Contributions

Serdar Varlik and M. Hakan Berument*

Credit channel and capital flows: a macroprudential policy tool? Evidence from Turkey

Abstract: Rapid credit growth induced by sudden capital inflows may negatively affect a country's economic performance, with the resulting outflows turning into a financial crisis. The purpose of this study is to determine whether controlling the credit channel of monetary policy could be used as a macroprudential tool to suppress the effects of sudden capital inflows on economic performance for small open economies like Turkey. In this paper, using the Vector Autoregression methodology employed by (Bernanke, S. B., M. Gertler, and M. Watson. 1997. "Systematic Monetary Policy and the Effects of Oil Price Shocks." *Brookings Papers on Economic Activity* 1: 91–157), we investigate whether shutting down the credit channel helps reduce the effects of capital inflows. Indeed, empirical evidence from Turkey shows that doing so decreases the effects of capital inflows on imports and industrial production, but further decreases interest rate and prices and further appreciates the domestic currency. Therefore, it may be prudent to support credit control with additional policy tools to prevent a further decrease in interest rate and prices and a further appreciation of the domestic currency.

Keywords: capital flows; credit channel; macroeconomic prudential policy.

JEL Codes: E51; E52; E58.

1 Introduction

Capital inflows as portfolio investments may affect a country's economic performance adversely because of the external fragility of the domestic financial

*Corresponding author: M. Hakan Berument, Department of Economics, Bilkent University, 06800, Ankara, Turkey, Phone: +90 312 290 2342, Fax: +90 312 266 2529, e-mail: berument@bilkent.edu.tr
Serdar Varlik: Department of Economics, Hitit University, 19040, Corum, Turkey

market, especially if achieved through the banking system when inflowed capital turns to outflowed capital. This effect on economic performance, frequently working through the credit channel, precipitates fluctuations in banks' balance sheets and may decrease credit quality. Moreover, currency appreciation may damage price stability and aggravate the current account deficit within the framework of financial stability. Since the 2008 global financial crisis, the magnitude of capital flows has become a factor in the financial stability of small open economies. Such countries, including Turkey, have begun to adopt various macroprudential policy tools to prevent the adverse effects of capital inflows; controlling bank credit growth is one such tool. This paper contributes to the literature on the subject by providing evidence for whether the credit channel can be used as a macroprudential tool to suppress the effects of sudden capital inflows on economic performance for small open economies like Turkey.

Sudden capital inflows may cause a surplus in credit supply, loosening credit standards and thus resulting in excessive credit growth (also called a *credit boom*). This situation can threaten price stability and financial stability by enlarging current account deficits, buoying asset prices and increasing domestic demand. Sudden capital inflows also increase the banking sector's foreign-currency-denominated liabilities (Gourinchas, Valdes and Landerretche 2001; Elekdağ and Wu 2011; Magud et al. 2012). Adversely, a slowdown in short-term capital inflows, such as if the economy encounters the *sudden stop* problem, may damage economic performance through the credit channel and even result in a financial crisis (Calvo 1998; Reinhart and Calvo 2000). Barajas, Dell'Ariccia, and Levchenko (2009) call this scenario a *bad credit boom*, and it occurs because central banks, especially in developing countries, focus on the excessive credit growth without planning for the problems that can occur when sudden capital inflows stop.

Interest rate, which is used as the basic monetary policy tool by central banks under a conventional policy setting in small open economies, may not be the best tool to control credit. For example, when central banks in these countries increase the policy interest rate to cool down the economy and slow credits, capital flows and credits increase, stimulating the economy. Thus, stirring up capital inflows feeds credits rather than constraining them (Hahm et al. 2012). This result is similar to another dilemma, that is, when central banks decrease the policy rate to discourage capital inflows. A lower interest-rate policy may spark the asset price bubble, which causes *credit-driven* and/or *irrational exuberance* (see Mishkin 2010). Low interest rates may also result in excessive risk taking in the economy, the channel called the "risk-taking channel of monetary policy" (Borio and Zhu 2008, p. iii). A low interest-rate policy can cause an increase in the net interest rate margin for financial institutions, which provides more profit

(Adrian and Shin 2010), and therefore, these institutions may choose to increase the leverage ratio and so take on more risky investments, which increases asset prices, loosens credits and precipitates a financially unstable environment. Thereby, on its own, interest rate may not be an effective policy tool to stabilize the financial system. These emerging deficiencies in conventional monetary policy since the global financial crisis may suggest using alternative macroprudential policy tools that complement the policy rate tool in an unconventional monetary policy framework.

The Turkish economy provides a convenient environment in which to study the effect of credit control on capital flow in economic performance. The credit channel is a well-recognized method of using monetary policy to affect economic performance (see Mishkin 1996; Boivin, Kiley, and Mishkin 2010), and a very important channel for small open economies like Turkey.[1] The purpose of this paper is not to document the existence or workings of the credit channel but to assess whether controlling the credits of the domestic banking system decreases the effects of capital inflows on a small open economy. Hence, we analyze the impacts of capital flow shocks on the economic performance of the Turkish economy through the credit channel by using Bernanke, Gertler and Watson's (1997) Vector Autoregression (VAR) methodology. The empirical evidence gathered from the Turkish case suggests that shutting down the credit channel decreases the effects of capital inflows on imports and industrial production, but further appreciates the domestic currency and decreases prices and interest rates. Therefore, we suggest that credit controls might be only one of a set of tools in macroprudential policy to suppress the adverse effects of capital flows.

Turkey achieved external financial liberalization in 1989, and since then, the relationship between sudden capital inflows and credit growth has been growing stronger, threatening financial stability. Başçı and Kara (2011) (governor and chief economist of the Central Bank of the Republic of Turkey (CBRT), respectively), Özatay (2011) (former CBRT deputy governor and former member of the CBRT's Monetary Policy Commission), Akkaya and Gürkaynak (2012) (two academicians) and Kara (2012) state that sudden capital inflows dramatically bring about two important results for Turkey: excessive credit growth and currency appreciation. The CBRT admits that these two factors as a result of capital inflows may result in price instability and financial instability. The CBRT (2012a) and Alper, Kara, and Yörükoğlu (2013) indicate that rapid currency appreciation induced by capital inflows may affect firms' willingness to borrow, leading to an

---

[1] In Turkey, the financial system is characterized by low financial capitalization in the equity market, low securitization and low opportunities for refinancing (such as for housing refinancing). For this reason, the banking system plays a big role in the credit market.

excessive lending appetite in banks. Thus, the banking sector increases credits to the private sector excessively, which causes domestic demand to grow faster than aggregate income. This process is called a *financial accelerator mechanism*, and amplifies business cycles. Eventually, the current account deficit dramatically increases, in parallel with credit booms and currency appreciation, which results in macroeconomic instability and even financial crisis (Ganioğlu 2012). An unforeseeable increase in credit growth and currency appreciation induced by intensive sudden capital inflows (also called *hot money*) negatively affect the current account balance. For example, in 2010, CBRT governor Yılmaz estimated that a 5% increase in credit growth would trigger a 2.1% increase in the current account deficit in Turkey for the year 2011 (Yılmaz 2010). Therefore, controlling excessive credit growth may forestall a high current account deficit. Akçay and Ocakverdi (2012) also suggest that controlling excessive credit growth may significantly reduce Turkey's high current account deficit. According to Kara et al. (2014), an average annual credit growth of 15% for Turkey would be reasonable in the medium term. In the summary of its Monetary Policy Committee Meeting of January 29, 2013, the CBRT stated that "[m]acroprudential measures will continue to be taken, should…credit growth expectations exceed 15% for a long period."

There is substantial empirical research analyzing the validity of the credit channel for monetary policy.[2] The related literature is enlarged with the role of capital flow shocks on credits, especially for developing countries. These studies focus on the credit growth induced by capital inflows (see, for example, Gourinchas, Valdes and Landerretche 2001; Tornell and Westermann 2002; Duenwald et al. 2005). This literature has been growing rapidly since the global financial crisis: Mendoza and Terrones (2008), Bakker and Gulde (2010), Borio et al. (2011), Shin (2012), Cetorelli and Goldberg (2012) and Lane and McQuade (2013) all point out that capital flows and international liquidity determine fluctuations in credits (boom and busts) through the credit channel and thus determine economic performance. All authors underline the adverse effects of credit growth induced by sudden capital inflows, and the Turkish case has plenty of evidence showing this relationship (see Alper and Sağlam 2001; Aslan and Korap 2007; Togan and Berument 2011; Binici and Köksal 2012).

---

2 See, for example, Bernanke and Blinder (1992), Sims (1992), Gertler and Gilchrist (1994), Bernanke and Gertler (1995), Hubbard (1994), Cecchetti (1999), Kishan and Opiela (2000), Kashyap and Stein (2000), Ashcraft (2006), Fuinhas (2008) and Çevik and Teksöz (2012). In the Turkish case, Gündüz (2001), Şengönül and Thorbecke (2005), Arena, Reinhart, and Vasquez (2007), Brooks (2007), Demiralp (2008), Cambazoğlu, and Güneş (2011) and Alper, Hülagu, and Kele (2012) argue that using the credit channel for monetary policy operates efficiently in Turkey, but Çavuşoğlu (2002), Çiçek (2005) and Aydin and Igan (2010) do not agree.

This paper is organized in six sections. In Section II, we briefly explain the relationship among capital flows, credits and the current account balance in Turkey. In Section III, we outline the methodology employed to assess the effect of shutting down the credit channel. Section IV presents the empirical evidence under alternative scenarios. Section V provides a set of robustness analyses and Section VI concludes the paper.

2 The relationship between capital flows and credits in Turkey: a short story

The banking sector plays an important role in the financial market, especially for developing countries such as Turkey, due to the sector's bigger share in the whole financial system compared to developed countries; banks not only determine financial deepening and but also the efficiency of monetary policy (see Cecchetti 1999). In the Turkish case, the banking sector's share of the balance sheet in the financial system was 91.5% in 2004 and 87.6% in 2012 (CBRT 2005, 2013). Although the share was lower in 2012, the banking sector remains highly dominant overall; while the percentage asset share of the banking sector in the GDP was 71.2% in 2004, this ratio reached 98% in 2012 (Banking Regulation and Supervision Agency 2006, 2012). Therefore, the credit channel, especially the bank lending channel, is important for the Turkish economy. Since the introduction of structural reforms in 2001, the credit channel has been working more efficiently than other monetary policy transmission mechanisms (Başçı, Özel, and Sarıkaya 2007).

To assess the importance of credit growth, we first provide a set of descriptive statistics (Table 1). The table shows a high correlation between credits and economic performance, which suggests the importance of the credit channel. The correlation coefficients between credits and imports, between credits and industrial production and between credits and consumer price index are more than 0.85. Furthermore, the correlation coefficient between credits and capital flows is 0.66, which shows the close relationship between credits and capital flows.

Figure 1 shows the relationship between credits and capital flows, and between credits and the current account deficit. While real credit growth and capital and financial accounts move together, real credit growth and the current account deficit move in the opposite direction from each other. To detect the fundamental relationship between credits and capital inflows in Turkey, we focus on the years since external financial liberalization (1989 onward). Respectively, increases and decreases in real credit growth have been accompanied by capital inflows and outflows since the 1990s. As evident in Figure 1, during the 1994 financial crisis, while increase

Table 1: Correlation coefficents between nominal and real credits and other variables.

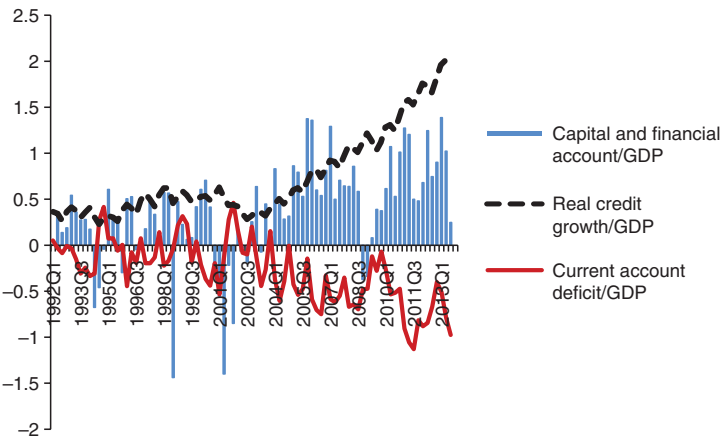|	Capital and financial account	Hot money	Exchange rate basket	Interbank rate	Imports	Industrial production	Consumer price index	Current account balance
Nominal credit	0.66	0.54	0.76	−0.51	0.91	0.85	0.88	−0.80
Real credit	0.66	0.52	0.74	−0.50	0.93	0.87	0.87	−0.82

Source: CBRT.

Figure 1: The Relationship between real credit growth and balance of payment.
Source: CBRT.

in real credit first slowed and then decreased depending on capital outflows, the current account deficit also decreased and thus so did the current account surplus. Similarly, the 1998 Asian financial crisis induced capital outflows from Turkey because of decreased global risk appetite. These capital outflows led to decreases in real credit growth and current account deficits. This story among capital flows, credits and current accounts has repeatedly played out in Turkey, especially since 1999. When capital inflows in the pre-financial-crisis period turned into capital outflows during the November 2000 and the February 2001 financial crises, real credit growth dramatically contracted, and correspondingly, a current account surplus emerged. In April 2001, the government announced the Transition to a Strong Economy Program, whose aims included banking sector soundness, price stability and lowered fiscal dominance; an (implicit) inflation targeting strategy began in January 2002. Also in 2002, the Banks' Association of Turkey and the Banking Regulation and Supervision Agency (BRSA) announced the Istanbul Approach,

which engaged in a reconstruction of firms' credits. In 2005, Banking Law No. 5411 was enacted, covering prudential regulations for banks' credit standards. As a result of these measures, capital inflows to Turkey increased; correspondingly, real credit growth increased and the current account deficit drastically increased. Meanwhile, in December 2006 and February 2008, the BRSA increased general provisions for loans in order to control the credit risk carried by the banking sector's balance sheet.

When we analyze the period since the 2008 global financial crisis, we see that a decrease in global risk appetite and an increase in Turkey's risk premium primarily slowed capital inflows to Turkey, but then initiated capital outflows. Throughout 2009, real credit growth rapidly decreased, which caused a decrease in the current account deficit. Nevertheless, the CBRT's monetary policies (such as reducing the policy rate and the reserve requirement ratio after 2008) and the increased capital inflows as a result of soaring global liquidity, induced especially by the US Federal Reserve's Quantitative Easing-II policy, reinitiated an increase in real credit growth at the beginning of 2010. Thereupon, within the framework of its Monetary Policy Exit Strategy, implemented in April 2010, the CBRT began to increase reserve requirement ratios to prevent rapid credit growth. Remember that the CBRT determines the different reserve requirement ratios for domestic- and foreign-currency-denominated deposits. In this way, it aims to increase the efficiency of the reserve requirement ratio[3] (Başçı and Kara 2011; Kara 2012). In September 2010, the CBRT terminated interest payments for reserve requirements denominated by domestic currency. Then, in December 2010, the CBRT differentiated reserve requirement ratios for deposits at different maturities, and expanded the scope of reserve requirements. However, this increase in reserve requirement ratios did not curb credit growth; conversely, credit growth drastically increased and the current account deficit increased as well.[4] The rapid credit growth only

---

3 On the other hand, the CBRT has been altering the framework of its monetary policy since the last quarter of 2010 by using new monetary policy tools such as an *asymmetric interest rate corridor* and the *reserve option mechanism* (ROM) to prevent the domestic effects of external fragility, such as excessive credit growth and currency appreciation induced by sudden capital inflows (CBRT 2011; Akçelik et al. 2013). This new approach involved a paradigm shift in monetary policy practice for Turkey (Üçer 2011).

4 Özatay (2011) ascribes the failure of the reserve requirement policy to control credit growth to the banking system's close substitution relationships regarding liabilities maturities. Akkaya and Gürkaynak (2012) agree; their study suggests that the reserve requirement policy failed because when the CBRT increased reserve requirement ratios, banks steered towards non-deposit funds such as foreign swaps to finance credits. Therefore, not only did the change-of-deposit-to-total-asset ratio increase, but so did the credits-to-total-asset ratio. Üçer (2011) and Özatay (2012) maintain that as the CBRT increased reserve requirement ratios, banks compensated by diminishing liquidity by again borrowing from the CBRT's open market operations. In that case, the reserve requirement policy was not an efficient tool for reducing credits.

began to slow after the BRSA implemented a microprudential policy to support the CBRT's macroprudential policy, increasing the rate of its Resource Utilization Support Fund and Loan-to-Value ratio (CBRT 2012b).

As a result of the ongoing slowdown in the global economy, and because of the combined efforts of the CBRT and the BRSA, credit growth came down to "reasonable levels" by the end of 2012 (CBRT 2012b, p. iv). Furthermore, the CBRT (2012a) determined the targets for an average annual rate of increase in credit growth to be 15%, which reflected the credit rule for monetary policy in 2013. Thus, on the one hand, the CBRT began to use an asymmetric interest rate corridor system to discourage capital inflows and to prevent an annual credit growth of more than 15%, and on the other hand, it implemented the ROM and reserve requirements, respectively, to provide currency and credit growth stability. Controlling credit growth thus plays a large part in the CBRT's new monetary policy framework in terms of price stability and financial stability.

3 Methodology

In this section, we first introduce the benchmark VAR specification that we use to assess the effects of capital flows on economic performance. Later, we outline how the effects of capital flows on economic performance are gathered by keeping the credit level constant.

The benchmark VAR specification is the regular VAR specification, which includes variables as a measure of capital flow, exchange rate, interest rate, credits, imports, income and prices. We use a lag order of two, as suggested by the Bayesian Information Criteria (BIC). We include 11 monthly dummies to account for seasonality. Moreover, to account for financial crisis periods, we include intercept dummies for each period from the second to the fifth months of 1994, the eleventh month of 2000 and the second month of 2001.

To identify capital flow shocks, we employ the Cholesky decomposition; thus, the order of variables is important. All variable placements are affected by the preceding variables contemporaneously but are not affected by the latter variables contemporaneously. However, all the variables affect each other with a lag. The variables are ordered as capital flow measure, exchange rate, interest rate, credits, imports, industrial production and consumer price index. Thus, capital flow measures affect capital flow measures, exchange rate, interest rate, credits, imports, industrial production and consumer price index contemporaneously but are not affected by these variables contemporaneously. Similarly, exchange rate is affected by capital flows contemporaneously and affects subsequent variables

contemporaneously. However, again, all of these variables affect each other with a lag.

The order of variables must be discussed. Turkey is a small and open economy. It has a volatile market, and for 2011, attracted only 0.059%[5] of the total capital flows to 30 emerging markets considered by the Institute of International Finance (IIF), even though it is the eighteenth-largest economy in the world according to the World Bank. Thus, Turkey is a small player in global capital flow markets. It is not that Turkey's economic performance affects capital flows to Turkey, but that capital flows affect Turkey's economic performance, possibly due to the country's questionable policy frameworks and previous political uncertainties (IIF 2014). Thus, we order capital flows first. For capital flows to affect the domestic economy they need to be converted to domestic currency, because by their nature, capital flows are in foreign currency. Thus, we place exchange rate second. The third variable is short-term interest rate, which the CBRT considers a policy tool (see, for example, Berument 2007; Ülke and Berument 2014). We place interest rate before credits, imports, output measure and prices. This ordering suggests that the conduct of monetary policy affects these economic variables contemporaneously. Placing interest rate after these variables would have assumed the extreme information assumption, which would have suggested that the CBRT knew these macro variables for a given month. Our ordering is parallel to Leeper, Sims, and Zha (1996) and Sims and Zha (2006). Since we consider credit control as a monetary policy tool, we place credits just after interest rate and before imports. Placing credits before imports is parallel with the argument that credit expansion increases the current account deficit through higher import demand (see IMF 2012; Aysan, Fendoğlu, and Kılınç 2014). We place the import measure before the output measure because Turkey is a small open economy with high energy inputs and raw and intermediate product import demands for its production. This ordering is parallel to Svensson (1998) and Leitemo and Söderström (2001). The last two variables are output and prices. Since prices respond slower than output, we place output before prices.

To assess the effects of capital flows on economic performance when there is no credit growth, we employ the VAR methodology used by Bernanke, Gertler and Watson (1997). They investigate the direct and indirect effects of oil price shock on an economy by considering a small VAR system, following policy alternatives regarding how the monetary policy measure of the Federal Funds Rate responds to oil shocks under various scenarios. Using our variables in their alternative policy simulations, we consider two scenarios. First is the base scenario, where

---

5 Authors' calculation from Institute of International Finance data (2013) and the CBRT's Electronic Data Delivery System (EDDS).

the control policy variable (interest rates in their specification and credit in our specification) responds to developments in the economy and where the control policy variable affects economic performance contemporaneously or with lags, depending on the identification assumptions: this model is basically the conventional unrestricted VAR model. The alternative policy scenario is that the credit variable does not respond to any macroeconomic variable that we consider. Thus, we can assess how capital flows affect economic performance if policy authorities can keep the credit level constant.

Following Bernanke, Gertler and Watson (1997), we can write our specification as:

$$CF_t = \sum_{i=1}^{p} \left(\Pi_{cfcf,i} CF_{t-i} + \Pi_{cfY,i} Y_{t-i} + \Pi_{cfcr,i} Credit_{t-i} \right) + \varepsilon_{cf,t} + G_{cry,i} \varepsilon_{y,t} + G_{crcr} \varepsilon_{cr,t} \tag{1}$$

$$Y_t = \sum_{i=1}^{p} \left(\Pi_{ycf,i} CF_{t-i} + \Pi_{yy,i} Y_{t-i} + \Pi_{yc,i} Credit_{t-i} \right) + G_{yc} \varepsilon_{cf,t} + G_{yy} \varepsilon_{Y,t} + G_{ycr} \varepsilon_{cr,t} \tag{2}$$

$$Credit_t = \sum_{i=i}^{p} \left(\Pi_{crcf} CF_{t-i} + \Pi_{cy,i} Y_{t-i} + \pi_{crcr} Credit_{t-i} \right) + G_{crcf} \varepsilon_{cf,t} + G_{cy,t} \varepsilon_{y,t} + \varepsilon_{cr,t} \tag{3}$$

CF_t is the capital flow variable, $Credit_t$ is the credit variable and Y_t is the vector for all the other macroeconomic variables that we consider. The order and zero constraints of the G matrices are determined by the identification assumptions.[6] The base scenario does not impose any constraint when the impulse responses are gathered on the Π matrixes. Under the alternative scenario, we restrict $\Pi_{cr\,cf,i}$, $\Pi_{cr\,y,i}$, $G_{cr\,cf}$ and $G_{cr\,y}$ to zero.

4 Empirical results

We use monthly data for the period between January 1992 and May 2013. Although the CBRT announced that they have tried to limit credit growth to control capital flows since 2010, it is common for Turkish policy makers to intervene in banks' credit limits, as evident by statements made by the prime minister just after the 2008 financial crisis began, and by the above-mentioned Istanbul Approach. Thus, our sample starts in January 1992, with the onset of the monthly availability of data on current account balances.

In our data, we use capital flows from the current account balance for capital flows, overnight interbank interest rate for interest rate, consumer price index

---

6 Under the Cholesky decomposition, G_{cry}, G_{crcr} and G_{ycr} are zero and G_{yy} is a lower triangular matrix.

for prices, imports from current account for imports and industrial production for income. Total credits to the private sector are used for credits, which consist of credits extended by conventional commercial, investment, development and participation banks. We use the Turkish Lira value of the basket of 1 US Dollar+1 Euro[7] as the exchange rate. The capital flow and import variables are deflated with the lag value of the interpolated monthly GDP to normalize them before using them in the analyses. We use the lag value of GDP to avoid simultaneity, that is, so that other variables do not affect the current account balance through GDP. All these variables enter the system in logarithms except interbank interest rate, imports and capital flow measures. All data used in this study are gathered from the CBRT's EDDS.

Figure 2 reports the impulse response functions when a one-unit shock is given to capital flows for the two types of specifications that we consider. However, to avoid multiple lines in the figure, which could be confusing, we only report the confidence one-standard-error bands for the base scenario. We report the impulse responses without the confidence bands for the alternative scenario. If the impulse responses of the alternative scenario cross the confidence bands of the base scenario, then we can say that under the alternative scenario, the impulse responses change in a statistically significant fashion from the base scenario. The confidence bands are reported as solid lines and the impulse response functions with no credit-growth effect are plotted as dotted lines.

Panel A of Figure 2 reports how a one-unit shock to capital flows affects itself for 24 periods. Under the base scenario, this effect is positive and statistically significant for two periods; the confidence bands are quite narrow and the impulse responses under the alternative scenario are within the confidence bands. The impulse responses not crossing over the confidence bands under the alternative scenario suggests that we could not find statistically significantly different evidence for the behavior of capital flows from the base scenario.

Panel B reports the impulse responses on how the exchange rate responds. The confidence bands suggest that currency appreciates permanently, and this effect is statistically significant for the 24 periods that we consider under the base scenario. When credits are kept constant (the alternative scenario), currency also appreciates. The level of appreciation is higher than what the base scenario suggests after the first period. The difference between the base scenario and the alternative scenario is statistically significant between the third and thirteenth periods. This result makes sense because shutting down credits decreases import demand mostly for investment goods and raw materials, and puts less pressure

---

7 The Euro series was not available before January 1999, thus we used the fixed exchange rate between the Euro and the Deutsche Mark to calculate the Euro exchange rate.
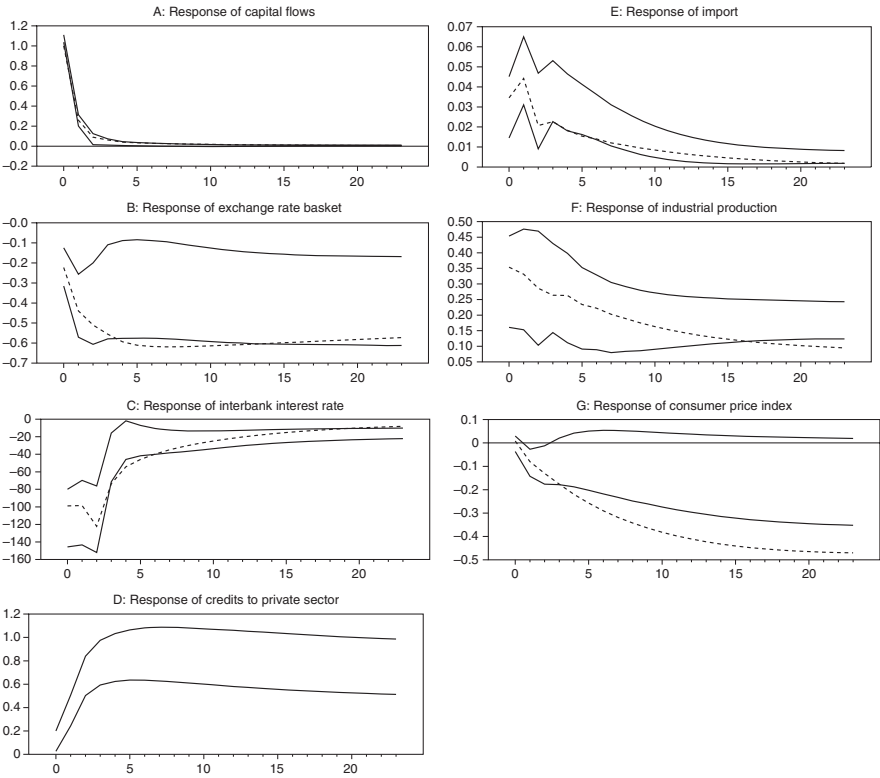
Figure 2: Responses to capital flows for the full sample.
The solid black lines report the lower and upper bounds of the confidence interval of the base scenario. The dashed line represents the impulse response when credit level is kept constant.

on the exchange rate. Thus, appreciation should be higher under a zero credit growth constraint.

Panel C reports the impulse responses for the interbank interest rates. The median response of interest rate, which can be followed by the mid-points of the confidence bands of the base scenario, stays below the pre-shock level and remains there for the 24 periods that we consider. The lower interest rate is statistically significant for the 24 periods that we consider. The impulse response under the alternative scenario reveals a lower interest rate than the base scenario between the first and ninth periods. This effect is statistically significant between the third and sixth periods, which makes sense because shutting down credits means that a lower credit demand puts less pressure on the interest rate than under the base scenario. Therefore, we consider that when credits are kept constant, there is a greater decrease in interest rate.

Panel D reports the impulse responses of credits when a one-unit shock is given to capital flows. Note that we do not report the impulse responses when the credit level does not change. Under the base scenario, credits increase with a positive shock to capital flows. This increase is statistically significant for the 24 periods that we consider, as suggested by the confidence bands of the base scenario.

Panel E reports the impulse responses for imports. Imports increase with capital flows, and this increase is statistically significant for most of the 24 periods that we consider. Under the alternative scenario, after the second period, imports are always lower than the median of import responses under the base scenario. The difference between the base scenario and the alternative scenario is statistically significant at the margin between the third and sixth periods.

Panel F reports the impulse responses for industrial production. The confidence bands under the base scenario suggest that industrial production increases with capital flows. This increase is statistically significant for the 24 periods that we consider. However, the increase in industrial production is lower than the median of the base scenario after the ninth period under the alternative scenario. This lower increase in industrial production is statistically significant after the sixteenth period. Thus, increase in output is lower under the alternative scenario.

Panel G reports the impulse responses for consumer prices. Under the base scenario, until the third period, consumer price index decreases and is statistically significant between the first and third periods. After the third period, the confidence bands suggest that this effect is not statistically significant; however, under the alternative scenario the consumer price index is statistically significantly lower than what the base scenario suggests after the third period. Thus, when credit level is kept constant a decrease in consumer price index is higher.

In sum, capital flows without credit control appreciate the domestic currency, decrease interest rates and prices but increase imports and output. However, constraining credit growth decreases the effects of capital inflows on imports and industrial production, but further appreciates the domestic currency and decreases interest rate and prices. The reason for this result may be that once the credit channel is shut down, import orders decrease for products such as investment goods, consumer goods and other goods at a given level of capital flow. This situation would create less demand for foreign exchange, which would result in an appreciation of domestic currency. The same amount of capital flow creates more demand on bonds when there is a lower order of import demand, and interest rate decreases. Higher appreciation and lower interest rate are also associated with higher output. Last, prices decrease more due to a lower exchange rate pass-through and a lower demand for imported products.

For the adoption of credit controls as a macroprudential policy tool, we observe a further appreciation of domestic currency and lower interest rate and prices, which might be a source of vulnerability. Under credit control, however, vulnerability of the financial market might not be an issue with a lower interest rate. Price deflation has never been a problem for Turkey, but appreciation of domestic currency is a well-recognized problem by the CBRT, the government and the public. Thus, additional macro/micro prudential policies should likely also be employed with credit constraint to avoid the adverse effects of appreciation. In the past, the CBRT has adopted various policies to avoid excessive appreciation, such as increasing foreign exchange demand through a higher required reserve ratio for foreign-currency-denominated deposits and/or increasing the ROM, which allows domestic banks to hold part of Turkish-Lira-denominated liabilities at the central bank in foreign currency (for details, see CBRT 2012c; IMF 2013). Thus, our findings are parallel with those of Blanchard, Dell' Ariccia and Mauro (2013), who suggest that the policy maker may use various policy tools by harmonizing a broad-scoped but instantly effective monetary policy and more-targeted fiscal measures. They also suggest that developing countries use macroprudential tools to affect foreign exchange while advanced countries use such tools to lead borrower behavior.

5 Robustness analyses

This section provides a set of further analyses to assess the validity of the results gathered from Figure 2 under alternative set-ups. The CBRT stated that it is not only the level of current account deficit but also its financing that is a problem. Portfolio investment or the above-mentioned hot money, for example, is less desirable than less-liquid financing (such as foreign direct investments) to finance the current account deficit (CBRT 2012a). We repeat the exercise for capital flows with the broad definition of hot money from Loungani and Mauro (2000).[8] The results are reported in Figure 3, which shows that the basic inference from Figure 2 is robust.

---

[8] Loungani and Mauro (2000) define three hot money measures based on balance of payment: Hot Money I, Hot Money II and Broad Hot Money. Hot Money I consists of the sum of Net Error and Omissions, Other Investment (Assets) and Other Investment (Liabilities) held by entities other than monetary authorities, the government and banks. Hot Money II equals Hot Money I plus Other Investment (Assets) and Other Investment (Liabilities) held by banks. Broad Hot Money includes Hot Money II plus Net Flows of Portfolio Investment Assets and Liabilities in the form of Debt Securities.
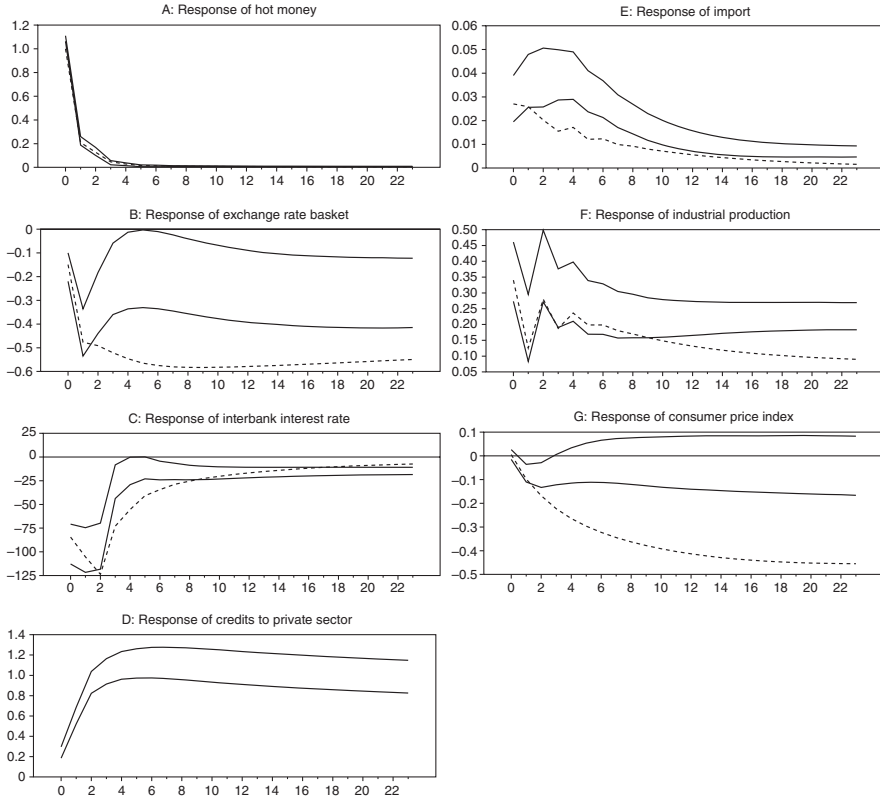
Figure 3: Responses to hot money for the full sample.
The solid black lines report the lower and upper bounds of the confidence interval for the base scenario. The dashed line represents the impulse response when credit level is kept constant.

To identify shocks for each macroeconomic variable, we use the Cholesky decomposition, and the order of variables is important. Togan and Berument (2011) argue that credits do not affect economic performance but do respond to economic performance contemporaneously. To account for this situation, we place credits last in the ordering. Figure 4 reports the corresponding impulse responses, and shows that the results from Figure 2 are robust.

Turkey's most important economic problem is the current account deficit and its financing (Başçı and Kara 2011; Başçı 2012). As we discuss above, Turkey is a small player in international finance. The lack of Turkey's financing options and its volatility are mostly due to non-economic factors such as domestic/regional political instability, world commodity price volatility and world liquidity (see Yılmaz 2008; Kılınç and Tunç 2014). However, for thoroughness, we order capital
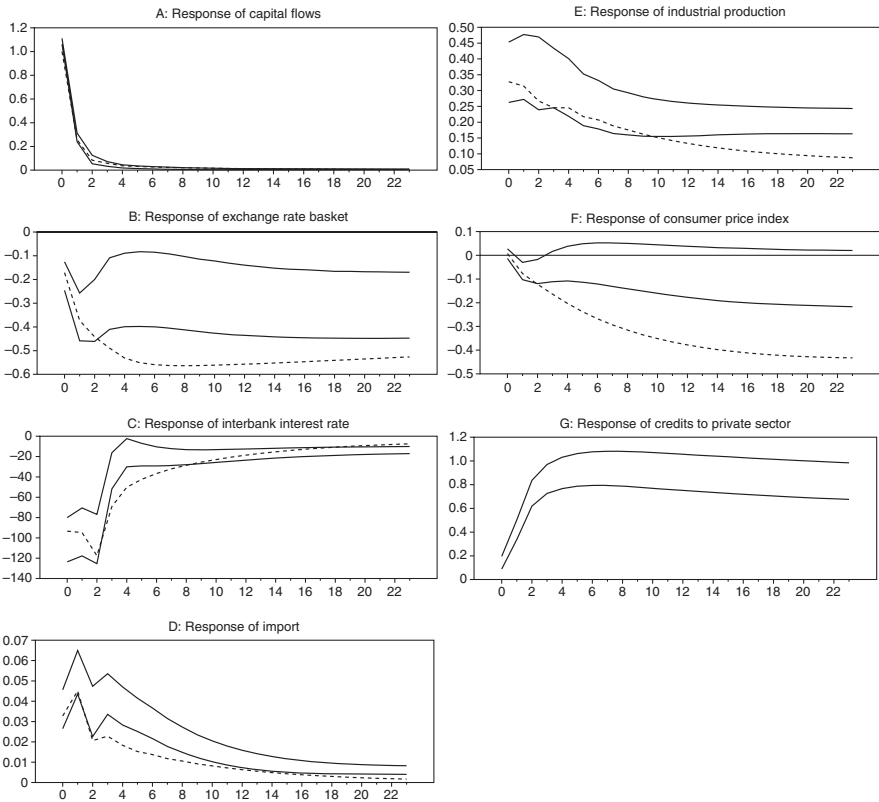
Figure 4: Shock to capital flows recorded variable: credit ordered last.
The solid black lines report the lower and upper bounds of the confidence interval for the base scenario. The dashed line represents the impulse response when credit level is kept constant.

flows last in the VAR setting even though this is not a reasonable assumption because of Turkey's high fragility due to its low savings rate, weak legal structure and high political risk. The sudden-stop literature also suggests that fragility in an economy affects capital flows. Thus, it is more likely that capital flow is an exogenous rather than endogenous variable in Turkey, that is, capital flows may not be affecting but are affected contemporaneously by the other six variables that we use in the VAR setting.[9] The relevant impulse response function is reported

---

9 A low persistency of capital flow shocks in the analyses we report further supports our argument that capital flows are more likely to be exogenous to the six variables that we consider rather than being endogenous. Since our study examines the effect of capital flows on economic performance, due to the nature of the question, capital flow should be one of the variables in the VAR setting. Since it is the 'most exogenous', it is the least likely variable to be ordered last and the most likely variable to be ordered first.

in Figure 5. The basic findings of the paper on the relative effect of capital flows when credit is controlled versus not controlled are robust even if capital flows are statistically weaker. Note that even under these assumptions, we still observe that when credits are controlled, the responses of exchange rate, interest rate, import and prices differ in a statistically significant fashion.[10]
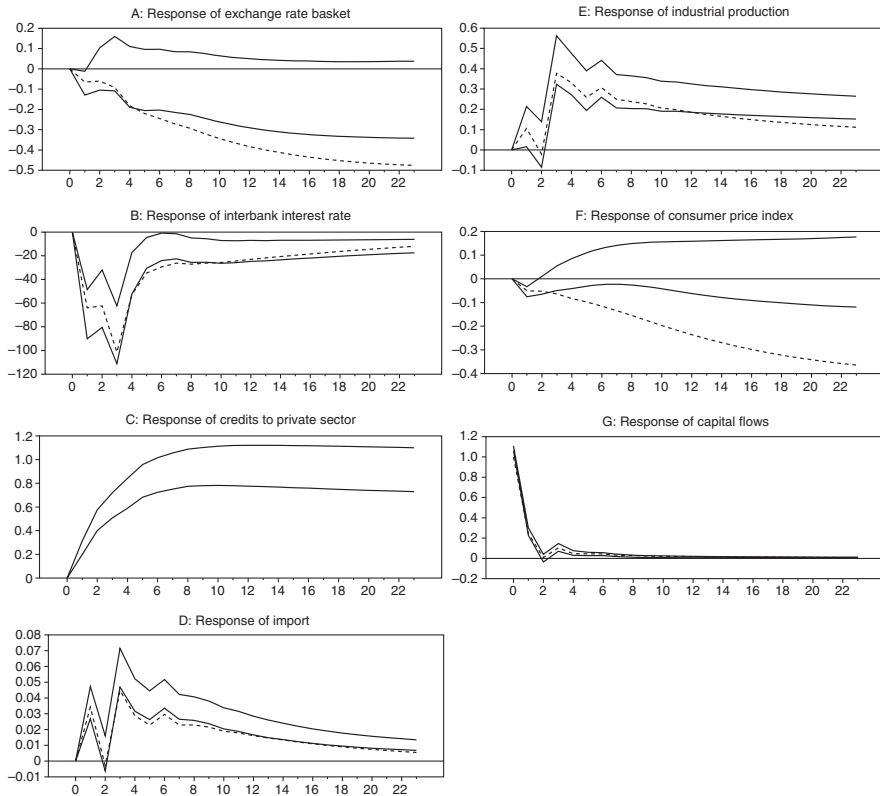

Figure 5: Responses to capital flows with capital flows ordered last.
The solid black lines report the lower and upper bounds of the confidence interval for the base scenario. The dashed line represents the impulse response when credit level is kept constant.

10 In our specification, exchange rate is ordered before interest rate. However, in the post-2008 era, the CBRT used interest rate to reverse capital flows. Thus, it can be argued that there is a contemporaneous relationship between interest rate and exchange rate. We looked for relevant Structural Vector Autoregression (SVAR) specifications in the literature that would allow this relationship but could not find any. We also experimented with various SVAR specifications, but among the impulse responses that gave results parallel to the economic theory for the benchmark model, we found none that gave improved results. Thus, our basic conclusions of the paper remain robust. Since the contribution of this avenue was nil, we did not pursue it further.

Our sample begins in January 1992 and ends in May 2013. During the time period studied, various developments occurred (such as a change in the exchange rate regime from crawling peg to freely floating in 2001, the adoption of implicit inflation targeting in 2002 and full-fledged inflation targeting in 2005, which resulted in lowering inflation from 90% to between 6% and 7%) that might have led to structural changes in the relationship among the macroeconomic variables that we consider in the VAR setting. To account for these changes, we provide the impulse response analyses for the post-2001 financial crisis era. When these reponses are analyzed, the decrease in interest rate was not higher but lower (not reported), which may indicate that capital flows might be going to markets other than money or bond markets. During the post-2001 era, in order to eliminate the adverse effect of capital flows, the CBRT opened foreign exchange buying auctions in addition to implementing credit controls and new tools such as the ROM (Ermişoğlu et al. 2013; Aslaner et al. 2015). Thus, we include central bank reserves (deflated with the lagged value of M2) as an additional variable; the corresponding impulse responses are reported in Figure 6. Including a central bank reserves variable may look odd because such reserves are mostly under the discretion of the CBRT. Nevertheless, including this variable may control for central bank reserves in the system rather than just model reaction to the central bank's behavior. It can also be argued that central bank reserves may increase with the required reserves of commercial banks in foreign exchange deposits and with the ROM, which are heavily tied to capital flows and government institutions' foreign exchange deposits.

Figure 6 reveals that a lower and statistically significant effect on import, output and prices are observed for the alternative scenario compared to the base scenario. Thus, in this sense, the results are robust. However, we could not find that exchange rate was responding differently under the alternative scenario than under the base scenario. This result may be due to a lower degree of freedom from the shorter time span, or to the CBRT's success with additional tools (such as higher required reserve ratios on foreign-exchange-denominated deposits and foreign-currency purchases) to avoid the adverse effect of appreciated currency. Thus, we could not observe further appreciated currency under the credit controls. More importantly, even if interest rate decreases with capital flows, then the decreases in interest rate under the alternative scenario are not higher but lower than what the base scenario suggests. The interest rate response is statistically significantly higher than what the base scenario suggests between the first and sixth periods. Note that with capital flows, CBRT reserves increase. However, under credit controls, increases in reserves are higher. Thus, CBRT reserves are an outlet for capital flows. The exercise that we perform tentatively supports the argument that capital flows may have been
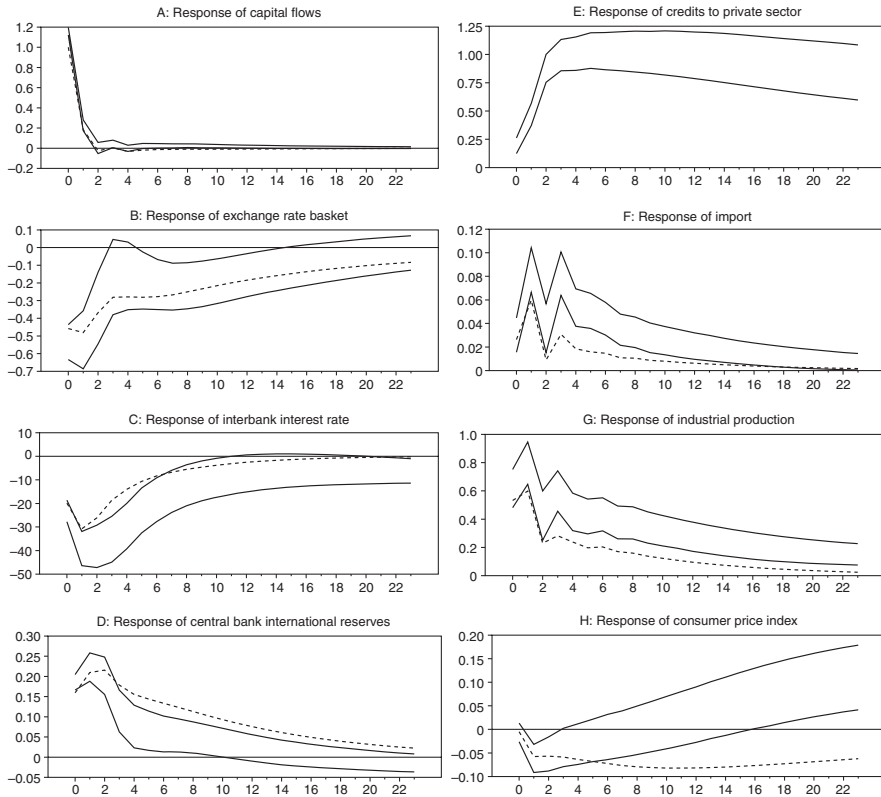
Figure 6: Responses to capital flows with Central Bank's reserves for the post-2001 crisis era. The solid black lines report the lower and upper bounds of the confidence interval for the base scenario. The dashed line represents the impulse response when credit level is kept constant.

going to alternative outlets such as central bank reserves since 2001.[11] Overall, we could not find any adverse effects of controlling credits for capital flows on exchange rate and interest rate for the post-2001 era. The results for imports, output and prices, however, are robust. [12]

Figures 2–6 report the confidence bands for the baseline model. We compare whether our results when the credit channel is shut down differ from

11 We also looked at the effects of capital flows on the equity markets and bond markets and we could not find any statistically different results for these markets when credits were controlled versus not controlled.
12 We also performed the analysis reported in Figure 6 with the full sample and the sample ending before 2001. The basic results of the benchmark analysis are robust but we could not observe the CBRT's reserves did not respond differently under credit control versus no credit control.

those the baseline scenario reveals. Although such a comparison is common practice in the literature (see, for example, Ludvigson, Steindel, and Lettau 2001; Bachmann and Sims 2012), in Figure 7 we also report the median for the base scenario (solid line) and the confidence bands for the alternative scenario (dashed lines). Figure 7 clearly suggests that when credits are constrained compared to when credits are not constrained, the appreciation of exchange rate will be higher after the second period in a statistically significant fashion when credits are controlled; the decrease in interest rate will be higher between the first and ninth periods; the increase in imports will be lower between the third period and eleventh periods; the increase in output will be lower after the
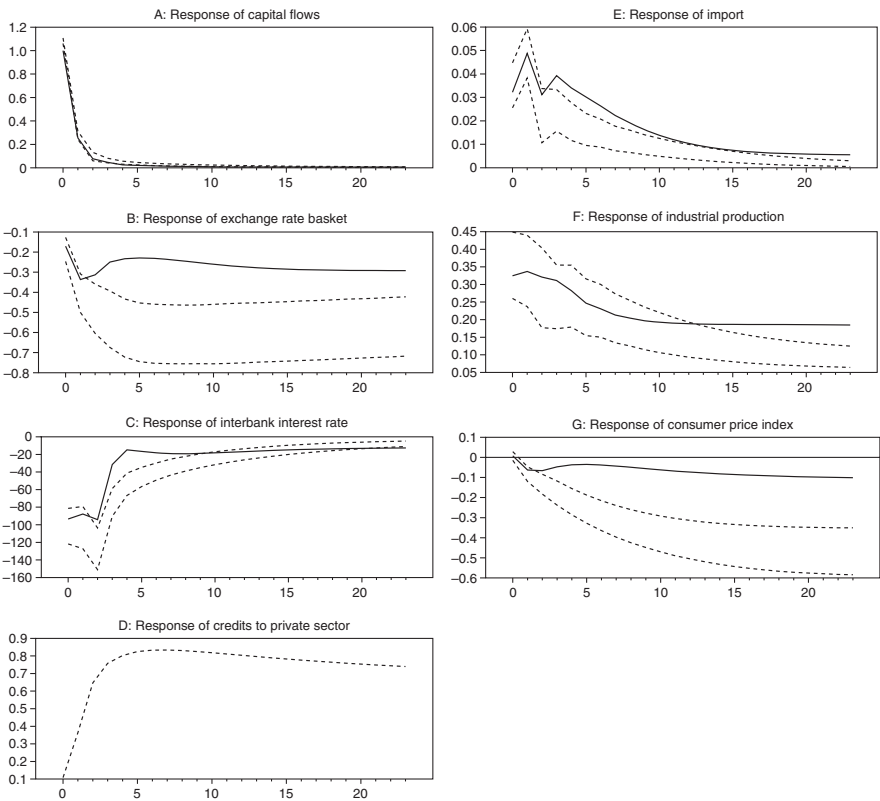

Figure 7: Responses to Capital Flows for the Full Sample: Median of Benchmark Model and Confidence Bands of Alternative Model.
The solid lines report the median of the base scenario. The dashed lines represent the lower and upper bounds of the confidence intervals when credit level is kept constant.

thirteenth period and the decrease in prices will be higher (prices will decrease more) after the third period. Thus, Figure 7 reveals stronger support for the hypothesis that shutting down the credit channel alters the (smaller) effect of capital flows on economic performance.

As noted above, we select a lag order of two according to the BIC, but it is possible that the estimates are biased due to lower parametization. To account for this possiblity, we perform the estimates with six lags, as suggested by the Final Prediction Error (FPE) criteria, and still find that the basic results from Figure 2 are robust. However, even if lower and statistically significant exchange rate, interest rates and prices are observed, but lower statistically significant industrial production and imports are not observed when we compare the base scenario and the alternative scenario, the results for the latter may be due to over-paramatization. This analysis and the remaining analyses are not reported here to save space but are available from the authors upon request.

The period that we consider was riddled with various exogenous events, thus we include additive dummies for the military coup in February 1997, the major earthquake in August 1999, the shifts in global risk appetite in March 2003, September 2008 and October 2008 and the military "e-note" in April 2007. Our basic results are still robust, but the level of significance deteriorates slightly for exchange rate.

Especially during the 1990s, Turkey was one of the main beneficiaries of IMF loans to stabilize its economy. Thus, part of the capital flow figures includes such loans. To account for this fact, we also perform the analogue of Figure 2, which excludes such funds, and find that the results from Figure 2 are still robust but the statistical evidence for exchange rate is weaker.

Turkey is a small open economy, with its export/revenue mostly denominated in Euros and its import/payments mostly denominated in US Dollars (see Berument and Dinçer 2007). Thus, we perform the analyses with the 1 USD+1 Euro basket exchange rate. However, capital flows (and hot money) are measured in US Dollar terms. We perform the impulse responses for the exchange rate between the Turkish Lira and the US Dollar rather than between the Turkish Lira value of the basket. The results are still robust but the statistical evidence for exchange rate is weaker.

In sum, we can argue that when we consider various alternatives in this section for the relative effect of capital flows on macroeconomic variables when credits are controlled versus not controlled, the estimates for exchange rate, imports, output and prices are robust and statistically significant. The statistical evidence for interest rate is robust except for in Figure 6 when the analysis is performed for the post 2001 era.

6 Conclusion

This paper assesses the role of credit growth in controlling the adverse effects of capital flows on economic performance. To address these effects, we used Bernanke, Gertler and Watson's (1997) methodology, which imposes a set of restrictions on a credit growth scenario for impulse response functions gathered from a baseline VAR model. We gathered two different impulse responses from different credit growth scenarios when a one-unit shock was given to capital flows. In the base scenario, we did not impose any constraints on credit growth, and thus conventional impulse responses were gathered from the VAR specification. In the alternative scenario, we shut down the credit channel; that is, the credit level was equal to its pre-shock level and stayed there.

In all these scenarios, we found that capital flows appreciated the domestic currency, decreased interest rate and prices and increased import and output levels. When we compared the base scenario with the alternative scenario, where credit level did not change, the appreciation of domestic currency and decreases in interest rate and prices were higher. However, the increases in imports and output were lower. These results suggest that constraining credit growth helps the economy avoid the adverse effects of capital flows for imports and output. Such a policy may also help prevent a higher current account deficit by restricting increases in imports and output. In addition, although shutting down the credit channel further decreases interest rate, a higher appreciation in domestic currency may cause a higher decrease in prices than what the base scenario suggests. This result reflects that constraining credit growth may be a useful macroprudential policy tool to provide price stability. However, a higher level of appreciation may increase the domestic economy's vulnerability in terms of financial stability such as when over-borrowing from abroad by foreign-denominated currency. In this sense, constraining credit growth to eliminate the adverse effects of capital flows may thus be only partially effective, and should likely be supplemented with additional policies.

References

Adrian, T., and S. H. Shin. 2010. "Liquidity and Leverage." *Journal of Financial Intermediation* 19 (3): 418–437.

Akçay, C., and Eren Ocakverdi. 2012. "An Interim Assessment of the Ongoing Turkish Monetary and Macro Prudential Experiment." *İktisat İşletme ve Finans* 27 (315): 77–92.

Akçelik, Y., E. Başçı, E. Ermişoğlu, and Arif Oduncu. 2013. "The Turkish Approach to Capital Flow Volatility." *CBRT Working Paper* 13 (06).

Akkaya, Y., and S. R. Gürkaynak. 2012. "Current Account Deficit, Budget Balance, Financial Stability and Monetary Policy: Reflections on a Gripping Episode." *İktisat İşletme ve Finans* 27 (315): 93–119.

Alper, C. E., and I. Sağlam. 2001. "The Transmission of a Sudden Capital Outflow: Evidence from Turkey." *Eastern European Economics* 39 (2): 29–48.

Alper, K., T. Hülagu, and G. Kele. 2012. "An Empirical Study on Liquidity and Bank Lending." *CBRT Working Paper* 12 (04).

Alper, K., H. Kara, and M. Yörükoğlu. 2013. "Alternative Tools to Manage Capital Flow Volatility." *CBRT Working Paper* 13 (31).

Ashcraft, B. A. 2006. "New Evidence on the Lending Channel." *Journal of Money, Credit and Banking* 38 (3): 751–775.

Aslan, Ö., and H. L. Korap. 2007. "Monetary Transmission Mechanism in An Open Economy Framework: The Case of Turkey." *Ekonometri ve İstatistik* 5: 41–66.

Arena, M., C. M. Reinhart, and F. F. Vasquez. 2007. "The Lending Channel in Emerging Economies: Are Foreign Banks Different?" *IMF Working Paper* 07 (48).

Aslaner, O., U. Çıplak, H. Kara, and D. Küçüksaraç. 2015." Reserve Options Mechanism: Does It Work As An Automatic Stabilizers?" *CBRT Central Bank Review* 15: 1–18.

Aydin, B., and D. Igan. 2010. "Bank Lending in Turkey: Effects of Monetary and Fiscal Policies." *IMF Working Paper* 10 (233).

Aysan, A. F., S. Fendoğlu, and M. Kılınç. 2014. "Managing Short-Term Capital Flows in New Central Banking: Unconventional Monetary Policy Framework in Turkey." *CBRT Working Paper* 14 (03).

Bachmann, R., and E. R. Sims. 2012. "Confidence and the Transmission of Government Spending Shocks." *Journal of Monetary Economics* 59: 235–249.

Bakker, B. B., and A. M. Gulde. 2010. "The Credit Boom in the EU New Member States: Bad Luck or Bad Policies?" *IMF Working Paper* 10 (130).

Banking Regulation and Supervision Agency. 2006. Financial markets Report, March–June, Issue. 1–2.

Banking Regulation and Supervision Agency. 2012. Financial markets Report, December, Issue. 28.

Barajas, A., G. Dell'Ariccia, and A. Levchenko. 2009. Credit Booms: the Good, the Bad, and the Ugly, http://www.nbp.gov.pl/Konferencje/NBP_Nov2007/Speakers/Dell_Ariccia.pdf.2013.12.11.

Başçı, E. 2012. Guvernor's Başçı's Presentation at the Conference on Reserve Requirements and Other Macroprudential Policies: Experiences in Emerging Economies. October 8, Istanbul.

Başçı, E., and A. H. Kara. 2011. "Financial Stability and Monetary Policy." *İktisat İşletme ve Finans* 26 (302): 9–25.

Başçı, E., Ö. Özel, and Ç. Sarıkaya. 2007. "The Monetary Transmission Mechanism in Turkey: New Developments." *CBRT Working Paper* 07 (04).

Bernanke, S. B., and S. A. Blinder. 1992. "The Federal Funds Rate and the Channels of Monetary Transmission." *American Economic Review* 82 (4): 901–921.

Bernanke, S. B., and M. Gertler. 1995. "Inside the Black Box: The Credit Channel of Monetary Policy Transmission." *Journal of Economic Perspectives* 9 (4): 27–48.

Bernanke, S. B., M. Gertler, and M. Watson. 1997. "Systematic Monetary Policy and the Effects of Oil Price Shocks." *Brookings Papers on Economic Activity* 1: 91–157.

Berument, M. H. 2007. "Measuring Monetary Policy for Small Open Economy: Turkey." *Journal of Macroeconomics* 29 (2): 411–430.

Berument, M. H., and N. Dinçer. 2007. "The Effects of Exchange Rate Risk on Economic Performance: The Turkish Experience." *Applied Economics* 36 (21): 2429–2441.

Binici, M., and B. Köksal. 2012. Determinants of Credit Booms in Turkey, *MPRA Paper*, 38032.

Blanchard, O., G. Dell' Ariccia, and P. Mauro. 2013. Rethinking Macro Policy II: Getting Granular, *IMF Research Department Staff Discussion Note*, SDN/13/03.

Boivin, J., T. M. Kiley, and S. F. Mishkin. 2010. "How Has The Monetary Transmission Mechanism Evolved Over Time?" *NBER Working Paper Series*, 15879.

Borio, C., and H. Zhu. 2008. "Capital Regulation, Risk-Taking and Monetary Policy: A Missing Link in the Transmission Mechanism?" *BIS Working Paper*, 268.

Borio, C., R. McCauley, and P. McGuire. 2011. "Global Credit and Domestic Credit Booms." *BIS Quarterly Review* September, 43–57.

Brooks, P. K. 2007. "The Bank Lending Channel of Monetary Transmission: Does itWork in Turkey?" *IMF Working Paper*, 07 (272).

Calvo, A. G. 1998. "Capital Flows and Capital-Market Crises: The Simple Economics of Sudden Stops." *Journal of Applied Economics* 1 (1): 35–54.

Cambazoğlu, B., and S. Güneş. 2011. "Monetary Transmission Mechanism in Turkey and Argentina." *International Journal of Economics and Finance Studies* 3 (2): 23–33.

Cecchetti, G. S. 1999. "Legal Structure, Financial Structure, and Monetary Policy Transmission Mechanism." *FRBNY Economic Policy Review* 5 (2): 9–28.

Central Bank of the Republic of Turkey. 2005. Financial Stability Report, August, 1.

Central Bank of the Republic of Turkey. 2011. Monetary and Exchange Rate Policy for 2012.

Central Bank of the Republic of Turkey. 2012a. Monetary and Exchenge Rate Policy for 2013.

Central Bank of the Republic of Turkey. 2012b. Financial Stability Report, 15, November.

Central Bank of the Republic of Turkey. 2012c. Reserve option Mechanism, CBRT Bulletin, 28.

Central Bank of the Republic of Turkey. 2013. Financial Stability Report, 16, May.

Cetorelli, N., and L. Goldberg. 2012. "Banking Globalization and Monetary Transmission." *Journal of Finance* 67 (5): 1811–1843.

Çavuşoğlu, T. 2002. "Credit Transmission Mechanism in Turkey: An Emprical Investigation." *Middle East Technical University ERC Working Papersin Economics* 02 (03): 1–30.

Çevik, S., and K. Teksöz. 2012. "Lost in Transmission? The Effectiveness of Monetary Policy Transmission Channels in the GCC Countries." *IMF Working Paper* 12 (191).

Çiçek, M. 2005. "The Monetary Transmission Mechanism in Turkey: An Analysis through VAR (Vector Autoregression) Approach." *İktisat İşletme ve Finans Dergisi* 20 (233): 82–105.

Demiralp, S. 2008. "Money and the Monetary Transmission Mechanism in Turkey." *İktisat İşletme ve Finans Dergisi* 23 (264): 5–20.

Duenwald, K. C., N. Gueorguiev, and A. Schaechter. 2005. "Too Much of a Good Thing? Credit Booms in Transition Economies: The Cases of Bulgaria, Romania, and Ukraine." *IMF Working Paper* 05 (128).

Elekdağ, S., and Y. Wu. 2011. "Rapid Credit Growth: Boon or Boom-Bust?" *IMF Working Paper* 11 (241).

Ermişoğlu, E., A. Oduncu, and Y. Akçelik. 2013. Reserve Option Mechanisim and Exchange Rate Volatility. (in Turkish), *TCMB Ekonomi Notları*.

Fuinhas, J. A. 2008. "Monetary Transmission and Bank Lending in Portugal: A Sectoral Approach." *The IUP Journal of Monetary Economics* 6 (1): 34–60.

Ganioğlu, A. 2012. "Finansal Krizlerin Belirleyicileri Olarak Hızlı Kredi Genişlemeleri ve Cari İşlemeler Açığı." *CBRT Working Paper* 12 (31).

Gertler, M., and S. Gilchrist. 1994. "Monetary Policy, Business Cycles, and the Behaviour of Small Manufacturing Firms." *The Quarterly Journal of Economics* 109 (2): 309–340.

Gourinchas, P. O., O. R. Valdes, and O. Landerretche. 2001. "LendingBooms: Latin America and the World." *NBER Working Paper Series*, 8249.

Gündüz, L. 2001. "Monetary Transmission Mechanism in Turkey and Bank Lending Channel." *İMKB Journal* 18 (5): 13–30.

Hahm, J., S. F. Mishkin, S. H. Shin, and K. Shin. 2012. "Macroprudential Polices in Open Emerging Economies." *NBER Working Paper Series*, 17780.

Hubbard, R. G. 1994. "Is There a Credit Channel for Monetary Policy?" *NBER Working Paper*, 4977.

Institute of International Finance. 2013. Capital Flows User Guide. *IIF Research Note.*.

Institute of International Finance. 2014. Capital Flows to Emerging Market Economies *IIF Reserach Note* Januray 30, 2014.

International Monetary Fund. 2012. Turkey: Selected Issues. *IMF Country Report*, 12/39.

International Monetary Fund. 2013. Turkey: Selected Issues. *IMF Country Report*, 13/364.

Kara, A. H. 2012. "Monetary Policy in the Post-Crises Period." *İktisat İşletme ve Finans* 27 (315): 9–36.

Kara, A. H., H. Küçük, S. T. Tiryaki, and C. Yüksel. 2014. "In Search of a Reasonable Credit Growth Rate for Turkey?" *CBRT Central Bank Review*, 14: 1–14.

Kashyap, K. A., and C. J. Stein. 2000. "What Do a Million Observations on Banks Say about the Transmission of Monetary Policy?" *American Economic Review* 90 (3): 407–428.

Kılınç, M., and C. Tunç. 2014. "Identification of Monetary Policy Shocks in Turkey: A Structural VAR Approach." *CBRT Working Paper*, 14 (23).

Kishan, R., and T. Opiela. 2000. "Bank Size, Bank Capital, and the Bank Lending Channel." *Journal of Money, Credit, and Banking* 32 (1): 121–41.

Lane, R. P., and P. McQuade. 2013. "Domestic Credit Growth and International Capital Flows." *European Central Bank Working Paper Series*, July, 1566.

Leeper, E. M., C. A. Sims, and T. Zha. 1996. "What does monetary policy do?" *Brookings Papers on Economic Activity* 2: 1–63.

Leitemo, K., and U. Söderström. 2001. "Simple Monetary Policy Rules and Exchange Rate Uncertainty." *Sveriges Riksbank Working Paper Series*, 122.

Loungani, P., and P. Mauro. 2000. "Capital Flight From Russia." *IMF Policy Discussion Paper*, June, 6.

Ludvigson, S., C. Steindel, and M. Lettau. 2001. Monetary Policy Transmission Through the Consumption-Wealth Channel, Federal Reserve Bank of New York Economic Policy Review, 8(1): May, 117–133.

Magud, E. N., M. C. Reinhart, and R. E. Vesperoni. 2012. "Capital Inflows, Exchange Rate Flexibility, and Credit Booms." *IMF Working Paper*, 12 (41).

Mendoza, G. E., and E. M. Terrones. 2008. "An Anatomy of Credit Booms: Evidence from Macro Aggregates and Micro Data." *NBER Working Paper Series*, 14049.

Mishkin, S. F. 1996. "The Channels of Monetary Policy Transmission: Lessons for Monetary Policy." *NBER Working Paper Series*, 5464.

Mishkin, S. F. 2010. "Monetary Policy Flexibility, Risk Management, and Financial Disruptions." *Journal of Asian Economics* 23: 242–246.

Özatay, F. 2011. "The New Monetary Policy of the Central Bank: Two Targets-Three Intermediate Targets-Three Tools." *İktisat İşletme ve Finans* 26 (302): 27–43.

Özatay, F. 2012. "An Exploration into New Monetary Policy." *İktisat İşletme ve Finans* 27 (315): 51–75.

Reinhart, M. C., and A. G. Calvo. 2000. "When Capital Inflows Come to A Sudden Stop: Consequences and Policy Options." In *Reforming the International Monetary and Financial System*, edited by P. Kenen and A. Swoboda, 175–201. Washington, DC: International Monetary Fund.

Şengönül, A., and W. Thorbecke. 2005. "The Effect of Monetary Policy on Bank Lending in Turkey." *Applied Financial Economics* 15 (13): 931–934.

Shin, H. S. 2012. "Global Banking Glut and Loan Risk Premium." *IMF Economic Review* 60: 155–192.

Sims, A. C. 1992. "Interpreting the Macroeconomic Time Series Facts." *European Economic Review* 36 (5): 975–1011.

Sims, A. C., and T. Zha. 2006. "Were there regime switches in US monetary policy?" *American Economic Review* 96: 54–81.

Svensson, O. E. L. 1998. "Open-Economy Inflation Targeting." *NBER Working Paper Series*, 6545.

Togan, S., and M. H. Berument. 2011. "Current Account Balance, Capital Flows and Credits." *Bankacılar Dergisi* 78: 3–21.

Tornell, A., and F. Westermann. 2002. "Boom-Bust Cycles in Middle-Income Countries: Facts and Explanation." *IMF Staff Papers* 49: 111–55.

Üçer, M. 2011. "Observation on Recent Monetary Policy Measures." *İktisat İşletme ve Finans* 26 (302): 45–51.

Ülke, V., and M. H. Berument. 2014. Effectiveness of Monetary Policy Under Different Levels of Capital Flows for An Emerging Economy: Turkey, Applied Economics Letters, *forthcoming*.

Yılmaz, D. 2008. Guvernor Yılmaz's Presentation in Trabzon. September 4. Trabzon.

Yılmaz, D. 2010. Guvernor Yılmaz's Presentation at the Meeting with the General Menagers of the Banks, December 23, Ankara.