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Domestic Original Sin in Public Debt Management: The Case of Turkey (1996-2016)[1]

Kamu Borç Yönetiminde Yurtiçi Orijinal Günah: Türkiye Örneği (1996-2016)

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Abstract

The concept of original sin was introduced in 1999 with the leading studies of Eichengreen and Hausman, and the literature on this concept was expanded by contributions of Eichegreen, Panizza and Hausman (2003, 2005). Domestic original sin is defined as the inability of a country to borrow long term loans from the domestic market with the domestic currency at fixed interest rate. In this case, the amount of international debt from foreign markets increases due to the original sin, which increases the financial vulnerabilities of the countries and makes them vulnerable to debt and money crises.

Keywords: *Domestic Original Sin, Public Debt Management, Currency Mismatch*

Jel Codes: *H60, H63, H69*

Özet

Orijinal günah kavramı, 1999 yılında Eichengreen ve Hausman'ın öncü çalışmaları ile literatüre kazandırılmış, Eichegreen, Panizza ve Hausman (2003, 2005)'ın katkılarıyla bu alandaki literatür genişlemiştir. Yurtiçi orijinal günah, bir ülkenin yurtiçi piyasalarda yerli para birimi ile sabit faizle ve uzun vadeli borçlanamaması olarak tanımlanır. Bu durumdaki ülkelerin, yurtdışı piyasalardan yabancı para biriminden borçluluk miktarı orijinal günah nedeniyle çoğalmakta ve bu durum ülkelerin finansal kırılganlıklarını arttırarak onları borç ve para krizlerine açık hale getirmektedir.

Anahtar *Kelimeler: Yurtiçi Orijinal Günah, Kamu Borç Yönetimi, Döviz Uyumsuzluğu*

Jel Kodları: *H60, H63, H69*

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Introduction

The liberalization of international financial markets is one of the most important developments of the last thirty years. Increased external financing through liberalization is expected to complement domestic savings, encourage faster capital formation rates in low- and middle-income countries and thus encourage development and growth. It is also another expectation that the diversity of international portfolio allows investors to share the risk more efficiently. However, sudden stoppage and reversal of the flow of capital is supported by a very broad literature[3]. In practice, reverses in capital flows were associated with the devastating crisis in Mexico, Thailand, Indonesia, Korea, Russia, Brazil, Ecuador, Turkey, Argentina and Uruguay, and thus the literature on how capital flows may be the source of instability was enriched (Eichengreen & Hausman, 2003:1).

However recently, there is another theme that stands out in studies that separates volatility and destabilizing effects of capital flows. This theme is the balance sheet effect. It is understood that the vast majority of international debt obligations take place with the currencies of major creditor countries and financial centers - such as USA, Japan, UK, Switzerland and Euro zone - as the international financial markets have been liberalized and countries become able to borrow and lend internationally. As a result, emerging market countries that use international debt markets effectively by accumulating net external debt take on discrepancies in balance sheets and obligations disproportionately occur in the form of currencies such as US Dollar, Yen, Pound, Euro, and Swiss Franc. However, because the borrower countries do not have the incomes to finance these debts, exchange rate changes will have significant wealth effects in the creditor countries. Especially, in the depreciation of the money which is the standard treatment of an economy with deficit of payment balance, the national income decreases in US dollars. The fact that the normal adjustment mechanism has been disabled also causes self-nurturing money and debt crises by warning investors, increasing volatility of capital movements, causing a sudden stoppage in the capital flow and reversing the current account (Eichengreen & Hausman, 2003:2-3). However, the fact that the developed countries owed their own currencies would be more advantageous since it would not create asset-liability mismatch and would reduce the size of the original sin.

The most important decision related to debt is whether the borrowing is to be made from the inside or the outside. While domestic borrowing is described as a domestic source transfer, international borrowing is transferring a new source as much as the amount of debt to the country.

[3] Calvo 1998, Milesi, Ferretti & Razin 1998.

Local currency is used in the repayment of domestic borrowing, whereas repayment in international borrowing is carried out in foreign currency. Another important decision to be taken on debts is whether the debts are made from foreign currency or local currency. In addition to the favorable effects on the foreign trade balance of the foreign exchange inflow to the country, the demand for foreign exchange revenues will increase for repayment. Increase in the share of foreign borrowing in the debt stock will increase the cost of borrowing in the face of sudden and rapid exchange rate increase. Domestic borrowing with local currency may not present the possibility of long-term international borrowing with foreign currency, and a short-term risk of renewal of debt may arise.

As can be seen, public debt stock has great impact on source, foreign exchange, interest rate and terms structure and debt management. As a result of the inability to borrow from international markets with local currency, a country lose it's competence to borrow from domestic market with fixed interest rate and financial system becomes fragile which means the existence of the original sin.

In this study, firstly, indications of domestic original sin in Turkey between 1996-2016 and the rates used for measuring these indices were calculated. Then the change in the domestic borrowing market and the impact of the strategic benchmark in public debt management on the domestic original sin indicators were determined by ratio analysis.

1. Public Debt Management

Public debt management is the change in the amount and composition of various elements of public debt such as foreign exchange, maturity and interest to contribute to economic stability in accordance with the economic policy observed in the country. The purposes of public debt management are to reduce the cost of borrowing, to ensure diversification of borrowing instruments, to establish an effective maturity and foreign exchange structure in borrowing, to deepen the secondary market of government debt notes, to coordinate with money market actors and finally to contribute to the economic balance.

In this context, debt management should provide budget financing of the state with tax revenues and seigniorage incomes in accordance with the risk analysis based on macroeconomic objective by taking the principle of borrowing at the lowest possible cost and reasonable risk level (Hazırolan, 2012:558).

Public debt management is basically based on the principle of reducing the costs to the most appropriate level, taking into account risks such as liquidity, interest and exchange rate, which the debt stock is exposed to. The increase in foreign currency borrowing exposes the exchange rate risk. Since

the increase in share of foreign currency in total debt stock makes the economy fragile against sudden and rapid increases in exchange rates, the importance of borrowing from the local currency is better understood. On the other hand, interest rate risk due to rising interest costs, and liquidity risk due to short-term debts are the most important problem areas of public debt management.

1.1. Debt Structure in Public Debt Management: Currency Type

A developing country that is not indebted with local currency can take steps to remove the currency mismatches from the original sin problem or to prevent it from emerging in the first place. For example, it may decide not to take a loan. Thus, there will be no currency mismatch because there is no external debt. However, it is also obvious that country would not benefit from the additional investment opportunity and consumption benefits offered by external debt. Alternatively, the government may accumulate foreign exchange reserves to fulfill foreign exchange obligations. However this is also costly, because the return on reserves is often well below the opportunity cost of funds (Eichengreen & Hausman & Panizza, 2003:5).

In Goldstein and Turner's study in 2004, the concept of "Currency Mismatch", which is asset-liability mismatch of borrowing country, is an important risk factor. Accordingly, assets and liabilities are different currencies, and when domestic money falls, assets will decrease, but debts with foreign currencies, in other words liabilities will increase.

Borrowing from international markets becomes obligatory in countries with original sin, since it will create longer term and lower cost compared to domestic markets. However, borrowing with foreign currency negatively affects the sustainability of borrowing by being exposed to volatilities in the exchange rate. In this way, the decrease of the domestic currency increases its value in terms of domestic currency.

Obviously, the need to borrow from international markets due to financing that is not available from national markets, makes countries to face the risk of exchange rates. It also raises long-term interest rates in periods that inflationary expectations rise (Aklan, 2010:36-37).

Goldstein and Turner (2004) argue that one of the obstacles to domestic currency borrowing is the deficiency in development of the national notes market. Although the views on the cause of the original sin differ, Gürcihan and Yılmaz (2007) summarized the concept as the credibility of the monetary policy; loose and unstable fiscal policy; financial sustainability and investors' demands to borrow with foreign currency at a level that they would feel safe (Yavuz, 2009:284).

Narrow investor base and lack of institutional investor that go towards to assets of the country with undeveloped national notes leads to currency mismatch (Turner, 2003:5-7).

Countries with undeveloped national notes markets borrow from foreign currencies in order to give a positive signal to the markets and to borrow at a lower cost, hiding these shortcomings (Jeanne, 2003:as cited in 6-11, Yavuz, 2009:279).

In fact, the development of the domestic borrowing market will reduce the market risk that may arise from a significant portion of the debt being held in foreign currency (Bal and Özdemir, 2012:8).

1.2. Debt Structure in Public Debt Management: Maturity and Interest

Maturity and interest structure of the debt have significant effects on debt sustainability. As the maturity of the debt becomes shorter, debt rollover becomes more difficult. The increasing domestic original sin in this way represents the devastating effects of short-term obligations.

In the presence of the undeveloped and low liquidity capital market, the financing of long-term investments to short-term funds increases the maturity mismatch between assets and liabilities (Aklan, 2010:36).

Countries within the domestic original sin, which Hausmann and Panizza (2003) define as inability to take long-term domestic loans domestically with domestic currencies with fixed interest rates, are obliged to borrow with variable interest rates depending on short-term and thus interest rate risk grows.

As it can be seen, the existence of the original sin causes the governments to borrow domestically in the short term or foreign currency from the foreign and domestic markets. Ineffective and inadequate institutions and inadequate confidence to applied policies lead countries to further deepen this problem.

2. Public Debt Management Strategies in Turkey

Turkey had significant deficiencies in the institutional and legal regulations for public debt management until 2003. The Law on the Regulation of Public Finance and Debt Management No. 4749 issued on March 28, 2002 in debt management and the Regulation on Debt and Risk Management adopted the basic principles applicable to legal integrity and debt management.

In public debt management, the principle of lowering the debt stock to the most appropriate level against risks of liquidity, interest rate and foreign currency. According to this principle, borrowing policies are carried out on

the basis of "strategic benchmark" which are formed every year from a medium-term point of view. The macroeconomic balances and cyclical developments are also taken into account in the overall debt management process, which starts with the establishment of strategic benchmark and continues with the realization of the debt (Undersecretariat of Treasury, 2016:24). These strategic benchmark are:

- In order to minimize the liquidity risk, extension of the average maturity to the extent that market conditions allow, reducing the share of the bonds that have less than 12 months to the maturity and holding strong reserve.
- In order to minimize interest risk, reducing the share of the bonds that interest will be renewed in the next 12 months by using fixed interest rates for TL loans.
- In order to minimize the exchange rate risk, the borrowing should be made predominantly in TL.

As seen, in order to minimize the foreign exchange risk, it is aimed that borrowing is mainly made in TL, therefore, domestic borrowing is not indexed with foreign currencies and international borrowing is limited.

The increase in bonds with foreign currency in the domestic debt stock makes it inevitable to be adversely affected by the exchange rate movements. In this way, the formation of the stock with TL aims to purify the disruptive effect of increase of currency on the public debt.

The development of markets for government debt notes is the most important of the borrowing strategies carried out by the Undersecretariat of Treasury. In order to develop primary and secondary markets in this framework, besides the "primary dealer" system, there should be policies such as exporting of bonds indexed to inflation, benchmark bond application (Undersecretariat of Treasury, 2008:61).

3. Application of Domestic Original Sin in Turkey

3.1. Development of Domestic Debt Stock and Debt Burden

Sudden increases in domestic debt stock in 1997, 2001 and 2009 were seen with the effects of budgetary imbalances, the decline in external debt, crises, inflationary pressures and election economy. Stock increased nominally by 131% in 1996, and by 99% in 1997 compared to the previous years (Table 1). In the end of 1996, applying to the sources of the Central Bank was restricted, the maturity structure of the loans was extended, the domestic debt principal and interest payments of 1997 was drastically delayed to the first three months of 1998. In 1998, as the borrowing cost increased compared to the previous year, the Treasury shortened the

maturity of borrowing in this period in order not to face more interest burden. On the other hand, the Far East Asian Crisis that started in July 1997 made it more costly to borrow in 1998 and thus reflected on the domestic debt. Therefore, this increase in the debt stock was affected by the primary deficit in the first half of the 1990s and the high real interest rates in the cost of borrowing in the second half (Yılmaz, 2015:177).

In 2001, a sudden increase of 235% occurred due to the liquidity crisis, and the increase in the domestic debt stock began to fall below 10% with the focus on post-crisis fiscal discipline (Table 1).

At the outset of the global crisis that broke out in 2008 domestic debt stock was 274.8 million TL and reached 407 million TL in the first five years of the crisis, up by about 50%. Today, it has shown increase of about 80% compared to the beginning, and the stock has almost renewed itself due to the crisis (Table 1).

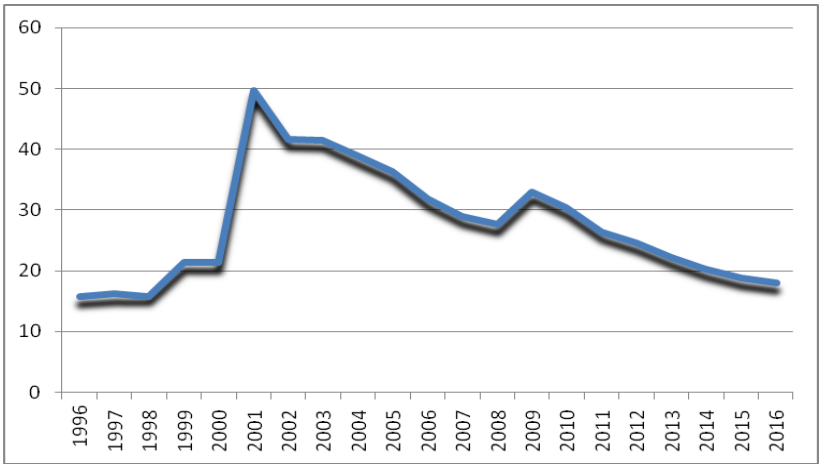
Table 1. Domestic Debt Stock (Million TL)

Years	**1996**	**1997**	**1998**	**1999**	**2000**	
Domestic Debt Stock	3,148,9	6,283,4	11,612,9	22,920,1	36,420,6	
Years	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Domestic Debt Stock	122,157,3	149,869,7	194,386,7	224,482,9	244,781,9	251,470,0
Years	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Domestic Debt Stock	255,309,9	274,827,3	330,004,6	352,841,2	368,778,4	386,541,7
Years	**2013**	**2014**	**2015**	**2016**	**2017**	
Domestic Debt Stock	403,006,9	414,648,5	440,124,3	468,644,3	535,400,0	

Source: Data of Undersecretariat of Treasury, Domestic Debt Statistics and Treasury Statistical Yearbook was used.

The Domestic Debt Stock / GDP ratio, which represents the domestic debt burden, is one of the important indicators of the cost of borrowing of a country. After the 1990s substitution of domestic borrowing instead of external borrowing, restrictions on the application to the Central Bank's resources and falling GDP in the crisis years resulted an increase of the share of stock in GDP by 50% in 2001 and this ratio decreased below 30% before global crisis. In 2009, it got close to 35% together with the rate of increase in stocks and the increase in the growth rate. Today, the burden of stock is up to 18% of GDP (Graph 1).

Graph 1. Domestic Debt Stock / GDP



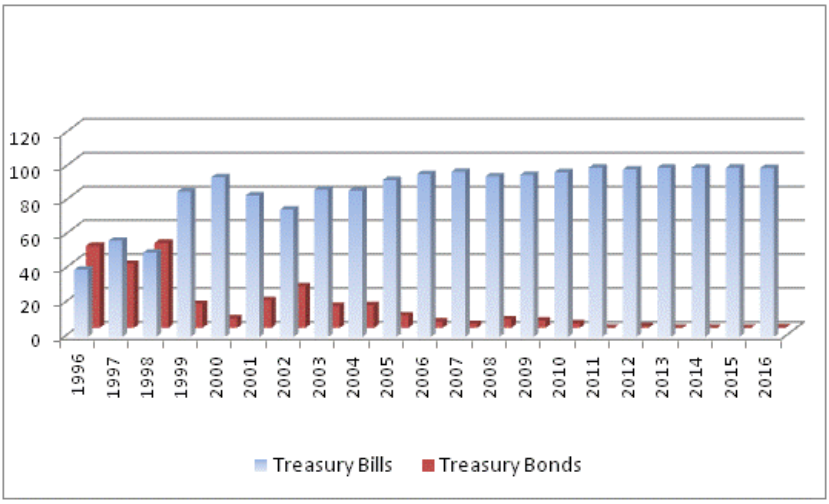
Source: Data of Undersecretariat of Treasury, Domestic Debt Statistics and Treasury Statistical Yearbook was used.

3.2. Maturity Structure of Domestic Debt Stock

Domestic debt stock of Turkey prefers Government Bonds of longer than a year of maturity instead of Treasury bills of up to one year maturity.

Government bonds have a share of 70% in the stock in total in 1999, 2000, 2005-2007, and have a share of 100% since 2010. After the rise of the share of treasury bills between 1996 and 1998, the short-term borrowing of the Treasury during the November 2000 and February 2001 crises shortened maturity and increased the interest payments.

Graph 2. Maturity Structure of Domestic Debt Stock (% Share)



Source: Data of Undersecretariat of Treasury, Domestic Debt Statistics and Treasury Statistical Yearbook was used.

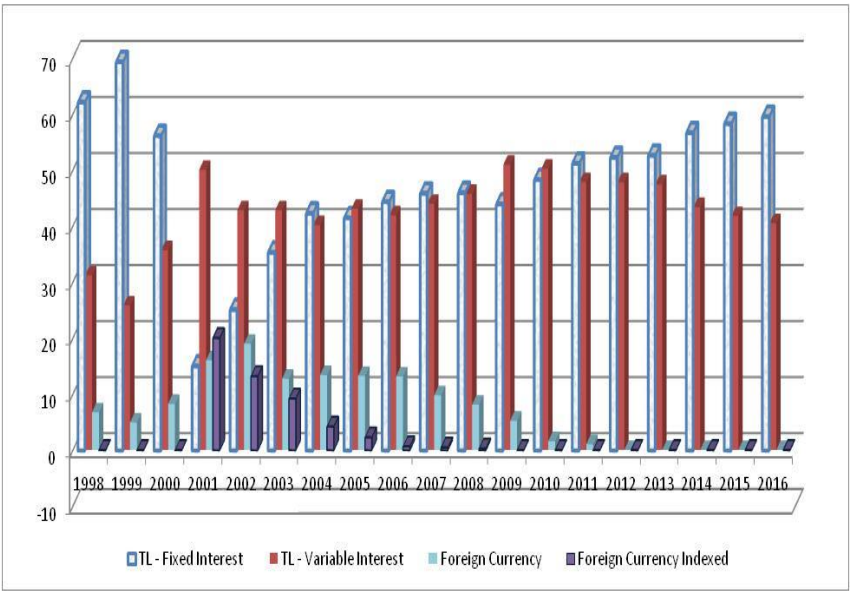
In the domestic debt stock, the share of treasury bonds over the years has exceeded the share of treasury bills. Especially in 2011, Treasury borrowed only long term, short term borrowing was set to zero. However, in 2012 and 2013, the Treasury went back to short-term debt, but the share of long-term bond did not fall below 95%. Since 2013, the entire stock consists of bonds (Graph 2).

3.3. Foreign Currency-Interest Structure of Domestic Debt Stock

The borrowed currency is at the center of the original sin. In the presence of the domestic original sin, countries cannot borrow long term debt with domestic currency with fixed interest rate. Graph 3 shows that in the years 1998- and 1999, notes in TL with variable or fixed interest rate were preferred and notes in foreign currency were tried to be reduced. However, the November 2000 and February 2001 crises disrupted structure of interest rate and foreign currency in the stock, making the domestic debt stock vulnerable to risks of interest rate and exchange rate. In 2000, the share of notes in TL decreased to 56% in the stock, while the share of variable interest rates increased to 35%. In addition, the share of notes in foreign currency increased to 5%. In the 2001 crisis, the share of fixed interest rate notes in TL decreased to 15%, and the variable interest rate notes started to constitute a half of the stock. In the same year, the share of notes in foreign currency in the stock increased to 16% while the share of foreign currency indexed bonds was 20% and the interest- foreign currency structure of domestic debt stock gradually deteriorated (Graph 3).

In 2002 and 2003, interest rate and exchange rate risk dominated the domestic debt stock. The share of variable interest rate notes in the stock was 42%, while the share of fixed interest rate notes could be increased a little. In these years, the exchange rate risk continued to feel itself clearly (Graph 3).

Graph 3. Foreign Currency-Interest Structure of Domestic Debt Stock (% Share)



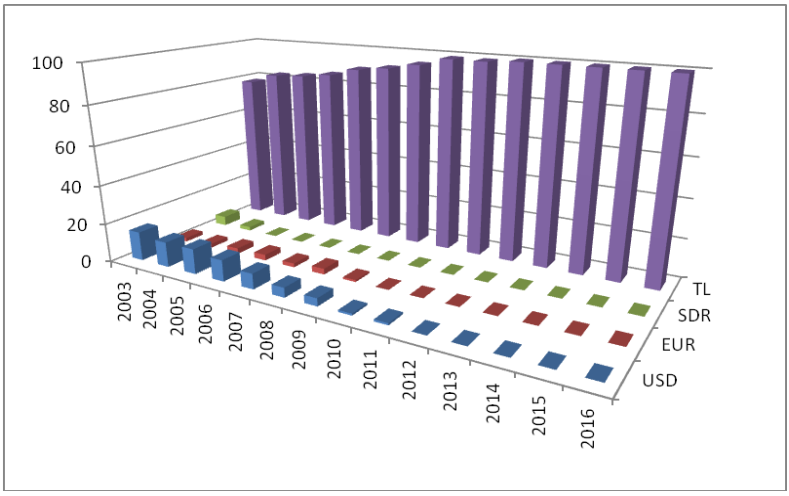
Source: Data of Undersecretariat of Treasury, Domestic Debt Statistics and Treasury Statistical Yearbook was used.

When the strategic benchmark applied after 2004 in public debt management are evaluated, it is seen that starting from 2004, notes in TL has begun to be preferred in line with the strategy. The share fixed interest rate notes and the share of variable interest rate notes in TL were approximately equal to around 42% in 2004 - 2008 (Yılmaz, 2015:189). The share of notes in TL (fixed and variable interest rate) within the stock could be recovered in 2007 to 90% which is the level of 1998, due to the decline in the share of foreign currency indexed notes after the decrease in 2001 and 2002. The share of notes in foreign currency was 14% in 2004 and 2005, and the exchange rate risk was somewhat eliminated by resetting the foreign currency indexed notes in the following years (Graph 3).

In order to minimize the interest risk in public debt management, borrowing in TL must be made predominantly with fixed interest rates. In the period when the global crisis erupted, the share of these notes remained

below 45%. Today, it can be concluded that interest rate in the domestic debt stock continues with TL denominated debt with 60% fixed interest rate and 40% variable interest rate. However, since 2011, the share of notes in foreign currency has been zero, efforts to minimize the exchange rate risk in public debt management is successful (Graph 3). As can be seen, the trend in the composition of domestic debt shows that the sensitivity of borrowing to exchange rate risk in recent years has declined compared to previous years, but sensitivity to interest rate risk continues because the expected decline in the share of variable interest rate notes could not be achieved.

Graph 4. Currencies in Domestic Debt Stock



Source: Data of Undersecretariat of Treasury, Domestic Debt Statistics and Treasury Statistical Yearbook was used.

After 2000, the share of borrowings in TL in the domestic debt in Turkey increased to 99% in 2010, an increase by 78% after the crisis of 2001, and since 2011 notes in TL dominated the domestic debt stock. Since the 2001 crisis, 15% of the domestic debt has been denominated in US dollars and 5% is in SDR, while SDR has not been used in debts since 2005. Share of Euro was used as the foreign currency for foreign currency indexed notes between 2003 and 2009, was also reset in 2010 (Graph 4).

4. Calculation of Domestic Original Sin in Turkey

Hausmann and Panizza (2003:963-964) examined the domestic debt stock by separating five components in order to determine the domestic original sin indications:

- Long-term fixed interest domestic debt stock (UVSF)
- Long-term short-term-indexed domestic debt stock (UVFE)

- Short-term fixed interest domestic debt stock (KVSF)
- Long-term inflation-indexed domestic debt stock (UVEE)
- Foreign currency-indexed domestic debt stock (DC)

The indicators of the domestic original sin (OS), which were created with the help of the data set that defines the structure of the debt instruments, were divided into three (Aklan, 2010:41 and Gürcihan & Yılmaz, 2007:6).

$$\text{OS 1 (H\&P)} = \frac{DC}{UVSF + KVSF + UVFE + UVEE}$$

$$\text{OS 2 (H\&P)} = \frac{DC + KVSF + UVFE}{DC + UVSF + KVSF + UVFE + UVEE}$$

$$\text{OS 3 (H\&P)} = \frac{DC + UVSF + KVSF + UVEE}{DC + UVSF + KVSF + UVFE + UVEE}$$

The first indicator shows the domestic debt stock in foreign currency; the second indicator reflects the domestic debt stock, which is sensitive to both foreign currency and short-term interest rates. The third indicator, which is more comprehensive, excludes long-term domestic debt stock indexed to short-term interest rates by showing inflation-indexed long-term domestic debt stock (Hausmann & Panizza, 2003:963-967 as cited in Gürcihan & Yılmaz, 2007:6).

Mehl and Reynaud's (2005) defined size of the domestic original sin as the inability of countries to take long term borrowing at fixed interest rates from domestic currencies (Mehl & Reynaud, 2005:12).

$$\text{OS (M\&R)} = 1 - \frac{\text{Long-Term Fixed Interest Domestic Debt Stock in Domestic Currency}}{\text{Total Domestic Debt Stock}}$$

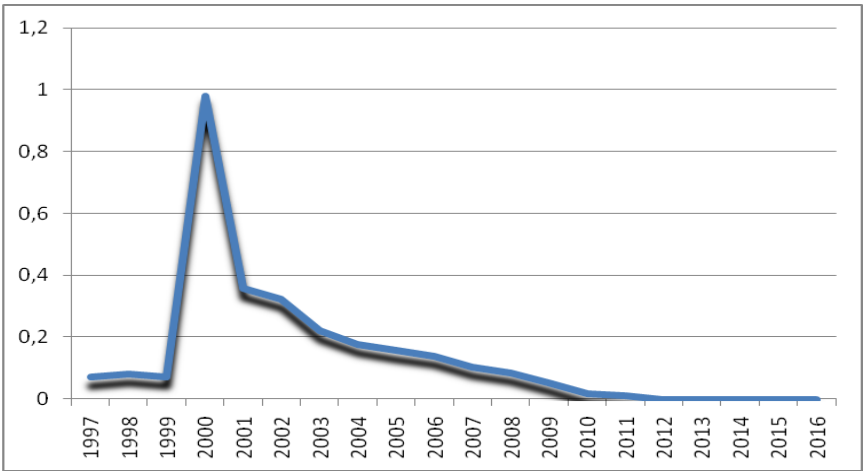
According to the indication of Mehl and Reynaud, when the domestic original sin size is "0", the country can take long-term borrowing in domestic currencies with fixed interest rate, while it cannot borrow when it

has "1" value. A value of 1 or close to 1 indicates that the composition of domestic debt stock is a source of financial fragility.

Gürcihan and Yılmaz (2007) have created indications of domestic original sin, taking into account foreign exchange and maturity risks. In the study, the following indicator was calculated with the statistics of the Undersecretariat of Treasury.

$$OS\ (G\&Y) = \frac{DC}{\text{Total Domestic Debt Stock}}$$

Graph 5. Domestic Original Sin in Turkey



Source: Data of Undersecretariat of Treasury, Domestic Debt Statistics and Treasury Statistical Yearbook was used.

As can be seen from Graph 5, the domestic original sin indicator in 1998 and 1999 is low. This situation can be explained by the fact that the share of notes in TL with fixed interest rate in total domestic debt stock is high. However, the indicator peaked in 2000. The share of those notes increased in total domestic debt stock due to correction of open foreign currency positions of the banks transferred to the SDIF with the crisis of November 2000 and February 2001 and to exchange of the short term notes in TL in the scope of the exchange bid with the foreign currency-indexed notes in TL. In addition to these developments, in the same period, a high amount of variable interest rate note was issued against duty losses of public banks. In addition, in the period following the crisis, due to the decrease in confidence in TL, borrowing was realized through foreign currency-indexed notes. At the end of 2001, the foreign exchange credits received by the Central Bank in the framework of the stand-by agreement with the IMF

were channeled to the Treasury, while the issuing of foreign currency-indexed domestic debt notes to the Central Bank by the Treasury was effective (Gürcihan and Yılmaz, 2007:7).

According to strategies based on strategic benchmark that have been in effect since 2004, as a result of the strategy of predominantly borrowing in TL, foreign currency-indexed notes have not been issued since January 2010 and since February 2012, all foreign currency-indexed notes were amortized and share of foreign currency notes has been set to zero. The share of debt in foreign currency was reduced with strategic benchmark in Turkey in a conscious way to solve the problem of original sin.

Conclusion

As the result of the domestic original sin which causes the countries not to take long-term loans at fixed interest rate, countries are forced to borrow in foreign currency at domestic and foreign markets. In addition, even if foreign currency borrowing is not performed, the original sin results in debts with short-term fixed interest rate or long term rate. This situation causes the maturity and / or exchange rate problems in the economy.

It has been observed that in most of the countries of the world, asset-liability mismatches have triggered and deepened crises. Having effective, deep and developed debt markets have important roles such as; reducing maturity-currency mismatches, stabilizing, enhancing creditworthiness, reducing the burden of debt service. Analyzes to determine the causes of the original sin have attempted to analyze the factors such as institutional structure, credibility, financial solvency, incomplete competition, exchange rate regime, political stability that will ensure the effectiveness of markets.

In this study, we have followed the traces of original sin on strategic benchmark in public debt management in Turkey between 1996-2016. In the calculation of domestic original sin, the indicator of Gürcihan & Yılmaz (2007) was used. This indicator takes into account the foreign exchange and maturity risks of the domestic debt stock. The findings are as follows:

- The domestic original sin indicator is very low in 1998 and 1999. This situation can be explained by the fact that the share of notes in TL-fixed interest rate in total domestic debt stock is high.
- The domestic original sin indicator has reached a record level due to the November 2000 and February 2001 crisis. The correction of foreign exchange open positions of the banks that went bankrupt in the crisis disrupted the debt structure. These banks were transferred to TMSF (Saving Deposit Insurance Fund of Turkey). Short-term TL-indexed securities held by these banks have been replaced with

foreign currency indexed, foreign currency and TL-variable interest securities.

- The domestic original sin indicator has reduced since 2001. Because, both the fiscal discipline program and the strategic benchmark were implemented to reduce the cost of public debt. The share of notes in foreign currency was 14% and the share of notes in foreign currency indexed was 0% in 2004 and 2005.
- Despite the 2008 global crisis, the domestic original sin indicator has remained the low level. Because when the crisis erupts, TL denominated borrowing is given instead of foreign currency.
- There is no domestic original sin indicator between 2011-2016 (it is zero). But domestic debt structure shows that the sensitivity to interest rate risk continues because the expected decline in the share of variable interest rate notes could not be achieved.

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