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Creative Accounting Practices and Measurement Methods: Evidence from Turkey

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Abstract
A fiscal rule imposed when the budget is not transparent yields more creative accounting to circumvent it and less fiscal adjustment, generating hidden deficits/debts in public sector. This study focuses on creative accounting practices of governments and adds to the literature by measuring hidden debts of the Turkish public sector ranging from the period 1989 to 2010. Accordingly, the author shows that the IMF has been misinformed, indeed has been misled by the Turkish authorities regarding the magnitude of public debt stock at the late 90's. The lacking information deteriorated the IMF's forecasts, which might be one of the main reasons for the failure of the IMF's planned fiscal consolidation at the outset of 2000–2001 crisis. The author's methodology can easily be adapted to any other country in order to identify the different margins on which governments can cheat and manipulate the Government Finance Statistics.

JEL E62 H61 H63 H83
Keywords Fiscal rules; creative accounting; contingent liabilities; hidden public debt; IMF policies

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Introduction

Reinhart and Rogoff (2011a) find that by recognizing the significance of domestic debt we can explain the reason why in some cases, the domestic debt is repudiated through high inflation, in other cases, governments default on (or restructure) external debt. In fact the problems of external default, domestic default and inflation are all integrally related, one of the implications of these results is that the overt default on (or repudiation) and rescheduling of domestic public debt are hidden behind the high inflation, banking crises, currency crashes, and debasements which often go hand in-hand with default (Reinhart and Rogoff 2008). In addition to these complicated interrelations which make many observers to assume that governments always honour the nominal face value of domestic debt[1], as a policy implication the governments often manage overhang of pre-existing domestic public debt to keep remarkably hidden from view.

Reinhart and Rogoff took our attention to the emergence of hidden debt of public sector as a problem: "Our results here, as well as a plethora of vivid examples from the accompanying Chartbook, suggest that more attention needs to be paid to hidden debts and liabilities. In a crisis, government debt burdens often come pouring out of the woodwork, exposing solvency issues about which the public seemed blissfully unaware" Reinhart and Rogoff (2011b:21).

Hidden public liabilities have been accumulated outside the budgetary system mainly in the form of lending/borrowing relationships among public sector entities to finance their government programs and subsidies. Reinhart and Rogoff (2011b) report that historically, domestic debt has in many countries been a major part of hidden debt that includes contingent liabilities of the government. Even though the authors do not give an accounting definition of hidden debt, there are some other studies focusing on its distinctive formation. Polackova (1998) study the fiscal risks that governments face and divide public liabilities into four types: direct explicit, direct implicit, contingent explicit, and contingent implicit. Polackova (1998) indicate that hidden debts result from contingent liabilities. The author concludes that a study of public sector's "accurate" fiscal position cannot be separated from obligations taken by the central government and other public sector entitites outside the budgetary system, a fact later emphasized by Polackova-Brixi et al. (1999).

In 90's the public domestic debt stock in Turkey overwhelmingly threatens fiscal position of public sector. With high and volatile inflation, real interest rates reach double digit rates, necessitating large primary fiscal surpluses in order to realize a rapid build up of domestic debt, but this in turn

[1] According to much contemporary analyses the recent shift by many emerging market governments from external to domestic bond issues is *surprising* (see IMF 2007).

depresses growth, thereby making it more difficult to dynamically sustain public debt. By contrast, the stock of external debt is low relative to export capacity, and the current account remains at sustainable levels even at times of rapid economic growth as long as the currency is properly aligned (Önel and Utkulu 2006; Ozkan 2005). At the end of 1999 Turkey adopted an ambitious stabilisation programme[2] backed by the International Monetary Fund (IMF). The IMF reports the goals of the programme: "To this end, the program rests on three pillars[3]: a large front-loaded fiscal adjustment; a strong exchange rate commitment underwritten by a no sterilization monetary policy rule and income policies; and a wide range of upfront structural reform measures" (IMF 2000c: 47, box 2.1). Even though initial indications after the adoption of the programme were leading to a fall in interest rates on market-based securities from 90 per cent to around 40 per cent, a severe liquidity crisis hit the economy in November 2000. The government faced problems in meeting its direct liabilities, necessitating large IMF bailouts. But, the IMF policy response to the crisis failed to prevent the collapse of the lira and hikes in interest rates in February 2001, which turned into the most serious financial and economic crisis Turkey has experienced in its post-war history and which, in turn, aggravated the domestic debt problem (see Akyüz and Boratav 2003; Ekinci 2002; Yeldan 2002; Miller 2006).

Our study aims to contribute to the literature by examining the Turkish public sector budget financing process and its domestic debt stock structure from the period 1989Q1 to 2010Q1. In contrast with the literature we show that "accurate" public debt stock through 90's was significantly greater than "announced" debt stock. Accordingly we show that the IMF staff has been misinformed, indeed has been misled by the Turkish authorities regarding the magnitude of public debt stock. The lacking information might have caused the IMF forecast errors, affecting planned fiscal consolidation at the outset of the crisis and might have been an important reason for the failure of the actions taken by the IMF, a fact later emphasized by Blanchard and Leigh (2013). Our study is also in line with a number of empirical and theoretical studies on "creative accounting", Easterly (1999), Milesi-Ferretti (2004), Milesi-Ferretti and Moriyama (2006), von Hagen and Wolff (2006), Buti et al., (2007), De Castro et al. (2011), and more recently Alt et al. (2012), focusing on shortcomings of traditional indicators in the presence of fiscal rules imposed by an outside agent, i.e., EMU, IMF, WB.

[2] During the period under examination Turkey had had 4 stand-by agreements with the IMF that enforced governments to limit primary deficits and to stabilize public debt (for the effects of IMF loan participation, see Barro and Lee 2005).

[3] The first pillar of the program directly addresses the primary balance of the public sector. The third pillar of the program constitutes structural reforms, which address the stabilization and sustainability of the public debt level through the improvement of the fiscal transparency (see IMF 2000c :48).

A first step towards managing the growth of contingent liabilities and reducing fiscal risk requires identifying and measuring them. We add to this literature[4] by measuring the hidden debts of Turkish public sector ranging from 1989Q1 to 2010Q1. To do this we provide a simple method which can be adapted to any other country by taking into account country-specific structure of public debt. Our method identifies the invisible budget of public sector (including local governments and public enterprises), which enables us to derive data on hidden overhang of domestic public debt in Turkey. The motivation behind is twofold. First, one would like to know the many different margins on which governments can cheat. Second, Reinhart and Rogoff (2011a) report that the countries that seem to be experiencing domestic debt intolerance are indeed serial defaulters. Among those serial defaulters[5], Turkey has been a center of attention of late, has at times defaulted, de facto, on their internal obligations over the past 175 years. An important feature of the Turkish case is that in the wake of financial liberalization, the Turkish economy experienced frequent financial crisis episodes -in 1994, 1999 and 2000-2001 and suffered a loss of 10–20% of real gross domestic product (GDP) in a single year (see Ozkan 2005; Akyuz and Boratav 2003; Ozatay 2000), which makes Turkey a good representative of serial defaulters and a richer laboratory for the literature on hidden debts, debt crises and possible policy implications.

2. Data and measurement issues

2.1 Data

The public sector in Turkey comprises eight main entities, each of which has its own budget (see Appendix A.1). The external debt stock statistics are transparent, regularly registered and are publicly announced by the Treasury's and Central Bank's (CBRT) websites. On the other hand there is no single place in which to find complete and comprehensive public finance data and domestic debt statistics (IMF 2002:16).Thus we compiled the data published by various government bodies. The data on public sector borrowing requirement (PSBR) are supplied by the State Planning Organization (SPO). Total revenue and expenditure data are reported by the Ministry of Finance (MOF). The data on budgetary operations of the central government[6](CG) are published by the Treasury. We use the market-based debt data reported by the Treasury. To construct changes in public debt, we rely on comparable information obtained from the debt management reports by the Treasury, ex post revisions by Turkish Court of

[4] See analyses in Celasun and Rodrik (1989) for the previous periods.
[5] Other important countries are Argentina, Brazil, Mexico, Greece and Venezuela.
[6] The CG budget is referred "Consolidated budget" in the Treasury's data sheets. Beginning from 2006 the data is released under the title "General Government budget".

Accounts (TCA), reports by the IMF and WB. For other variables such as GDP, CPI and interest rates, see Appendix B for details.

2.2 Measurement issues

The main drawbacks for the measurement of hidden debts can be listed as follows. First, so many governments and multilateral institutions exhibit lack of transparency in making time series on domestic debt (Reinhart and Rogoff 2011a:20); the basis of recording (Government finance statistics-GFS) conveys inconsistencies across countries and make most cross-country analyses[7] concentrate only on direct liabilities (Jeanne and Guscina 2006); an appropriate definition of public sector[8] is necessary, otherwise the traditional fiscal indicators offer starkly different picture of overall fiscal operations; creative accountings; incentives of the governments to hide deficits under the fiscal rules.

Precisely because there exists moral hazard and political incentives to circumvent legal framework, using the delimitation of general government sector defined by Eurostat (2010) is not appropriate for our analysis (see Appendix A.1). Among the public entities other than central government (OG), there are state economic enterprises (SEE) which is composed of many bodies engaged in wide range of economical activites from market production (non-financial SEE) to financial operations (financial SEEs including state banks). In their legal framework non-financial SEEs are market producers, and according to ESA 95 they should be classified as public corporations (outside general government). Similarly, financial SEEs should be classified as public quasi-corporations. In practice these entities are under complete control of CG and in order to realize government programs they act as if they were non-market producers, i.e. sell their output at prices that are not economically significant (see Appendix A.2). The fiscal performance of public sector encompasses a significant amount of government activities financed outside the budgetary system through the fiscal interventions of financial SEEs, which are initially incurred through political pressures and backed by legal basis with a significant time lag, i.e., transferred to future governments.

One of the most important emphases in the GFS framework is the basis of recording. Traditionally, governments have kept their accounts on a cash basis, focusing on their liquidity constraints. The Turkish GFS and budget financing data are on a strict cash basis (IMF 2002:49). The overall structure of national accounts follows the 1968 System of National Accounts (1968 SNA). The GFS is produced

[7] Mehl and Reynaud (2005) collected data on domestic debt structures in 33 countries for 1994-2005 and Jeanne and Guscina (2006) in 19 countries covering the years 1980-2005.

[8] The importance of an appropriate definition of public sector has been emphasized by, for example, Blejer and Cheasty (1991), and see references therein.

on an approximate GFSM 1986 basis, and the nonbudget sector data fall well short of GFSM 1986 requirements for classification detail (IMF 2002:12). The Turkish GFS focused mainly on cash transactions and on selected stocks but did not integrate them. Different from the EMU case (Buti et al., 2006; von Hagen and Wollf 2007), the inconsistencies between change in debt and budget deficits arises neither from difference between accrual – cash based recordings nor from valuation effects[9]. However, the Turkish GFS has further drawbacks. Irwin (2012:5) report that "under the cash basis of accounting, this year's deficit can be reduced simply by deferring payments so that they fall in the next year. Under the accrual basis, in which costs are recognized when they are incurred, not when cash is disbursed, *accounting devices* demand more expertise, but are still possible."

The route that we follow can be summarized as follows. Over a given period, change in debt stock can be partitioned in terms of the amount of security types issued or can be partitioned by determining how the associated receipts (principals) are used in budget process and how the associated payments (principals) are financed. The latter analysis may shed light on out-of-budget process, its magnitude and the possible fiscal grimmickies as well. Specifically the latter point of view focuses on the ability of a government to pay intra-governmental debts under the circumstances where primary balance is persistently negative (deficit) and where fiscal rules are imposed by an outside agent.

3 The structure of public debt stock and information partition of the IMF

3.1 Public debt, types of contingent liabilities and lagging juridical basis behind them

The public debt is aggregate of both domestic and external liabilities of eight public entities. External debt is completely market-based, whereas domestic debt consists of market-based debt and "non-marketable" debt, the latter signifying interest[10]-bearing contingent liabilities incurred among public entities and not reported in budget figures (see Appendix A.1-A.2). The domestic debt stock of public sector should be considered to be union (but not sum) of market-based domestic debt stock and non-marketable debt stock. In order to avoid confusion, we prefer the term "non-marketable" debt to cover overall stock of contingent liabilities, consisting of both "recognized" share (securitized by law) and "unrecognized" (politically backed, but not legitimate yet) share. The reason is that the Treasury authority prefers the term "cash stock" to signify market-based debt and the term "non-cash stock" to denote only recognised share of contingent liabilities, hiding the unrecognised share. Note also that

[9] For the discussion of the differences between two GFS frameworks, please refer to Bjorgvinsson (2004:2-4)
[10] lower than market-based interest.

country-specific technical definitions on GFS may cause misleadings. The term "non-marketable debt"[11] is preferred by US authorities and the IMF to refer to a type of market-based debt (IMF 2000a). By definition market-based debt is securitized[12] and accumulates through the issuance of the Governmental bonds (G-bonds) and the Treasury bills (T-bills) to financial markets. On the other hand, non-marketable debt consists of overall contingent liabilities in public sector, implying that a public entity may become borrower or creditor or both within public sector's dynamical fiscal interventions network. Polackova-Brixi and Mody define two type of contingent liabilities: "*Contingent explicit* liabilities are government legal obligations to make a payment only if a particular event occurs. Because the fiscal cost of contingent liabilities is invisible until they are recognised, they present hidden subsidy, blur fiscal analysis, and drain government finances only later… *Contingent implicit* liabilites depend on the occurence of a particular future event and on government willingness to act on them. Fiscal authorities also are often compelled to cover losses and obligations of the central bank, subnational governments, state-owned entreprises, budgetary and extrabudgetary agencies, and any other agencies of political significance" Polackova-Brixi and Mody (2002:25).

What possibly misleads financial markets is that the Treasury has a legal ability to consolidate and convert contingent liabilities into direct liabilities by issuing special type of securities to creditor public entities (Dikec 2001; Evrensel 2004). In the reports by the Treasury, this conversion is referred to by "non-cash borrowing", and the special papers (securities) issued are registered as "non-cash G-bonds" and "non-cash T-bills". Accordingly this new stock is entitled "non-cash stock". Since non-cash stock constitutes only recognised share of overall stock of contingent liabilities, throughout the study it is referred to by "securitized non-marketable debt stock" and likewise, the unrecognised share by "unsecuritized non-marketablde debt stock". The non-cash borrowing is performed under the consiladation law, the CBRT law and the budget laws constituted in the beginning of each fiscal year[13]. The issuance of the special papers causes an increase in securitized non-marketable debt and hence in overall public debt stock. Moreover these types of securities enjoy coupons. Note that according to the laws listed above, the coupons may not be paid by the Treasury, instead the Treasury may issue further special type non-cash G-bonds to postpone the interest payments in the form of future principal payments. By implementing those laws, mainly 6 types of special non-cash G-bonds and T-bills are

[11] OECD System of National Accounts (SNA 1993) and Maastricht (ESA 95)

[12] Marketable securities can only be issued by Treasury and on behalf of CG, but not of OG. The G-bonds enjoy one year or more maturity, while that of T-bills is shorter than one year. Debt management commission, SPO (Dikec 2001); Treasury Operations Report 1998 and 1999, published by Turkish Court of Accounts.

[13] Eight 5-years Development Plan Debt Management Report 2001, State Planning Organization (SPO), p.96.

issued for different purposes (see Dikec 2001). We have to identify these types to illuminate our analysis path. The first one is the *Holding* G-Bonds. The Treasury issues these types of bonds for guaranteed debts of SEE, SSI, and EBF. As a result the liabilities of the OG are held by the Treasury. Second, the *Consiladation* G-Bonds are issued when OG are in arrears, could not pay their debt service to creditor OG. The Treasury determines which OG are borrower (creditor), computes the "residual debts" and then issues G-bonds to the public entities who rest creditor but not indebted at the end. The *foreign currency (FX) differences* G-Bonds are created to finance the alteration of foreign currency over domestic currency (FX/TL), leading to an alteration in TL value of external debt stock. The CBRT finances the FX differences and the Treasury issues this type of bonds to CBRT in correspondence. For the future periods, the Treasury either pays the interest for the financing of FX differences or chooses *Consolidation* instrument. The fourth one is the *Short-term cash advances* (STA) G-Bonds issued to CBRT. The fifth one is the *Duty loses mechanism*. That arises from the OG's budget deficits because of the Treasury's lagging repayments. That is, the Treasury is indebted to OG but this debt stays unsecuritized until the beginning of each fiscal year where the Treasury issues bonds to these entities. Since the G-bond issuance does not cover all of the debt stock, we do never know what percent of this debt rests unsecuritized during each fiscal period and hence its time evaluation.

Finally, we have to take into account the *Interest payments*[14] bearing on above-described five types of liabilities. When the coupons of the special papers are matured, the Treasury may not pay and instead may issue further special type of bonds converting the matured interest payments to future principals which will again enjoy interest payments in the future periods.

Two questions arise here. How can the Treasury finance servicing the non-cash stock and how can it hide unrecognised share of contingent liabilities?. The Section 4 deals with the Treasury's "creative accounting" practices.

3.2 The information set of the IMF on stock of contingent liabilities

In order to examine to how extent the IMF has been informed about the public budget process, we rely on the IMF Staff country report (IMF 2000a) and the IMF's Report on the observance of standards and codes (ROSC) Turkey (IMF 2000b). Both first report and second report include the latest analyses and recommendations of the IMF on public sector's fiscal structure just before the incidence of November 2000 liquidity crisis. Based on these reports, we may obtain the information set of the IMF

[14] See "The Letter of Intent" (IMF 1999, item 58).

on both public sector budget structure and public sector's borrowing requirement. Based on the information provided by the Turkish authorities, the first report proposed the estimates of the IMF staff on years 2000 and 2001. The second report was prepared by the IMF Fiscal Affairs Department on the basis of both the Turkish authorities' responses to the IMF fiscal transparency questionnaire and additional information provided by the Turkish authorities. These reports clearly show that the IMF has been informed only of : First, the budgetary transactions, constituting the budget cash balance of CG and budget cash balances of OG, and second, the stock of non-cash securities, (securitized non-marketable debt). Consequently we understand that the IMF has not been informed by the Turkish authorities about non-budgetary transactions generating contingent liabilities and hence on unsecuritized share of public debt.

More specifically, the IMF is informed of fiscal operations listed below. In Table 1 we summarized and classified the distinct outcomes of these fiscal operations in terms of security types.

1. All types of budgetary transfers from CG to OG (IMF 2000a:8 and IMF 2000b, article #11)
2. Extrabudgetary activities by EBF's and Quasi-fiscal activities by financial SEEs (IMF 2000a :12)
3. "Duty-losses mechanism" which has been arisen from QFAs.

3.1. Duty-losses of nonfinancial public sector.

IMF (2000b, article #3) explains: "*The government budget does not fully reflect the cost of noncommercial activities conducted by nonfinancial state-owned enterprises. One main aspect of the relation between government and nonfinancial state-owned enterprises are the so-called "duty losses" incurred in providing goods and services below cost... In 1999, nonfinancial state-owned enterprises' duty losses amounted to about 1½ percent of GNP*."

3.2. Quasi-fiscal activities and unpaid duty losses (see IMF 2000a :9). The IMF explains*: "Until recently, the government budget did not fully reflect the cost of state-owned banks' noncommercial activities. Until 1999, these quasi-fiscal activities went unreported in the government budget. However, because of such operations, the outstanding stock of duty losses reached 12½ percent of GNP by end-1999*." (IMF 2000b, article #4)

4. Treasury guarantees (see IMF 2000a:15)
5. Non-cash debt stock (see IMF 2000a:14)
6. Short-term cash advances from CBRT (see IMF 2000a:25). These advances are referred to by

" unsecurtized vis a vis CBRT " in IMF (2000b, article #5)

The values associated with above-mentioned six items become observable only if they are securitized by issuance of 6 types of non-cash securities depicted in Section 3.1. Note that there are also some other difficulties that the IMF staff faced. The Court of Accounts' reports[15] state that budgetary operations of public entities were illegally misregistered. Similarly, the IMF states that the duty losses of the financial SEE were not registered in budget accounts. These defaults can be better noticed by comparing the borrowing requirement data announced by SPO and the Treasury to the Court of Accounts' reports and the IMF reports. The Turkish authorities declared that these activities (IMF 2000a:12) took the form of some state banks' providing subsidized credits to certain groups such as farmers and small businesses. However, the fact is much more crucial and the estimates of the duty losses in 1999 as per cent of GDP vary from about 11 per cent (Eichengreen 2001) to 15 per cent (Ertugrul and Selcuk 2002).

We can summarize the initial findings of the study. The IMF has been informed only on five components of the public sector's debt stock. We tabulate[16] them in Table 1. The aggregation of these items constitutes the securitized debt stock: The sum of market-based stock and non-cash stock.

Table 1 The information partition of the IMF on public debt stock

I. Cash G-bond stock	**II**. Non-cash G-bond Stock	**III**. Non-cash T-bill stock	**IV**. Cash T-bill stock	**V**. FX-currency difference stock, which is securitized

The items shown in Table 1 are derived from the GFS data announced by the SPO, the MFO and the Treasury. We computed the item (V) "FX differences" by using the data on external debt stock. The STA from CBRT is included. According to GFS the stock is classified into the cash and non-cash stock items.

It is evident that unsecuritized share of public debt, which is a significant part of net-increase in annual/quarterly public debt data is hidden from the IMF staff. Moreover since the PSBR data does not show the "accurate" borrowing requirement of public sector, the IMF staffs are not able to estimate the "accurate" debt stock of entire public sector. Since these securities can be issued only on behalf of CG, the government is able to manipulate the non-cash stock data as if it were covering overall public sector. The legal framework for indebtness falls short to prevent it.

[15] In 1998 Court of Accounts denied the accounts of the Treasury. These reports are published only in Turkish.
[16] To conserve space, we do not depict the data on a figure. See the Treasury's debt statistics (please see www.treasury.gov.tr.).

4 The "accurate" debt stock of public sector and the Treasury's accounting "illusion"

In previous section, we have already determined that the "accurate" debt stock of public sector is composed of marketable public debt stock, securitized non-marketable public debt stock and unsecuritized non-marketable public debt stock. This section presents the invisible part of public sector's budget structure which produces the contingent liabilities and revises the "conventional" budget identities to characterize the "accurate" budget structure of public sector.

Consider a fiscal period *t*. Let C_t stand for the stock of contingent liabilities (unsecuritized non-marketable debt stock) at period *t*, and H_t for the hidden non-budgetary transactions[17] taking place at period *t* (flow variable). The D_t denotes a share of non-marketable debt at period *t*, which had been securitized *k*-period before. Thus let D_{t-k} stand for the share of the contingent liabilities which were converted to direct liabilities (securitized) at period *t-k*. Let $\overline{B}_t$ show the total stock of non-marketable public debt, which is the sum of unsecuritized and securitized non-marketable debt stocks. In Eq.(3) let us suppose that D_{t-k} equals to λ per cent of C_{t-k}, λC_{t-k}. Eq.(4) shows one-period iterated (*t-k*+1) value of D_{t-k}, that is D_{t-k+1}. Based on Eq.(3), to obtain D_{t-k+1} we have to take into account; first, the interest r' bearing on the stock, second the principal repayments P_{t-k+1} that the Treasury pays to stock holder public entities, and third the new receipts R_{t-k+1} from financial public entities (financial SEEs, i.e., state banks). The P_{t-k+1} and R_{t-k+1} are flow variables which are shown on data sheets of the Treasury (see the examples of the Treasury's data sheets given in section 4.2). In Eq. (4) the $(1+r')$ stands for return on non-cash securities[18]. In Eq.(7) , r denotes the interest rate bearing on market-based securities.

$$C_t = C_{t-1} + H_t \tag{1}$$

$$\overline{B}_t = C_t + D_t \tag{2}$$

$$D_{t-k} = \lambda C_{t-k} \quad ; \text{ for k > 0 and } \lambda < 1 \tag{3}$$

$$D_{t-k+1} = (1+r')D_{t-k} - P_{t-k+1} + R_{t-k+1} \tag{4}$$

$$D_t = (1+r')^k D_{t-k} - \sum_{n=1}^{k-1}(1+r')^{k-n}(P_{t-k+n} - R_{t-k+n}) - P_t + R_t \tag{5}$$

[17] See Appendix A.1.
[18] The interest bearing on non-cash stock is imposed by the Treasury under the hierarchical pressure of central government.

Eq.(5) gives the *k*-period ahead value of D_{t-k}, that is D_t. Eq.(6) shows the "accurate" net-increase in securitized non-marketable debt at period *t*+1, ΔD_{t+1}. On the data sheets of the Treasury, the value of ΔD_{t+1} is shown under the title "net-increase in non-cash stock". However, the Treasury depicts ΔD_{t+1} as if it were equal to $R_t - P_t$, and hides the interest bearing on the stock, $r'D_t$. Let B_t^c stand for the market-based public debt. The net-increase in market-based debt is the difference between market-based receipts $B_t^{(R)}$ and market-based payments $B_t^{(P)}$, which in turn equals to the sum of interest payments bearing on the market-based stock $(r.B_t^{(c)})$ and primary balance $(G_t - T_t)$. Accordingly we have to revise this conventional budget financing identity by taking into account "non-cash payments". Eq.(7) revises the conventional identiy, and determines the "accurate" net-increase in market-based debt stock. The reason for this revision is straightforward; the Treasury should borrow an additional market-based receipt in order to repay the principals of securitized non-marketable debt stock to non-cash G-bond and non-cash T-bill holders. That is why, P_t is imposed in RHS of Eq.(7). Together with government spending G_t, the P_t deteoriates primary balance, implying a positive stock-flow adjustment (SFA)[19]. Accordingly in Eq.(8) we define the "accurate" magnitude of market-based debt.

$$\Delta D_{t+1} = r'D_t - P_{t+1} + R_{t+1} \tag{6}$$

$$\left[B_t^{(R)} - B_t^{(P)}\right] = (r)B_t^c + P_t + G_t - T_t \tag{7}$$

$$B_t^c = (1+r)B_{t-1}^c + P_t + G_t - T_t \tag{8}$$

The equations [1-8] enable us to determine the "accurate" magnitude of total debt stock of overall public sector, B_t^A. Eq.(9) defines the "accurate" debt to be equal to the sum of "accurate" market-based debt stock and the stock of non-marketable public debt. The latter is already defined in Eq.(2).

$$B_t^A = B_t^c + \overline{B}_t \tag{9}$$

Using Eq.(8) we rearrange Eq.(9) and obtain Eq.(10).

$$B_t^A = (1+r)B_{t-1}^c + \overline{B}_t + P_t + G_t - T_t \tag{10}$$

Imposing Eq.(2) into Eq.(10) yields Eq.(11).

$$B_t^A = (1+r)B_{t-1}^c + C_t + D_t + P_t + G_t - T_t \tag{11}$$

[19] The intra-governmental debt payment is a component of stock-flow adjustments (SFA). For a detailed analysis, please refer to Ozkaya (2014, forthcoming)

In Eq.(12) we obtain net-change in "accurate" value of total debt stock at period t+1, ΔB^{A}_{t+1}.

$\Delta B^{A}_{t+1} = B^{A}_{t+1} - B^{A}_{t}$, is equal to

$$\Delta B^{A}_{t+1} = rB^{c}_{t} + H_{t+1} + \Delta D_{t+1} + P_{t+1} + G_{t+1} - T_{t+1} \tag{12}$$

Replacing Eq.(6) into Eq.(12) yields Eq.(13). Note that the variable P_t given in Eq.[1-12] has twofold implications: In Eq.(6) it reduces the securitized non-marketable debt, while in Eq.(8) it augments the market-based debt. Even though the magnitudes of the two-type P_t are identitical, they act in opposite "direction". When we compute the "accurate" increase in debt stock, we have to take into account only one type P_t which is arising from market-based borrowing.

$$\Delta B^{A}_{t+1} = rB^{c}_{t} + H_{t+1} + r'D_{t} + P_{t+1} + R_{t+1} + G_{t+1} - T_{t+1} \tag{13}$$

Eq.(13) shows that at period t+1, net-increase in "accurate" debt stock depends positively on following flow variables. These are,

1.) sum of the interests bearing on market-based debt stock and on securitized non-marketable debt, $rB^{c}_{t} + r'D_{t}$

2.) non-budgetary transactions (flow of contingent liabilities), H_{t+1}

3.) sum of non-cash payments and non-cash receipts, $P_{t+1} + R_{t+1}$

4.) primary balance, $G_{t+1} - T_{t+1}$

Above arguments and Eq.(13) show that government can manipulate public debt statisticts by substracting non-cash payments from non-cash receipts $\left(R_{t+1} - P_{t+1}\right)$ and announcing the result as if it were equal to net-increase in non-cash debt stock. The contribution of hidden liabilities in Eq.(13) includes not only legitimate (political in past) factors $r'D_t + R_{t+1}$ but also political ones $H_{t+1} + P_{t+1}$, a fact already emphasized by Alt et al. (2012:14).

4.1 What is kept hidden and what is "illusion" ?

The Treasury never announces B^{A}_{t} given in Eq.(11) , since it never announces C_t given in Eq.(1). Therefore we cannot determine the exact magnitude of $\overline{B}_t$ given in Eq.(2),. What is hidden by the

Treasury is H_{t+1}, depicted by the second article. Thus the exact value of contingent liabilities at any period cannot be observed, and we cannot compute the exact value of Eq.(13), ΔB^{A}_{t+1}.

The accounting "illusion" that the Treasury applies can be easily seen on its data sheets (see section 4.2). In order to obtain net-increase in total public debt if one simply adds up net-increase in market-based debt stock and net-increase in non-cash debt stock (the seventh column of the tables), then the non-cash payments (P_t) eliminate each other. That is, if you directly replace Eq.(5) into Eq. (11), then the P_t values eliminate each other. Eq.(13) defines the "accurate" borrowing requirement of public sector. However, the public sector borrowing requirement (PSBR) announced by the Treasury and SPO constitutes only a share of its exact magnitude. Eq.(14) clarifies this issue.

$$\left[PSBR\right]_{t+1} = (r)B^{c}_{t} + G_{t+1} - T_{t+1} \tag{14}$$

Eq.(14) is known as the conventional budget identity in the literature and it shows that the borrowing requirement of public sector is equal to its budget balance (deficit).

The difference between Eq.(13) and Eq.(14) gives us the contingent liabilities (flow) of overall public sector at a given period *t*+1. Eq.(15) deals with this issue.

$$\Delta B^{A}_{t+1} - \left[PSBR\right]_{t+1} = H_{t+1} + r'D_{t} + P_{t+1} + R_{t+1} \tag{15}$$

Eq.(15) shows the balance of operations taking place outside the budgetary system (non-budgetary balance) of public sector. This value constitutes the deficit of "invisible budget" of public sector. To compute "accurate" debt stock of overall public sector, we have to rely on Eq.(11). Even though we cannot observe the exact stock of contingent liabilities (C_t), Eq.(11) enables us to obtain a least value for it.

4.2 Application to the announced data sheets

To illustrate our methodology, we present below the announced data on public budget process. In Appendix C, we exemplify our findings for the three fiscal periods; 1995, 1997 and 2009. We consider that the analysis for the year 2009 is also crucial, since the off-budget structure of public sector is still conserved. More specifically, total receipts are compared to the total non-cash receipts and likewise, the amount of total payments is compared to the amount of total non-cash payments. This comparison enables us to distinguish between securitized and unsecuritized partitions of contingent liabilities.

Let us introduce the Table shown below. The original view of domestic debt data sheet for any period-T is shown by first seven columns and four rows. The eight and ninth columns are imported by us from "consolidated budget financing" (CG budget financing) data sheets because of the absence of single data source. From the data sheet given below, we can observe the cash amount borrowed from market (Receipts market-cash), cash repaid to market (Payments market-cash), and the market-based borrowing used to finance budget balance (Rec.cash for budget – Pay. Cash for budget). On the data sheets, the variables P_t and R_t find themselves under the items "non-cash payment" (B1+B2) and "non-cash receipt" (A1+A2), respectively. In the Table, the details for net-increase in non-cash stock (A1,A2,B1,B2) have not been explained and what we could observe is the "net-increase in non-cash stock" (DNC). Even though the items A1, A2, B1, B2 are hidden, we are able to compute (A1+A2-B1-B2) = DNC . The DNC value is announced by the Treasury. As it can be seen, there is no information about the non-marketable debt stock; instead, change in securitized part of the non-marketable debt stock is placed under the item "net-increase in non-cash debt stock". Following from below-shown data sheet, we can extract the fifth and sixth rows. The amounts depicted on data sheets are given in terms of 1000 YTL (new Turkish Lira).

PERIOD T	*Type of security*	*Receipts market - cash*	*Payments market-cash*	*Receipts non-cash*	*Payment non-cash*	*Net-inc in non-cash stock*	*Rec. cash for budget*	*Pay. Cash for budget*
	G-Bond	GCRM	GCPM	A1	B1	DNC	*GCRB*	*GCPB*
	T-Bill	TCRM	TCPM	A2	B2		*TCRB*	*TCPB*
				XRG	**XPG**			
				XRT	**XPT**			

Side by side comparison of receipts and payments allows us to obtain the amount of securities used for financing non-budgetary tasks. The use of market-based cash receipts (XRG, XRT) in non-budgetary tasks is obtained respectively by (GCRB) – (GCRM) =XRG and (TCRB) – (TCRM) = XRT. The payments (XPG,XPT) covering previous receipts (XRG, XRT) are obtained respectively by (GCPB) – (GCPM)=XPG and (TCPB) - (TCPM)=XPT. We can deduce that if there were no accumulation of non-budgetary transactions, then we can define an "identity for securitization". The three steps shown below clarify this issue.

a.) The absolute value $|XRG + XRT|$ shows the amount of total borrowing which has been received from market but is not used for budget financing of CG (or vice versa according to the sign).

b.) The absolute value $|XPG + XPT|$ has been paid from budget but did not address the market, instead it was used in non-budgetary operations (or vice versa according to the sign).

c.) Given a.) and b.), in order that there exists no accumulation of non-budgetary operations

$|(XRG + XRT) - (A1 + A2)| = 0$ and $|(XPG + XPT) - (B1 + B2)| = 0$ should together hold. Their unification implies that $|(XRG + XRT) - (A1 + A2)| - |(XPG + XPT) - (B1 + B2)| = 0$ should hold. Otherwise this difference shows the deficit generated by non-budgetary transactions and its sign "-" shows that this amount is securitized, or "+" shows that this amount rests unsecuritized.

This simple methodology enables us to identify the net-increase in "accurate" debt stock in terms of securitized and unsecuritized components, each of which shows whether the net-increase in domestic debt borrowing instruments is carried out for budgetary or non-budgetary tasks. Table 2 summarizes these results.

Table 2 The distinct components of the net-increase in "accurate" public debt stock

I. Market-based borrowing used to finance CG budget	**II**. STA from CBRT used to finance CG budget	**III**. Market-based borrowing which is not used to finance CG budget, but used in non-budgetary transactions	**IV.**Non-cash borrowing used in non-budgetary transactions, including FX alterations on external debt stock, which are securitized	**V**. FX-alterations on external debt stock, which are unsecuritized

The Table 2 shows the net-increase in "accurate" gross domestic debt stock in terms of its distinct components

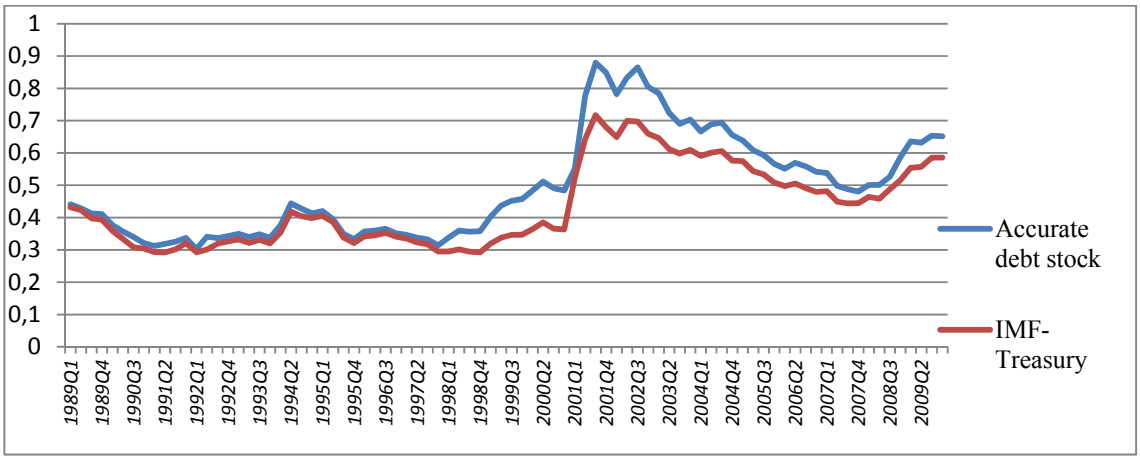
Let us present our findings. By using the methodology introduced in section 4.1 and exemplified in 4.2, we identify the non-budgetary transactions, composing the net-increase in unsecuritized domestic debt stock. Since we have the data on both the net-increase in marketable domestic debt stock and net-increase in securitized non-marketable domestic debt of public sector, we are able to distinguish between budgetary and non-budgetary transactions. Different from Table 1, Table 2 shows distinct components of both securitized and unsecuritized contingent liabilities. When we compare Table 1 to Table 2, we easily see that Table 1 does not enable us to distinguish between budgetary and non-budgetary transactions. Therefore, different from Table 1, Table 2 depicts the flows, namely the items (III), (IV) and (V) (excluding securitized FX alterations) which constitute the share of unsecuritized contingent liabilities in net-increase in "accurate" domestic debt stock.

The hidden liabilities given in Table 2 affect the IMF stabilization programme initiated in 1999 through its first and third pillar (IMF 2000c:47). The first pillar addresses the fiscal adjustment. Based on the data supplied by the Turkish authorities, the IMF identifies in nominal terms first, the true functional relationship (base setup) between optimal primary deficit and inflation rate together with the stabilized public debt level at the end of 1999 (see IMF 2000a:22, item 31-33). Accordingly the IMF determines policy applications for the year 2000, called "central policy". Comparing Eq.(13) to

Eq.(14) enables us to conclude that the IMF underestimates the primary deficit of public sector. According to our results, the annual "accurate" primary deficit in real terms per real annual GDP is "at least" 7% greater than the IMF knows[20]. Accordingly the third pillar is based on the stabilization of the level of public debt which has reciprocal effects on the success of the first pillar in perspective of dynamical analysis.

Figure 1 depicts our estimations and the announced debt stock data by the Treasury[21], respectively. The IMF data and the Treasury's announcements are approximately identical (see Table 5 and Table 6, IMF 2000a:24-25). The IMF staff declares that the data provided by the Turkish authorities is taken as given (see the endnotes for the data tables in IMF 2000a). Because of the drawbacks explained in the Section 4.1, our estimations present the " least value[22]".

Figure 1.



The "accurate" public debt stock in real terms over real annual GDP versus the public debt stock in real terms over real annual GDP which is announced by the Treasury and taken as given by the IMF

Figure 1 depicts that the difference (17%) thorugh the year 2000 is even strong enough that the stabilization of the level of the public debt cannot be sustainable in sense of stationarity. We conclude that this bias deteroirates the success of the third pillar of the IMF programme. In order to compute the real annual GDP for the period under examination, we use the methodology given in Appendix C.

[20] As we have explained, the primary deficit is a flow variable and the IMF knows only the amount of cash budgetary transactions as flow variable. In our computation 1987=100 prices are taken into account, see also Appendix B.

[21] The Treasury's stock data can be found in Debt Statistics released by Treasury www.treasury.gov.tr and also Annual Debt Management Reports released by Treasury from 1999 to 2010. The data can be supplied upon to request. Please note that, when the Treasury series shown in Figure 1 is compared to the original series given by the Treasury, one has to take care of both the deflating methodology (base prices, CPI) and the computation method for the real annual GDP (see Appendix C for our method).

[22] This minimum value is the output of the Eq.(9), the drawbacks find themselves in the second term at the RHS of the Eq.(9). We could compute only a share of this second term.

5 Conclusion

The persistent hidden liabilities may create structural effects on emerging markets with open capital accounts where financial markets, interest rates and exchange rates go through fluctuations, associated with boom-bust cycles in international capital flows (Jaeger and Schuknecht 2007). Precisely because the persistency of hidden debts are closely related to the lack of transparency on public budget systems (Alt et al. 2012: 19), complex interactions of public financial institutions (i.e., state banks) and weaknesses in the regulatory framework may aggregate the fragility of banking sector and hence of financial sector. In this study we focused on different margins on which governments can cheat and try to understand why governments do not make it easier for standard databases to incorporate their debt history. We identified that public sector not only enjoys various political instruments to generate contingent liabilities but also creates special budgetary laws to convert stock of contingent liabilities to direct liabilities, hiding the deficits generating the converted liabilities. In contrast to the wide belief, we show that the authorities may have misled the IMF staff regarding the hidden public debt and invisible budget process. Secondly, we introduced non-budgetary transactions, which will strengthen the efforts of academic research on fiscal transparency. Our findings on "creative accounting" practices contribute to the literature on "hidden deficit" which is defined by cash expenditures shifted off the budget for hiding subsidisation (Polackova-Brixi et al. 1999; Easterly 1999), accumulation of low-quality assets (Buti et al. 2007) and capital injections (von Hagen and Wolff 2006; Alt et al. 2012). Finally we showed that the magnitude of hidden liabilities was strong enough to affect the IMF stabilization programme 1999 through its first and third pillar.

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Appendix A

A.1 Contingent liabilities and components of securitized non-marketable debt (non-cash stock)

The public sector in Turkey comprises eight main public entities, each of which has its own budget according to budget appropriation laws (see IMF 2000a). These are Central Government (CG) and other governmental entities (OG). The OG are Local Authorities (LA), State-Owned Entreprises (or State Economic Enterprises SEE), Social Security Institutions (SSI), Extra Budgetary Funds (EBF), Unemployement Insurance Fund (UF or UI), the SEEs under privatization, and the Central Bank (CBRT). The SEE comprises financial SEEs (state-owned banks) and non-financial SEEs.

The lending/borrowing relationships constituting contingent liabilities are not initially legal, but are politically established under hierarchical control of CG. With a significant time lag, the Treasury consolidates and recognises these liabilities by law, and issues special type of non-tradeable G-bonds to lenders. The amount of transactions are recorded neither to lender's budget nor to borrower's, and are hidden from public view. These non-budgetary (off-budget) transactions occur in the form of cash and/or in form of transactions of goods and/or services both commercial and noncommercial.

The share of the non-marketable debt which is recognised (securitized) by the Treasury consists of following components: Accumulated net losses of non-financial SEEs; repetitive operational losses of financial SEEs; frequent assumption of public entities' debts; guarantees on private sector partnerships for public policies where sufficient return is unlikely[23]; increase in foreign debt in local currency; interest bearing on these debts. Precisely because these six items become observable only when they are securitized by law (see Section 3.1), we refer to "hidden debts" as debt-creating fiscal interventions which give rise to these items and have a direct impact on the relevant entity's net borrowing/net lending (increasing the deficit or reducing the surplus). According to the classification by Polackova-Brixi and Mody (2002: 24-25) first three items and sixth one consist of contingent implicit, the fourth and fifth items consist of contingent explicit liabilities.

A.2. Public corporations (non-financial SEEs) and Public quasi-corporations (financial SEEs)

The main factors affecting SEE profitability, and thus budgetary transfers and the need for debt assumption by the central government are public sector price adjustments and wages.

For many goods, public price adjustments are made periodically, generally with several years' interval, rather than being automatically linked to production costs. As an exception, gasoline prices are closely linked to world prices. In the mid-1990s loss-making SEEs were agricultural enterprises, railways, national airlines, hard coal and electricity generation-distribution[24]. The financial relations between government and SEE are complex and unclear (IMF 2000a). SEE deficits are paid for, often with a lag, through transfers from the budget and all sorts of offsets and arrears: payments of foreign debt of the enterprises by the Treasury, offsets and arrears in tax liabilities, arrears in social security contributions, and arrears to other state enterprises.

Some SEEs have defaulted in the past on their bank debt (state banks).

On the other hand, some of contingent implicit liabilities arising from BOT contracts in the energy and water sector. Some 18 BOTs (Build-operate-transfer) are currently in operation, mainly in the energy sector[25]. The BOT contracts between private companies have take-or-pay provisions and stipulate price guarantees. Some payments linked to guaranteed debt do appear should be recoreded as capital transfers to SEEs (see Eurostat 2010:118-122).

Financial SEEs and duty losses

Starting in 1993, state banks started accruing duty losses, on account of credit subsidies to the agricultural sector, which were not appropriated in the budget and the bulk of which were not securitized until the fiscal year 2006.

[23] The average duration of an infrastructure project reached 15 years. In 2000, the number of projects failed is 5231.

[24] Between 1994-99 losses (duty losses plus equity injections) for the main agricultural SEE amounted to $6.2bn. The Treasury assumed $2.4bn in SEE debt during 1992-2002, including for the national airline and energy enterprises.

[25] In the BOT model, a private company builds and operates a plant and transfers ownership to the state after a pre-specified amount of time.

Duty losses can conceptually be broken down into three components: The credit subsidy component; interest on the unsecuritized stock of duty losses outstanding, financed by state bank borrowing; a residual, which reflects operational losses and activities mandated by the government.

Appendix B

Depending upon the inflation level, we may propose two methods in order to calculate annual real GDP.

I. Let $(GDPA)_T$ denote the current annual GDP at period *T* and that $(GDP)_T$ denote current GDP occurred within period *T*.

1. $(GDPA)_T = (GDP)_T + (GDP)_{T-1} + (GDP)_{T-2} + (GDP)_{T-3}$, and equivalently

$(GDPA)_T = (GDPA)_{T-1} + [(GDP)_T - (GDP)_{T-4}]$ denotes the Annual GDP at *T*.

II. Let $(GDPAr)_T$ denote the real annual GDP at period *T* based on constant prices of some fixed period *t* , P_T^t. We obtain two methods of calculations:

1. $(GDPAr)_T = \dfrac{(GDPA)_T}{(P)_T^t}$ and **2.** $(GDPAr)_T = (GDPAr)_{T-1} + \left[\dfrac{(GDP)_T}{(P)_T^t} - \dfrac{(GDP)_{T-4}}{(P)_{T-4}^t}\right]$

where the convergence $(P)_T^t - (P)_{T-n}^t \to \varepsilon$ yields the equality of two methods. In other words, if the inflation is too small, then two methods yield nearly same results. Given high inflation in the Turkish economy through the most of the period, we propose to use method II.

Appendix C

Let us introduce the first case, the fiscal year 1995.

Fiscal Year	*Type of security*	**Receipt-cash market**	**Payment-cash market**	**Receipt non-cash**	**Payment non-cash**	**Net-increase in non-cash stock**	**Rec. Cash for budget**	**Pay. Cash for budget**
1995	**G-Bond**	366873	94489	A1	B1	85465,7	*222453*	*136796*
	T-Bill	1298630,2	971561,6	A2	B2		*1147241*	*950023*
				-144420	**42307**			
				-151389,2	**-21538,6**			

The data sheet shows the net-increase in non-cash debt stock as (A1+A2)-(B1+B2) = 85465,7. Since the total non-budgetary receipt equals to absolute sum (144420+151389,2) = 295809,20 and total non-budgetary payment is given by absolute sum (-42307 + 21538,6) = 20768,4; the non-budgetary transactions should be equal to (295809,20 + 20768,4) = 316577,6.

In order that the non-budgetary transactions to be securitized, (295809,20 – (A1+A2)) = 0 and (-20768,4 + (B1+B2)) = 0 should together hold, which imply (295809,20 – (A1+A2)) – (-20768,4 - (B1+B2)) = 0 holds. Thus the amount (316577,6 – 85465,7) = 231111,9 rests unsecuritized, which shows the deficit generated outside the budgetary system. This amount is a net-increase in stock of contingent liabilities, which has been accumulated through non-budgetary transactions at fiscal year 1995.

Let us introduce the second case, the fiscal year 1997.

If the data sheet is compiled, then we see that the net-increase in non-cash debt stock as (A1+A2)-(B1+B2) = 656249,4. Since the total non-budgetary receipt is absolute sum (1117038,3+92756,1) = 1209794,40 and total non-budgetary payment is absolute sum (333947,1 + 265415,9) = 599363; then the net non-budgetary transactions should be equal to (1209794,4 - 599363) = 610431,4. In order that the non-budgetary transactions must be securitized, (1209794,40 – (A1+A2)) = 0 and (599363- (B1+B2)) = 0 should together hold, implying that (1209794,40 – (A1+A2)) – (599363- (B1+B2)) = 0 holds. Then the amount (610431,4– 656249,4) = -45818 shows the securitized share of previously accumulated contingent liabilities. This amount shows the share of (previous) contingent liabilities which are consolidated and converted to the direct liabilities at 1997. The sign "-" depicts that it is a net- decrease in stock of contingent liabilities (unsecuritized non-marketable debt stock) but net-increase in stock of direct liabilities. Thus the net indebtness of public sector remains unchanged.

Different from the fiscal years 1995 and 1997, we see that in data sheets of 2009 the details of the net-increase in non-cash debt stock are announced by the Treasury.

We extract the following information about the operations taking place outside the budgetary system.

The non-marketable G-bond and T-bill securities used for budget financing amount to 3509315,53 and 0,96136, respectively. If the method is applied, then we obtain the difference 9375512,58 - (9375512) = 0,58, the unsecuritized non-budgetary transactions at period 2009, which constitutes a net-increase in unsecuritized non-marketable debt stock.