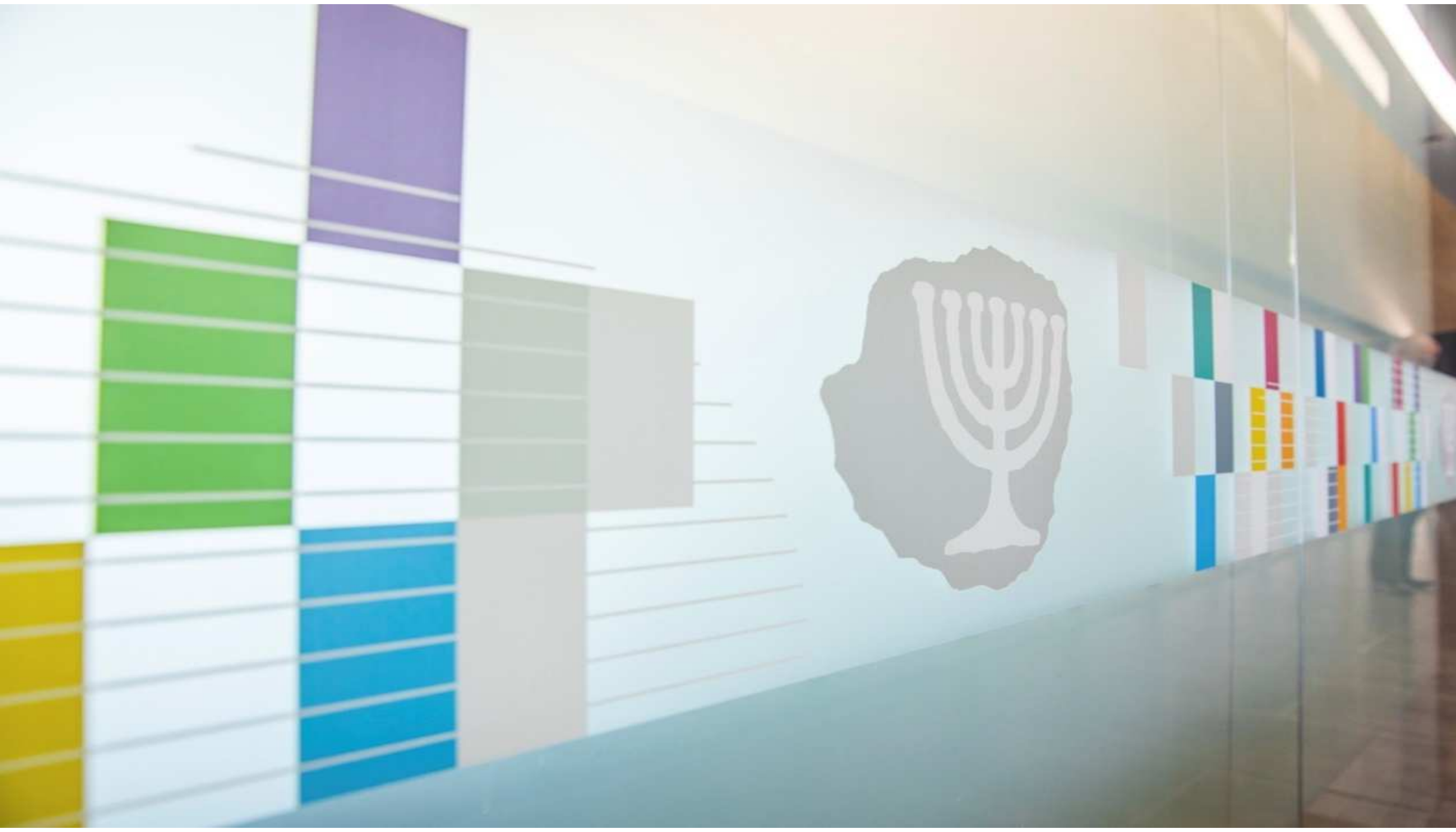
Bank of Israel

Research Department

Research and Policy Analysis Notes



From COVID-19 to War: Analysis of the Factors Driving Inflation and GDP in Israel Using a Structural VAR Approach

Author: Itamar Caspi

November 2025

Paper No. 2025.06

From COVID-19 to War: Analysis of the Factors Driving Inflation and GDP in Israel Using a Structural VAR Approach

- This analysis examines the factors that influenced inflation and GDP in Israel from the first quarter of 2020 through the first quarter of 2025. The analysis distinguishes between demand shocks, supply shocks, and monetary shocks — all defined as changes in demand, supply, or monetary policy that cannot be anticipated based on the past development of macroeconomic variables.
- During the post-COVID recovery period (2021–2023), inflation was primarily driven by positive demand shocks, alongside supply shocks that mainly restrained economic activity.
- Following the outbreak of the Swords of Iron war in October 2023, supply shocks became a significant factor contributing to the increase in inflation, in view of disruptions in the labor force (due to reserve mobilization and reduced availability of non-Israeli workers) and interruptions in supply chains.

1. Introduction

This analysis presents an empirical assessment of the structural factors that influenced the development of inflation and GDP in Israel during a period of exceptional volatility — from the outbreak of the COVID-19 pandemic in early 2020 through the first quarter of 2025. This period was marked by unprecedented healthcare, economic, political, and geopolitical challenges. The Israeli economy first had to contend with the complex consequences of the global pandemic, subsequently with elevated inflation, and later with the outbreak of the Swords of Iron war in October 2023.

The analysis focuses on two main periods, each posing distinct challenges for monetary policy makers. The first period, covering the COVID-19 years and the subsequent recovery (2020–2023), was characterized by sharp fluctuations in economic activity and inflation. After nearly a decade of stable and low inflation, the onset of this period saw a further decline in inflation accompanied by an economic slowdown, primarily reflecting supply constraints associated with lockdowns and social-distancing measures. However, the economy later experienced a rapid and unexpected recovery led by demand, which was accompanied by a renewed rise in inflation. Toward the end of this period, following domestic and global monetary tightening, inflation began to moderate.

The second period, from October 2023 through the first quarter of 2025, is defined by the economic effects of the Swords of Iron war. This period introduced new challenges, as the Israeli economy faced significant shocks on both the demand and supply sides. On the supply side, the extensive mobilization of hundreds of thousands of reservists for prolonged periods led to a sharp decline in the available civilian labor force. Certain industries, such as construction and agriculture, were further affected by a substantial reduction in the availability of non-Israeli workers. Disruptions to supply chains and to activity in labor-intensive industries resulted in production constraints and price increases across various parts of the economy. On the demand side, the sharp rise in defense and government expenditures, together with support measures for affected businesses and households, contributed to an increase in aggregate demand. This combination of significant supply constraints alongside strong demand posed unique challenges for monetary policy. Consequently, inflation stabilized and even began to rise again.

Recent research indicates that understanding the inflationary wave during the COVID period and the corresponding monetary policy response requires distinguishing between demand-side and supply-side effects. Giannone and Primiceri (2024), using a structural VAR model, show that in the United States and Europe most price increases were driven by demand rather than by supply disruptions such as production or port bottlenecks. Cerrato and Gitti (2022) analyzed data at the metropolitan level in the United States and found that price behavior during lockdowns changed markedly. The relationship between prices and unemployment weakened significantly during the pandemic but strengthened thereafter, again suggesting that demand plays a notable role in driving inflation. Examining the eurozone, Kollmann (2021) found that the initial COVID-19 shock was supply-driven. However, price levels did not rise substantially, likely because demand weakened simultaneously. Shapiro (2022) proposed a new method for classifying price increases based on the direction of changes in prices and quantities in the components of the US Personal Consumption Expenditure index, concluding that roughly half of US inflation was due to supply factors, one-third from demand, and the remainder from indeterminate sources. Finally, Eickmeier and Hofmann (2022) show that demand was the dominant driver of inflation in the United States, whereas supply played a larger role in Europe.

Demand- and supply-side analyses have also been conducted at the Bank of Israel using a range of empirical approaches. Structural DSGE models were published in Chapter 3 of the Bank of Israel Annual Reports for 2023–2024, alongside an analysis in the spirit of Shapiro (2022), which classified inflation components according to parallel movements in prices and quantities. In addition, analyses based on Business Tendency Surveys (Ilek and Mazar, 2025) and real-time credit card transaction data were used to assess demand and supply constraints. Across these approaches, a consistent picture emerged: During the post-COVID recovery period (2021–2023), a combination of strong demand recovery and supply limitations underpinned the rise in inflation and growth.

The analysis presented here is based on a structural Vector Autoregression (VAR) model, which serves as a tool for identifying structural shocks using sign restrictions. Specifically, the model first decomposes macroeconomic dynamics into two main types of shocks—demand and supply—and subsequently extends the decomposition to include monetary policy shocks. This approach enables a deeper understanding of the mechanisms that operated within the Israeli economy during the period under review and allows for an assessment of their relative contributions to fluctuations in inflation and GDP. Identifying the sources of economic shocks is important not only from an academic perspective but also for policymakers, as it highlights trade-offs between policy objectives and supports the formulation of more targeted and effective monetary and fiscal strategies.

Distinguishing between types of shocks is particularly important for monetary policy decisions. When inflation is driven by excess demand, policy trade-offs are generally limited — an interest rate increase is expected to cool both inflation and economic activity, and vice-versa. In contrast, inflation originating from supply shocks presents a genuine policy dilemma, as monetary tightening may exacerbate the decline in output. Moreover, the source of inflation affects the assessment of the risk that inflation will become entrenched at a high and persistent level, as opposed to being temporary. Therefore, an accurate understanding of the forces driving inflation is essential for an informed policy response.

The analysis is organized as follows. First, we present the methodology and data used in the study, including a detailed description of the structural VAR model and the variables included in it. Next, we describe the data and sample period employed in the analysis. Finally, we present the results, focusing on the two key periods—the COVID-19 and recovery period, and the wartime period—and examine the relative contributions of demand, supply, and monetary policy shocks to the dynamics of inflation and GDP.

2. Methodology

To characterize the structural shocks that affected inflation and other macroeconomic variables, as well as their dynamics, we will adopt the approach of Giannone and Primiceri (2024), hereafter GP, and first estimate a structural VAR model of the following form:

$$y_t = c + A_1 y_{t-1} + \cdots + A_p y_{t-p} + u_t$$

where y_t is a vector of n endogenous macrovariables expressed as a function of p independent lags, according to coefficient matrices $A_1, \dots, A_p$ and n reduced-form one-step-ahead forecasting errors that are presented by the vector u_t. The structural equation that translates the reduced-form forecasting errors into structural shocks is given by

$$Bu_t = \varepsilon_t$$

where B is an $n \times n$ matrix of contemporaneous coefficients linking the forecast errors to the structural shocks, and ε_t is a vector of n structural shocks. The translation of the forecast errors into structural shocks is performed using the inverse of the matrix B, meaning

$$u_t = B^{-1}\varepsilon_t.$$

The identification problem of the structural matrix in the VAR model is equalivent to attempting to solve a system of equations with more unknowns than equations. To see this, we first take the unconditional expectation ($\mathbb{E}$) of both sides of the above equation and obtain

$$\Sigma_u = \mathbb{E}[u_t u_t'] = \mathbb{E}[B^{-1}\varepsilon_t \varepsilon_t' (B^{-1})'] = B^{-1}\Sigma_\varepsilon (B^{-1})',$$

where Σ_u is the covariance matrix of the forecast errors, which can be estimated from the data.[1] This matrix is symmetric, and therefore contains $n(n+1)/2$ free elements. In contrast, Σ_ε is the covariance matrix of the structural shocks. This matrix is unobserved, but it is customary to assume that it is diagonal (that is, the structural shocks are mutually uncorrelated) and to normalize it so that all diagonal elements equal one, i.e. $\Sigma_\varepsilon = \mathrm{I}_n$. Under this assumption, the relationship between the covariance of the forecast errors and that of the structural shocks can be written as

$$\Sigma_u = B^{-1}(B^{-1})'.$$

The matrix B contains n^2 free elements, while Σ_u contains only $n(n+1)/2$. To identify the parameters of the structural matrix B, one must impose some values for $n(n-1)/2$—exactly the number of identification constraints required to identify the structural shocks. To achieve

[1] The sample counterpart of the expectation $u_t u_t'$ is the covariance matrix of the regression residuals (the forecast errors).

identification, one must incorporate external theoretical information or use information external to the model.

Similar to GP, the identification of structural shocks as supply and demand shocks in this analysis is based on sign restrictions on the contemporaneous impact of the structural shocks on the endogenous variables. In practice, this is implemented by imposing restrictions on the signs of the free elements in the matrix B^{-1}.

The estimation algorithm applies this by drawing a "rotation matrix," multiplying it by the Cholesky factor of the covariance matrix of u_t, and checking whether the resulting product satisfies the predefined sign restrictions.[2] If it does, the draw is retained. If not, another draw is made, up to a maximum number of attempts. The estimated structural matrix is defined as the average of the matrices that satisfy the sign restrictions, and the distribution of its values reflects the uncertainty surrounding the estimates.

For example, in a model with two endogenous variables—GDP and inflation—the matrix B^{-1} is defined such that the first column represents demand shocks and the second column represents supply shocks. Specifically, the sign restriction imposes a situation in which a positive demand shock simultaneously increases both GDP and inflation (and vice-versa), while a positive supply shock affects the two variables in opposite directions—positively affecting inflation and negatively affecting GDP (and vice-versa):

$$\begin{pmatrix} u_t^{\pi} \\ u_t^{GDP} \end{pmatrix} = \underbrace{\begin{pmatrix} + & + \\ + & - \end{pmatrix}}_{B^{-1}} \begin{pmatrix} \varepsilon_t^D \\ \varepsilon_t^S \end{pmatrix}.$$

where ε_t^D is a structural demand shock and ε_t^S is a structural supply shock.

What is the meaning of these "structural shocks" identified by this method (and by any VAR-based method)? In the classical econometric approach, the dependent variable is explained by observable variables, such as indicators of supply chain disruptions, risk premia, and credit measures. In contrast, in the structural VAR approach, the exogenous structural factors are not directly observed. Rather, they are defined as part of the unexplained residual, after all relevant observed variables have been accounted for in the regression.[3]

---

[2] In the sign-restriction method, it is assumed that the covariance matrix of the forecast errors (Σ_u) can be decomposed using an orthonormal rotation matrix Q, such that $\Sigma_u = PQQ'P'$. From this it follows that $B^{-1} = PQ$. The choice of Q is made so that the result satisfies the desired sign restrictions. In the case of a VAR model with two variables (such as output and inflation), a two-dimensional rotation matrix of the form

$$Q(\theta) = \begin{pmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{pmatrix}$$

is used, where $\theta \sim U(0,2\pi)$.

[3] Exogenous variables can be added to the VAR system, but even in that case they do not constitute structural shocks. They are exogenous variables that themselves are influenced by structural shocks. For example, adding the price of oil as an exogenous variable does not resolve the fundamental issue: oil prices themselves change as a result of global demand and supply shocks that affect the price of oil. Each of these shocks has different implications for an economy for which the price of oil is exogenous. Thus, an increase in oil prices due to higher global demand is not equivalent to an increase resulting from an OPEC supply cut.

These shocks can be thought of as the forces that shift the curves in a general equilibrium model such as AD–AS. In particular, the unexpected change in any variable—that is, the change not explained by its own lags or by those of other variables, also called the "forecast error" (in our case, u_t^{π} and u_t^{GDP})—is actually a linear combination of structural shocks (in our case, ε_t^D and ε_t^S). The goal of structural analysis is to extract these forecast errors and use them to identify the structural shocks. Since these shocks are not directly observable, they must be identified through restrictive assumptions on the model's dynamics.

The choice of the sign-restriction method for identifying structural shocks stems from its empirical flexibility and theoretical suitability to the Israeli economy.[4] Nevertheless, it is important to qualify the traditional interpretation of "demand and supply shocks" in the model. One can take a more pragmatic view, where the essential distinction is between shocks that create a trade-off for monetary policy and those that do not. In this framework, "supply shocks" are those that drive inflation and GDP in opposite directions, thereby posing a dilemma for the central bank between stabilizing inflation and stabilizing economic activity. In contrast, "demand shocks" are those that move both variables in the same direction, and therefore do not create a conflict between monetary policy objectives. The advantage of this interpretation is that it allows one to focus on the practical implications of the shocks for monetary policy, without relying on rigid theoretical definitions of aggregate demand and supply.

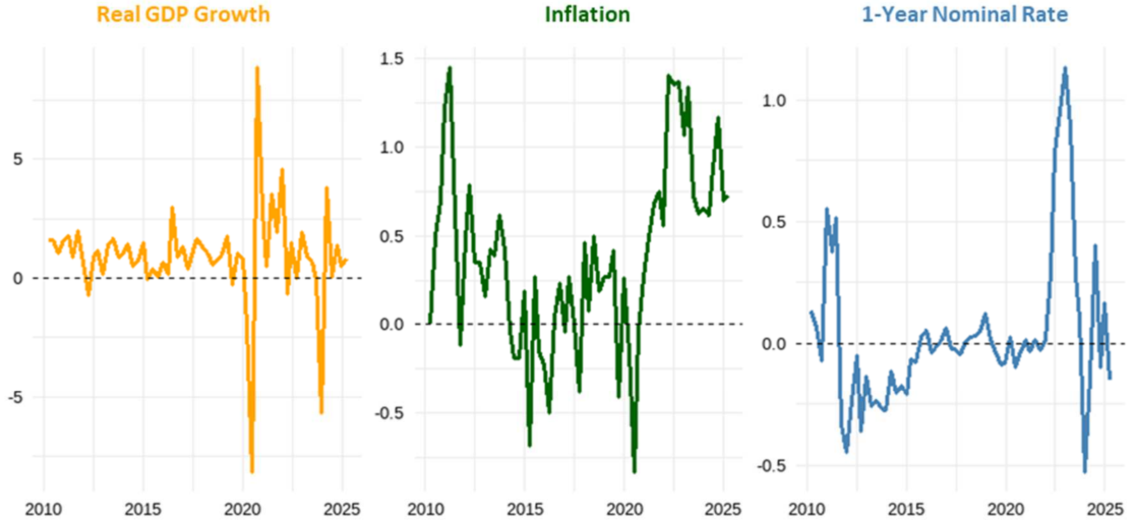
3. Data and estimation

In the first part of the analysis, we estimate the simplest version of the model, which includes only two endogenous variables: the Consumer Price Index (CPI) and real GDP.[5] Specifically, the endogenous variables are defined as the quarterly rate of change (in percent) of each of these variables (see Figure 1). The model is estimated with four lags of each variable, using a sample that begins in the first quarter of 2010 and ends in the fourth quarter of 2019.

[4] It is worth noting that several methods exist for identifying structural shocks within VAR-based analysis. Among the common approaches, in addition to sign restrictions (Uhlig, 2005), are identification based on timing (Sims, 1980) and identification based on differences in shock variances (Rigobon, 2003). Each of these methods provides a different perspective for interpreting and understanding the structural shocks in the model, allowing researchers to examine the dynamic effects of unexpected changes in the economic system.

[5] One key difference between our approach and that of GP is the choice to estimate the model in differences rather than in levels. This decision was made because, in the Israeli case, estimating the model in levels resulted in unstable coefficients.

Figure 1 | Real Growth, Inflation, and Change in the 1-Year Interest Rate
2010:Q1–2025:Q1



Inflation and real growth are in terms of quarterly rates of change, and the change in the interest rate is in terms of the difference in percentage points.

SOURCE: Based on Central Bureau of Statistics.

The sample period begins in 2010, as this marks the start of a relatively stable period following the subsiding of the 2008 Global Financial Crisis. The end of the sample is set at the end of 2019 to enable a valid counterfactual exercise—that is, to assess how the economy would have evolved in subsequent years had no shocks occurred, including the COVID-19 pandemic and the war, and had the economy continued according to its historical dynamics.

To do so, the model must be estimated over a "normal" period in which it can be assumed that the structure of the economy remained stable and that the relationships among the variables did not change materially.

Technically, the counterfactual exercise is performed by running the model estimated up to the last quarter of 2019 forward (i.e., forecasting) from the first quarter of 2020 onward, under the assumption that no new shocks occur. This forecast represents the expected development of the key variables if the historical dynamics had continued without shocks until convergence to a general equilibrium. Comparing this forecast with the realized data allows identification and quantification of the impact of the exceptional shocks. To ensure that the gap between the forecast and the actual data reflects only the effect of the shocks—and not changes in the model parameters—the estimation must stop before the shocks begin.[6]

[6] The COVID-19 crisis brought sharp and significant shocks to a wide range of macroeconomic time series. These exceptional shocks can distort parameter estimation in a VAR model. Therefore, it is often preferable to use data from the precrisis period as the basis for estimation. The professional literature offers several approaches to address this issue (Lenza and Primiceri, 2022; Bobeica and Hartwig, 2023). In our work, we adopt the approach of GP and Bernanke and Blanchard (2024). This approach involves estimating the model up to the point in time preceding the outbreak of COVID-19 and using the resulting coefficients for forecasting and identifying structural shocks.

In the second part of the analysis, the model is expanded to include an additional endogenous variable—the interest rate—which enables identification of monetary policy shocks. For this purpose, we use the change in the one-year interest rate (in percentage points) derived from the zero-coupon yield curve as a variable representing the overall stance of monetary policy. This choice stems from the empirical challenge that the Bank of Israel's policy rate was fixed at near-zero for much of the sample period, making it difficult to identify monetary shocks. This approach is consistent with the research literature (Swanson and Williams, 2014), which recommends using longer-term interest rates when the short-term policy rate is constrained by the effective lower bound.[7]

Given the "curse of dimensionality" that characterizes a VAR model rich in parameters estimated on a relatively short sample, we employ Bayesian estimation with a hierarchical Minnesota prior, which includes several elements designed to improve the efficiency of the estimators.[8]

To estimate the contribution of demand and supply shocks, we use the model estimated on data from the first quarter of 2010 through the fourth quarter of 2019 to forecast the development of the endogenous variables from the first quarter of 2020 through the first quarter of 2025, and compute the out-of-sample forecast errors (by comparing the forecasts with the realized data). Finally, using the structural matrix (estimated on the sample ending in 2019), we decompose the out-of-sample forecast errors into the contributions of the two structural shocks—demand and supply—and subsequently also into the monetary shock.

Although the current analysis does not explicitly include global variables, it is important to emphasize that the model is capable of capturing their effects indirectly. As shown by Forbes et al. (2018), in a structural VAR with sign-restriction identification, the identified shocks also reflect global effects. In our case, disruptions in global supply chains are reflected in supply shocks, while fluctuations in global demand are captured within domestic demand shocks. The fact that the model explains a substantial portion of the variation in the target variables, despite its relative simplicity, demonstrates its effectiveness in capturing both domestic and global dynamics. This finding is consistent with Bobeica and Hartwig (2023), who showed that even during the COVID-19 period—characterized by unprecedented global shocks—relatively simple local models can provide meaningful insights.

4. Results

The baseline estimation results are presented in Figure 2. The solid line in each subfigure depicts the actual development of the variable (annual real growth or annual inflation), while the dashed line represents the forecast for that variable as derived from the VAR model. Thus, for annual inflation, the model predicts a level one percentage point higher than the initial value. Given that the annual inflation rate at the end of 2019 stood at 0.6%, the forecast implies convergence toward a level slightly below the midpoint of the inflation target (1.6%).

[7] The one-year interest rate derived from the zero-coupon yield curve reflects both market expectations for the Bank of Israel's short-term policy rate and risk and liquidity premia. As such, it does not isolate the purely expectational component. Its use as a measure of the monetary stance arises from the lack of more direct information, particularly when the policy rate itself is at the lower bound.
[8] See Giannone et al. (2015).

With respect to real GDP, the model predicts convergence to a quarterly growth rate of 0.8%, equivalent to approximately 3.2% in annual terms.

It should be noted that the relative stability of the dashed line—the forecast—stems from the fact that it is computed forward based solely on estimation data up to the end of 2019. It therefore does not incorporate the exceptional macroeconomic shocks that occurred subsequently, such as the COVID-19 pandemic or the Swords of Iron war. The gap between the forecast and the actual data precisely represents the structural demand and supply shocks that this analysis seeks to identify and quantify.[9]

The yellow and green bars in the figures illustrate the contribution of each identified structural shock—"demand" and "supply," respectively—to the forecast error (i.e., the gap between the solid and dashed lines). The sum of the two bars equals the total forecast error at each point in time.[10]

From a macroeconomic perspective, at the onset of the COVID-19 crisis, the Israeli economy experienced substantial negative demand shocks alongside supply disruptions, leading to a sharp decline in economic activity. Beginning in 2021, as the recovery took hold, a symmetric dynamic emerged in which aggregate demand rebounded while aggregate supply remained constrained. During this period, the rise in inflation was driven mainly by aggregate demand shocks, while supply shocks partially offset this effect.

In the quarters following the outbreak of the war, we can see that there was a marked increase in the positive contribution of supply shocks to annual inflation, alongside a smaller negative contribution from demand shocks. The latter gradually diminishes, reaching zero in the second quarter of 2024, and subsequently turns positive, strengthening further in the third and fourth quarters.

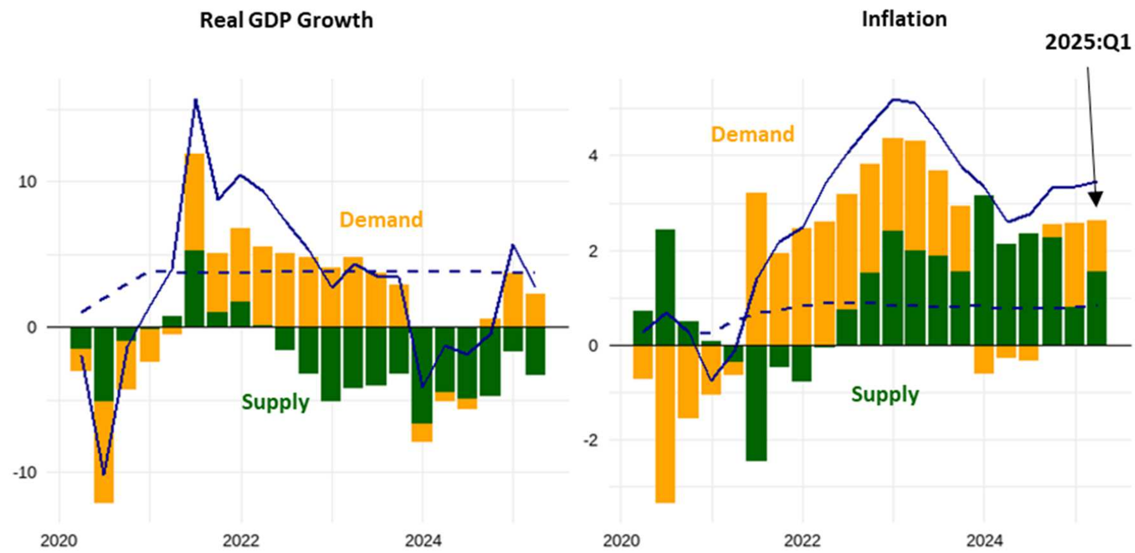
---

[9] The levels to which the model converges reflect the quarterly averages (at annual rates) of inflation and real growth over the sample period.

[10] The contributions shown in the shock identification are point estimates based on the structural matrix obtained as a unique solution (or an average of solutions) satisfying the predefined sign restrictions. These estimates are not accompanied by confidence or credible intervals and do not reflect the full dispersion of the posterior distribution of the structural contributions. Therefore, the contributions should be interpreted with caution—as representing a specific identification scenario rather than a definitive and precise estimate of the shocks' effects.

Figure 2 | Decomposition of Inflation and Growth into Supply and Demand Shock Contributions

2020:Q1–2025:Q1



Annual rate of change (current quarter relative to the same quarter in the previous year). The dashed line indicates the model's forecast, and the solid line indicates the actual figure. The columns indicate the contribution of the supply and demand shocks that took place since the beginning of 2020 to the gap between the actual figure and the forecast calculated on the basis of the model.

The model's results are consistent with the economic narrative of the post-COVID recovery. At the onset of the pandemic and the imposition of lockdowns, the Israeli economy experienced a sharp decline in activity, driven primarily by restrictions on private and business consumption—reflected in the negative contribution of demand shocks. With the removal of restrictions, households and firms that had accumulated savings during the lockdowns rapidly increased consumption and investment, releasing a surge of "pent-up demand." This phenomenon is reflected in the significant positive contribution of demand shocks to both growth and inflation from mid-2021 onward.

At the same time, global supply chain disruptions, shortages of raw materials, and rising maritime shipping costs generated inflationary pressures on the supply side.[11]

With the outbreak of the war in October 2023, the Israeli economy shifted from a period of recovery and stabilization to a different type of economic shock. The model successfully captures this sharp transition, as the sources of inflationary pressure shifted markedly—from predominantly demand-driven shocks during the post-COVID recovery to substantial supply-side shocks following the onset of the war.

The large-scale mobilization of reservists, the decline in the availability of non-Israeli workers in key industries, and disruptions to business activity in areas affected by the fighting constrained the economy's productive capacity precisely when domestic demand remained strong, the latter partly

[11] See, for example, Chapter 3, *Bank of Israel Annual Report* for 2022.

due to increased government spending. This development created a complex challenge for monetary policy, which must balance the need to contain inflation with the need to support economic activity and maintain equilibrium between demand and supply under highly uncertain conditions.

5. The expanded model: A monetary policy shock

The above analysis, which classified structural shocks into only two categories—demand and supply—is intentionally simplified, with both its advantages and limitations. While it allows for a relatively clear examination of the main aggregate forces underlying the evolution of key macroeconomic variables, it omits an important factor that has played a significant role in recent years—monetary policy. Expanding the model to include monetary shocks would enable a deeper understanding of the impact of interest rate developments on economic activity and inflation during the period under review.[12]

To estimate the contribution of monetary shocks in addition to the two previously identified shocks (demand and supply), we first augment the empirical model with an additional endogenous variable—the interest rate. A key empirical challenge in this context arises from the fact that the Bank of Israel's policy rate remained at the effective lower bound (near-zero) for a substantial portion of the sample period. To partially address this issue, we follow the common approach in the literature and use the one-year yield from the zero-coupon yield curve as a proxy for the overall stance of monetary policy.[13]

To distinguish the contribution of monetary shocks from the broader demand component, we again employ the identification approach proposed by GP, who define a monetary shock as one that exerts a positive effect on the interest rate and a negative effect on both inflation and output. In addition, GP assume that this effect is not limited to the contemporaneous period but persists for four consecutive quarters (see Table 1).[14] Extending the sign restriction for the monetary shock over four periods is intended to prevent over-identification of short-lived, economically insignificant monetary disturbances.

[12] In the empirical framework of this study, a "monetary shock" is defined as an unexpected change in monetary policy (in the interest rate) that is not a systematic response to changes in economic conditions, as captured by the policy reaction (according to the model) to GDP, inflation, their lags, and lagged interest rates.
[13] See, for example, Swanson and Williams (2024).
[14] In simple terms, the sign restriction in this case applies to the period of the shock and the three subsequent quarters.

Table 1 | Sign Constraints for the Model with Three Structural Shocks: Demand, Supply, and Monetary					
Shock	**Variable**	**Period**			
		1	**2**	**3**	**4**
Demand	GDP	+			
	Prices	+			
	Interest rate	+			
Supply	GDP	-			
	Prices	+			
	Interest rate				
Monetary	GDP	-	-	-	-
	Prices	-	-	-	-
	Interest rate	+	+	+	+

Figure 3 presents the historical decomposition of inflation and GDP into demand, supply, and monetary shocks. As before, the discussion focuses on two main periods: the COVID-19 and recovery phase (2020–2023) and the wartime period (from late 2023 onward). As shown, the model provides a more detailed picture of macroeconomic dynamics when the monetary shock is identified separately.

It is important to emphasize that the contribution of the monetary shock shown here reflects the *exogenous* impact of monetary policy—beyond the systematic response of the policy rate to prevailing demand and supply conditions in the economy. In other words, these represent monetary policy actions that deviated from what would have been expected based on the estimated monetary rule implied by the model.

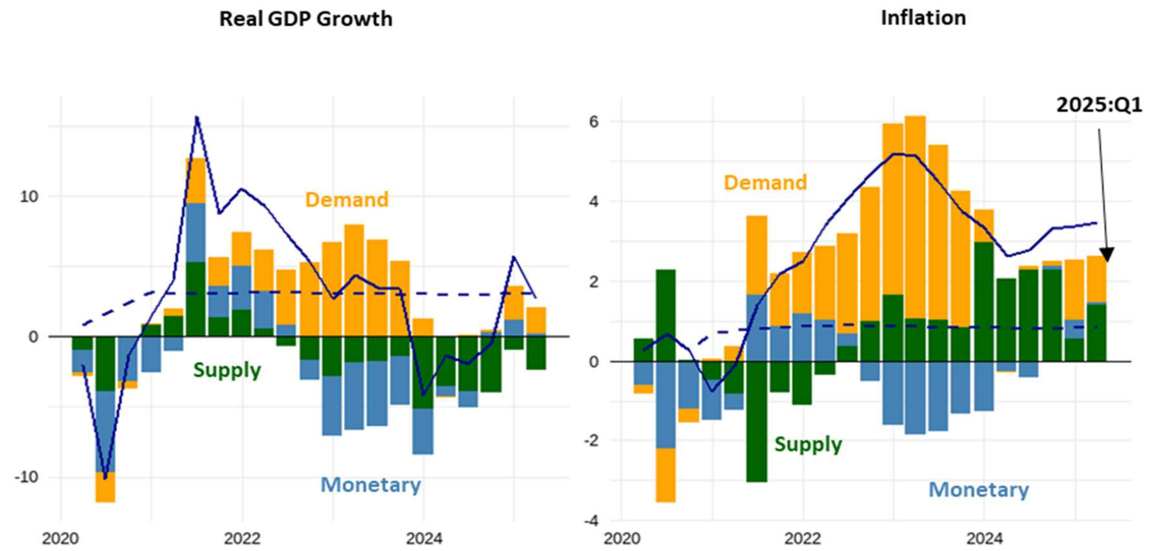
During the post-COVID recovery period, beginning in mid-2021, the monetary shock contributed negatively to GDP, reflecting the restraining effect of interest rate increases that were more aggressive than the model would have predicted in response to emerging inflationary pressures. At the same time, on the inflation side, the negative contribution of the monetary shock indicates the role of active tightening in curbing price increases—beyond what would have occurred through the standard policy response to market conditions.

It should be noted that although actual policy rate hikes began only in 2022, the one-year forward rate—the measure used in estimating the shocks—had already started to rise during 2021 (both in Israel and globally), reflecting growing expectations of monetary tightening. Consequently, the restraining effect of monetary policy during that period is already captured in the yield-curve-based indicators.

Following the outbreak of the war, a more complex picture emerges. Monetary policy continued to moderate inflation in the short term, but its contribution to the slowdown in activity diminished. This may indicate that the Bank of Israel adopted a more balanced approach, taking into account the economy's unique challenges during wartime. This development underscores the importance of real-time judgment in setting monetary policy—the need to navigate between containing inflation and supporting economic activity in an environment where supply shocks are the dominant source of inflationary pressure.

Figure 3 | Decomposition of Inflation and Growth into Supply, Demand, and Monetary Shock Contributions

2020:Q1–2025:Q1



The dashed line indicates the model's forecast, and the solid line indicates the actual figure. The columns indicate the contribution of the supply, demand , and monetary shocks that took place since the beginning of 2020 to the gap between the actual figure and the forecast calculated on the basis of the model.

6. Sensitivity tests

To assess the robustness of the results presented above, several sensitivity tests were conducted. First, the estimation period was extended by shifting the starting point of the sample from 2010 back to 2003—a period that includes the business cycle preceding the Global Financial Crisis. The main findings remained robust under this specification (not shown in this document). In particular, the significant contribution of demand shocks to inflation during the post-COVID recovery period, and the subsequent shift toward supply-shock dominance following the outbreak of the war, were preserved.

Second, we examined the sensitivity of the results to the measurement of inflation by replacing the Consumer Price Index with the GDP deflator. This alternative specification also confirmed the core findings of the analysis, although some differences were observed in the magnitude of the shocks.

Finally, a robustness test was performed by estimating the model over the 2003–2014 period and conducting forecasts and factor decompositions for the subsequent period, 2015–2019. This exercise yielded results indicating that the model is capable of reliably identifying structural shocks even outside the estimation sample.

7. Conclusion

The structural analysis of inflation and economic activity in Israel since 2020 provides important insights for policymakers. The study shows that during the COVID-19 period (2020–2023), following the initial downturn, the rise in inflation was driven primarily by positive demand shocks. In contrast, with the outbreak of the Swords of Iron war (late 2023), supply shocks became the dominant factors shaping the dynamics of inflation and GDP, while demand shocks continued to support economic activity.

According to the results, during the post-COVID recovery, inflation was mainly demand-driven, whereas since the onset of the war, supply-side factors—particularly the large-scale mobilization of reservists and the shortage of non-Israeli workers—have become the principal sources of inflationary pressure. In both periods, aggregate demand exceeded potential output, but the underlying mechanism differed: during the COVID-19 recovery, the excess demand was due to a surge in consumption and investment, while during the war, it resulted from a decline in potential output itself.

Despite the differing economic contexts, both periods required a restrictive monetary policy stance—initially to contain excess demand relative to existing potential output, and later to restrain excess demand in the face of a reduced potential output.

References

Bobeica, E. and B. Hartwig (2023). "The COVID-19 Shock and Challenges for Inflation Modelling", *International Journal of Forecasting* 39(1): 519–539.

Cerrato, A. and G. Gitti (2022). *Inflation Since Covid: Demand or Supply*. Available at SSRN 4193594.

Eickmeier, S. and B. Hofmann (2025). "What Drives Inflation? Disentangling Demand and Supply Factors", *International Journal of Central Banking*, 21(3): 111–153.

Forbes, K., I. Hjortsoe and T. Nenova (2018). "The Shocks Matter: Improving our Estimates of Exchange Rate Pass-Through", *Journal of International Economics*, 114: 255–275.

Giannone, D., M. Lenza, and G.E. Primiceri (2015). "Prior Selection for Vector Autoregressions", *Review of Economics and Statistics*, 97(2): 436–451.

Giannone, D. and G. Primiceri (2024). "The Drivers of Post-Pandemic Inflation", National Bureau of Economic Research (NBER) Working Paper No. 32859.

Ilek, A. and Y. Mazar. (2025). "A Business Conditions Real-Time Measure of Output Gap Deviations", Discussion Papers Series 2025.11, Bank of Israel Research Department.

Kollmann, R. (2021). "Effects of Covid-19 on Euro Area GDP and Inflation: Demand vs. Supply Disturbances", *International Economics and Economic Policy*, 18(3): 475–492.

Lenza, M. and G. Primiceri (2022). "How to Estimate a Vector Autoregression after March 2020", *Journal of Applied Econometrics*, 37(4): 688–699.

Rigobon, R. (2003). "Identification Through Heteroscedasticity", *Review of Economics and Statistics*, 85(4): 777–792.

Sims, C.A. (1980). "Macroeconomics and Reality", *Econometrica: Journal of the Econometric Society,* 48(1): 1–48.

Swanson, E.T. and J.C. Williams (2014). "Measuring the Effect of the Zero Lower Bound on Medium- and Longer-Term Interest Rates", *American Economic Review*, 104(10): 3154–3185.

Uhlig, H. (2005). "What are the Effects of Monetary Policy on Output? Results from an Agnostic Identification Procedure", *Journal of Monetary Economics*, 52(2): 381–419.