DEBT, DEFICITS AND INFLATION ON THE ROAD TO THE EU: THE CASE OF TURKEY

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Turkey experienced a severe banking crisis in 2001 that resulted in huge social and fiscal costs since most defaulting banks had already been compulsorily transferred to a publicly-held fund (the deposit insurance fund). Basing ourselves on estimations by Burnside et al. *[2003, NBER Working Paper], we further investigate the links between these fiscal costs and the subsequent debt deflation that occurred in Turkey after the crisis. Our analysis also draws extensively on the Fiscal Theory of the Price Level (FTPL) and on the empirical methodology originally proposed by Canzoneri* et al. *[2001, American Economic Review]. Our main results are twofold. First, the fiscal costs attributable to the banking crisis can be given a FTPL interpretation and debt deflation appears as a deliberate policy. Second, the FTPL interpretation is not reliable over a time span excluding the most recent years, and the public management of the banking crisis can be considered as an "exceptional circumstance". The policy implications are then that without a substantial improvement in the management of banks, a dramatic economic episode like the 2001 crisis could again occur and the Turkish disinflation efforts could be wasted and lost for a long period. Hence, converging towards the EU standards in terms of deregulation seems a reasonable condition for avoiding long years of high deficits and inflation.*

JEL classifications: F31, E62, E63

S ince 1987 and its first membership application, Turkey has never been so close to the standards of the European Union (EU). The relationships between Turkey and what was called at the time the European Economic Community started in 1963 with the Ankara agreement that paved the way to a customs union which became a reality in 1996. During the Helsinki summit (1999), the EU officially acknowledged Turkey's application. The European Council in Copenhagen in December 2002 strongly welcomed "the important

steps taken by Turkey towards meeting the Copenhagen criteria"[1] and encouraged it to pursue the reform process energetically (EC, 2003). It concluded that "if the European Council in December 2004, on the basis of a report and a recommendation from the Commission, decides that Turkey fulfils the Copenhagen political criteria, the European Union will open accession negotiations with Turkey without delay"; hence, a deadline was set for responding to the application and for eventually proposing that membership be scheduled.

There are still numerous obstacles to full membership, however. Despite recent improvements, the Kurdish issue has not yet been solved in Turkey. Although Turkey has, for instance, ratified two major UN Covenants on Civil and Political Rights and on Social and Economic Rights, the European Commission still argues that "political, civil, economic, social and cultural rights" are not fully guaranteed and that "more efforts are needed to enhance the coherence of legal provisions and practice" (EC, 2003). As for religion, the proposition by some governments to mention the Christian nature of the EU in the draft of the European constitution in 2003 is one example of the indirect obstacles to full membership for a country without a (wide) Christian tradition. Going beyond politics and religion, the economic situation in Turkey is also still worrying: inflation is not definitely under control and very large fiscal primary surpluses are still necessary to curb public debt dynamics and halt monetisation. Though inflation, deficits and debts are not part of the criteria to be met in order to enter the EU, they are of importance. First, they may enlighten the relationship between the central bank and the government and show if the central bank can be labelled "fully-independent" or not; second, EU membership entails participation in a fixed exchange-rate system (ERM II) whose functioning is not independent of monetary and fiscal policies.

A comprehensive understanding of macroeconomic features in Turkey necessitates that their historical context be described in some detail: in a country which had applied an elaborate import-substitution strategy until the early 1980s before moving to today's wide-open and liberalising Turkey, the changes in the economy have been profound, the possible exceptions being inflation trends and the size and scope of government activities[2].

Transition towards the EU has also been slowed down by major currency crises: in 1994 and again in 2001, the Turkish Lira (TL) depreciated by almost 100% following speculative attacks. In 2001, the exchange-rate anchor *vis-à-vis* the US dollar and the euro had to be abandoned and Turkey adopted a flexible exchange-rate regime.

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1. The membership conditions laid down at the Copenhagen summit (1993) incorporate a political criterion which pays particular attention to human rights and respect for minorities.
2. For a more extensive presentation of the Turkish economy, see Esfahani (2003).

In this paper, we pay much attention to the relationship between fiscal policy, inflation and the most recent crisis, whose roots are to be found in currency turmoil and banking weaknesses. Despite close links between both roots, the 2001 crisis had more of its origins in the banking system than the former 1994 crisis, and the 2001 banking crisis has also had huge consequences in terms of budget deficits on a scale not witnessed since 1994[3] . The fiscal cost of the recent banking crisis is understood to have modified fiscal policy at that time and given rise to a deliberate policy of inflating and depreciating the currency in order to provoke a debt deflation– a debt relief to cover the fiscal costs. This explanation (see Burnside, 2004; Burnside *et al.*, 2003) is quite appealing, though it lacks an empirical investigation of the causality between fiscal policy and inflation. We thus turn towards the Fiscal Theory of the Price Level (FTPL, hereafter) and the recent empirical methodology developed by Canzoneri *et al.* (2001) to give an assessment of this likely policy change and of its causality.

1. The currency crises

Turkey's transition towards a market economy began soon before the *Coup d'État* of September 1980. At that time, the import-substitution strategy no longer appeared sustainable because the Turkish economy was plagued by substantial external indebtedness. Turkey was no longer able to import the intermediate goods that were crucial to the production of domestic final goods. The Lira was devalued in early 1980, public prices were increased to reduce public deficits and financial markets started being liberalised. Neither the *Coup d'État* nor the return of democracy in 1983 modified this trend towards a market economy.

The eighties witnessed a sharp acceleration in GDP growth, and a surplus on current account, at least until 1987 for the latter (see table 1). In 1989, capital movements were liberalised, the convertibility of the TL was adopted and foreign currency holdings by residents in Turkey were authorised. Between 1989 and 2001, the degree of openness doubled and exports soared. Unfortunately, in the early nineties, monetary and fiscal stances have radically changed by comparison with the late eighties: money supply growth and primary deficits have resumed (see table 1).

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3. Isik and Hassan (2003) argue that the 1994 crisis had a major impact on foreign and small banks whereas "public banks apparently passed through the crisis unharmed". This was not the case in 2001, as we shall argue in what follows.

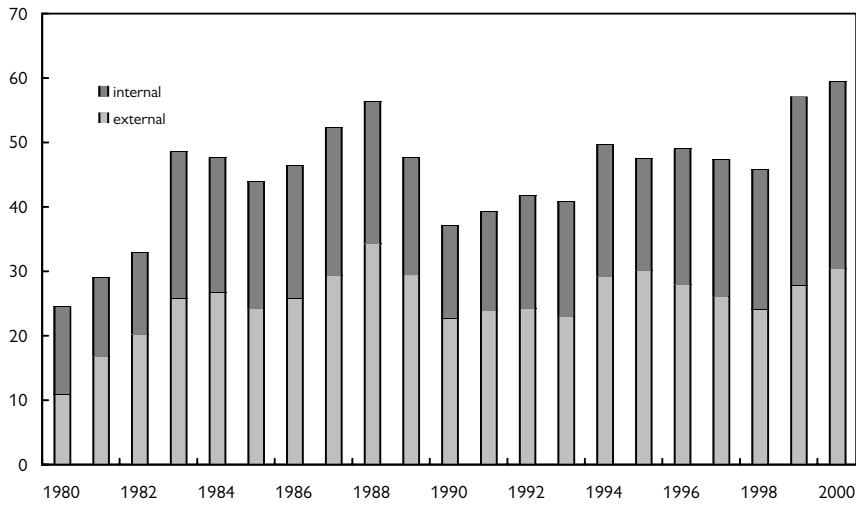| 1. Some key macroeconomic indicators in Turkey 1980-2000						
	GDP growth (%)	Current account (% GNP)	Primary surplus (% GNP)	Lg term int. rate (in %)*	Public debt (% GNP)	Base money growth (in %)	CPI-based Inflation rate (%)
1980	− 2.4	4.9	− 2.5	—	24.5	45.0	110.2
1981	4.8	—	− 0.6	—	29.1	104.7	36.6
1982	3.1	—	− 0.7	—	32.9	45.5	30.8
1983	4.2	3.1	− 0.7	—	48.6	31.6	37.1
1984	7.1	2.4	− 2.4	—	47.7	93.9	49.7
1985	4.3	1.5	− 0.3	—	44.0	65.0	44.2
1986	6.8	1.9	− 0.2	—	46.4	23.4	30.7
1987	9.8	0.9	− 0.5	—	52.3	48.5	55.1
1988	1.5	− 1.8	0.8	—	56.4	89.4	61.6
1989	1.6	− 0.9	0.3	59.8	47.6	53.0	64.3
1990	9.4	− 1.7	0.5	54.0	37.1	32.1	60.4
1991	0.3	0.2	− 1.5	80.5	39.2	86.7	71.1
1992	6.4	− 0.6	− 0.6	87.7	41.8	93.7	66.0
1993	8.1	− 3.5	− 0.9	87.6	40.8	48.9	71.1
1994	− 6.1	2.0	3.8	164.4	49.8	51.2	125.5
1995	8.0	− 1.4	3.3	121.9	47.5	92.3	76.0
1996	7.1	− 1.3	1.7	135.2	49.0	87.2	79.8
1997	8.3	− 1.4	0.1	127.2	47.4	− 30.7	99.1
1998	3.9	1.0	4.3	122.5	45.9	− 32.4	69.7
1999	− 6.1	− 0.7	1.8	109.5	57.1	384.1	68.8
2000	6.3	− 4.9	5.3	38.0	59.4	− 52.1	39.0

*: annual average.
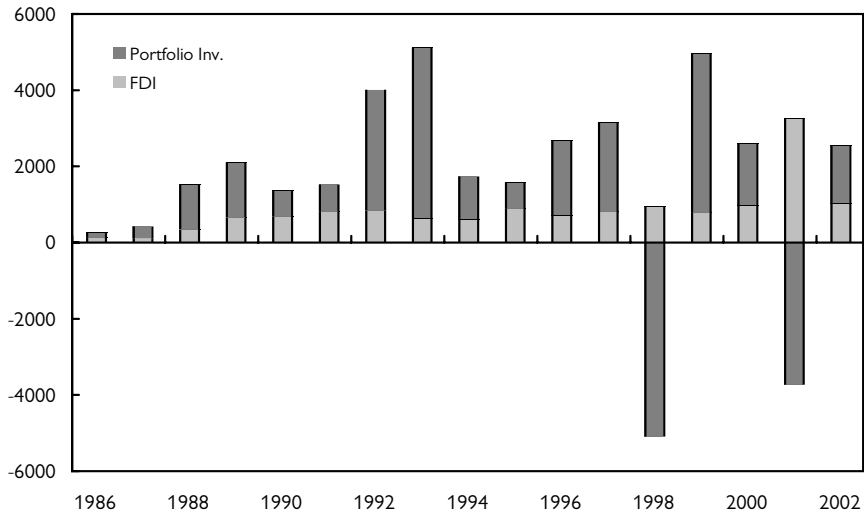*Sources*: DPT, SPO, Central bank of the Turkish Republic.

One prominent drawback with the second situation has been the recourse to foreign creditors to finance a substantial part of the public deficits (see figure 1): though external public debt had been reduced since 1988, it rose again between 1991 and 1995. Almost simultaneously, total public debt was increased by 13% of GNP. Moreover, the steep rise of foreign investment in the early nineties (see figure 2) had a major drawback: although it helped to finance the Turkish economy, it was predominantly constituted of portfolio investment whose volatility has been very substantial and has jeopardised the financial stability of the whole economy. Data in figure 2 testify to this usual phenomenon: as soon as uncertainty arises regarding the capacity of a country to sustain its exchange-rate regime or its fiscal policy, the so-called hot money vanishes. From 1993 up to the 1994 crisis, for instance, foreign capital in Turkey decreased by US $ 3.5 billion. In 1998 and again in 2001, portfolio investment even turned sharply negative, possibly amplifying the crises.

1. Public debt in Turkey (in % of GNP)

Sources: SPO, Central bank of the Turkish Republic, and IMF.

2. Foreign investment in Turkey, US $ millions

Source: IMF.

Neither public deficits *per se* nor foreign credit are solely respon-sible for a currency crisis. The instability of the financial system or the illiquidity and the insolvency of banks can also deeply influence the whole economy as they convey information on the unreliability of bank credits to finance domestic investment. In the case of Turkey, the situation of the banking system has been largely driven by the situation of the public finances. In fact, Turkish banks for a long time borrowed

abroad at relatively small rates of return in order to buy domestic public bonds whose rates of return were quite high (table 1). Thus, banks did not finance domestic investment and, meanwhile, they were increasing Turkey's exchange-rate exposure, which made self-fulfilling currency crises more probable and more dangerous for the economy. The fact that Turkish banks were neglecting the exchange-rate risk was also due to a deliberate policy of depreciating the TL *vis-à-vis* the US dollar in order to fully compensate for inflation: borrowing abroad was always profitable since the borrowed amount had its value increased after the foreign currency had been converted in TL; meanwhile, Turkish governments had to offer high rates on TL-denominated bonds to attract creditors.

Another important mechanism led to self-fulfilling currency crises: contingent liabilities. Burnside (2004) and Burnside *et al.* (2003) strongly highlighted the risk that government guarantees, contingent on an event like a steep currency depreciation, may change the behaviour of banks in anticipation of this likely event and, therefore, may increase rather than decrease their fragility as they would face little incentive to reduce their risk exposure. Hence, governments bear an indirect and important responsibility in the domestic financial turmoil: the insurance against contingent risk they provide to banks may produce a vicious circle that eventually leads banks to make bad loans or dissuade them from hedging against exchange-rate risk. *In fine*, governments should bear the costs of bank failures.

In Turkey, until 1999, bank supervision had been the co-responsibility of the Treasury and the national central bank. Since the "rules vs. discretion" debate[4] has crept into macroeconomic literature, the close institutional relationship between fiscal policy, monetary policy and financial supervision has been largely questioned and has been expected to prevent public authorities from building on credibility *vis-à-vis* private agents, be they residents or non-residents. Conventionally, the Turkish authorities went on to adopt a new banking law in June 1999 that paved the way for the independence of supervision bodies. Moreover, the new Council for banking supervision and monitoring also manages the Deposits Insurance Fund (DIF), which gives the possibility of taking control of insolvent banks, restructuring their assets and compulsorily selling them off. In late 1999, 5 banks whose losses were estimated at 2.2% of GNP were compulsorily purchased by the Fund.

Unfortunately, the Stabilisation Plan[5] laid down by the IMF in December 1999, which was intended to stop inflation and unsustainable

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4. Following the Kydland-Prescott (1977) — Barro-Gordon (1983) thesis.

5. The Plan was based upon a nominal exchange-rate anchor (with gradual flexibility at a 18-month-horizon), a strict monetary policy according to which base money moves hand-in-hand with the Central bank net external assets, and a restrictive fiscal policy, most notably through a VAT increase and the diminishing of payroll expenditures. For more details, please refer to the website of the Turkish Treasury (http://www.hazine.gov.tr/english/announce/sb_english.htm).

public-debt dynamics, was so successful that it soon placed the Turkish economy on an overheating trend. The decrease in nominal interest rates, with real rates turning out to be negative, reduced the costs of debt and boosted economic growth, essentially due to the boom of durable goods consumption which had been delayed in 1998 because of high nominal rates. Consequently, attention was diverted from external indebtedness, though it soared again, as well as from the continuation of structural reforms, most notably as regards the financial system. In November 2000, overheating and the Argentinian crisis slowed down internal and external confidence in the performance of the Turkish economy. Domestic banks, which were still largely invested in domestic public bonds, had an urgent need for liquidity; consequently, they started selling public bonds and thus participated in the rise in public yields. The loss of foreign capital also had a major impact on these yields since it was followed by a substantial decrease in base money that intensified the liquidity crisis (*cf.* footnote 5). On 4 December 2000, the short-run overnight nominal interest rate went up to 2,000%. Although the crisis was stopped, at least partly thanks to the interventions of the IMF and the World Bank (which injected US $ 15 billions in the Turkish economy), contingent liabilities of the Turkish State remained: the rise in the short– and long-term interest rates placed a heavy burden on banks, as they were relatively unable to grasp financing flows on the interbank market. In late 2000, the 6th most important bank in Turkey was transferred to the DIF.

Hence, at the beginning of 2001, the Turkish economy was severely hit by interest-rate hikes, by the deterioration in the position of banks, by the rising losses of banks transferred to the DIF and by the loss of the central bank's exchange-rate reserves. The overall situation was liable to provoke a speculative attack against the Turkish Lira.

The currency crisis reached its climax in February 2001 and led the central bank to abandon its restrictive policy as well as the nominal anchor of the TL against a basket of euro and US dollar. The subsequent rise in the interest and inflation rates, as well as the depreciation of the TL, have been disruptive for the whole banking system and have largely increased the social cost embedded in the DIF: up to 18 banks were transferred to the DIF and their losses reached 17% of GNP.

2. Assessing the fiscal costs of bank bailouts

Burnside *et al.* (2003) have given an assessment of the costs of currency crises on banks and, consequently, on governments whose behaviour is hindered by the bailout clause, explicit or otherwise. This clause behaves like a contingent liability and is thus intended to drive

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governments' behaviour. Burnside (2004) precisely defines the under-lying mechanisms at work: "Once a contingent liability has been realised, a government must take one or more of the following actions: (i) explicitly default on some portion of its debt, (ii) receive greater transfers from abroad, (iii) increase its seigniorage revenue, (iv) deflate the real value of local currency debt or (v) implement fiscal reforms that result in a higher primary surplus." (p. 27) Burnside argues that only the three latter points are of interest and he discusses their impact on the probability of a crisis driven by self-fulfilling expectations. Most noteworthy, the initial stock of nominal public debt is a key factor in reducing the probability of a severe currency crisis: the higher the initial debt, the greater the revenue from nominal debt deflation and the lower the need for seigniorage revenues.

The Turkish case is a very interesting one within this framework. According to Burnside *et al.* (2003), the fiscal cost of the banking-sector bailout in 2001, *via* the DIF, was approximately an astonishing 18.2% of Turkey's GDP in 2000, and it is thus worth assessing how this cost has been distributed among the afore-mentioned points (iii) to (v). The methodology for constructing the contributions of various sources of financing to total fiscal cost can be summarised as follows. The changes in government revenue and expenditure flows as a result of the crisis are first decomposed into three components: changes due to declines in real activity, changes due to declines in the relative price of non-traded goods[6] and a residual term which is being ascribed to "explicit fiscal reform" (explicit changes in the tax system, or cuts in quantities of goods and services purchased by governments). After having withdrawn "explicit fiscal reforms" from the fiscal cost of the banking crisis, the "net fiscal cost to be financed" is allocated between changes in seigniorage, debt deflation (through price increases and/or exchange-rate depreciation), changes in transfers, taxes and purchases which are due to changes in the relative price of non-traded goods, and what has still been unpaid.

According to Burnside *et al.* (2003), "explicit fiscal reforms" in Turkey amounted to 3.3% of GDP while lost revenue due to the post-crisis recession was 4.4% of GDP. Among the resulting "net fiscal cost to be financed", amounting to 19.3% of GDP, 7.3% was raised through a substantial decline in the dollar value of Turkey's domestic debt, and a mere 1.8% of GDP through increased seigniorage revenues (table 2).

A comparison with the Mexican case, after the currency crisis of 1994 (table 2), sheds some light on the specificities of the Turkish case. First, though the post-crisis recessions were quite similar (when expressed in percent), the change in the ratio of the GDP deflator to

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6. It is assumed that a currency crisis provokes a tightening of external borrowing constraints which makes agents substitute tradable goods for non-tradable goods, inducing a fall in the relative price of the latter.

the nominal exchange rate (i.e. the change in the relative price according to the terminology used by Burnside *et al.*, 2003) was on average twice as high in Mexico as in Turkey. Assuming a constant foreign inflation rate, it can be inferred that competitiveness grew much more in Mexico than in Turkey after their respective crises. Since the depreciations of the exchange rate in the first year of each crisis were also quite similar (the appreciation of the US dollar *vis-à-vis* the Mexican peso and that of the US dollar/euro basket *vis-à-vis* the TL were equal to 50%), the most substantial difference between the two experiences was the trend of the inflation rate: prices rose more rapidly in Turkey than in Mexico.

2. Changes in output, relative prices and budgets after recent currency crises

Date of the crisis	Turkey Feb. 2001	Mexico Dec. 1994
Changes in real GDP after the crisis (%)		
Year 1	− 10.5	− 9.2
Year 2	− 7.2	− 7.6
Changes in relative prices after the crisis (%)		
Year 1	− 21.0	− 32.0
Year 2	− 10.9	− 29.6
Changes in government budgets after the crisis (% of GDP)		
Fiscal cost of banking crisis	18.2	15.0
Explicit fiscal reforms	3.3	− 2.5
Change in revenue due to recession	− 4.4	− 6.5
Net fiscal cost to be financed	19.3	24.0
Increase in seigniorage	1.8	1.7
Debt deflation	7.3	1.7
Change in primary balance due to change in relative prices	1.2	9.1
Amount as yet unpaid	**10.1**	**11.5**

Source: Burnside (2004).

The second key difference is related to the former: the Turkish government has relied much more on debt deflation in order to bear the fiscal cost of the banking crisis than the Mexican government did. This points to the relationship between inflation and public debt in Turkey: Burnside *et al.* (2003) show that most public debt has a relatively low maturity (never exceeding 3 years) but is, meanwhile, almost exclusively non-indexed. We consider that this feature paves the way for an interpretation of the public debt-inflation nexus within the framework of the FTPL (Cochrane, 2001; Woodford, 2001).

The FTPL states that a government can exogenously set its real spending and revenue plans, and that the price level will take on the value required to adjust the real value of its contractual nominal debt obligations to ensure government solvency. The price level is thus a "jump" variable which satisfies the government present value budget constraint (PVBC).

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Consider the government flow budget identity:

$B_{t+1} = (1 + i_t) B_t - S_{t+1}$, where B_t is public debt at the end of period t, i_t is the return on public debt, and S_t is the primary surplus. Expressed in terms of GDP shares, this constraint can be formulated as:

$$b_{t+1} = r_t b_t - s_{t+1}, \text{ where } b_t = \frac{B_t}{p_t y_t} \text{ and } r_t = (1 + i_t) \frac{p_t y_t}{p_{t+1} y_{t+1}}$$

and with p_t the price level and y_t real GDP.

Assuming the expected real rate to be constant, the flow condition can be solved forward to yield the present value budget constraint:

$$b_t = E_t \sum_{j=1}^{k} \frac{1}{r^j} s_{t+j} + E_t (\frac{1}{r^k} b_{t+k}). \qquad (1)$$

Equation (1) is an accounting identity. *Ex post*, it should hold for whatever value of the interest rate, the primary surplus or nominal income. Government solvency is ensured if the last term on the RHS of equation (1) tends to zero when k tends to infinity. This so-called transversality condition ensures that the public debt to GDP ratio does not increase by more than the gap between the interest rate and the GDP growth rate (denoted here by r). The familiar sustainability condition for public finances follows:

$$b_t = E_t \sum_{j=1}^{\infty} \frac{1}{r^j} s_{t+j}. \qquad (2)$$

The main outcome of the FTPL is in stating that there are two different *ex ante* mechanisms that permit equality between the two sides of equation (2). In the first case, the fiscal authority adjusts its future spending and taxes so that they meet the constraint for whatever value of the interest rate and the nominal income. In the second case, the fiscal authority does not act in accordance with the fulfilment of its budget constraint, so that the price level must move according to:

$$p_0 = \frac{B_0}{y_0} \left[E_0 \sum_{j=1}^{\infty} \frac{1}{r^j} s_j \right]^{-1}. \qquad (3)$$

In this setting, where fiscal policy determines the price level, the steady state is also conditional on monetary policy under-reacting to the inflation rate (Leeper, 1991)[7].

Stated in differences, equation (3) gives some scope for evaluating the relationship and causality between the inflation rate and the change in the public debt to GDP ratio. Analogously to Canzoneri *et al.* (2001)[8], if fiscal authorities are not prone to satisfy their present value budget constraint, a positive innovation in the primary surplus should

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7. Under-reaction means that an increase in the inflation rate leads to a reduction in the *ex post* real interest rate.

8. Canzoneri *et al.* (2001) reject the FTPL interpretation of US fiscal data. Creel and Le Bihan (2004) have extended evidence to the major European countries and also reject the FTPL interpretation in all countries.

reduce the price level and increase public debt, whereas in the other case this innovation would help to buy back some debts, i.e. public liabilities would fall. A two-variable VAR in level should be sufficient to differentiate between the two possible behaviours of the government and thus possibly give a FTPL interpretation to Turkish fiscal data.
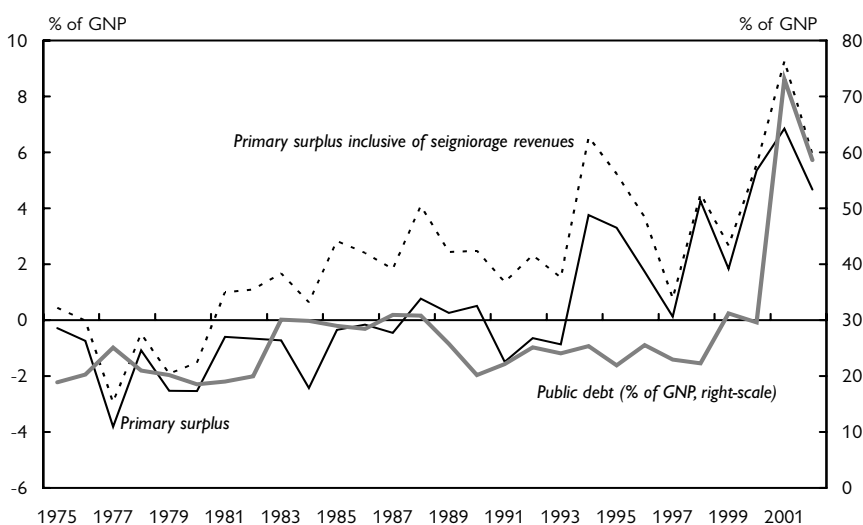
3. Investigating the FTPL in the case of Turkey

In a companion paper (Creel and Kamber, 2004), we have checked the reliability of an open-economy version of the FTPL in Turkey, placing strong emphasis on the links between public deficits, seigniorage and the nominal exchange rate. In the present paper, and consecutively to the conclusions of Burnside *et al.* (2003) as regards the fiscal costs of Turkey's recent banking crisis, we give preference to a closed economy framework, where also seigniorage revenues are not at the centre of the dynamics of inflation. Both companion papers hence give an assessment of the fiscal origins of the crisis, a currency crisis in the former and a banking crisis in the present case. One may argue that the most recent crisis was a mix of both types and that the conclusions arising from the two papers will then be complementary.

Some previous works have already shown that Turkish budget deficits could significantly affect current inflation (Metin, 1995, 1998; Tekin-Koru and Ozmen, 2003)[9] or inflation expectations (Celasun *et al.*, 2003). However, these studies did not investigate the specific topic of public debt deflation and could not shed light on the valuable conclusions of Burnside *et al.* (2003). For instance, Metin (1995,1998) assumed that public deficits were financed through base money creation and she disregarded public debt dynamics and its denomination. Tekin-Koru and Ozmen (2003) also do not incorporate the domestic public debt in their long-run relationships between the inflation rate, a monetary aggregate and fiscal policy. Though they claim to be investigating the FTPL, they disregard its short-run implications— the short-run interactions between the interest rate and the primary surplus (Leeper, 1991)— as they test for the relationship between the consolidated budget deficit (therefore mixing up the interest on debt and the primary surplus) and the inflation rate. They also place much emphasis on the importance of so-called "interest-bearing broad money" without acknowledging that the implications of this broad money aggregate on inflation and the fiscal origin of its increases should have led them to incorporate the whole domestic public debt within the empirical framework.

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9. See also Lim and Papi (1997).

Figure 3 plots domestically-owned public debt inclusive of base money in Turkey[10] and primary surpluses, exclusive and inclusive of seigniorage revenues. These revenues were quite huge until the late nineties, as shown by the discrepancy between the two surpluses. They have been growing again during the recent banking crisis, though not sufficiently to alleviate its consequent fiscal burden. As for the overall domestic public debt, this was relatively stable until the late nineties but it has finally soared at the beginning of the new century. The plotted data would rather testify to a positive relationship between the primary surplus and public debt, both expressed as a share of GNP, but this is not a sufficient condition for giving an FTPL interpretation to the data. This is due to the fact that, *ex post*, any government behaviour– satisfying or not satisfying the PVBC on an *ex ante* basis– are consistent with the PVBC (equation (1)): a higher primary surplus in the future permits a higher present debt (through a drop in the price index), while a higher present debt is stabilised only insofar as a higher primary surplus is accumulated in the future. Distinction between these two types of behaviour rests only on the reaction of the fiscal authorities to a shock: will an unexpected increase in the primary surplus lead the government to reduce its liabilities in the near future or not? If the answer is: 'Yes', one can reject the FTPL interpretation. If it is: 'No', the FTPL may gain some support.

3. Domestic public debt, surplus and seigniorage revenues

Sources: SPO, Central bank of the Turkish Republic, IMF and authors' calculations.

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10. In Creel and Kamber (2004), the total public debt– foreign currency-denominated and domestic currency-denominated– is considered. The variations in the nominal exchange rate thus modify the total value of debt and interact with domestic fiscal policy.

Unit-root tests, applied to domestic public debt and to the primary surpluses respectively inclusive and exclusive of seigniorage revenues have led to the overall rejection of stationarity (see table 3); the three above-mentioned variables are I(1) on the 1975-2002 sample. However, the ADF-test and the KPSS-test give opposite results as regards domestic public debt: it would be I(2) according to the former and I(1) according to the latter. Due to the small size of the sample, results of unit-root tests are weak and may be non-robust. Despite potential non-stationarity of the data, we perform a VAR-in-level approach which has proven stable. The reason for performing this type of approach lies in the prevalence of the short-run joint dynamics of primary surplus and public debt which is at the core of the distinction between a FTPL interpretation of the data and a non-FTPL interpretation (*cf.* Canzoneri *et al.*, 2001).

3. Unit-root tests						
1975-2002	dd *(in level)*	dd *(in diff.)*	seig_sp *(in level)*	seig_sp *(in diff.)*	sp *(in level)*	sp *(in diff.)*
ADF t-stat	− 0.37	− 0.89	− 2.08	− 4.91 *	− 1.78	− 4.48 *
Lag(s)	2	1	0	4	0	4
KPSS	0.43(b)	0.20	0.62(a)	0.17	0.60(a)	0.29

Note: dd is the domestic public liabilities, seig_sp is the primary surplus inclusive of seigniorage revenues, and sp the primary surplus exclusive of seigniorage revenues, all expressed in % of GNP. Data are yearly.
Lag(s): lag length for ADF test selected according to AIC.
*: indicate rejection of the unit root hypothesis at the 5% critical level for ADF test.
(a): indicate rejection at the 5% level of stationarity by the KPSS test (computed assuming no trend under the null).
(b): indicate rejection at the 10% level of stationarity by the KPSS test (computed assuming no trend under the null).
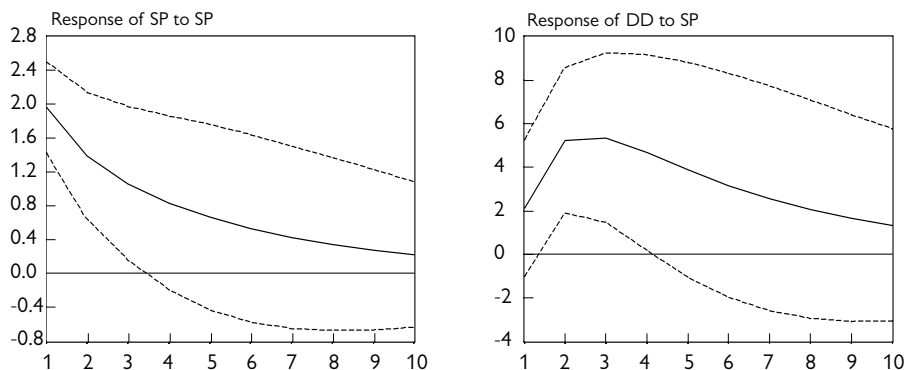*Sources*: SPO, Central bank of the Turkish Republic, IMF and authors' calculations.

As already mentioned, we wish to focus on the relationship between inflation and public debt and thus have recourse to the links between public debt and the primary surplus within a FTPL framework. Considering the low contribution of seigniorage revenues to the recent fiscal impact of the 2001 banking crisis, we first carry out a VAR incorporating the primary surplus exclusive of seigniorage revenues and public domestic debt. Substituting the surplus inclusive of seigniorage revenues will also be considered, as a robustness test.

Identifying a surplus shock in a FTPL regime is relatively simple because the surplus series is supposed to be exogenous. Whatever the level of output, interest rate and public debt, a FTPL regime assumes no reaction by the fiscal authority. Hence, the first equation of the VAR, which describes the evolution of the ratio of the surplus to GNP, is a forecasting equation in which the public debt to GNP ratio only enters because of its value in forecasting future surpluses. An innovation to the first equation can then be identified as an exogenous shock.
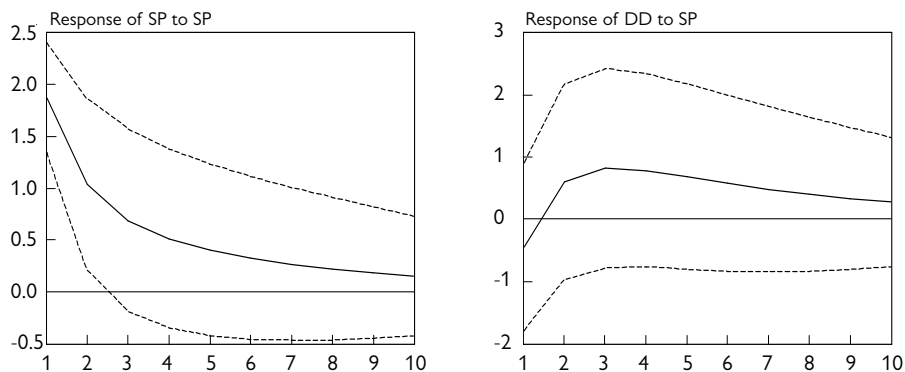
Figure 4 shows the impulse response functions (IRFs) of the VAR computed for the ordering 'surplus-debt'. This allows for a contemporaneous effect on the domestic public debt, in accordance with a FTPL regime. The dashed lines represent the two standard deviation bands. Five tests (likelihood-ratio, final prediction error, Akaike, Schwarz and Hannan-Quinn information criteria) using a general-to-specific procedure led us to include one lag.

4. Impulse response functions to a surplus shock **exclusive** of seigniorage revenues (in %, sample: **1975-2002**)
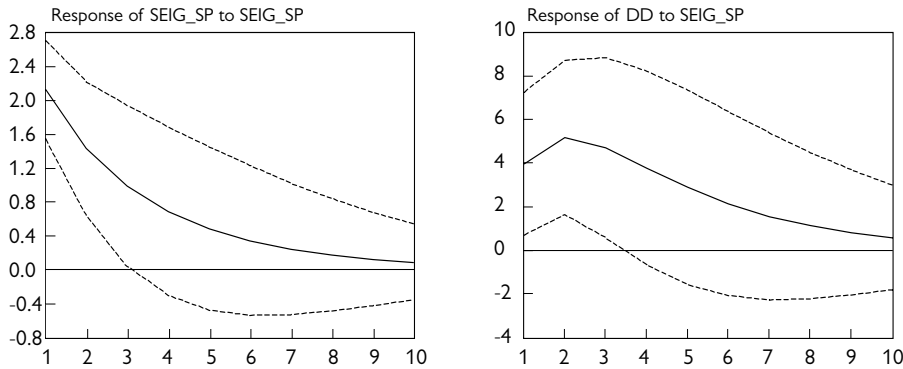

The response of the domestic public debt to GNP ratio to an innovation in the primary surplus exclusive of seigniorage revenues (in % of GNP) is immediately positive and it is significant for the first three years after the shock has occurred. Such a positive response testifies in favour of a FTPL regime: fiscal issues are prominent in explaining the steep rise in prices in Turkey.

5. Impulse response functions to a surplus shock **exclusive** of seigniorage revenues (in %, sample: **1975-2000**)
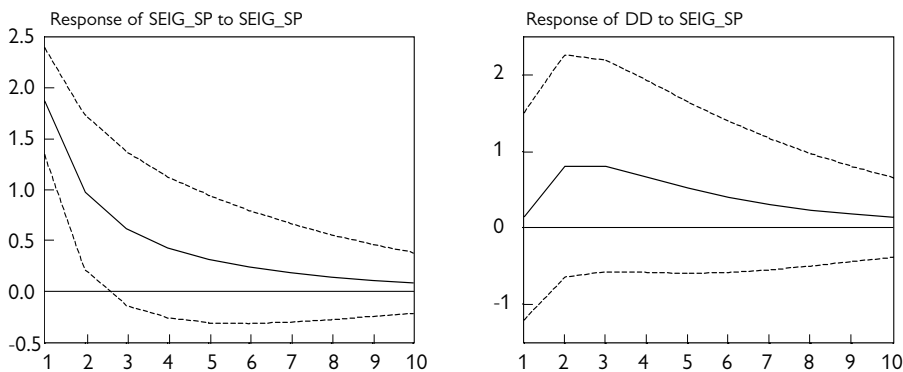
Nevertheless, removing the last two years from the sample (figure 5) would substantially modify the preliminary IRFs: the response of domestic public debt to a surplus shock is no longer significant and it is also negative in the short run. Is it that the banking crisis of 2001 is a critical issue in explaining the apparent FTPL interpretation of the relationship between public debt and the primary surplus only over the most recent years, i.e. this relationship would have been an "exceptional circumstance" under which the fiscal burden of the crisis has directly driven the inflation rate? Or does it mean that seigniorage revenues would be helpful in explaining to a greater extent the relationship between fiscal policy and the inflation rate? To tackle this alternative, we have incorporated the primary surplus inclusive of seigniorage revenues in the VAR and estimated the response of the domestic public debt to a surplus shock over the two following samples: 1975-2002 and 1975-2000 (figures 6 and 7, respectively).

6. Impulse response functions to a surplus shock **inclusive** of seigniorage revenues (in %, sample: **1975-2002**)

7. Impulse response functions to a surplus shock **inclusive** of seigniorage revenues (in %, sample: **1975-2000**)

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Results are somewhat mixed. Over the whole sample, the FTPL argument is given more weight: the positive response of domestic public debt to a surplus shock is higher than when the shock had occurred on the surplus exclusive of seigniorage revenues. It can testify to the substantial influence of "interest-rate broad money" on public debt dynamics, hence confirming the statistical results by Tokin-Koru and Ozmen (2003) but, here, within a FTPL context.

However, over a shorter sample (1975-2000), the (still) positive response of domestic public debt to a surplus shock is no longer statistically significant and the FTPL hypothesis is thus largely questioned. It seems as if the theory had been given some weight only over the most recent period, after the banking crisis led to huge social and fiscal costs. There is thus some room for concluding that the debt deflation that has occurred in Turkey in 2001 has actually modified the behaviour of the fiscal authorities, but only recently. The link between fiscal policy and debt deflation would be an "exceptional circumstance" and the FTPL interpretation over the whole sample would simply be a statistical artefact.

4. Conclusion: the recent experiment

As our primary focus in this paper has shown, the profound banking crisis that occurred in Turkey in 2001 has, at least temporarily, modified the policy mix which had been applied in this country for some years. In contrast to the restrictive fiscal policy and the attachment to a nominal anchor (a basket of currencies) which had been implemented since 1999, the year 2001 witnessed a sharp deterioration in the primary surplus and a substantial debt deflation, which occurred mainly through a temporary resurgence of high inflation. This temporary change in the behaviour of the fiscal authorities has had some roots in the FTPL. However, on a shorter horizon excluding the most recent years, the FTPL interpretation of Turkish fiscal data is unreliable.

This is consistent with the recent trends in the Turkish economy. The disinflation process has been continuing, albeit via a different mechanism: inflation targeting has been substituted for the nominal anchor strategy. The stabilisation programme of January 2002, set in accordance with the IMF, was drawn up with the following targets: an annual inflation rate below 35% in 2002, 20% in 2003 and 12% in 2004. In 2003, the target was met, despite the rapid resumption of economic growth (+ 8% and + 5% in 2002 and 2003, respectively). The implementation of an inflation target strategy has been accompanied by a strategy of high interest rates which could (have) endanger(ed) economic growth persistence. However, a key element on the budget

side intervened in late 2001 and has had positive consequences ever since. After the sharp depreciation of the TL *vis-à-vis* the US dollar in 2001, the banks were heavily burdened by their debts denominated in US dollars. In order to provide US dollars to the banks, the government converted the TL-denominated Turkish public bonds owned by Turkish banks into US dollar-denominated public bonds. Thanks to this swap[11] and to the subsequent appreciation of the Turkish Lira, the interest-rate rise has not led to an increase in Turkish public debt. Hence, the swap has also been very successful in curbing the inflation rate.

Finally, among the challenges faced by Turkey in the near future, restructuring the banking sector is one of the most crucial. Although the EC (2003) notes that Turkey's market regulations and institutions have improved, that financial sector surveillance has been strengthened and FDI legislation modernised, "the privatisation of state-owned banks and enterprises as well as market deregulation has to be accelerated". Without a substantial improvement in the management of banks, there would still be fears that a dramatic economic episode like the 2001 crisis could recur and that the disinflation efforts be wasted and lost for a long period. Hence, converging towards the EU standards in terms of (de)regulation is, as far as Turkey is concerned, a clear condition for avoiding long years of high deficits and inflation. This also means that the Commission's Report and the European Council of December 2004 might have almost final consequences on the road taken by the Turkish economy: to be or not to be in Europe, "that is the question".

References

Barro, R. and Gordon, D.B. (1983). 'Rules, Discretion and Reputation in a Model of Monetary Policy', *Journal of Monetary Economics*, Vol. 12, No. 1, July.

Burnside, C. (2004). 'Currency crises and contingent liabilities', *Journal of International Economics*, Vol. 62, No 1, January.

Burnside, C., Eichenbaum, M. and Rebelo S. (2003). 'Government finance in the wake of currency crises', *NBER Working Paper*, No. 9 786, June.

Canzoneri, M.B., Cumby, R.E., and Diba, B.T. (2001). 'Is the Price Level Determined by the Needs of Fiscal Solvency?', *American Economic Review*, Vol. 91, No. 5, December.

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11. Almost two thirds of total public debt have been swapped.

Celasun O., Gelos, R.G. and Prati, A. (2003). 'Would "Cold Turkey" work in Turkey?', *IMF Working Paper* No. 49, March.

Cochrane, J. (2001). 'Long-Term Debt and Optimal Policy in the Fiscal Theory of the Price Level', *Econometrica*, Vol 69, No. 1, January.

Creel, J. and Kamber, G. (2004). 'Fiscal policy, seigniorage revenues and the exchange rate: an application of the fiscal theory of currency crisis to Turkey', *mimeo*.

Creel, J. and Le Bihan, H. (2004). 'Using Structural Balance Data to Test the Fiscal Theory of the Price Level: some international evidence', *mimeo*.

Esfahani, H.D. (2003). 'Fatal Attraction: Turkey's troubled relationship with the European Union', *The Quarterly Review of Economics and Finance*, Vol. 43, No. 5, Winter.

European Commission (2003). 'Continuing Enlargement', *Strategy Paper and Report of the EC on the progress towards accession by Bulgaria, Romania and Turkey*, November the 5th. On Turkey, see: http://www.europarl.eu.int/meetdocs/delegations/turk/20031202/05.docen.pdf.

Isik, I. and Hassan, M.K. (2003). 'Financial disruption and bank productivity: the 1994 experience of Turkish banks', *The Quarterly Review of Economics and Finance*, Vol. 43, No. 2, Summer.

Kydland, F. and Prescott, E.C. (1977). 'Rules Rather Than Discretion: The Inconsistency of Optimal Plans', *Journal of Political Economy*, Vol. 85, No. 3, June.

Leeper, E. (1991). 'Equilibria under "active" and "passive" monetary policies', *Journal of Monetary Economics*, Vol. 27, No. 1, February.

Lim, C.H. and Papi, L. (1997). 'An Econometric Analysis of the Determinants of Inflation in Turkey', *IMF Working Paper* No. 170, December.

Metin, K. (1995). 'An Integrated Analysis of Turkish Inflation', *Oxford Bulletin of Economics and Statistics*, Vol. 57, No. 4, November.

Metin, K. (1998). 'The Relationship between Inflation and the Budget Deficit in Turkey', *Journal of Business and Economic Statistics*, Vol. 16, No. 4, October.

Tekin-Koru, A. and Ozmen, E. (2003). 'Budget deficits, money growth and inflation: the Turkish evidence', *Applied Economics*, Vol. 35, No. 5, March.

Woodford, M. (2001). 'Fiscal Requirements for Price Stability', *Journal of Money, Credit, and Banking*, Vol. 33, No. 3, August.