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Time-Varying Role of House Prices on Monetary Policy in Türkiye

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Türkiye'de Konut Fiyatlarının Para Politikası Üzerindeki Zamanla Değişen Rolü

Abstract

The main focus of this study is examining the time-varying effects of house prices on monetary policy in Türkiye from February 2010 to November 2021. We analyse these effects using a time-varying parameter vector autoregressive model with stochastic volatility (TVP VAR-SV). The evidence indicates that responses of inflation to positive house price shocks decrease over time. The response of credit and interest rates to positive house price shocks increases after 2018. The results reveal that the responses of the Central Bank of the Republic of Türkiye (CBRT) to the changes in the housing market have changed over time.

Keywords : House Price, TVP VAR-SV, Monetary Policy.

JEL Classification Codes : C11, C32, E52.

Öz

Bu çalışmanın amacı, Şubat 2010'dan Kasım 2021'e kadar Türkiye'de konut fiyatlarının para politikası üzerindeki zamanla değişen etkilerini incelemektir. Bu etkiler stokastik oynaklığa sahip zamanla değişen parametreli vektör otoregresif model (TVP VAR-SV) kullanılarak analiz edilmiştir. Elde edilen sonuçlar, enflasyonun pozitif konut fiyatı şoklarına verdiği tepkilerin zaman içinde azaldığını göstermektedir. Kredi ve faiz oranının pozitif konut fiyatı şoklarına tepkisi 2018'den sonra artmaktadır. Sonuçlar, Türkiye Cumhuriyet Merkez Bankasının (TCMB) konut piyasasındaki değişimlere verdiği tepkilerin zaman içinde değiştiğini ortaya koymaktadır.

Anahtar Sözcükler : Konut Fiyatı, TVP VAR-SV, Para Politikası.

1. Introduction

The central bank's monetary policy decisions are vital in maintaining overall economic health. These decisions include adjusting interest rates and managing the money supply to stimulate economic activity or control inflation. The housing market is a significant sector affected by these policies, as housing purchases typically involve substantial financial investments, often necessitating the use of credit. Thus, central banks' interest rates and money supply decisions can directly influence the housing market. Excessive fluctuations in housing prices can lead to significant changes in consumers' net wealth, indirectly affecting consumer spending and overall economic growth. For example, rapid increases in housing prices can make consumers feel wealthier and lead to increased spending. However, this situation also risks creating a housing bubble and subsequent bursts, which can result in widespread financial and economic damage. While excessively low interest rates can trigger prolonged housing market bubbles, excessively high rates can negatively affect housing sales and the construction sector, leading to an overall economic slowdown. Therefore, central banks must carefully evaluate the potential effects of their monetary policy decisions on the housing market. Additionally, developments in the housing market can have a significant impact on the health of the financial system. Large decreases in housing prices can weaken the balance sheets of financial institutions and restrict their lending capacities, leading to broader economic consequences. In this context, central banks should closely monitor developments in the housing market and adjust monetary policy as necessary to support financial stability and sustainable economic growth.

"The housing market is of central concern to monetary policymakers. To achieve the dual goals of price stability and maximum sustainable employment, monetary policymakers must understand the role that housing plays in the monetary transmission mechanism if they are to set policy instruments appropriately" (Mishkin, 2007). These statements, spoken by Mishkin a year before the subprime mortgage crisis in the USA, were a clear warning to monetary policymakers. However, the housing market catastrophe did emerge. One of the critical lessons from the global financial crisis is that while concentrating on price stability, central banks should not ignore the threats rising in the financial system and the asset price bubbles (Kara, 2012). The researchers reopened the discussion on how the housing market affects the overall economy and how monetary policy should react to rising house prices (Jarociński & Smets, 2008; Jordà et al., 2020; Nocera & Roma, 2018). Since the crisis, many major central banks have changed the implementation of traditional monetary policy. For efficient policy implementation, central banks should now monitor the adverse real effects of rising house prices (Tunc, 2020), which are consumers' most valuable asset, and also adapt their monetary policy stance to protect against shocks (Bjørnland & Jacobsen, 2010: 218). The CBRT has altered conventional inflation targeting policy by adopting financial stability and monitored aggregate and regional house price indices since 2010.

However, most focused on developed countries using the same conventional frameworks (VAR, SVAR), such as the US, New Zealand, Switzerland, Norway, the UK, and Sweden. They have not paid more attention to open emerging economies using the time-varying methodology. Türkiye's house prices have been overheating rapidly in recent years, and in August 2022, the annual growth rate reached 184%. After the 2018Q3, the CBRT gradually reduced its policy interest rate, and house prices in Türkiye have since resumed rising (Yıldırım & İvredi, 2021). The primary motivation of this study is to investigate the time-varying role of house prices on monetary policy in Türkiye. "Does the change in house prices impact the stance of monetary policy? Or, are monetary policymakers indifferent regarding fluctuations in the housing market?". To our knowledge, this research is the first effort to analyse the impacts of Türkiye's house price shock on monetary policy using the time-varying parameter vector autoregressive models with stochastic volatility (TVP-VAR-SV). In general, the VAR model typically assumes that parameters are constant. However, this may not be the case over long periods or when there are changes in economic policy. As a result, it may be beneficial to consider allowing parameters to vary over time (Elliott & Timmerman, 2013). Also, it is possible to get accurate insights using time-varying models rather than conventional linear testing (Plakandaras et al., 2020). The Turkish economy frequently experiences structural changes; for this reason, time-varying parameter methodology is the correct approach in this study.

The study's main finding is that house price shocks have significant time-varying effects on monetary policy stance. Therefore, As Mishkin (2007) asks in his work, "How can monetary policy best respond to fluctuations in asset prices, especially house prices, and possible asset-price bubbles?". There will be much discussion on the answer to this question.

The remainder of this paper is organised as follows: Section 2 reviews the literature, Section 3 describes the methodology, Section 4 presents the empirical results, and Section 5 concludes with policy implications.

2. Literature Review

There is widespread empirical and theoretical consensus in the literature that monetary policy shocks can cause house prices (see Jarociński & Smets, 2008; Mishkin, 2007; Iacoviello, 2002; Elbourne, 2008; Negro & Otrok, 2007; Bernanke, 2009; Robstad, 2018; Zhang & Pan, 2021). However, a few recent studies have explored the role of house prices on a monetary policy stance and found that the effect of house prices on monetary policy varies in different countries (Jarociński & Smets, 2008; Bjørnland & Jacobsen, 2010). In their research on the role of house prices in the monetary transmission mechanism, Bjørnland and Jacobsen (2010) show that the monetary policies of Norway, Sweden, and the UK are all influenced differently by house prices. When there is a shock in house prices, interest rates react regularly. Because of the direct effects, Elbourne (2008) indicates that the housing market plays a key role in the monetary transmission mechanism as well as Giuliodori (2005), Cai and Wang (2018). Nocera and Roma (2018) reveal substantial asymmetries among the countries in the euro area regarding how house prices react to monetary policy. According to Wadud et al. (2012), the key determinants of Australian house prices are the short-run interest rate and inflation. Tan and Chen (2013) show that house prices are significant in the Chinese monetary policy transmission mechanism. There is substantial evidence to support the idea that changes in house prices have a wealth and collateral effect. The bifurcation analysis of Brito et al. (2016) demonstrates that when monetary policy is more actively implemented, it leads to significant fluctuations in housing prices, manifesting as pronounced booms or busts. The study further establishes that adopting interest rate feedback rules, which are designed to respond dynamically to changes in both inflation and housing prices, cannot conclusively prevent the occurrence of these extreme fluctuations in the housing market. In Pakistan, there is a one-way relationship between monetary policy and housing prices, where a stricter monetary policy leads to lower house prices, and a more flexible approach increases them, despite the central bank not considering house prices when setting monetary policy (Umar et al., 2019). Bjørnland and Jacobsen (2013) show that monetary policy is less responsive to fluctuations in house prices compared to stock prices in the short term, but in the long term, this relationship reverses; however, due to the delayed response to house price shocks, they exert a more significant influence on both GDP and inflation than stock prices. Short-run findings suggest that policymakers prioritise stabilising the stock market in the short term, possibly due to its more immediate impact on economic sentiment and liquidity. However, this dynamic shifts as time progresses, with the long-term relationship between monetary policy and economic indicators reversing. In this extended timeframe, the effects of house price shocks become more pronounced, eventually surpassing the influence of stock price fluctuations on the broader economy. This reversal can be attributed to several factors, including the slower nature of housing market adjustments and the delayed implementation of monetary policy responses specific to the real estate sector. The more significant influence of house prices on GDP and inflation in the long term can be explained by the significant role the housing sector plays in overall economic activity. Housing investments are a critical component of GDP, and fluctuations in house prices can affect consumer wealth and spending, construction activity, and broader financial conditions. Furthermore, changes in housing costs are a key driver of inflation, mainly through mechanisms like rent and homeownership costs. Therefore, despite the initial lag in response, the eventual impact of house price changes on the economy is both profound and enduring, highlighting the critical need for policymakers to consider the long-term implications of their decisions on the housing market. According to Notarpietro and Siviero (2015), the optimal approach for monetary policy to address fluctuations in house prices, whether due to shifts in housing demand or financial disturbances, hinges on the economy's financial frictions. They argue for a negative policy response when there are fewer financially restricted agents while advocating for a positive response in economies with a high average loan-to-value ratio. Nocera and Roma's (2018) analysis suggests that combining monetary policy with macroprudential regulatory measures is essential to prevent potential real estate bubbles, especially in vulnerable national housing markets, particularly when macroeconomic and financial stability goals are misaligned, and house price responses to monetary policy vary significantly.

The findings of Albuquerque et al. (2020) show that since the 2008 Financial Crisis, house prices in the US have become more reactive to a shock to an expansionary monetary policy. The findings of Zhang and Pan (2021) suggest that in China's low-speed growth regime, monetary policy has a more significant impact on the housing market. Robstad (2018) supports using monetary policy to moderate changes in house prices and prevent financial instability in Norway. Mbazia and Djelassi (2019) empirically investigate the relationships between house prices and money demand for five Middle East and North African (MENA) nations. Findings demonstrate that rising house prices increase real money demand in both the long- and short-run estimations. The importance of the influence of house price developments on monetary policy in MENA countries may be clarified through the positive relationships between house prices and money demand in Qatar, Malta, and Türkiye. Dias and Duarte (2019) indicate that house rents rise in response to narrowing monetary policy shocks compared to house prices. Kutlu's (2019) findings indicate that changes in monetary policy have a negative impact on house prices in the Türkiye economy. This result demonstrates how monetary policy significantly and positively impacts house prices. The study's empirical results indicate that monetary policy affects house prices. Therefore, the CBRT should take housing costs into account when formulating policies. Tunc and Gunes (2022) examine the dynamic link between monetary policy and house prices in seven emerging countries. They demonstrate that most central banks respond with monetary policy to unexpected changes in house prices to limit any potential adverse impacts on prices, output, and financial stability. The housing market is relatively localised and has not yet the potential to have a spillover effect that would create an economic recession in emerging markets; thereby, the monetary policy response has also been relatively muted. In their research examining the CBRT's sensitivity to increases in house prices since 2010, Yıldırım ve İvrendi (2021) found that house price fluctuations have no impact on Türkiye's monetary policy response function. Although it is not the primary factor influencing house prices, monetary policy has become more significant in recent years. Chen ve Lin's (2022) study investigating the relationship between house prices and monetary policy concluded that an expansionary monetary policy causes an increase in real house prices in almost all the countries examined. Additionally, it was stated that the differences in the financial liberalisation levels of the nations would be effective in shaping the response to the monetary shocks of house prices.

3. Methodology

We use the TVP VAR-SV model proposed by Primiceri (2005) to determine the dynamics of house prices and monetary policy. TVP VAR-SV model is an extension of the basic VAR model. Allowing coefficient and variance-covariance matrix changes over time enables the construction of a TVP VAR-SV model. The TVP-VAR model with stochastic volatility is as follows:

$$y_t = X_t\beta_t + A_t^{-1}\,\Sigma_t\varepsilon_t, t = s+1, \dots, n \tag{1}$$

where the coefficients β_t, parameters A_t and Σ_t are all time-varying.

For the sake of simplicity, two assumptions are made. First, we will suppose that the matrix A_t is a lower triangular. Second, the parameters in (1) are determined via a random walk process (Nakajima, 2011). We can build the model as follows:

$$\beta_t = \beta_{t-1} + u_{\beta t} \tag{2}$$

$$a_t = a_{t-1} + u_{at} \tag{3}$$

$$h_t = h_{t-1} + u_{ht} \tag{4}$$

where, $a_t = \left(a_{21}, a_{31}, \ldots, a_{k,k-1}\right)$ be a stacked vector of the lower-triangular elements in A_t and $h_t = (h_{1t}, \ldots, h_{kt})$ with $h_t = log\sigma_{jt}^2$ for $j = 1, \ldots, k,\ t = s+1, \ldots, n$. Also we have $\beta_{s+1} \sim N(\mu_{\beta_0}, \Sigma_{\beta_0})$, $a_{s+1} \sim N(\mu_{a_0}, \Sigma_{a_0})$ and $h_{s+1} \sim N(\mu_{h_0}, \Sigma_{h_0})$ with:

$$Var\left(\begin{bmatrix} \varepsilon_t \\ u_{\beta t} \\ u_{at} \\ u_{ht} \end{bmatrix}\right) = \begin{bmatrix} I_n & 0 & 0 & 0 \\ 0 & \Sigma_{\beta_0} & 0 & 0 \\ 0 & 0 & \Sigma_{a_0} & 0 \\ 0 & 0 & 0 & \Sigma_{h_0} \end{bmatrix}.$$

The TVP-VAR-SV estimate procedure differs from traditional methods. When there is constant volatility, Equations (1)-(4) may be represented as a Gaussian state-space model, and the classical Kalman filter can be used to estimate. Due to the model has stochastic volatility, we should estimate it using Bayesian techniques[1].

Given the data y, sample from the posterior distribution $\pi(\beta, a, h, w|y)$ is generated using the Markov chain Monte Carlo (MCMC) method where $w = (\Sigma_\beta, \Sigma_a, \Sigma_h)$. The MCMC algorithm involves the following steps (Nakajima et al., 2011):

(i) Initialize β, a, h and w
(ii) Sample β from $p\left(\beta|a, h, \Sigma_\beta, y\right)$
(iii) Sample Σ_β from $p\left(\Sigma_\beta|\beta\right)$
(iv) Sample a from $p(a|\beta, h, \Sigma_a, y)$
(v) Sample Σ_a from $p(\Sigma_a|a)$
(vi) Sample h from $p(h|\beta, a, \Sigma_h, y)$
(vii) Sample Σ_h from $p(\Sigma_h|h)$
(viii) Go back to (2)

If the MCMC sample has a high autocorrelation, the Markov chain method's convergence is slow, and inference requires many samples (Nakajima et al., 2011). To reduce the sample autocorrelation, the simulation smoother was developed by De Jong and Shephard (1995) and Durbin and Koopman (2002). It enables sample a simultaneously from the conditional posterior distribution $\pi(|\beta, h, \Sigma_a, y)$ which can reduce the autocorrelation of

[1] *For details of estimation procedure Nakajima (2011) can be checked.*

the MCMC sample. To generate the VAR parameters β and use simulation smoother, the following equations are used:

$$y_t - X_t\beta_t + A_t^{-1}\,\Sigma_t\varepsilon_t, t = s+1, \dots, n \tag{5}$$

$$\beta_t = \beta_{t-1} + u_{\beta t}\ t = s, \dots, n-1 \tag{6}$$

where $\beta_s = \mu_{\beta_0}$ and $\mu_{\beta_s} \sim N(0, \Sigma_{\beta_0})$.

$$\hat{y}_t = \hat{X}_t a_t + \Sigma_t\varepsilon_t, t = s+1, \dots, n \tag{7}$$

$$a_t = a_{t-1} + u_{at} \tag{8}$$

where $a_s = \mu_{\beta_0}$ and $\mu_{a_s} \sim N(0, \Sigma_{a_0})$.

$$\hat{y}_t = y_t - X_t\beta_t \tag{9}$$

and for $t = s+1, \dots, n$:

$$\hat{X}_t = \begin{pmatrix} 0 & \cdots & \cdots & \cdots & & \cdots & 0 \\ -\hat{y}_{1t} & 0 & 0 & \cdots & & \cdots & \vdots \\ 0 & -\hat{y}_{1t} & -\hat{y}_{1t} & 0 & & \cdots & \vdots \\ 0 & 0 & 0 & -\hat{y}_{1t} & & \cdots & \vdots \\ \vdots & \vdots & \vdots & \vdots & \vdots & & \vdots \\ 0 & 0 & 0 & \cdots & & \cdots & -\hat{y}_{k-1,t} \end{pmatrix}.$$

To draw stochastic volatility states h, the inference for $\{h_{jt}\}_{t=s+1}^{n}$ separately for $j = 1, \dots, k$.

The i-th element of $A_t\hat{y}_t$ can be written as:

$$y_{it}^{*} = \exp\left(\frac{h_{it}}{2}\right)\varepsilon_{it}, t = s+1, \dots, n \tag{10}$$

$$h_{i,t+1} = h_{it} + \eta_{it}, t = s, \dots, n-1 \tag{11}$$

$$\begin{pmatrix} \varepsilon_{it} \\ \eta_{it} \end{pmatrix} \sim N\left(0, \begin{pmatrix} 1 & 0 \\ 0 & v_i^2 \end{pmatrix}\right)$$

4. Empirical Results

We use the monthly frequency industrial production index (2015=100), consumer price index (2003=100), total domestic credit, exchange rate, and interbank interest rate (short-term interest rate as an indicator of the policy stance) and house price index (2017=100) for the period 2010:02-2021:11. All data are taken from the CBRT Electronic Data Delivery System except interbank interest rate. It is taken from Fred Lousiana. The industrial production index and consumer and house price indexes are seasonally adjusted using the Tramo-Seats. The exchange is the average TL equivalent of the euro and dollar exchange rates. Percentage change of all variables except the interbank interest rates compared to one period ago is taken[2]. We take the first difference in the interbank interest rate. After transformation, we take the abbreviations of variables: the interbank interest rate, total credit, nominal exchange rate, industrial production index, house price index, and consumer price index as ir_t, cre_t, exc_t, ip_t, $house_t$ inf_t, respectively.

In our basic model (1), we take, $y_t = (ip_t, inf_t, cre_t, exc_t, ir_t, house_t)'$. To identify the effects of the monetary policy, the interest rate is often taken as the last variable in the Cholesky order. As suggested in Bjornland and Jacobsen (2010) and Robstad (2018), we take the house price as the last variable in the ordering of the Cholesky decomposition because of the economic theory, contemporaneous effects of monetary policy are typically expected, particularly on assets prices such as house prices and exchange rates. Theoretically, if these asset values affect the real economy, monetary policy should respond contemporaneously to changes in these variables. This study explores how time variation within a VAR model can occur either in the coefficient matrix or the variance-covariance matrix. To find the best way to represent changes over time, four model specifications are compared: time-varying parameters with (1) stochastic volatility or (2) constant variance and fixed coefficient with (3) stochastic volatility or (4) constant variance. The deviance information criterion (DIC) determines the best-fitting model (Spiegelhalter et al., 2002).

Table: 1
DIC Values for Different VAR Models

Modeller	**DIC**	$\boldsymbol{p_d}$	$\boldsymbol{\bar{D}}$
TVP-VAR-SV	6720.45	48.25	-3360.23
TVP-VAR	6905.32	42.67	-3451.49
VAR-SV	7150.88	39.82	-3575.12
VAR	7324.15	37.94	-3668.08

Table 1 reveals that the TVP-VAR-SV model has the best fit, as indicated by its lowest DIC value. This means that using time-varying parameters offers a superior model to constant coefficients. Additionally, incorporating stochastic volatility further improves the model's fit compared to constant variance. To determine the number of lags in the VAR, we evaluate the model from one to six lags and select the appropriate lag with the lowest Schwarz-Bayesian Information Criterion; the minimum value is obtained when the model is estimated with one lag. We draw 10000 samples from the posterior distribution after discarding 1000 as a training sample. The posterior means, SD, and 95% confidence intervals of the selected parameters obtained from the TVP-VAR estimate are presented in Table 2. Considering the convergence diagnostics and inefficiency factors, the posterior distribution converged, and a sufficient number of independent samples were obtained to conclude (Nakajima et al., 2011).

[2] *From now on, when we talk about variables, we mean their transformed state.*

Since the prediction method used in the study is Bayesian, some a priori information must be entered into the system beforehand. The distributions of covariance matrices are assumed to have the following a priori:

$$(\Sigma_\beta)_i^{-2} \sim Gamma(10; 0{,}01)$$

$$(\Sigma_h)_i^{-2} \sim Gamma(2; 0{,}01)$$

$$(\Sigma_a)_i^{-2} \sim Gamma(2; 0{,}01)$$

We take $\mu_{\beta_0} = 0$, $\mu_{a_0} = 0$, $\mu_{h_0} = 0$ and $\Sigma_{\beta_0} = \Sigma_{a_0} = \Sigma_{h_0} = 6 \times I$ for initial values of time-varying parameters.

Table: 2
Estimation Results for Selected Parameters in the TVP-VAR-SV Model

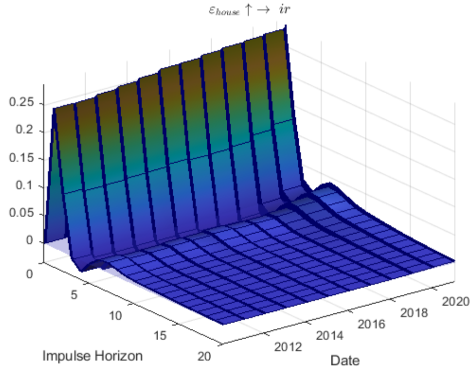
Parameter	Mean	Std. error	Lower (%95)	Upper (%95)	CD statistics	Inefficiency
s_{b_1}	0,0023	0,0003	0,0018	0,0029	0,439	6,85
s_{b_2}	0,0023	0,0003	0,0018	0,0029	0,074	10,30
s_{a_1}	0,0055	0,0016	0,0033	0,0096	0,413	43,45
s_{a_2}	0,0060	0,0020	0,0035	0,0116	0,248	48,86
s_{h_1}	0,3444	0,1008	0,1789	0,5750	0,961	41,22
s_{h_2}	0,0055	0,0016	0,0034	0,0093	0,516	46,77

The next part examines the effect of the change in house prices on monetary policy with the help of time-varying impulse and response functions. All figures contain two different graphic types. These are three-dimensional (3D) and short- and long-term impulse-response functions. Three-dimensional graphs are formed by giving impulse response functions obtained for all time points on a single graph. On the other hand, confidence intervals of impulse-response functions cannot be shown in these graphs due to the complexity of the graph. The second type of graph, which includes confidence intervals and shows cumulative effect responses, is given below the three-dimensional graphs. Only impulse response and their confidence bands for periods 1 and 18 are presented in this graph.

Figure 1 reports the impulse responses of interest rates to a positive house price shock. The response of interest rates to house price shocks is positive and has a time-varying structure. The response increases in the short term but is constant between 2010 and 2018 in the long run. After 2018, the response increases in the long term.

Between 2010 and 2018, Türkiye's economy experienced a period of relative stability and growth. Like many countries, Türkiye was affected by the global financial crisis in 2008-2009. However, its economy recovered quickly due to economic reforms and strong domestic demand. This may have contributed to the constant interest rate response during this period. The CBRT implemented expansionary monetary policies to stimulate economic growth. This could have contributed to the stable interest rate response to house price shocks, as the central bank aimed to maintain low interest rates to support growth. In 2018, Türkiye faced an economic downturn and currency crisis, with the Turkish lira losing significant value against major currencies. This led to high inflation and decreased investor confidence, prompting the central bank to raise interest rates aggressively. The central bank's approach to monetary policy may have become more reactive to economic indicators, such as house price shocks, to stabilise the economy.

Figure: 1
The Impulse Response Function of the Interest Rate to One Standard Deviation Positive the House Price Shocks with ±2 Standard Error Bands



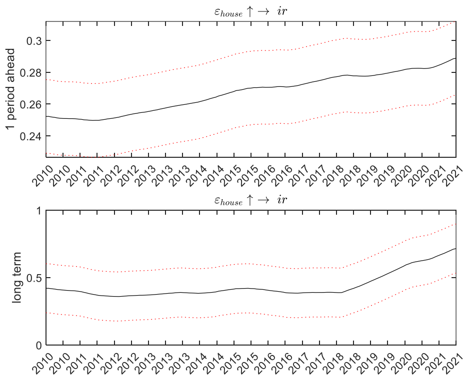
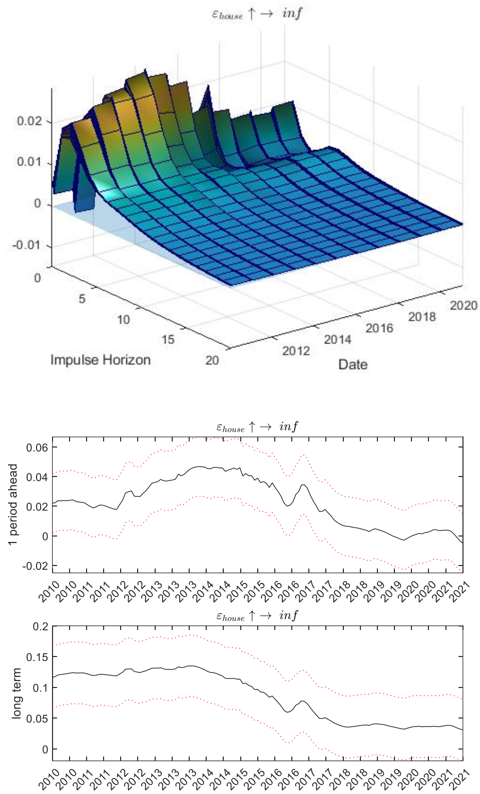


Figure 2 reports inflation's impulse responses to a positive house price shock. The short-term effects of a positive house price shock on inflation are positive but statistically insignificant after 2018. In the short run, inflation's response increases between 2012 and 2015 and decreases until 2020.

Figure: 2
The Impulse Response Function of the Inflation to One Standard Deviation Positive the House Price Shocks with ±2 Standard Error Bands

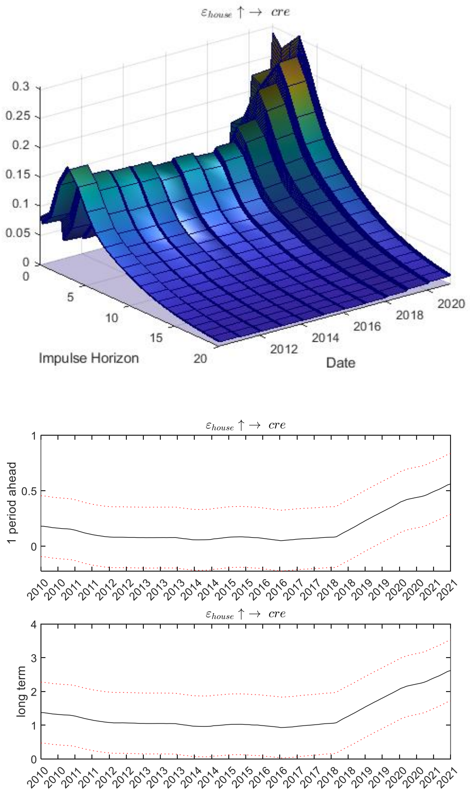


Between 2012 and 2015, Türkiye experienced strong economic growth driven by domestic demand, government spending, and a construction boom (World Bank, 2014). The CBRT maintained relatively low-interest rates to support growth, which could have increased credit availability and contributed to the rising inflation during this period. The Turkish government promoted the construction and real estate sectors, resulting in increased demand for housing and an upsurge in house prices. This could have contributed to the positive relationship between house price shocks and inflation during this period. From 2015 until 2020, Türkiye's economy faced several challenges, including political instability. The coup attempt in 2016, rising geopolitical tensions, and domestic political issues contributed to increased uncertainty, which could have dampened economic growth and reduced the impact of house price shocks on inflation. In 2018, Türkiye experienced a currency crisis, with the Turkish lira losing significant value against major currencies. This led to high inflation and prompted the central bank to raise interest rates aggressively to stabilise the economy. This tightening of monetary policy could have weakened the relationship between house price shocks and inflation.

After 2018, the positive but statistically insignificant relationship between house price shocks and inflation could be attributed to stabilising inflation. As the central bank took measures to curb high inflation, the relationship might have become less pronounced.

Figure 3 shows the credit response to a positive house price shock. Before 2018, the response was positive but statistically insignificant. It increased after 2018 and reached its maximum value in 2021.

Figure: 3
The Impulse Response Function of the Credit to One Standard Deviation Positive the House Price Shocks with ±2 Standard Error Bands



Before 2018, the statistically insignificant response of credit to house price shocks can be attributed to several factors. Türkiye recovered relatively quickly from the global financial crisis, with economic decisions and solid domestic demand stimulating credit growth. The relationship between credit and house price shocks was weak during this recovery period.

The Central Bank kept interest rates relatively low during this period, encouraging borrowing and credit expansion. However, the relationship between credit and house price shocks was not strong enough to be statistically significant. The economic administration and financial institutions implemented regulations and lending practices that limited the impact of house price shocks on credit growth. For example, in this period, regulations such as the regulation of credit valuation ratios, macroprudential regulations on credits, maturity limits on house credits, and limits on house credit interest rates have the potential to limit the impact of house price shocks on credit growth in Türkiye.

After the 2018 currency crisis, the CBRT raised interest rates, but post-June 2019 saw a rapid decline in interest rates. Low interest rates boosted demand for house credit, contributing to the rise in house prices, which led to an increase in total domestic credits. In the same period, foreign investors' interest in the real estate sector led to a rise in house prices and an increase in total domestic credits.

5. Conclusion

This study examines the impact of house prices on a monetary policy stance, price stability, and credit using the TVP VAR-SV model for Türkiye. While the effect of the house price shock on inflation is statistically insignificant after 2018, its impact on credit and interest rates increases after 2018. The effect of house prices on credit and interest rates is long-term and increases after 2018. Empirical evidence shows that 2018 is when the response of other variables changed in response to the shocks in house prices for Türkiye.

Our findings show that CRBT reacts to house market developments. The development of the housing market, its financialisation, and the emphasis of economic management on the housing market may be effective in the changing effects of the housing market on the monetary policy over time. In particular, as of the beginning of 2018, it is thought that the CBRT has taken a tighter monetary stance within the "leaning against the wind" view to reduce the risks accumulated in the financial markets due to the increase in house prices. After the rapid depreciation of the Turkish lira in August 2018, the CBRT tightened its monetary policy significantly and implemented additional measures against speculative currency attacks. The CBRT did not remain indifferent to developments in house prices in the short and long term and gave more palpable responses, especially in the post-2018 period, despite house price shocks. In other words, during the determination of the monetary policy of the CBRT, it took an approach that considered price stability and house prices. When the CBRT wishes to control house prices, it would be appropriate to consider the time-varying nature of the asset channel.

The broader implications of our findings suggest that central banks in other countries could benefit from considering the dynamic relationship between house prices and monetary policy. Our study indicates that a time-varying approach to the asset channel can be crucial for managing price stability and monetary policy efficacy. Central banks might employ similar strategies to "lean against the wind", adjusting their policy stances in response to real estate market signals to preempt financial instability and ensure sustainable economic growth.

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