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TURKEY'S DISTRESSING DANCE WITH CAPITAL FLOWS

In the aftermath of the 2001 crisis Turkey took important steps towards achieving macroeconomic and financial stability. Together with favorable international financial conditions, this helped to achieve a rather high per-capita GDP growth. The high growth period failed to be sustainable, however. From 2008 to 2013, Turkey had a rather volatile and low growth. This paper aims at analyzing the underlying reasons of high volatility of growth and discussing short-term economic policy alternatives to mitigate such undesired fluctuations.

KEY WORDS: savings rate, liability dollarization, capital flows, credit, asset prices, volatility of growth, short-term economic policy

[1] http://www.tepav.org.tr/en/ekibimiz/s/1089/Fatih+Ozatay_+PhD

In the aftermath of the 2001 crisis Turkey took important steps towards achieving macroeconomic and financial stability. As a result, at the end of 2007 compared to the end of 2001, the central government budget deficit reduced to 1.6% of GDP from 11.5% of GDP, public debt-to-GDP ratio declined to 40% from 74%, the share of credit volume in banks' total assets increased by a factor of 2.5, non-performing loan to loan ratio decreased to a mere 3.5% from the striking 41.4% level, inflation rate reduced to 8.4% from 68.5%. The Central Bank of Turkey (CBT) became independent, an autonomous financial sector supervisory and regulatory agency was formed, and the banking sector was recapitalized. Thanks to these strong positive developments cum ample global liquidity in most of the period, the average per-capita GDP growth rate was 5.5% in 2002-07 -more than two times of the average of the preceding 50 years- and did not show significant fluctuations.

Notwithstanding these improvements, the high growth-low volatility period did not continue. Turkey was one of the countries that the global financial crisis hit most: the per-capita GDP contracted by 0.6% in 2008 and 6.1% in 2009. The following 2010-12 period witnessed significant fluctuations in the per-capita GDP growth. Contrasting the mean and volatility of per capita growth rate for the 2002-07 and 2008-12 periods is striking. The average growth rates were 5.5% and 1.9%, whereas its standard deviations were 1.8 and 5.9, respectively.

Table 1. Growth, Savings, and Investment: Turkey, Emerging Market Economies and Developing Countries (period averages)

	World	EMEs&DC	CEE	CIS	Dev. Asia	ASEAN-5	LA&Caribbean	MENA&AP	Sub-Sahara	Turkey
Average growth (%)										
1990-2001	3.1	3.9	1.9	-1.6	7.2	4.9	2.8	4.3	2.6	3.4
2002-2012	3.8	6.4	4.1	5.2	8.6	5.3	3.7	5.4	5.7	5.2
2002-2007	4.5	7.2	5.7	7.6	9.2	5.7	4.1	6.3	6.4	6.8
2008-2012	2.9	5.6	2.2	2.4	7.9	4.8	3.3	4.4	4.8	3.2
Standart deviation of growth										
1990-2001	0.85	1.08	3.37	7.72	1.87	4.55	1.76	1.80	1.93	5.49
2002-2012	1.74	1.79	2.99	4.29	1.58	1.38	2.51	1.57	1.30	4.37
2002-2007	1.00	1.49	1.09	1.40	1.65	0.48	2.34	1.43	0.87	1.81
2008-2012	2.17	1.85	3.54	5.01	1.31	1.99	2.90	0.95	1.19	5.89
Investment/GDP (%)										
1990-2001	22.7	25.4	21.8	24.2	32.8	31.2	20.9	23.5	17.4	21.7
2002-2012	22.7	28.9	21.7	22.8	38.2	26.4	21.3	25.9	21.1	19.9
2002-2007	22.3	27.1	21.8	22.5	35.6	25.1	20.7	24.6	20.2	19.6
2008-2012	23.1	31.1	21.7	23.1	41.3	27.8	21.9	27.4	22.1	20.0
Savings/GDP (%)										
1990-2001	22.0	23.8	19.5	26.6	32.3	28.4	18.4	23.1	15.6	20.8
2002-2012	22.9	31.4	16.4	28.3	41.8	29.7	21.0	35.5	20.0	15.1
2002-2007	22.5	30.1	16.3	29.4	39.7	28.9	21.4	34.8	19.7	15.8
2008-2012	23.4	33.0	16.4	27.0	44.3	30.7	20.6	36.4	20.4	14.1

Notes: EMEs&DC: Emerging market and developing economies. CEE: Central and Eastern Europe. CIS: Commonwealth of Independent States. La&Caribbean: Latin America and Caribbean. MENA&AP: Middle East, North Africa, Afghanistan, and Pakistan. Sub-Sahara: Sub-Saharan Africa. For the country groups information see the source.

Source: Author's calculation based on the IMF World Economic Outlook Database (April 2013 version).

Though the main culprit of this rather poor performance of the 2008-12 period is the global financial crisis and the following European crisis, it is highly plausible to think that without significant vulnerabilities of the Turkish economy, such developments would not have had an impact of the order mentioned above. Contrasting the growth performance of Turkey with those of emerging market and developing economies supports this view firmly. There is not much difference between the average growth rates of Turkey and this group in the 1990-2001 and 2002-07 periods.[2] This is not the case for the 2008-12 period. Note further how the volatility of Turkish growth increased sharply in the 2008-12 period and reached three times the average volatility observed in the emerging market and developing economies as a whole. One should also take into consideration that the average volatility of the 2008-12 period was even higher than that realized in the turbulent 1990's when Turkey was struggling with a wealth of macroeconomic imbalances (Table 1).

Three main questions follow. First, despite the long mileage taken towards establishing fiscal discipline and financial stability in the aftermath of the 2001 crisis, why the Turkish economic growth had fluctuated sharply? Second, what are the challenges for macroeconomic policymakers to reduce such sharp fluctuations? Third, what are the lessons that can be drawn from the Turkish experience? In this paper, our objective is to answer these questions.

The plan of the paper is as follows. In the second section we point to two interrelated important reasons for the observed large swings in real economic activity: low domestic savings rate and high level of dollarization. Episodes of excess volatility in capital flows between 2002 and 2013 are documented in the third section. The fourth section is on the effects of capital volatility since 2002. Two effects are highlighted. First, surges in capital inflows (capital reversals) are leading indicators of rapid (slow) credit growth periods. Second, there has been a significant comovement between capital flows and asset prices. Both effects have important repercussions on GDP growth. In the fifth section we discuss economic policy challenges for the short-term and draw some policy lessons. The final section concludes.

Low Savings Rate and High Dollarization

Table 1 shows gross savings and investment to GDP ratios for various country groups and Table 2 provides same information for individual emerging market economies (EMEs).[3] Turkey does not have an outstanding investment performance. On the contrary, its investment-to-GDP ratio is below most of its peers. Despite this fact, in recent years Turkey became one of the most foreign-financing dependent countries: it had the

[2] Our sample starts by the year of 1990 when the capital account was liberalized.

[3] There is not a consensus on which countries should be regarded as EMEs. Our list of EMEs is identical to that reported in FED(2014), except Taiwan.

lowest savings rate among the country groups shown in Table 1 and EMEs listed in Table 2 for 2008-12. Note further how savings-to-GDP ratio of Turkey declined in the 2002-12 period and especially in the last five years.

Table 2. Growth, Savings, Investment, and Liability Dollarization: Turkey and Emerging Market Economies (averages for the 2008-2012 period)

	Growth per capita (mean, %)	(std. dev.)	Savings (% GDP)	Investment (% GDP)	External Debt (% GDP)	IIPL[a] (% GDP)	NIIP[b] (% GDP)
Brazil (11630)[c]	2.28	3.16	17.2	19.2	17.1	63.4	-32.3
Chile (14280)	2.92	2.94	22.5	23.4	39.9	na[d]	na
China (5740)	8.72	0.94	52.0	47.5	9.1	38.6	26.8
Colombia (6990)	2.57	1.79	20.2	23.1	21.9	na	na
India (1530)	5.13	3.03	32.3	35.6	18.6	37.8	-11.6
Indonesia (3420)	4.52	0.77	31.9	31.9	24.7	58.5	-38.1
Malaysia (9800)	2.51	3.37	34.6	22.3	33.0	na	na
Mexico (9740)	0.64	3.89	23.8	24.9	23.8	74.5	-38.4
Philippines (2470)	2.92	2.55	22.7	19.1	29.8	na	na
Russia (12700)	1.72	5.39	27.2	22.4	31.8	65.1	8.3
South Africa (7610)	1.04	2.07	15.3	20.1	28.9	95.6	-13.3
South Korea (22670)	2.35	2.23	31.5	28.8	36.6	77.2	-9.6
Thailand (5210)	2.69	4.22	29.3	26.5	30.7	na	na
Turkey (9730)	1.91	5.80	14.1	20.0	41.6	72.5	-45.0

Notes. [a]: IIPL is the liability side of the net international investment position. [b]: NIIP is the net international investment position. [c]: Numbers in parentheses denote GNI per capita for 2012. GNI is gross national income as defined by the World Bank. [d]: (na) means not available.

Source: Author's calculations based on the IMF's World economic Outlook Database (savings and investment), the IMF's Principal Global Indicators Database (IIPL and NIIP), and the World Bank's database (growth per capita, external debt and GNI).

The mirror image of heavy dependence on foreign financing is the significant level of liability dollarization which renders growth performance of Turkey vulnerable to sharp depreciations through the so called balance sheet effect. There is not a unique way of measuring liability dollarization.[4] One approach to this problem is to focus on the country's foreign currency indebtedness to non-residents. In this context, Table 2 provides information for the external debt-to-GDP ratios of EMEs and the liability side of the international investment position (IIPL) for the EMEs within the G-20 group. Note that while the first variable takes into account financial instruments which render issuers liable for interest and principal payments, the second one is for all sorts of financial transactions. Among the EMEs listed in Table 2, Turkey has the highest external debt to GDP ratio. While its IIPL is not the highest, is still above the average. More importantly, when the gap between the liability and asset sides of international investment position (NIIP) –a measure for financial dollarization- is taken into consideration, it becomes

[4] See, among others, Reinhart et al. (2003) and Yeyati (2005).

clear that among these countries Turkey has the largest currency mismatch and thus the largest exposure to depreciation of its currency.[5]

As emphasized in Yeyati (2005), the above measures of foreign indebtedness vis-à-vis non-residents could understate the potential problems arising from currency mismatches. After all, even if currency mismatch to non-residents is at a very low value, there can be an important extent of currency mismatch within a country at the sectoral level. The Central Bank of Turkey (CBT) provides the foreign exchange position for non-financial firms vis-à-vis both residents and non-residents. As percent of GDP, the period averages are as follows: 2002-2007: -5.1 and 13.2; 2008-12: -14.1 and 23.5; as of 2013Q2: -21.1 and 29 (the first entries are for the net foreign exchange position and the second ones are for the liability side of the foreign exchange position). It is evident that the level of dollarization sharply increased in the second period.[6]

Given that the investment-savings gap is by definition equals to the current account deficit which should be financed by net capital inflows, low savings rate exposes the country to the 'mercy' of changes in international financial conditions even in achieving a modest investment ratio and sustaining a growth rate that falls short of narrowing the per-capita income gap with the developed world. As discussed below, high level of liability dollarization exacerbates this problem. The volatility of real GDP of Turkey is the largest among EMEs listed in Table 2. In the rest of the paper we provide evidence which show that low savings rate and high liability dollarization are among the main culprits.

Volatile Capital Flows

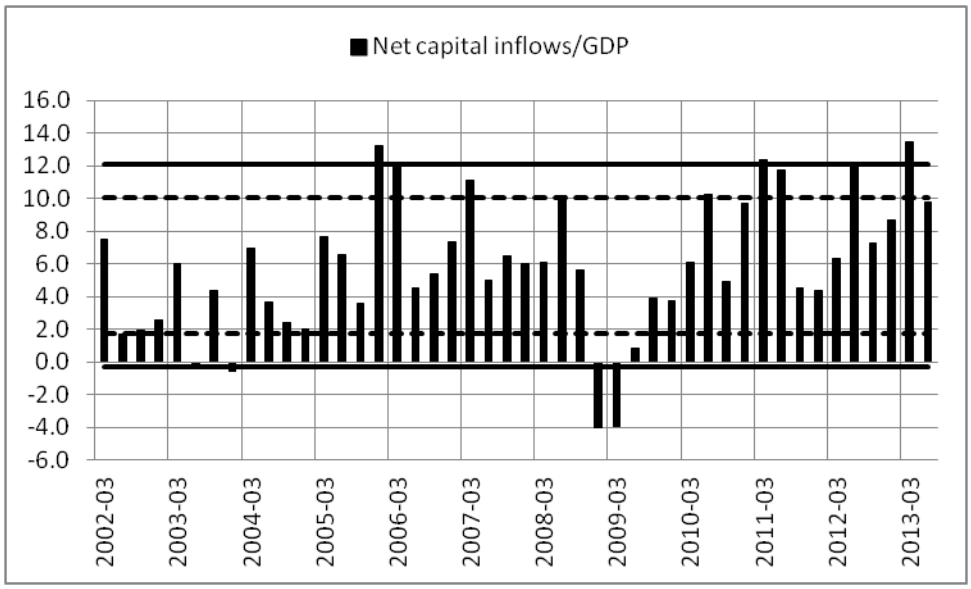
Both surges in capital inflows and reversals have the potential to create headwinds for an economy. We use quarterly and monthly data to pinpoint such episodes between 2002 and 2013.[7] Evolution of net capital inflows-to-GDP ratio in this period is shown in Figure 1. Between the first quarter of 2002 and the second quarter of 2013, the mean of this ratio is 5.9% and its standard deviation is 4.16 percent. During this period, there is not any quarter in which net capital inflows-to-GDP ratio exceeds its mean plus two times its standard deviation, which is 14.2%. If we lower the threshold to mean plus 1.5 standard deviation -12.1%- we end up with 2005Q4-06Q1, 2011Q1, 2012Q2 and 2013Q1. Further lowering the threshold to mean plus one standard deviation -10.1% - we have 2005Q4-06Q1, 2007Q1, 2008Q2, 2010Q2, 2010Q4-11Q2, 2012Q2, and 2013Q1-13Q2 periods. Note that ratio values for 2010 Q4 and 2013Q2 are marginally below this threshold.

[5] For NIIP, as %GDP, the period averages are as follows: 1996-2001: -30.2; 2002-07: - 38, and 2008-12: -43. Moreover, in 2012 the NIIP-to-GDP ratio was at a record level: - 52.8 percent.

[6] We cannot contrast the Turkish foreign exchange position of non-financial firms with those observed in the EMEs listed in Table 2 due to lack of data.

[7] At the time of writing the latest available quarterly data was for the second quarter of 2013 and monthly data for July 2013.

Figure 1. Net Capital Inflows to GDP ratio: 2002Q1-2013Q2 (%).



Source: The author's calculation from the original data of the Central Bank of Turkey.

Notes. The upper (lower) horizontal solid line shows the mean plus (minus) 1.5 standard deviation of the ratio, upper (lower) horizontal dashed line shows the mean plus (minus) one standard deviation of the ratio.

To finalize the timing, lastly, we make use of monthly data and look at positive financing gaps –the difference between the need for financing –the current account deficit- and net financing- around the beginning and end of these episodes. We use months with positive financing gaps -months that witnessed lack of necessary financing- to pinpoint the final timing. Around the starting quarter of the episode, the month that succeeds the month with the first positive financing gap marks the exact starting month of the episode. Similarly, around the end of the episode, the month just before the first month with first positive gap marks the exact final month of the episode. We eliminate episodes that last too short –less than or equal to four months. So, for episodes of surges in capital inflows we have September 2005-February 2006, March 2010-April 2011, and April 2012-April 2013 periods.

There is only one period in which net capital inflows-to-GDP ratio remains below its mean minus two times its standard deviation, which is minus 2.4%: 2008Q4-09QI. Even if we increase the threshold to mean minus one standard deviation -1.7%- we do not have any additional two consecutive quarters with net capital flows-to-GDP ratio below this threshold level. However, this time the episode identified in the previous stage becomes wider: 2008Q4-09Q2. Finally, making use of monthly financing gap data like in the "when it pours" episodes, but this time looking for negative financing months to mark the interim months of sudden stops, the exact timing is the October 2008-April 2009 period.

Impact on the Turkish Economy

Periods of surge in capital inflows, especially "when it pours" types, excessive risk taking behavior becomes the norm rather than the exception. Low interest rates and ample foreign financing lead corporate sector to borrow heavily from abroad. In this environment, domestic credit expands as well. For example, for a sample of 19 advanced and 28 emerging market economies, the IMF (2011, Box 1.2) finds that excessive capital inflows are good predictors of credit booms, between 1960 and 2010. Credit booms cause a significant overheating in economic activity. Episodes of sudden stops are not less traumatic; one observes sharp declines in credit and economic activity which lead to financial disruptions.

Capital flow volatility has repercussions on competitiveness and strength of balance sheets of the corporate sector as well. Surges in capital inflows to EMEs (sudden stops) have tended to lead to appreciated (depreciated) currencies. A depreciation (an appreciation) of domestic currency has a positive (negative) effect on growth through a rise (fall) in exports. However, in countries with significant liability dollarization balance sheet channel leads to just opposite impact on growth. In sudden stop episodes (episodes of surges in capital inflows), given high external indebtedness and the large positive gap between foreign exchange denominated liabilities and assets, depreciation (appreciation) of domestic currency decreases (increases) net worth of the corporate sector. A similar negative (positive) impact of sudden stops on balance sheets is through declines (increases) in asset prices. A reduction (an increase) in the net worth of the non-financial corporate sector decreases (increases) its investment expenditures by increasing (decreasing) its external finance premium. Note that the financial accelerator theory, which is at the core of New Keynesian models, derives an investment behavior as a function of net worth to external financing ratio.[8] As this ratio declines, so does investment. It is worth mentioning that this channel has become the focal point for scholars of financial crises since the 1997-98 Asian crisis.[9]

Impact on the Exchange Rate, Turkish Sovereign Spreads, and Interest Rates

Given the low level of savings and high liability dollarization, it would be a surprise if capital flow volatility had not had important repercussions on the Turkish economy. To have a more clear understanding of these effects, we first focus on the impact of such episodes on the exchange rate, Turkish sovereign spreads, and the gap between the secondary market benchmark treasury rate and the policy rate of the CBT. As the exchange rate, the lira equivalent of an exchange basket with half euro and half US dollars is taken. Turkish sovereign spread is measured by JPMorgan's EMBI+, which is the gap between the 10-year US dollars denominated Turkish treasury bonds and the 10-

[8] Bernanke et al. (1999).

[9] See, for example, Krugman (1999).

year US treasury bonds and an important indicator for risk perception for Turkey. An increase in this index points to an increase in risk perception.

Table 3. Fluctuations in Capital Flows and Asset Prices

		Sovereign spread (EMBI)[a]		Basket exchange rate[b]		Benchmark rate-policy rate[c]
		Average	Change (bp)[d, e]	Average	Change (%)[d]	Average (pp)[f]
Surge-in-capital-flows						
2005M9-2006M2[g]	Before[h]	292.3	-65.3	1.52	-2.6	0.9
	During	227.0		1.48		-0.5
	After[i]	221.0	6.0	1.64	-9.8	0.7
2010M3-2011M4	Before	246.7	-32.7	1.82	-2.2	1.8
	During	214.0		1.78		1.5
	After	266.1	-52.1	2.05	-13.2	2.4
2012M4-2013M4	Before	350.9	-112.3	2.11	-2.8	2.3
	During	238.6		2.05		0.5
	After	250.3	-11.7	2.25	-8.9	2.1
Sudden stops						
2008M10-2009M4	Before	322.7	223.9	1.56	18.6	-2.3
	During	546.6		1.85		2.4
	After	310.5	236.1	1.83	1.1	2.0

Notes. [a] JPMorgan emerging market bond index for Turkey. [b] Lira equivalent of the equally weighted basket of the US dollars and euro. [c] The secondary market benchmark treasury bond rate minus the policy rate of the Central Bank. For 2005M9-06M12 and 2008M10-09M4, the policy rate is the overnight borrowing rate. For the 2010M3-11M4, the policy rate is the weekly repo rate. For 2012M4-13M4, the policy rate is the average funding rate. [d] 'Change' in each entry is with respect to 'during' periods. [e] (bp) stands for basis points. [f] (pp) stands for percentage points. [g] (M) stands for 'month'. [h] 'Before' is the preceding six-month period. [i] 'After' is the post 6-month period.

Source. The author's calculations based on the original data from the Central Bank of Turkey and Bloomberg.

In Table 3, we compare the average of daily values of each of these variables during each of the above mentioned episodes with the averages of those observed in the preceding and post six months. Narrowing the window to the preceding and post three, four or five months does not change the main message.[10] Compared to the relative tranquil periods surrounding them, as expected a-priori, during periods of surge in capital flows periods (sudden stops), both of the spreads –EMBI and the gap between benchmark rate and the policy rate- decline (rise) and lira appreciates (depreciates).

[10] The reason of taking the difference between the benchmark rate and the policy rate as the relevant measure of stress in the financial markets, rather than the benchmark rate, is the fact that the benchmark rate has been highly affected from the policy rate, which may blur the picture since we take averages around a relatively wide window.

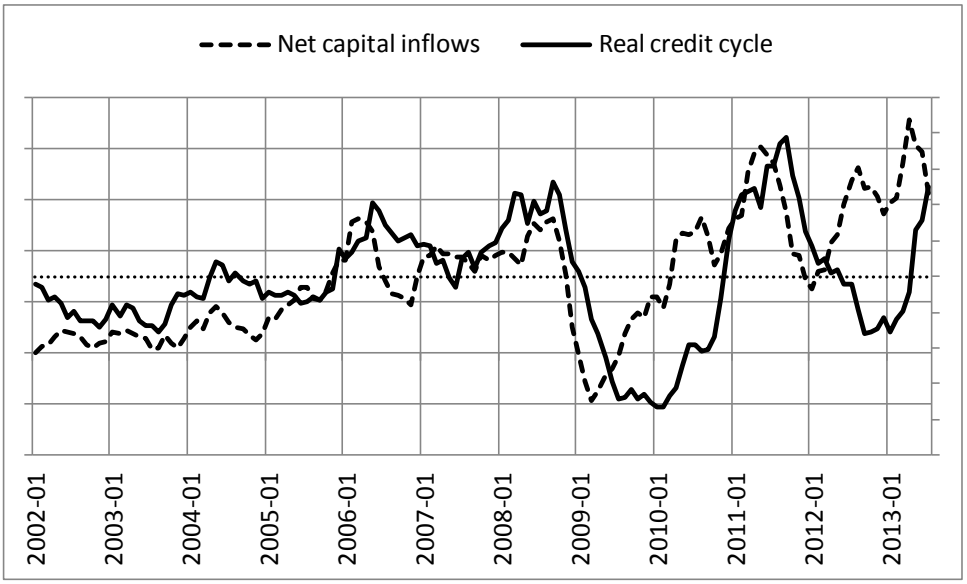
Impact on the Real Credit Cycle

Secondly, we turn to credit cycles. For Turkey, Günay and Kılınç (2011) report that, relative to tradable sector non-tradable sector is more volatile over the business cycle due to its heavy dependence on credit. Binici and Köksal (2012) indicate that as net capital inflows increases the probability of a credit boom rises in Turkey. Figure 2 shows evolution of the cyclical component of real credit stock together with the six-month moving average of net capital inflows between January 2002 and July 2013.[11] In the region above (below) the horizontal dotted line, real credit stock exceeds (falls short of) its trend. Table 4 documents the peak and trough dates of the credit cycle together with changes in capital flow episodes given in Table 3. A peak marks the beginning of a low credit growth phase whereas a trough indicates the start of a high credit growth phase. There is a close relation between the high credit growth phases and the episodes of surges in capital flows on the one hand and the low credit growth episodes and sudden stops on the other hand.[12]

[11] Real credit stock is calculated by dividing nominal credit stock to the consumer price index and then deseasonalized by the Tramo/Seats methodology. Finally, the trend of the deseasonalized real credit stock data is found by the HP filter. The cyclical component in Figure 2 is the deviation of the seasonally adjusted real credit stock from its trend. The original data is obtained from the CBT. Six-month moving average value for any month is the last six months average.

[12] There is not an exact match; this is not something unexpected, however. Note also that there are extra credit cycles, which are not shown in Table 5. This is again something natural. After all there are other factors behind credit fluctuations which are discussed further below. However, some of the credit cycle phases that do not match with capital flows episodes shown in Table 5, have actually close relationship with somehow less pronounced capital flow episodes. For example, net capital inflows-to-GDP ratio remains below its mean minus one standard deviation at 2004Q4. Corresponding to it, there is a rather mild slow credit growth period starting at the peak of 2004M6 and ending at the trough of 2005M8. Similarly, net capital inflows-to-GDP ratio exceeds its mean plus one standard deviation at 2007Q1 and 2008Q2. There is a high credit growth cycle that starts at the trough of 2007M6 and ends at the peak of 2008M10.

Figure 2. Net Capital Inflows (six-month moving average) and the Cyclical Component of the Real Credit Stock: January 2002- July 2013.



Notes. The horizontal dotted line shows the zero line above which real credit stock exceeds its trend. The cyclical component is calculated as explained in the endnote 8.

Source. The author's calculations based on the data from the Central Bank of Turkey.

Table 4. Capital Flows and Credit Cycles

	Corresponding credit cycle	
Surges in capital flows	Trough	Peak
2005M9-2006M2	2005M8	2006M7
2010M3-2011M4	2010M2	2011M9
2012M4-2013M4	2012M11	
Sudden stops	Peak	Through
2008M10-2009M4	2008M10	2010M2

Notes. See notes for Table 3 and Figure 1.

Source. The author's calculations.

More formal evidence comes from the Granger-causality analysis. A close inspection of Figure 2 raises the possibility that fluctuations in net capital inflows have predictive power for credit cycles. Indeed, the null hypothesis that states that net capital inflows does not Granger-cause the real credit cycle is rejected at least at the 1% level, for alternative lag selections and filters (Table 5). But the reverse is not true: The null hypothesis that states that the real credit cycle does not Granger-cause net capital inflows cannot be rejected.[13] Next we enlarge the information set. This time, we search

[13] When the Granger-causality analysis is performed for the real credit cycle obtained through the HP filter, we use the cyclical part of net capital inflows again obtained through the HP filter and alternatively the original series, which is stationary (I(0)). The results are similar. We report only the results for the cyclical part of net capital inflows. Despite the fact that this series is stationary, the reason as one of the alternatives we take the cyclical part

whether net capital inflows have still predictive power for the real credit cycles, when the impact on lagged values of the effective required reserve ratio of the CBT, the real short-term interbank rate, the industrial production index, the business confidence index, and a dummy for the Banking Regulation and Supervision Agency's (BRSA) decision on mid 2011 to mitigate rapid credit expansion are taken into account. The results obtained from the bivariate analysis do not change (Table 5).[14]

Table 5. Granger Causality Between Net Capital Inflows and Real Credit Cycles (2002M1-2013M7)

		p-values	
Null hypothesis	Number of lags[a]	HP filter[b]	Deterministic Trend[c]
Bivariate information set			
NCI[d] does not cause RC[e]	1	0.000	0.000
	3	0.000	0.000
	6	0.003	0.001
	12	0.009	0.004
RC does not cause NCI	1	0.349	0.998
	3	0.391	0.472
	6	0.173	0.620
	12	0.848	0.870
Enlarged information set[f]			
NCI does not cause RC	1	0.000	0.000
	3	0.001	0.003
RC does not cause NCI	1	0.382	0.975
	3	0.426	0.600

Notes. [a] For the bivariate information set, the Schwarz information criterion indicates that the lag length should be 1 whereas the appropriate lag length is 12 by the Hannan-Quinn criterion. For the enlarged set, due to degrees of freedom concerns, the maximum lag length is selected as three. [b] The cyclical components are obtained by applying the Hodrick-Prescott filter to the de-seasonalized real credit and original net capital inflows. [c] Cyclical component of real credit is

of it, is simply to check robustness of our results to alternative filters. However, when the Granger-causality analysis is performed for the real credit cycle obtained as the residual from a deterministic trend, we use the original net capital inflows series which does not have a deterministic trend. See the notes for Table 5 for the necessary details.

[14] The effective required reserve ratio is obtained as the ratio of the required reserves held by the banking sector at the CBT to the total liabilities net of the capital of the banking sector. Data is obtained from TDM database. The business confidence index is the real sector confidence index of the CBT. The real short-term interbank rate is the difference between the overnight interbank market rate and the 12-month ahead expected annual inflation rate. The overnight interbank rate reflects almost one-to-one the policy rate of the CBT. The reason of using the interbank rate instead of the policy rate is the fact that which interest rate of the CBT was the real policy rate had been unclear since the end of 2010 up to end of 2013. Expected inflation rate is disseminated by the CBT. The dummy variable to capture the effect of the decision of the BRSA takes a value of zero up to June 2011 and one afterwards. For net capital inflows and real credit series see the previous footnote.

the residual term of an OLS regression of the de-seasonalized real credit on a constant, time trend, and the square of time trend. In this regression the original net capital inflows series is used. [d] NCI: Net capital inflows. [e] RC: Real credit. [f] The enlarged information set, in addition to NCI and RC, includes the effective required reserve ratio, the real policy rate, the industrial production index, the business confidence index and a dummy for the mid 2011 decision of the Banking Regulation and Supervision Agency. See the text for detailed information for the variables.

Source: The author's calculations.

Evidence documented so far clearly show that there is a significant and positive relation between net capital inflows and real credit cycle. Moreover, the former has significant predictive power for the latter. The next question that follows is obvious: What is the impact of real credit on growth? We basically seek the role of real credit cycles in explaining real GDP cycles.

Impact on the Real GDP Cycle

There is a wealth of evidence pointing to a strong and positive relation between credit and growth in Turkey (Özatay and Sak, 2002; Özatay, 2008; Ermişoğlu et al., 2013; Kara and Tiryaki, 2013). There is also evidence that real appreciations are expansionary in Turkey, at least, in the short-run (Kara et al., 2007). Yeyati and Sturzenegger (2009) document that real exchange rate appreciations are associated with slow growth periods or contractions in the absence of dollarization, whereas financial dollarization may reverse this effect. Frankel (2005) points to contractionary effects of devaluations in highly dollarized economies. These observations hold for Turkey as well (Kesriyeli et al., 2013).

We now turn to underlying factors of fluctuations in the real GDP in the 2002Q1-13Q2 period. As standard in short-term analysis of potential determinants of fluctuations in real economic activity, we take the real government expenditures, the real interest rate, the real exchange rate, the business confidence index, the real credit -all in cyclical form, and the growth rate of the real income of Turkey's export markets. The real interest rate is the difference between the nominal interbank money market rate which closely resembles the policy rate of the monetary authority and the 12-month ahead expected inflation rate. The real exchange rate is the real effective exchange rate of the CBT (an increase points to real appreciation). As foreign income we take the annual growth rate of the real GDP of the basic export market of Turkey -the European Union (EU-28). The rest of the variables are as explained above.

Table 6. The Determinants of Real GDP Cycles: 2002Q1-2013Q2 (OLS results)

	Coefficient	t-ratio	Coefficient	t-ratio
Constant	-25.25	0.39	-28.37	0.45
Real GDP (-1)	0.43	2.98***	0.68	8.17***
Real credit	2.31	2.73***		
Real government expenditures	0.17	0.49	0.60	1.72*
Business confidence	28.61	4.31***	28.84	4.33***
Real exchange rate	10.10	1.18	6.80	0.81
Real interest rate (-1)	-28.09	1.75*	-42.83	2.69***
Growth rate of the EU-28	44.74	1.01	23.89	0.57
Net capital inflows (-4)			0.02	2.46**
Adjusted R^2	0.87		0.87	
	p-values		p-values	
AR(1)	0.99		0.52	
ARCH(1)	0.59		0.15	

Notes: All variables with the exception of the EU-28 (annual) growth rate are the cyclical components of the series. For the details see the text. Absolute values of t-ratios are shown. The numbers in parentheses denote the lags of the variables. AR(1) is the Breusch-Godfrey statistics for the first order autocorrelation. ARCH(1) is the statistics for the first order conditional heteroskedasticity. The reported values are the probability values. (***) denotes significance at the 1% level. (**) denotes significance at the 5 % level. (*) denotes significance at the 10% level.

Table 6 shows that the cycles of the real credit volume, the real interest rate (its first lag), and the business confidence are the three important determinants of the real GDP cycles. As the real credit volume and business confidence increases and the real interest rate declines the real GDP increases above its trend. The coefficients of real credit volume and business confidences are significant at the 1% level and the coefficient of the real interest rate is significant at the 10% level. While the coefficients of the cyclical parts of the real government expenditures and the real foreign income are not significant, they have the correct sign. Finally, as discussed above the coefficient of the real effective exchange rate could take any sign. Here it has a positive sign, which indicates that real appreciation has a positive impact on real GDP; however it is not significant. There is no first order autocorrelation and first order conditional heteroskedasticity problems. These results reinforce the findings of various researchers summarized above: real credit expansions (contractions) above (below) the trend have a significant role in real GDP to remain above (below) its trend. But, since one of the main determinants of the real credit cycle is net capital inflows, this is to say that in the period analyzed net capital inflows played an important role in the volatility of the real GDP. Indeed, when the real credit cycle is replaced by (the fourth lag of) net capital inflows, similar results were obtained (Table 6).

Policy Challenges

International capital flows can be very volatile. Capital flows to Turkey is not an exception. As shown in the preceding sections, a rise in this volatility has the tendency to create significant fluctuations in real credit and asset prices. Credit booms stemming from surges in capital flows jeopardize financial stability. But, surges in capital flows do not last forever; capital reversals are inevitable. A credit crunch caused by capital reversals leads to a painful adjustment. It forces real economy activity to remain much below its potential and unemployment to increase.[15] One of the main economic policy problems that has been intensively discussed since the global crisis is what can be done to curb such excessive risk-taking behavior in sunny days.[16] So the first question that arises is how the amplitude of credit cycles can be mitigated.

As discussed above, sharp asset price changes have been observed during highly volatile capital flows episodes. Especially, exchange rate volatility is a matter of concern. While recent empirical literature on Turkey shows that real appreciations are expansionary, it is not something desirable due to at least two reasons. First, real appreciations lead to a loss in competitiveness. Second, a sufficiently long lasting real appreciation renders borrowing in foreign exchange attractive. But, this is exactly at the core of the reason why a real appreciation is expansionary in the first place: liabilities denominated in foreign exchange exceeding assets denominated in foreign exchange; making Turkey vulnerable to the mercy of international financial markets. Real depreciations are not less problematic. One generally observes deterioration in balance sheets and culminating inflationary pressures. So, the second question: how can excess volatility in real exchange rate be reduced?

Fiscal Policy

If not in all schools of economic thought, in economic policy-making circles it is widely accepted that, if conditions permit, fiscal policy should be countercyclical. However, the qualification is important. EMES were once notorious for their inability to implement countercyclical policies.[17] The mere reason was that they were struggling with enormous macroeconomic imbalances –especially they had high budget deficits and public debt. Under such circumstances, they did not have the room for maneuver in bad times to increase government spending. Doing so would have increased public debt and plausibly caused a rise in risk perception leading to a rise in real interest rates, decline in business confidence, and triggered even a sudden stop. Clearly, to the extent that this possibility materialized, such a policy would have backfired; caused

[15] See for example Schulirck and Taylor (2012).

[16] An important summary for this debate is provided by Blanchard et al. (2013).

[17] See, for example, Frankel et al. (2013).

even a lower growth than in the absence of fiscal easing. For example, this was the situation in most of the Latin American countries and Turkey throughout the 1990s.

By the implementation of sound fiscal policies shortly discussed in the introduction, this incapacity has gradually eliminated in Turkey as indicated recently by the experience of 2009. As a response to recession that started at the last quarter of 2008, Turkey took a series of fiscal stimulus measures. The reaction of financial markets was not hostile. This was something unimaginable in the 1990s.[18] This evidence revealed that, in the absence of a sharp and persistent deterioration in fiscal balances in the future, countercyclical fiscal policy is at the disposal of Turkish policymakers. Thus, in an episode of a surge in capital flows, as a response to rapid credit growth and the following above the trend GDP growth rate, policymakers have the option to tighten fiscal policy. Contrary, during sudden stops they could ease fiscal policy and allow a mild increase in public debt.

Monetary Policy

The CBT interpreted the surges in capital inflows that started in early 2010 (Table 3) as a threat to financial stability and to curb the following rapid credit expansion raised required reserve ratios in successive steps between October 2010 and April 2011. However, the credit growth did not decline in the first three quarters of 2011 (Table 4). Through the end of June 2011, the BRSA took various macro prudential measures. Almost at the same time, the European crisis was on track to intensify causing a significant reduction in global risk appetite. Consequently, net capital inflows declined significantly in the second half of the year (the quarterly net capital inflows to GDP ratios in 2011 were 12.4, 11.7, 4.5, and 4.4%, respectively) leading to a parallel decline in credit growth in the last quarter of the same year.

In order to have a better understanding of the relative importance of all these factors on the decline in the rate of growth of the real credit volume, we may first refer to Table 5. There, we show that controlling for the impact of the required reserve ratio, the decision of the BRSA and some other potential factors, the fluctuations in net capital inflows still have a significant predictive power for explaining the real credit cycles. However, while the changes in the required reserve ratio and the decision of the BRSA do not have a predictive power for the future fluctuations of real credit volume, could have a significant contemporaneous explanatory power. To check this possibility we estimate an OLS equation with the real credit cycle as the dependent variable and net capital inflows, the real manufacturing production index, the business confidence index, the real interest rate, the effective required reserve ratio –all in cyclical form, and a dummy to capture the impact of the BRSA's decision, for the 2002M1-2013M7 period

[18] The IMF (2009) attempts to measure the magnitude of fiscal stimulus policies of the members of G-20. According to the IMF, the fiscal stimulus of Turkey was at roughly 1.1 percent of GDP. Note that the estimate for Turkey does not include the measures taken in June 2009. For the details, see Özatay (2010).

as explanatory variables. Net capital inflows and real manufacturing index cycles are significant at the 1% level and the real interest rate is significant at the 10% level, whereas the required reserve ratio was not significant.[19]

These results shed some doubt especially on the effectiveness of required reserve ratio in mitigating real credit cycles. However, the set of possible macro-prudential tools that can be used as financial stabilizers is much richer and no macro prudential authority has required reserve ratio as the only policy tool. But what is important is that almost all of the important policy tools proposed in recent research to use for fulfilling macro financial stability objective are at the disposal of BRSA in Turkey. This brings us to the institutional design issue.

Institutional Structure

At the one extreme, a central bank can be held responsible from both objectives – price stability and macro financial stability. The main shortcoming of this institutional set up is that one ends up with a "super" central bank holding a lot of power, which on the one hand raises questions regarding how compatible this would be with democracy, on the other hand such a setup as time evolves could jeopardize the independence of such a central bank. At the other extreme of the institutional structure spectrum is a central bank responsible from price stability and a macro prudential authority responsible from macro financial stability, and a coordination committee to assure that these institutions act in concert. Various in between combinations are of course available. Discussing these issues in depth is, however, out of scope of this article.[20]

Turkey currently selected the second option and established the "Financial Stability Committee" in 2011.[21] One important shortcoming is the absence of a detailed description of responsibilities and powers of this committee. We do not know whether the committee is rather an advisory one or has power to enforce its decisions to its members. If the committee is an advisory one and one of the member institutions of the committee disagrees to take a decision which other members ask to take, who will have the final word, for example? If the committee is not an advisory one, will not the independence of its independent members be jeopardized?

If these problems are satisfactorily addressed, then together with countercyclical fiscal policy, monetary and financial stability policies can be used in tandem to curb excessive credit cycles. Of course, there is another policy choice, which, if effectively used as a supplement to these policies, can help to curb excessive credit cycles:

[19] The estimation results can be obtained from the author.

[20] For a detailed discussion, see BIS (2011).

[21] The head of the committee is the Treasury minister, and its members are governor of the CBT, undersecretary of the Treasury, presidents of the BRSA, the Capital Markets Board of Turkey, and the Deposit Insurance Fund.

capital controls. But, this is a big if and discussing whether such controls can be successful in the Turkish economy in light of the experience of other countries -while very important- is obviously beyond the scope of this study.

The Exchange Rate Policy

Reducing excess volatility in the exchange rate is basically in the domain of monetary policy given that a central bank has the main policy tools necessary. In theory, one can write down and solve a model with an objective function for the central bank which has the difference between the inflation and its target, output gap, and the difference between the real exchange rate and its long-term value as its arguments, for example. Accordingly, this central bank can make use of its policy tools as a reaction to not only inflation and output developments but also to exchange rate developments: It can lower (increase) its policy rate as a response to a real appreciation (depreciation) more than it would, were the exchange rate absent in its objective function.

There are at least two potential problems for conduct of such a monetary policy in Turkey. First, despite the inflation rate is currently at low levels relative to 1990s, it is still high among its peers. Given that exchange rate pass-through is still important –in the range of 15% according to the CBT-, such a monetary policy has the danger to undermine aims for achieving lower inflation levels. Second problem is related with volatile capital flows. Think that, due to appreciation pressures stemming from surge in capital inflows, the CBT starts to reduce its policy rate signaling that policy rate would be lessened further in the period ahead. However, suppose that in the midst of this easing cycle, due to whatever reason, risk appetite in international financial markets decreases, and the capital reversal begins. This time the CBT has to hike its policy rate. Obviously, this would be a rather erratic monetary policy, causing a lot of uncertainty in the upcoming periods regarding monetary policy for economic decision makers.

Indeed, this is exactly what happened in Turkey during the 2010-11 period. Starting from late 2010, in successive steps, the CBT reduced both its policy rate and the lower limit of its interest rate corridor (its overnight borrowing rate) to counter culminating appreciation pressures on the lira (CBT, 2012, p. 5). However, as of August, crisis in Europe intensified leading to an increase in risk aversion which put a sharp depreciation pressure on the lira which had already been depreciating due to the policy of the CBT (Table 4). A few weeks later, intensification of uncertainties started to depreciate the lira this time sharply, and the CBT initiated to implement just the opposite of the policy that it had implemented in the first seven months of 2011. Following a greatly questioned mild rate cut in early August, it both increased its lending rate and let the overnight market rate to diverge from its policy rate in the upward direction.

These problems do not mean that the CBT should always abstain from conducting monetary policy with the real exchange rate in its objective function as an additional

argument. On the contrary, there could be conditions in which such a monetary policy would be optimal. What we instead want to emphasize is that the proper timing for putting in place such a monetary policy is crucially important. The recent experience of the CBT reveals the fact that in times of increased capital volatility, current economic conditions with average inflation rates at 8% and significant liability dollarization is hardly a starter.

Conclusion

Despite important steps taken towards establishing macroeconomic stability in the aftermath of the 2001 crisis, the Turkish economy is still vulnerable to the mercy of international financial markets basically due to two reasons: low savings rate and high level of liability dollarization. Consequently, volatile capital flows aggravate credit cycles and lead to significant changes in asset prices. Such effects by amplifying business cycles undermine both macroeconomic and financial stability.

In this paper, first we documented episodes of surges in capital inflows and sudden stops between 2002 and 2013 in Turkey. We then investigated how such episodes have led to credit cycles, changes in asset prices, and fluctuations in real economic activity between 2002 and 2013. Finally, we discussed economic policy challenges posed by credit cycles and changes in asset prices and drew some lessons.

We argued that Turkey has no longer doomed to implement procyclical macroeconomic policies; it has the room for maneuver to mitigate magnitude of business cycles amplified by volatile capital flows. Regarding the macro financial stability policies, almost most of the policy tools to curb sharp credit cycles are currently at the disposal of the BRSA. Monetary authorities should take this fact into consideration when forming their policy to achieve their dual objective of price and financial stability. The recently established Financial Stability Committee could help in this respect. Nonetheless its governance structure is not clear yet and this opaqueness might raise concerns about the independence and autonomy of its independent and autonomous members, which could undermine the effectiveness of monetary policy decisions. Finally, we argued that in principle the CBT can include real exchange rate in its objective function in addition to inflation and output gap. Nevertheless, we raised the possibility that unless the inflation rate reduces to a level that does not jeopardize competitiveness of the economy, such a policy could be counterproductive especially during episodes of high capital volatility.

We should emphasize that the two important problems of the Turkish economy –low savings rate and high liability dollarization- do not bear easy solution. This is an important avenue of future research and necessitates a medium to long run perspective.

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