disturbances. If our decomposition correctly captures supply- and demand-driven inflation in Mexico, the responses of these measures should be consistent with the nature of the external shocks.

[2] Importantly, the model is intentionally only partially identified. We impose sign restrictions exclusively on U.S. variables in order to identify external demand and supply shocks, while leaving the responses of Mexican variables unrestricted. This allows the data to determine how these externally identified shocks transmit to the Mexican economy. The objective of this exercise is not to identify structural shocks within Mexico, but rather to evaluate whether the behavior of the supply- and demand-driven inflation measures constructed in the main text is consistent with externally identified disturbances.

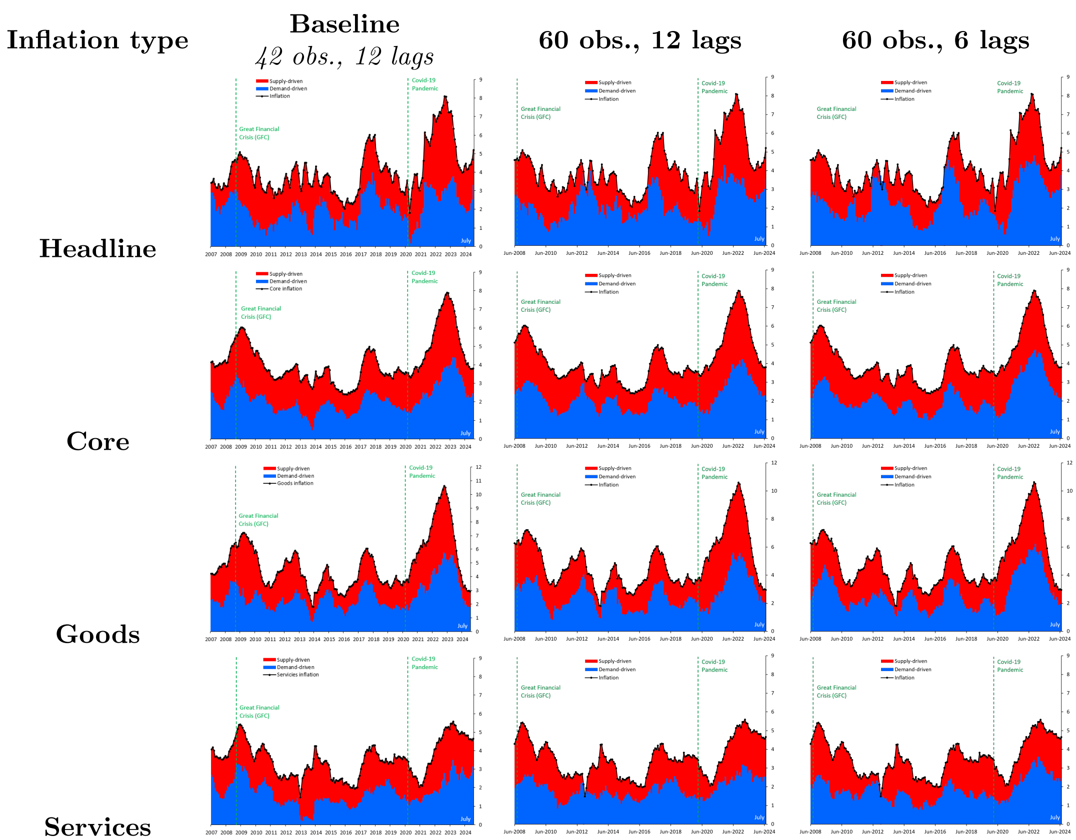


Figure A.4: Robustness of the inflation decomposition to alternative rolling-window specifications. Rows correspond to inflation measures and columns correspond to VAR specifications.

Data

The VAR includes two U.S. variables used to identify external shocks: U.S. industrial production and U.S. CPI inflation. In addition, the system incorporates Mexican variables to analyze the domestic transmission of these shocks. These variables are: economic activity measured by the Global Indicator of Economic Activity (IGAE, its Spanish acronym), the headline supply- and demand-driven inflation measures constructed in the main text, and the bilateral Mexico–U.S. real exchange rate.

All variables are expressed in annual growth rates and are observed at monthly frequency from December 2006 to July 2024. U.S. data are obtained from the Federal Reserve Economic Data (FRED) database of the Federal Reserve Bank of St. Louis, while the Mexican variables are sourced from Banco de México.

Reduced-form VAR

The dynamics of the system are described by the following reduced-form VAR:

$$y_t = C + B_1 y_{t-1} + \cdots + B_p y_{t-p} + u_t \tag{B.1}$$

where y_t is an $N \times 1$ vector of endogenous variables, C is a vector of constants, B_i are matrices of coefficients associated with lagged variables, and u_t is a vector of reduced-form residuals with $u_t \sim N(0, \Sigma)$.[3]

Structural Identification

To recover structural shocks from the reduced-form residuals, we assume that

$$u_t = A\varepsilon_t \tag{B.2}$$

where ε_t is a vector of orthogonal structural shocks with $\varepsilon_t \sim N(0, I)$ and A is a nonsingular matrix such that $\Sigma = AA'$.

[3]The model is estimated as a Bayesian Structural VAR with a Normal-Wishart prior using the BEAR toolbox (Dieppe et al., 2016). Hyperparameters are selected through a grid-search procedure that maximizes the marginal likelihood. The prior autoregressive coefficient is set to 0.8 for variables expressed in growth rates, which is standard in the literature.

Our identification strategy follows the sign-restriction approach widely used in the structural VAR literature, pioneered by Uhlig (2005). To identify U.S. supply and demand shocks we follow the strategy proposed by Peersman (2005), which imposes sign restrictions on the joint behavior of output and inflation.

Importantly, no restrictions are imposed on the Mexican variables; their responses are left unrestricted so that the data determine how external shocks transmit to the Mexican economy.

The assumption that U.S. variables affect Mexican variables but not vice versa is consistent with the small open economy (SOE) framework commonly used in the SVAR literature, as in the seminal contributions of Cushman and Zha (1997) and Kim and Roubini (2000). In the context of Mexico, this assumption is particularly plausible given the strong economic integration between the two economies. Approximately 80% of Mexican exports are directed to the United States and the U.S. economy is roughly twenty times larger than Mexico's economy. Therefore, shocks originating in the United States can influence Mexican macroeconomic variables, while feedback effects from Mexico to the United States are negligible. Applications of this approach to the Mexican economy include Chavarín et al. (2023) and Colunga-Ramos and Cepeda (2024).

We identify two structural shocks for the United States using sign restrictions imposed on impact.

Table B.2: **Sign Restrictions for U.S. Shocks**

	Demand Shock	**Supply Shock**
U.S. Industrial Production	+	-
U.S. Inflation	+	+

A *U.S. demand shock* is characterized by a simultaneous increase in U.S. industrial production and inflation, reflecting an expansion in aggregate demand. In contrast, a *U.S. supply shock* corresponds to a negative supply disturbance that raises inflation while reducing industrial production.

Once these shocks are identified, we analyze the responses of Mexican variables—economic activity (IGAE), supply-driven inflation, demand-driven inflation, and the real exchange rate. This exercise provides an external validation of the inflation decomposition used in the main analysis.

Results

Figure B.5 reports the impulse responses to a U.S. demand shock, identified as a disturbance that increases both U.S. inflation and U.S. industrial production on impact. Following this shock, Mexican economic activity (IGAE) expands for roughly one year, while demand-driven inflation increases persistently over a similar horizon. In contrast, supply-driven inflation shows only a small impact response that quickly dissipates. The real exchange rate appreciates modestly, consistent with stronger external demand for Mexican goods following the U.S. expansion.[4]

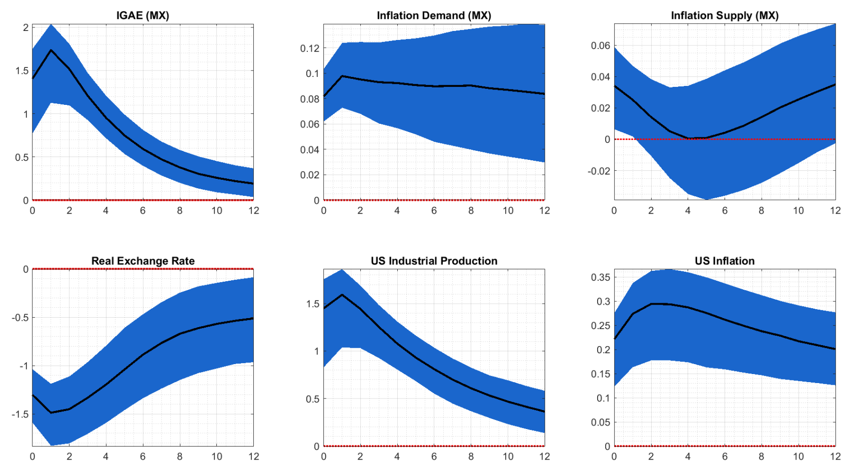


Figure B.5: Impulse responses to a one-standard-deviation U.S. demand shock. Shaded areas represent 68% credibility intervals.

Figure B.6 reports the impulse responses to a U.S. supply shock, identified as a disturbance that raises U.S. inflation while reducing U.S. industrial production on impact. In this case, Mexican economic activity contracts briefly, while supply-driven inflation increases for most of the horizon. Demand-driven inflation remains essentially unresponsive, and the real exchange rate shows no discernible response.

Taken together, these results provide external validation for our inflation decomposition. Shocks identified as demand disturbances in the United

[4]An increase in the real exchange rate corresponds to a real depreciation of the Mexican peso.

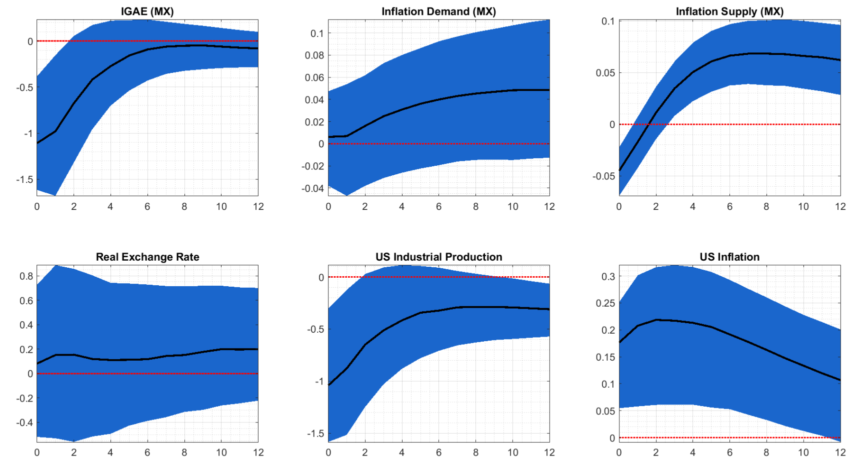


Figure B.6: Impulse responses to a one-standard-deviation U.S. supply shock. Shaded areas represent 68% credibility intervals.

States primarily affect demand-driven inflation in Mexico, whereas shocks identified as supply disturbances mainly translate into movements in supply-driven inflation. This pattern supports the interpretation that the measures constructed in the main text successfully capture demand- and supply-driven inflation dynamics.

References

Benigno, G., di Giovanni, J., Groen, J.J., Noble, A.I., 2022. The GSCPI: A New Barometer of Global Supply Chain Pressures. Staff Report 1017. Federal Reserve Bank of New York.

Bernanke, B.S., Gertler, M., 1995. Inside the black box: The credit channel of monetary policy transmission. Journal of Economic Perspectives 9, 27–48. doi:10.1257/jep.9.4.27.

Chavarín, R., Gómez, R., Salgado, A., 2023. Sectoral supply and demand shocks during covid-19: Evidence from mexico. Latin American Journal of Central Banking 4, 100083.

Chen, Z., Valcarcel, V.J., 2021. Monetary transmission in money markets:

The not-so-elusive missing piece of the puzzle. Journal of Economic Dynamics and Control 131, 104214. doi:10.1016/j.jedc.2021.104214.

Chen, Z., Valcarcel, V.J., 2025. Modeling inflation expectations in forward-looking interest rate and money growth rules. Journal of Economic Dynamics and Control 170, 104999. doi:10.1016/j.jedc.2024.104999.

Christiano, L.J., Eichenbaum, M., Evans, C.L., 1999. Monetary policy shocks: What have we learned and to what end?, in: Taylor, J.B., Woodford, M. (Eds.), Handbook of Macroeconomics. Elsevier. volume 1, pp. 65–148. doi:10.1016/S1574-0048(99)01005-8.

Colunga-Ramos, L.F., Cepeda, L.E.T., 2024. Regional supply, demand and labor shocks on the manufacturing sector during covid-19 in mexico. Latin American Journal of Central Banking 5, 100113.

Colunga-Ramos, L.F., Valcarcel, V.J., 2024. A divisia measure of the money supply for mexico. Journal of Money, Credit and Banking 56, 1559–1590. doi:10.1111/jmcb.13198.

Cushman, D.O., Zha, T., 1997. Identifying Monetary Policy in a Small Open Economy Under Flexible Exchange Rates. Journal of Monetary Economics 39, 433–448.

Dieppe, A., Legrand, R., Van Roye, B., 2016. The BEAR toolbox. 1934, ECB working paper.

Ferrante, F., Graves, S., Iacoviello, M., 2023. The inflationary effects of sectoral reallocation. Journal of Monetary Economics 140, S64–S81. doi:10.1016/j.jmoneco.2023.03.003.

Kim, S., Roubini, N., 2000. Exchange rate anomalies in the industrial countries: A solution with a structural var approach. Journal of Monetary Economics 45, 561–586. doi:10.1016/S0304-3932(00)00010-6.

Nakamura, E., Steinsson, J., 2008. Five facts about prices: A reevaluation of menu cost models. The Quarterly Journal of Economics 123, 1415–1464. doi:10.1162/qjec.2008.123.4.1415.

Peersman, G., 2005. What caused the early millennium slowdown? evidence based on vector autoregressions. Journal of Applied Econometrics 20, 185–207.

Shapiro, A.H., 2024. Decomposing supply- and demand-driven inflation. Journal of Money, Credit and Banking 56, 2161–2198. doi:10.1111/jmcb.13209.

Uhlig, H., 2005. What are the effects of monetary policy on output? results from an agnostic identification procedure. Journal of Monetary Economics 52, 381–419.