9 Depositor myopia and banking sector behaviour

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Introduction[1]

Typically, banks provide liquidity insurance by pooling funds in exchange for demandable deposit contracts, and diversify away idiosyncratic credit risk by financing different investment projects (Diamond and Dybvig 1983; Diamond 1984; Kashyap *et al*. 2002, to quote but a few). Demand deposit contracts, which offer liquidity insurance, make banks prone to runs, leading to insolvency, due to early liquidation of long-term debt contracts. In this study, our main intention is to understand how the bank behaviour interacts with the depositor behaviour, given the conditions of financial constraint on both the demand and cost sides of bank credit. Although bank runs are more likely to be an issue for the banking sector, especially in a developing country like Turkey, where several exchange rate crises were associated with recurrent banking crises,[2] our focus will not be on the deposit drain, which is the case in the classical bank-run framework. We rather draw attention to the possible shortening of deposit maturity by risk-averse depositors due to increased uncertainty over real asset returns. Both theoretical and empirical studies consider the likeliness of bank runs in the absence of (full-coverage) deposits insurance. However, few studies deal with the deposit composition of banks varying from longer-termed time deposits to immediately demandable deposits. Kashyap *et al*. (2002) and Gatev and Strahan (2006) argue that synergies between credit lines and deposit taking enable banks to keep safe from the likelihood of runs and thus reduce their liquid asset holdings. However, in the case of full insurance, the deposit holders might give priority neither to the solvency nor to the liquidity risk of the individual bank, but to the price stability in the financial system. For a small open economy, the depositors' concern for price stability can arise from exchange shocks or high public debt driven by default risk, which might worsen the expectations that either inflation would accelerate and/or nominal interest rates would increase. Having to face that nominal shock is likely; the depositors might switch to time deposits with shorter maturity, denominated either in dollars or in the national currency to avoid any loss in real terms. The motivation of the risk aversion might be either to minimize loss incurring from the perceived risk associated with the uncertainty arising from a default on the public debt; or to avoid any depreciation resulting from the high pass-through effect of exchange

rates, which is very common among emerging countries which have suffered from high inflation in the past.[3] This framework is a close fit for many Latin American countries and Turkey. The inconsistent exchange rate regime and fiscal policy in these emerging countries give incentives to myopic behaviour (or short-termism) as the only financing pattern for the debt contracts.[4] Figure 9.1 shows how some major Latin American counties and Turkey suffer from private credit contraction under fiscal dominance. Note that in the 1990s, these countries several times attempted stabilization policies by adopting hard pegs in order to tame high inflation and sustain growth. Reversal movements of private and public debt can be attributed to the fiscal imbalances resulting from default risk and uncertainty. In the past two decades, an improvement in budgetary position has contributed to credit expansion in terms of Gross Domestic Product (GDP).

In the literature, maturity of private debt contracts has a greater significance than term structure of deposits due to the link between firms' problems and investment financing. There are two opposing claims regarding the consequences of short-term debt on economic performance. First, Calomiris and Kahn (1991) and Flannery (1994) assert that shortening of debt maturity is an effective way of disciplining bankers and mitigating agency problems inherent in banking: the threat of withdrawal of funds increases the likelihood of profitable investment opportunities. Second, Diamond and He (2014) and Diamond and Rajan (2012) claim that short-term debt harms the real economy by decreasing real investment levels. Diamond and He (2014) show that short-term debt can hinder current investment:

1 when the volatility of firm value is higher in bad times than in good times;
2 in a dynamic setting with future investment opportunities, when the reduction in equity value is very large as a result of a combination of bad times and shorter-term debt;
3 when investment benefits are inter-temporally linked, short-term debt may reduce future growth as a result of earlier future default.

In Diamond and Rajan (2012), uncertainty about households' income is the source of liquidity problems in the economy. This uncertainty increases households' withdrawals which cause an increase in the real interest rate, which in turn decreases bank net worth. If this loss is sufficiently high, this may terminate some otherwise profitable project financed by bank loans.

The consequences of myopic debt financing can be found in models based on a bank-run setting. Chang and Velasco (2000) discuss how short-term debt can be a source of fragility leading to a balance of payments crisis. Bussière *et al*. (2006) argue that higher economic or political uncertainty tightens solvency constraints and favours the short-term debt since debt maturity decreases with the uncertainty on investment returns. Furthermore, using a longitudinal data set, Jeanne and Guscina (2006) find that Latin American countries have very low shares of long-term domestic-currency debt, and argue that the reason for the high ratio of short-term domestic debt can be found in the history of monetary instability in these countries.

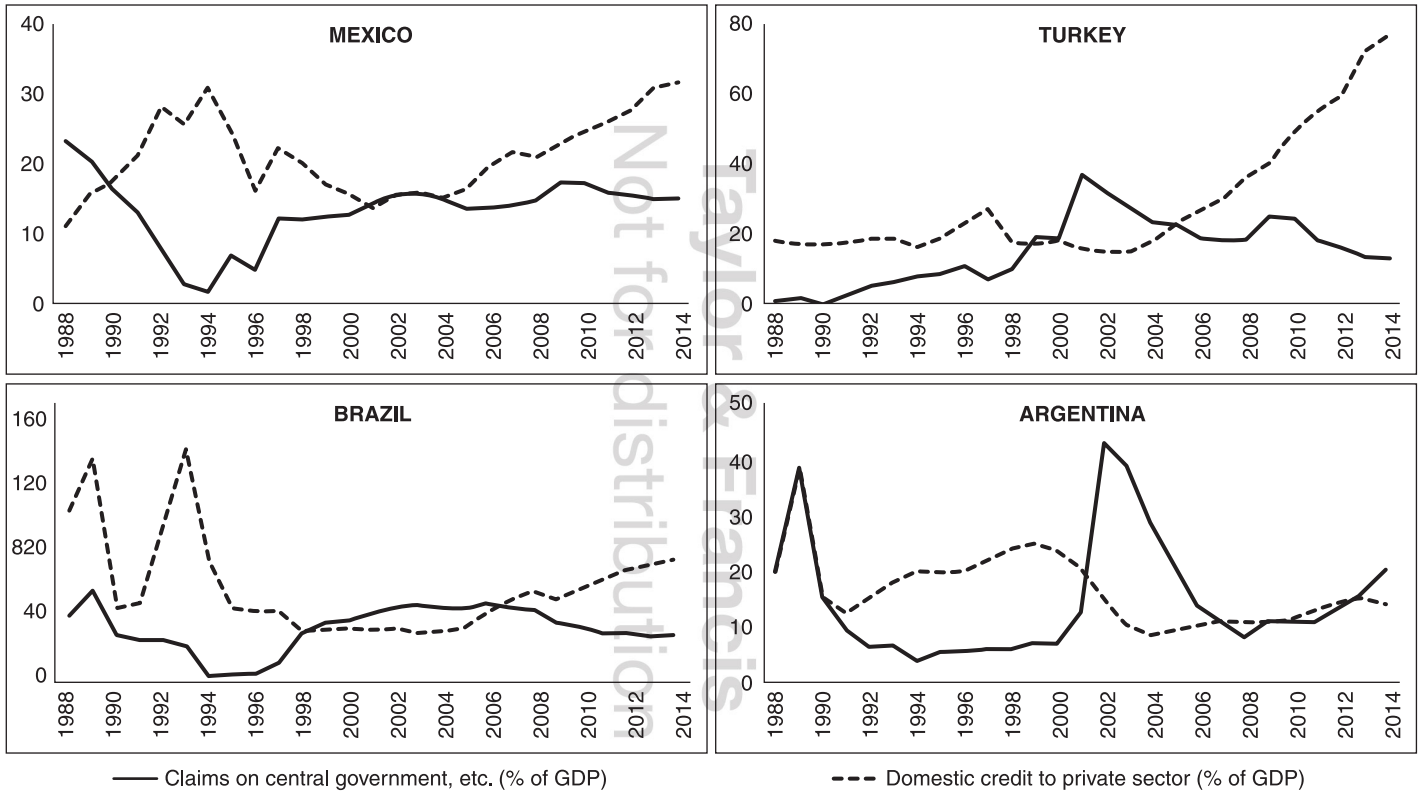

Figure 9.1 Public debt and credit expansion (Mexico, Turkey, Brazil and Argentina).

Source: Authors' creation, based on World Bank (2015).

We can clarify the possible interactions between the depositor and the banking sector in the following way. Banks will alter their asset composition unless the depositors' concerns are instantaneous or temporary. The compositional change in bank assets will probably be in favour of holding more assets like government bonds or treasury bills rather than debt contracts, which are less solvent and more risky in the short run. Thus, expectations about price stability in the financial system, whether derived from the depositors or the banking sector, will affect the credit market through the maturity channel. It is possible to make an analogy with the bank-run case: the maturity channel might not forcefully lead to a contraction in the funds (deposits) available to the banking sector, but it might lead to a contraction in the credit volume given the expectations of depositors and the reluctance of the banking sector to expand credits, which in turn can impede economic growth. In a similar fashion, in this study, our main hypothesis is that the systemic costs (which would appear in bank-run cases) are likely to emerge if the financial system runs into an unstable period due to increased uncertainty and risk perceptions over the asset-price stability.

Depositor behaviour can be a reflection of expectations in the financial markets, which in turn, contribute more to the short-term use of bank resources by creating a considerable cost effect for the banking sector. However, the degree of depositor myopia may change depending on expectations about the macroeconomic stability. It needs more inquiry at the individual bank level on how much banks decide to reduce the maturity gap[5] *vis-à-vis* the shortening of the deposit maturity. Nevertheless, it is reasonable to assume that banks will become more unwilling to finance investment projects. The contribution of this chapter is to assess the role of the price and maturity effects resulting from depositor myopia on the entire banking credit expansion. We try to show that macroeconomic imbalances like fiscal distress might undermine financial stability through shortening of the term structure of deposit maturity, and increasing the cost of funds with higher interest rates. We argue that bank behaviour does reflect and transmit the short-termism that governs the financial structure. The results that emerge from the Turkish case indicate that underdeveloped financial markets (with a heavy dependence on public debt) and recurrent banking crises, coupled with macroeconomic mismanagement, might lead to lower growth and shorter growth periods as well.

The remainder of this chapter is organized as follows. The second section discusses briefly the stability issue and the Turkish banking sector. The third section describes the data and the methodology used for testing the econometric model. The fourth section presents the results, and the fifth section concludes.

The banking sector and stability in Turkey

The banking sector in Turkey has a low capacity for credit creation. Indicators such as the ratio of commercial bank loans to GDP and the ratio of commercial bank loans to deposits are very low in comparison with Organisation for Economic Co-operation and Development (OECD) countries. As an example, the credit-to-GDP ratio was 35 per cent for Turkey, while it was 157 per cent for the EU-27

Table 9.1 Economic and financial indicators

	DIR	*BIR*	*CR/GDP*	*DEP/GDP*	*CR/DEP*	*Growth*	*I/GDP*	*Inflation*
Turkey	21	18.4	35	42	83	4.7	25.2	8.4
EU-27	4.3	4.5	157	136	116	4.6	25.2	3.6

Source: Turkish Statistical Institute (TURKSTAT).

countries on average. Similarly, the deposit-to-GDP ratio was respectively 42 per cent and 136 per cent in 2007.[6] Combining both of these indicators, we see that the credit-to-deposit ratio was 83 per cent for Turkey, which is significantly lower than the EU-27 average of 116 per cent.

Table 9.1 provides a comparison of different economic and financial variables between the EU-27 countries and Turkey for 2007. European countries including Turkey are examples of bank-based economies where the main financial system works through credit institutions. Comparing Turkey with other European countries, we notice that the share of investment to GDP (I/GDP) – a proxy of finance demand – in Turkey is equal to the average value of European countries. However, there is a considerable difference in terms of financial variables – deposit interest rates (DIR), bond interest rates (BIR), ratios of credit to GDP (CR/GDP), deposit to GDP (DEP/GDP) and credit to deposit (CR/DEP) – which are more closely related to the credit availability of the banking sector.

According to Table 9.1, the ratios of deposit-to-GDP and credit-to-GDP are very high for the EU-27 countries. Compared with the case of Turkey, it is about 3.2 times higher for the first, and 4.5 times higher for the second ratio. The financial deepening indicators show evidence of the lower size of credit supply in Turkey. The same relatively low banking performance of Turkey can be traced when it comes to the low transformation rate of deposits to credit: the credit-to-deposit ratio is 1.4 times higher for the EU-27 countries.

From the development perspective, the financial liberalization that took place in the mid-1980s has not produced enough financial deepening in Turkey. The incapacity of the financial system to expand credits impeded economic development all through the 1990s. Although recent stable economic conditions facilitated a stronger banking sector (though there was a slight recession due to global recession in 2008), it is nevertheless evident that if the Turkish banking system were to catch up with the EU averages, all other things being equal, one would expect more investment and economic growth. Several studies in the literature support this view: Bencivenga and Smith (1991) develop a theoretical model where financial intermediation raises the economic growth rate. The basic idea in their paper is that without financial intermediaries, there will be an excessive holding of unproductive liquid assets that cannot be transformed into productive investment. As a result, financial intermediaries, by changing the composition of savings, produce higher investment and growth rates even without an increase in savings rates.[7] Levine *et al*. (2000) provide strong empirical evidence that a more efficient financial system which ameliorates information asymmetries and facilitates transactions promotes economic growth.

One of the main factors that may explain the underdevelopment of the Turkish banking system is the high uncertainty and volatility of the economy. Between 1994 and 2001, the Turkish economy underwent three serious subsequent economic crises; namely, in 1994, 1999 and 2001 (the severest one). These crises produced sharp downturns in economic activity and raised the question of public debt sustainability in the face of volatile interest rates and inflation. To give some figures by way of example, during the period between 1980 and 2007, the average inflation rate was 53 per cent and the debt requirement to GDP ratio was 5 per cent. Although GDP grew at a rate of 4 per cent on average, it followed a very unstable path: in 1994 and 1999, Turkey hit a growth rate of –4.7 per cent, while in 2001, it was even lower at –7.5 per cent.

A second factor might be the political instability. Between 1980 and 2008, 17 governments had been in power, and the average tenure is just about two years, since elections are held every five years, but an election can be called before that time. According to Kaufmann *et al*. (2009), Turkey has a score of –0.73 on the political instability index (which ranges from –2.5 to 2.5) while the EU-27 has 0.78 on average. This picture was even worse for Turkey in 1996, with a score of –1.49 compared to 0.81 for the EU-27 average. For the second index, showing whether governments design and implement policies and regulations that permit and promote private sector development, Turkey scores lower than the average for the EU-27 countries: in 2008, Turkey has an index number of 0.22 while the EU-27 average is 1.29. Interestingly, the Turkish government's regulatory quality is found to be higher in earlier years (e.g. 0.54 in 1996), meaning that the situation is worsening.

These economic and political uncertainties may strongly modify the composition and maturity of financial contracts, and thus generate a contraction in the volume of bank loans. From a small open economy perspective, higher interest rates – due to higher uncertainty – will not only reduce new investment, but also change the risk composition of new projects via credit rationing. Typically, when interest rates are higher, banks will be faced with the demand for loans for more risky projects. However, this is not the only effect of uncertainty on investment projects; it may also affect the maturity composition of deposits, which in turn shrinks the volume of credits. With rising uncertainty, depositors may be more averse to risk, and some of them may switch to shorter-term deposit contracts than they would choose in a more stable period. This curtailment in deposit maturity may also reallocate the funds available away from investment projects if banks' risk perception/aversion is affected by the maturity of deposits.

Data and methodology

Data description

We used monthly data covering a period of almost 20 years, starting from January 1990 up to October 2009, including the entire financially liberalized phase of the Turkish economy. Holding that data frequency is crucial in order to understand

whether the compositional change on the asset side is affected by various financial variables, and especially from the liability side of the balance sheet in the short run, we limit the model to the data available on a monthly basis. Our main estimation strategy will be to test whether there is causality, in the sense of Granger, between short-term liabilities and long-term commitments as debt contract inside the banking sector. In order to eliminate the level effect of possible deposit drain, we chose to use the credit/deposit ratio as a proxy of bank behaviour. We excluded consumer credit, and kept the bank credit to the private sector (CRDP), which is supposed to be a longer-term commitment as debt contract. The deposit variable in the denominator consists only of deposits both in foreign and national currencies, with a maturity of one month and over. The maturity of deposit (MTDP) is the weighted average in days, and again it consists only of deposits with a maturity of one month and longer. In order to include the cost of funds in the model, we took the interest rate spread (IRSP) between one-month time deposits and the average monthly rate for short-term treasury bills. In order to include the credit demand, we used the monthly production index of the manufacturing sector (PROD) as a proxy. Along with the myopic (short-termism) hypothesis, we also consider the maturity of government bonds (TRES) that might serve as a major asset for the banking sector in the absence of more developed financial debt contracts. The exchange rate variable (EXCH) is also added to the model to reflect the probable nominal shocks in a small open economy. The next subsection discusses the methods to be used in establishing the causal relationships between the variables mentioned above.

Empirical methods

Our empirical strategy has two main objectives. The first one is to explain how the variables are related one to another over time. The second one is to provide an understanding of the causal relationships involved in different models. The pioneering study by Granger (1969) was the first to test for the direction of causality between two variables. The test, in its primitive form, is quite simple. Granger (1988: 200) gives the definition of causality in terms of predictability: considering two time-series, x and y, it is argued that "if y_t causes x_t, then x_{t+1} is better forecast if the information in y_{t-j} is used than if it is not used". Hence the standard causality test runs ordinary least squares (OLS) regression of a variable x in level form on the lagged levels of both x and y. Then a Fisher test is sufficient to check for Granger causality from y to x (*vice versa* for the inverse direction of causality). However, with non-stationary series it has been shown that the standard causality test can yield spurious causality results (see, among others, Granger and Newbold 1974).

Thus, each time-series analysis should begin by testing for the stationarity of the variables.[8] In the case of non-stationarity of the variables (with the proviso that they are integrated of the same order), Engle and Granger (1987) showed that any combination of these variables may be stationary, which means that there exists a cointegrating vector such that the linear combination of the variables formed using this vector is integrated of order zero. Thus, following the unit root tests, the second step of the analysis should consist of exploring the cointegration properties of the series, and the Johansen cointegration test procedure (Johansen

and Juselius 1990) is widely used for this purpose. If a cointegrating relationship exists – that is, if we have a long-run equilibrium relationship between the variables involved in the analysis – then the dynamic Granger causality can be captured from a vector error correction model (VECM) derived from this cointegrating equilibrium relationship.[9]

Using the variables discussed above, the VECM can be expressed as follows:

$$\Delta CRDP_t = \psi_1 + \sum_{i=1}^{m} \beta_{11i} \Delta CRDP_{t-i} + \sum_{i=1}^{n} \beta_{12i} \Delta MTDP_{t-i} + \sum_{i=1}^{o} \beta_{13i} \Delta IRSP_{t-i} + \sum_{i=1}^{p} \beta_{14i} \Delta EXCH_{t-i} + \sum_{i=1}^{r} \beta_{15i} \Delta PROD_{t-i} + \sum_{i=1}^{s} \beta_{16i} \Delta TRES_{t-i} + \alpha_1 \varepsilon_{t-1} + u_{1t} \quad (9.1.1)$$

$$\Delta MTDP_t = \psi_2 + \sum_{i=1}^{m} \beta_{21i} \Delta CRDP_{t-i} + \sum_{i=1}^{n} \beta_{22i} \Delta MTDP_{t-i} + \sum_{i=1}^{o} \beta_{23i} \Delta IRSP_{t-i} + \sum_{i=1}^{p} \beta_{24i} \Delta EXCH_{t-i} + \sum_{i=1}^{r} \beta_{25i} \Delta PROD_{t-i} + \sum_{i=1}^{s} \beta_{26i} \Delta TRES_{t-i} + \alpha_2 \varepsilon_{t-1} + u_{2t} \quad (9.1.2)$$

$$\Delta IRSP_t = \psi_3 + \sum_{i=1}^{m} \beta_{31i} \Delta CRDP_{t-i} + \sum_{i=1}^{n} \beta_{32i} \Delta MTDP_{t-i} + \sum_{i=1}^{o} \beta_{33i} \Delta IRSP_{t-i} + \sum_{i=1}^{p} \beta_{34i} \Delta EXCH_{t-i} + \sum_{i=1}^{r} \beta_{35i} \Delta PROD_{t-i} + \sum_{i=1}^{s} \beta_{36i} \Delta TRES_{t-i} + \alpha_3 \varepsilon_{t-1} + u_{3t} \quad (9.1.3)$$

$$\Delta EXCH_t = \psi_4 + \sum_{i=1}^{m} \beta_{41i} \Delta CRDP_{t-i} + \sum_{i=1}^{n} \beta_{42i} \Delta MTDP_{t-i} + \sum_{i=1}^{o} \beta_{43i} \Delta IRSP_{t-i} + \sum_{i=1}^{p} \beta_{44i} \Delta EXCH_{t-i} + \sum_{i=1}^{r} \beta_{45i} \Delta PROD_{t-i} + \sum_{i=1}^{s} \beta_{46i} \Delta TRES_{t-i} + \alpha_4 \varepsilon_{t-1} + u_{4t} \quad (9.1.4)$$

$$\Delta PROD_t = \psi_5 + \sum_{i=1}^{m} \beta_{51i} \Delta CRDP_{t-i} + \sum_{i=1}^{n} \beta_{52i} \Delta MTDP_{t-i} + \sum_{i=1}^{o} \beta_{53i} \Delta IRSP_{t-i} + \sum_{i=1}^{p} \beta_{54i} \Delta EXCH_{t-i} + \sum_{i=1}^{r} \beta_{55i} \Delta PROD_{t-i} + \sum_{i=1}^{s} \beta_{56i} \Delta TRES_{t-i} + \alpha_5 \varepsilon_{t-1} + u_{5t} \quad (9.1.5)$$

$$\Delta TRES_t = \psi_6 + \sum_{i=1}^{m} \beta_{61i} \Delta CRDP_{t-i} + \sum_{i=1}^{n} \beta_{62i} \Delta MTDP_{t-i} + \sum_{i=1}^{o} \beta_{63i} \Delta IRSP_{t-i} + \sum_{i=1}^{p} \beta_{64i} \Delta EXCH_{t-i} + \sum_{i=1}^{r} \beta_{65i} \Delta PROD_{t-i} + \sum_{i=1}^{s} \beta_{66i} \Delta TRES_{t-i} + \alpha_6 \varepsilon_{t-1} + u_{6t} \quad (9.1.6)$$

where Δ is the difference operator, *m*, *n*, *o*, *p*, *r* and *s* are the number of lags determined by the Hannan–Quinn information criterion, ε_{t-1} is the lagged error correction term derived from the cointegration equation and u_{it} is a white noise.

This system of equation enables us to investigate multivariate Granger causality. As argued by Lutkepohl (1982), Granger non-causality tests in a bivariate system may be subject to the omitted-variable bias. In addition to this technical aspect, our model does not consider only credit-to-deposit ratio and maturity of deposits, but it takes into account interest rate spread, exchange rates, and the maturity structure of government bonds in order to capture the possible interactions inside the financial system.

Results and discussion

As described above, as a preliminary step, we test for unit root by means of the augmented Dickey–Fuller test (ADF; Dickey and Fuller 1981). Furthermore, we employ the Kwiatkowski *et al*. (1992) test, known as the KPSS test, for the null hypothesis of stationarity of a univariate time series. The results indicate that all variables involved are non-stationary in level, but stationary in first difference; that is, they are all I(1).[10]

Since the non-stationary variables are integrated of the same order, their linear combination may be stationary, indicating that the variables are cointegrated. We test for cointegration or long-run relationship between these variables employing the Johansen–Juselius test (Johansen and Juselius 1990; Johansen 1991). The results are given in Table 9.2. To check the robustness of the results, the Engle–Granger two-step procedure (Engle and Granger 1987) is also performed (not reported here in view of the similar findings).

As shown in Table 9.2, both trace and maximum eigenvalue statistics indicate the presence of two cointegrating equations at the 5 per cent level.

From Table 9.3, it follows that the error correction term is significant only for the CRDP equation. This means that if there is a deviation from the cointegrating relationship, this variable has the tendency to restore the long-run equilibrium,

Table 9.2 Johansen Test for the number of cointegrating relationships

Eigenvalue	H_0 : r =	*Trace*	*L Max*	*Critical values at 95%*	
				Trace	*L Max*
0.23288	0	127.32	62.83	82.49	36.36
0.13025	1	64.49	33.07	59.46	30.04
0.06218	2	31.41	15.21	39.89	23.80
0.0431	3	16.20	10.44	24.31	17.89
0.02365	4	5.76	5.67	12.53	11.44
0.00038	5	0.09	0.09	3.84	3.84

Note: *r* indicates the number of cointegrating relationships. The critical values for maximum eigenvalue and trace test statistics are given by Johansen and Juselius (1990). The model specification includes an intercept and no trend in the cointegrating equations.

Table 9.3 Temporal Granger causality test results

	Sources of causation												
	Short-run (F-statistics)						*Long-run (LR-statistics)*	*Joint (short-run/long-run) (F-statistics)*					
	CRDP	*MTDP*	*IRSP*	*EXCH*	*PROD*	*TRES*	ε_{t-1}	*CRDP,* ε_{t-1}	*MTDP,* ε_{t-1}	*IRSP,* ε_{t-1}	*EXCH,* ε_{t-1}	*PROD,* ε_{t-1}	*TRES,* ε_{t-1}
CRDP	–	0.10	2.54	0.33	0.6	0.73	7.66**	–	3.63*	4.33**	2.59	1.59	1.51
MTDP	0.09	–	1.90	0.07	0.35	0.56	0.18	0.11	–	1.31	0.10	0.32	0.46
IRSP	2.25	24.09**	–	1.33	0.10	0.42	3.47	2.39*	14.03**	–	1.87	0.72	1.11
EXCH	0.08	0.11	0.37	–	0.89	2.14	1.26	0.33	0.64	0.65	–	0.78	1.84
PROD	3.57**	0.12	0.11	0.82	–	0.82	0.48	2.88**	0.27	0.21	0.73	–	0.81
TRES	1.26	1.80	0.24	2.85	2.56*	–	1.82	1.72	1.66	0.70	2.34	3.19**	–

Note: * and ** denote significance at the 5 and 1 per cent level, respectively.

absorbing the effect of the shock to the system. Considering only Equation (9.1.1), we see that both in short and long runs (joint causality), Granger causality runs from MTDP and IRSP to CRDP. This finding implies that in the long run, credit supply in Turkey is affected by changes in the interest rate spread, but it is not preceded by the demand side, which is proxied by production index (PROD). Thus, it can be said that the credit market is greatly affected by cost-driven factors, given the considerable price of uncertainty.

Another important finding is that MTDP is found to be an exogenous variable, which means that none of the other variables involved in the analysis Granger-causes MTDP. This finding is crucial for the focus of our theoretical discussion. The expectations of depositors emerge as an exogenous factor affecting the bank behaviour in terms of credit creation. Considering the high volatility in the Turkish financial market, it is not surprising that expectations change quite frequently under a high inflation and rapid exchange rate adjustments. We argue that expectations of depositors contribute to the shift in the allocation of funds in terms of maturity. On the other hand, in the short- and long-run dynamics, our results indicate that interest rate spread changes should be considered as endogenous variables to both credit supply and deposit maturity. Furthermore, taking into account the results from Equation (9.1.1), we see that bi-directional causality exists between IRSP and CRDP, implying that the price effect and rationing of credits are mutually reinforcing, and give rise to circularity in terms of Granger causality.

Considering both Equations (9.1.5) and (9.1.1), we conclude that a uni-directional causal relationship exists between CRDP and PROD, and that the direction of causality is from the former to the latter. This finding provides enough evidence that the credit market is driven by the supply side rather than the demand side: throughout two decades of open economy experience, the economic cycle is constrained by credit market conditions.

Finally, from Equations (9.1.4), (9.1.5) and (9.1.6), it follows that a uni-directional causality runs from PROD to TRES, indicating that the government budget constraints weigh on the maturity of public financing. We can conclude that there is a connection between tax revenues and the default risk on public debt. As the growth of the economy accelerates and tax revenues increase, the default risk on public debt decreases, leading to a greater facility in terms of maturity for public finance.

Conclusion

In this chapter, we focused on the relationship between the banking sector credit expansion and myopic depositor behaviour in Turkey during the period from 1990 to 2009. Considering the high macroeconomic instability resulting from the two major imbalances (budget deficit and inflation), the past two decades under financial liberalization have not contributed enough to deepen the credit market compared to other countries' experiences.

The multivariate causality analysis provides evidence of a circular relationship, in which the major role can be given to the effect of uncertainty on the structure of the financial market.

To make a brief summary of our results, we underline several major points for the case of Turkey in the 20-year period of financial liberalization:

1 Given the uncertainty on price stability, depositor myopia influences both the liability side of the balance sheet of the banking sector and the interest rate spread in the financial market.
2 The interest rate spread and credit ratio have a bi-directional causal relationship implying a feedback mechanism.
3 Credit creation precedes production, implying that cycles are instead driven by the supply side of the credit market. This result implies that:
4 Given that the credit conditions drive the growth of the economy, the budget constraint of the public sector improves in a way that leads to a decline in the default risk and thus facilitates borrowing in the longer term.

For further research, we may suggest different extensions of our results. A possible extension of this work would be to conduct similar analyses for other economies, particularly small open economies or countries under fiscal dominance. The case of Greece would be an interesting exercise to see whether such a feedback mechanism between uncertainty and the financial market is in play regarding the recent fiscal imbalances. A panel data analysis instead of a time-series approach should also be considered.

Notes

1 This research has been realized with financial support from the Galatasaray University Scientific Research Fund (project number: 11.103.004).
2 The twin crises of 1994 and 2001 are examples of such episodes where maturity and currency mismatches inside the banking sector amplified the severity of the liquidity crisis. In a recent study, Karabulut *et al*. (2010) investigated the determinants of the currency crises in Turkey and concluded that the share of short-term debt in GDP and the ratio of credit to deposit were the determinants of these crises.
3 See Kara and Öğünç (2008) for more discussion.
4 Tirole (2002) argues that short-term debt might be an optimal response to systemic or macroeconomic risks.
5 Since there is no information on the maturity of the credits, we cannot directly argue concerning the shortening of credit maturity.
6 See TCMB (2008) for further discussion.
7 The low savings rate is a controversial issue for the Turkish case, due to two decades of chronic high inflation. Van Rijckeghem and Üçer (2008) discuss how the saving–credit relation in Turkey is strongly linked to cycle effects.
8 Recently, new econometric techniques have been developed to address the non-stationarity problem. For example, while Maximum entropy bootstrap (Meboot; see Vinod 2004) can be used with non-stationary data, autoregressive distributed lag (ARDL) models (Pesaran *et al*. 2001) are designed for dealing with the variables that are integrated of different orders.
9 Since the literature is very rich on the subject, we do not discuss the methodological issues in detail. See, for example, Hamilton (1994) and Hayashi (2000) for a detailed time-series analysis.
10 We do not report the stationary test results to conserve space. All unreported results are available from the authors upon request.

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