

## DOMESTIC ORIGINAL SIN OF SOVEREIGN DEBT IN TÜRKİYE

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### Abstract

The study analyzes the original sin of sovereign debt in Türkiye with a focus on domestic original sin. Eichengreen and Hausmann (1999) define original sin as the inability of a country to borrow in its own currency in the international market, while the issuance of foreign currency debt in the domestic market is defined as domestic original sin (Eichengreen, Hausmann, and Panizza, 2003). In this context, the structure of the debt portfolio was evaluated based on the indicators developed by Eichengreen, et al. (2003) and its simplified version widely used in the literature. Based on the analysis of the sovereign debt portfolio, it has been concluded that although the debt stock to GDP ratio is relatively low in Türkiye, the domestic original sin has reached historically high levels and currency mismatch is significant.

**Keyword:** Original Sin, Sovereign Debt, Exchange Rate Risk

**JEL Codes:** H63, H68, H81

## TÜRKİYE'DE DEVLET BORCUNUN YURTIÇİ İLK GÜNAHI

### Öz

Çalışma Türkiye'de kamu borcunun ilk günahını yurtiçi ilk günaha odaklanarak analiz etmektedir. Borç portföyünün yapısı, Eichengreen and Hausmann (1999) ilk günahı bir ülkenin uluslararası piyasada kendi parası cinsinden borçlanamaması olarak tanımlarken yurtiçi piyasada döviz cinsi borçlanma ise yurtiçi ilk günah olarak adlandırılmıştır (Eichengreen, Hausmann ve Panizza, 2003). Bu kapsamda borç portföyünün yapısı Eichengreen ve diğerleri (2003) tarafından geliştirilen göstergeler ve bunun literatürde yaygın olarak kullanılan basitleştirilmiş versiyonu temel alınarak değerlendirilmiştir. Kamu borç portföyünün analizine dayanarak, Türkiye'de merkezi yönetim borç stokunun GSYH'ye oranının görece düşük olmasına rağmen yurtiçi ilk günahın tarihsel yüksek seviyelere ulaştığı ve kur uyumsuzluğunun önemli bir seviyede olduğu sonucuna ulaşılmıştır.

**Anahtar Kelimeler:** İlk Günah, Devlet Borcu, Döviz Kuru Riski

**JEL Kodları:** H63, H68, H81

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## INTRODUCTION

Due to the 2001 crisis, the central government's domestic debt stock to GDP ratio increased from 21.9 percent to 50.9 percent. On the other hand, there was a deterioration in the foreign currency position of the debt portfolio, and the share of foreign currency domestic debt in the total domestic debt stock increased from 8 percent to 36 percent. The switch of TL-denominated government domestic bonds to foreign currency government bonds in order to extend the maturity of domestic debt and reduce the risk of default on debt played an important role in the increase of foreign currency debt. With the enactment of Law No. 4749 on the Regulation of Public Finance and Debt Management in 2002, the debt management within the Treasury was restructured and a new debt management approach based on risk analysis was introduced with the development of medium-term strategic benchmarks. As a result of public debt management being carried out based on cost and risk balance, foreign currency-denominated domestic borrowing was gradually terminated until 2010 in order to mitigate the exchange rate risk.

Sound government debt management suggests that portfolio benchmarks are indicators for the preferred composition of a debt portfolio (e.g., domestic versus external, fixed versus variable interest rate, redemption profile) and define the degree of risk exposure of the debt (Wheeler, 2003, IMF and World Bank, 2014, World Bank, 2017) to guide day to day management of government debt (IMF and World Bank, 2001). There are several portfolio models for the design of the public debt portfolio (Gale, 1990, OECD, 2005)) and the cost-at-risk approach is widely accepted by debt managers (Danmarks Nationalbank, 2005 and Bernaschi, M., Morea, R., Sarno, L., Tesseri, F., Verani, F., and Vergni, D., 2019). With the enactment of Law No. 4749 on the Regulation of Public Finance and Debt Management in 2002, the debt management within the Treasury was restructured and a new debt management approach, based on risk analysis, was introduced (Cangöz and Balıbek, 2012) with the development of medium-term strategic portfolio benchmarks (Balıbek and Memiş, 2012).

Due to the 2001 crisis, domestic debt stock to GDP ratio of Türkiye increased from 21.9 percent to 50.9 percent (Hazine Müsteşarlığı, 2003). On the other hand, the share of foreign currency domestic debt in the total domestic debt stock increased from 8 percent to 36 percent mostly because of the switch operation performed in 2001 by exchanging short-term TL-denominated government domestic bonds with longer-term foreign currency bonds to extend the maturity of domestic debt and reduce the risk of default on government debt (Balıbek, 2011).

It has been observed that there have been rapid improvements in the risk and cost indicators of the central government debt since 2002. In parallel, as confirmed by international organizations and credit rating companies not only the debt structure but also the debt management, in general, has significantly

strengthened in Türkiye (World Bank, 2012). Following the improvements in the public finances and debt management capacity in Türkiye, the share of foreign investors in the domestic debt bond stock increased from 7.1 percent in 2004 to 23.2 percent in 2012. During this period, as a part of the efforts to reduce the exchange rate risk, the share of foreign currency debt in total government debt was reduced to 27 percent in 2012 from 46 percent in 2003 (Ministry of Treasury and Finance (MOTF), n.d.).

The deterioration in the risk indicators which started in 2013 and accelerated after 2018 with the organizational changes in debt management, degraded risk management to the secondary level (Cangöz, 2019). One of the most striking changes in the borrowing strategy in this new period is the resumption of foreign currency domestic borrowing. This situation has led to incompatibility, which is called as the first or original sin in the literature based on the empirical findings by Eichengreen, and Hausmann (1999). Given that countries earn income in local currency but their debt liabilities in foreign currency the original sin can cause an increase in the risk of non-payment of debts and fragilities in finance and markets and also trigger crises caused by government debt (Eichengreen, Hausmann and Panizza, 2005, 2007, 2023).

This study explores the evolution of original sin in Türkiye based on the approach originally developed and Eichengreen and Hausmann (1999 and later Eichengreen, Hausmann, and Panizza, 2003). Given that Türkiye does not issue government debt in local currency in external markets, calculations of the original sin indicator developed by Eichengreen et al. (1999 and 2003) have never shown any differences over time. However, due to changing policies and priorities of the government, the Treasury can issue or stop issuing foreign currency-denominated debt in the domestic market which results in changes in the domestic original sin. Therefore, the study focuses on domestic original sin and the impacts of foreign currency domestic debt on the currency risk position of the sovereign debt portfolio.

## **SOVEREIGN BORROWING IN IN FOREIGN CURRENCY AND ORIGINAL SIN HYPOTHESIS**

Governments mainly borrow to cover the budget deficits that arise because budget revenues do not cover their expenses. Considering that the budget revenues generated by taxes and tax-like sources are in local currency, it is expected that governments borrow in local currency to finance their funding need. However, it is widely observed in emerging and developing countries that governments create foreign currency liabilities through external borrowing. This situation occurs mostly due to the lack of borrowing capacity in local currency because of insufficient domestic capital accumulation (Goldstein and Turner, 2004), and the need for resources to finance development and support the Central Bank for the accumulation of foreign exchange reserves (Engel and Park, 2022). Hale, Jones, and Spiegel (2020) point to the inflation history of an issuer as a limiting factor for borrowing in domestic currency. Furthermore, insufficient legal



and institutional framework of the domestic borrowing market, lack of macroeconomic stability, and lack of or inadequate risk hedging opportunities and instruments (Han, 2023) are the other factors limiting governments to borrow in local currency. Foreign currency borrowing may be caused by other reasons such as dependence on foreign technology and raw materials, high military expenditures, rapid population growth, and political instability.

Governments employ the resources raised by external borrowing mostly to finance domestic expenditures, including capital investments to reduce the imbalance between domestic investments and savings, increase employment and support growth, and balance the distribution of development among regions. On the other hand, it is also observed that in countries where the price stability is weak, economic and political risks are high, foreign currency is widely used in economic activities or preferred in savings, and risk hedging instruments are not developed, governments borrow domestically in foreign currency. Melecky (2007) provides a comprehensive review of the literature.

Regardless of all the reasons mentioned above governments can prefer foreign currency borrowing in the domestic market just because the borrowing costs in foreign currency are lower than in local currency (Velandia and Cabral, 2018).

Following the 1997 Asian crisis, a series of studies published by Eichengreen and Hausmann (1999) and later by Eichengreen, et al. (2003) pointed out that, except for a limited number of countries, the others were unable to borrow from abroad with their own currency. Moreover, many countries cannot find long-term borrowing opportunities in domestic markets with their national currencies, and the situation of borrowing in foreign currency is defined as the “original sin”.

Countries whose debts are in foreign currency, but income is in national currency may be exposed to financial and debt crises due to a mismatch between cash flows. In such countries, the increase in exchange rates can cause an increase in the level of indebtedness, create difficulties in the payment of debt obligations, and cause fragilities in the financial system (Eichengreen, et al., 2005 and 2005b).

Eichengreen et al. (2003) divided original sin into two: domestic and international original sin and developed various methods to measure it. Through the indices created in this context, original sin (OSIN) can be calculated not only in terms of debt securities but also in other debt instruments and derivatives.

$$OSIN = \max\left(1 - \frac{\text{securities in currency } i}{\text{securities issued by country } i}, 0\right) \quad (1)$$

In measuring original sin, rather than residency, currency of issued debt is taken into account. In this regard, debt securities issued by residents of other countries in the relevant currency are also included in the calculation since residents of the country subject to the calculation can use these securities to convert their foreign currency liabilities into local currency liabilities.

The first indicator of original sin (OSIN1) is calculated by subtracting the ratio of the country's stock of international securities issued in its own currency to the total stock of international securities issued by that country from 1 (Eichengreen et al., 2003).

$$OSIN1 = \left(1 - \frac{\text{securities issued by country } i \text{ in currency } i}{\text{securities issued by country } i}\right) \quad (2)$$

Particularly in developing and emerging economies, foreign currency-denominated or indexed debt instruments are used in the domestic market. Although this type of debt is not considered as foreign debt in the accounts, there is no significant difference when considered in terms of original sin, since it is carried out in foreign currency.

Eichengreen et al. (2003) developed the following formula for measuring domestic original sin (DSIN) where FC represents foreign currency debt, DSTF represents local currency fixed interest short term debt, DLTF represents local currency fixed interest long term debt, DLTII represents variable interest local currency debt, and DLTIP represents inflation indexed local currency debt.

$$DSIN = \frac{FC+DSTF+DLTII}{FC+DLTF+DSTF+DLTII+DLTIP} \quad (3)$$

Considering that the sum of FC, DSTF, DLTF, DLTII and DLTIP represents the outstanding domestic debt amount, it is possible to simplify the denominator in equation (3) as the total domestic debt amount as shown in equation (4). On the other hand, in measuring domestic original sin DSIN indicator takes the foreign currency debt stock as well as the fixed interest local currency debt stock into account which can be misleading in a case where governments simultaneously issue both foreign currency-denominated debt and fixed interest local currency debt.

Domestic original sin (DSIN1), as calculated by Gürçihan and Yılmaz (2007) and Cangöz (2020), involves only domestic debt liabilities denominated in foreign currency. Therefore, DSIN1 provides the opportunity to focus only on foreign currency liabilities and measure vulnerability to exchange rate movements.



$$DSIN1 = \frac{\text{foreign currency denominated and indexed domestic debt stock}}{\text{outstanding domestic debt}} \quad (4)$$

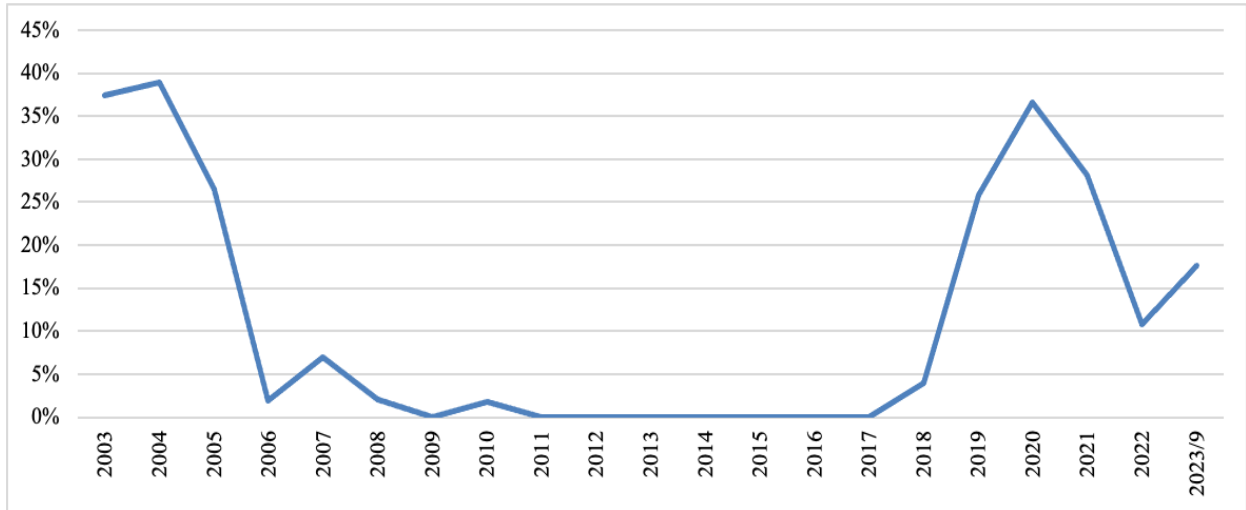
In recent years, foreign investors have shown interest in the domestic debt securities of emerging and developing countries, especially due to the decrease in the yield of developed country bonds. In parallel, countries are trying to develop their domestic bond markets and are increasingly meeting their financing needs through domestic borrowing. As a result, currency mismatches are decreasing or even disappearing. As a matter of fact, Eichengreen et al. (2003) stated that the problems caused by original sin will decrease with the development of the domestic bond market.

### **ORIGINAL SIN IN TÜRKİYE**

The Treasury, for the first time, issued foreign currency-denominated government securities with an amount of US\$ 2.2 billion at the end of 1996 (Cangöz, 2021). Then, until the domestic debt switch operation in 2001, the Treasury continued to borrow domestically through foreign currency-denominated and indexed bonds and bills in an irregular manner and employed different methods, including public offerings. In the domestic debt switch in June 2001, the Treasury issued foreign exchange-indexed government bonds for 6.7 billion US dollars (7.7 billion TL) with 3 and 5-year maturity in order to both extend the maturity of the domestic debt stock and contribute to banks closing their foreign currency open positions. (Balıbek, 2011).

Since 2002 when the Treasury established risk management, foreign currency borrowing has been made only during the redemption periods of previously issued bonds and in amounts lower than the redemption amount. The Treasury made domestic borrowing of 3.0 billion Euros and 34.0 billion USD between 2003 and 2010. The Treasury issued its last foreign currency bond with an auction on January 19, 2010, and borrowed 1.9 billion US dollars. This bond was paid on January 18, 2012, thus reducing the Treasury's foreign currency domestic debt stock to zero (Figure 1).

**Figure 1:** Share of foreign currency denominated domestic borrowing in total domestic borrowing



**Source:** Author's calculation based on the Ministry of Treasury and Finance data.

Eight years after the last foreign currency borrowing in 2010, the Treasury resumed borrowing in the domestic market with foreign currency. In this regard, on September 12, 2018, the Treasury started collecting demands from individual investors for a Euro-denominated domestic government bond with a maturity of 364 days and coupon payments every 6 months. At the end of the two-day book-building period, the Treasury issued bonds amounting to 837 million Euros with a coupon rate of 1.10% (MOTF, 2018).

The foreign currency domestic borrowing in September 2018 was not only a bond issue within the scope of the Treasury financing program but also a deviation from the Treasury's risk management approach performed since 2002. The Treasury continued to borrow in foreign currency in the domestic market and these government bonds and lease certificates have become a part of the Treasury financing program. In this regard, 26 percent of the total domestic borrowing in 2019 and 37 percent in 2020 was in US dollars and Euros (Figure 1).

Since September 2018, when foreign currency domestic debt started to be regularly re-issued, the Treasury has issued bonds and lease certificates amounting to 11.6 billion Euros and 24.8 billion USD (Table 1).

**Table 1:** Foreign currency domestic borrowing in Türkiye

Years	Euro denominated (million Euro)	US dollar denominated (million US dollar)
2003	929	8884
2004		8680
2005	1392	11494
2006	0.7	649
2007		1838
2008		564
2009		79
2010		1925
2018	688	99
2019	5154	88
2020	2905	13969
2021	2860	2500
2022		1578
2023/09		6569

**Source:** Author's calculation based on the Ministry of Treasury and Finance data.

Due to rapid increase in the share of foreign currency debt in the central government debt stock, the domestic debt portfolio has become exposed to exchange rate risk. Following the peak in the share of foreign currency-denominated bonds in the government's domestic financing program 2021, some restrictions were imposed in the new issues given that the Central Bank's USD/TRY exchange rate, which was at 6 TL in September 2018 increased to 13 TL in 2021 and 18 TL in 2022. Although the USD/TRY exchange rate exceeded 28 TL, 18 percent of domestic borrowing was made in foreign currency in the first nine months of 2023.

Historically, bonds issued in the international market have been denominated in foreign currency and there has been no borrowing in Turkish lira on behalf of the Turkish government. Accordingly, as in previous periods (Gürçihan and Yılmaz, 2007), the OSIN1 indicator was calculated as 1 in the years 2003-2023 (Table 2).

In 1996, when the Turkish government issued first foreign currency debt in the domestic market, both the risk management framework and medium-term debt management strategy were absent. Therefore, the



foreign currency debt was issued with the cost-related concerns. From 2003 to 2010 when risk mitigation was at the forefront, borrowing operations were performed based on the strategic benchmarks of "borrow mainly in Turkish Lira" and "borrow mainly through fixed-rate instruments" (MOTF, 2011). In parallel, the share of fixed-rate domestic debt stock has increased from 35 percent in 2003 to 48 percent in 2010 while the foreign currency domestic debt reduced to 1.6 percent in 2010 from 21.9 percent in 2003. As a result, DSIN1, the domestic original sin formula of Eichengreen et al. (2003) decreased from 57.2 percent to 49.8 percent indicating that the quantum of domestic foreign currency-denominated debt and fixed-term debt increased at a slower pace than that of overall domestic debt stock (Table 2).

**Table 2:** Original sin of sovereign debt in Türkiye

Years	OSIN1	DSIN	DSIN1
2003	1	57.2%	21.9%
2004	1	59.9%	17.6%
2005	1	56.9%	15.5%
2006	1	58.1%	13.8%
2007	1	56.1%	10.2%
2008	1	54.3%	8.4%
2009	1	49.1%	5.2%
2010	1	49.8%	1.6%
2011	1	52.2%	1.0%
2012	1	52.2%	0.0%
2013	1	52.6%	0.0%
2014	1	56.6%	0.0%
2015	1	58.3%	0.0%
2016	1	59.5%	0.0%
2017	1	65.1%	0.0%
2018	1	64.2%	1.0%
2019	1	64.7%	11.5%
2020	1	62.9%	25.1%
2021	1	62.3%	29.4%
2022	1	64.9%	26.9%
2023/09	1	67.3%	24.7%

**Source:** Author's calculation based on the Ministry of Treasury and Finance data.



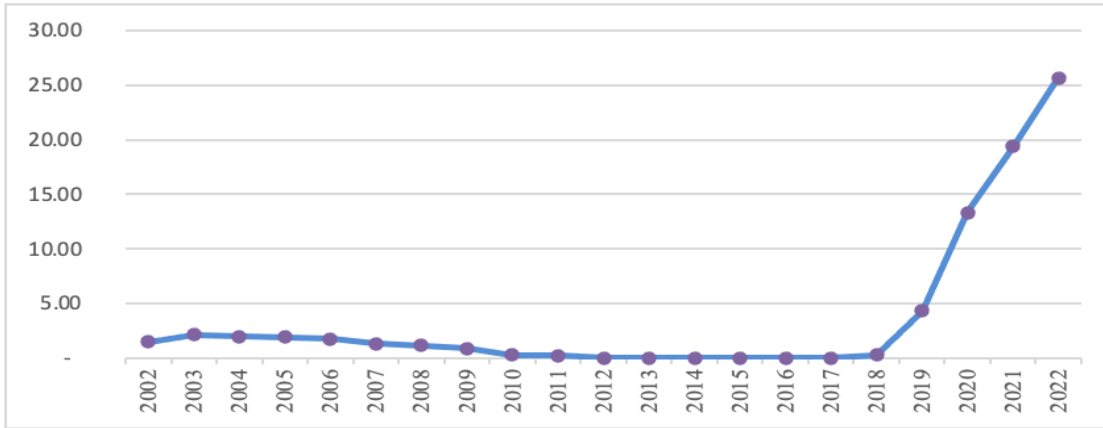
As shown in Table 2, since 2003, the domestic original sin (DSIN1) fell constantly and disappeared in January 2012 based on the objective of the Treasury to increase the resilience of the debt portfolio to exchange rate movements by eliminating the currency mismatch.

Between 2011-2017, the period when the improvements in the cost and risk positions of the sovereign debt were preserved and reinforced, the domestic borrowing strategy was designed and implemented under the strategic benchmark of “borrowing from domestic markets in TL” which implies that foreign currency bonds will not be issued. However, 2018 and beyond has been a period in which the effect of risk management gradually weakened, the opportunistic financing approach came to the fore, and debt management, like other fiscal policy tools, was used to reduce interest rates and support growth in the economy. Accordingly, due to the favorable financing conditions in international capital markets supported by the unusually low interest rates and low volatility (Organization for Economic Co-operation and Development (OECD), 2018) and the effect of increasing interest rates domestically, the Treasury was heavily indebted in foreign currency in local market and domestic original sin (both DSIN and DSIN1) reached its highest level historically.

The size of the domestic original sin and the Treasury's sensitivity to increases in the exchange rate move in the same direction. As a matter of fact, while a 5 percent increase in the exchange rate increased foreign currency and indexed domestic debt by approximately 1.5 billion TL in 2002, an increase of the same amount increased the debt stock by only 880 million TL in 2009, when the global crisis was experienced, as the Treasury reduced foreign currency debts within the scope of risk management. In parallel with the decrease in foreign currency-denominated domestic debts in the following years, the effect of the exchange rate increase on the domestic debt stock gradually decreased and fell to zero in 2012.

As the Treasury re-started to borrow in foreign currency in 2018, the sensitivity of the domestic debt stock to exchange rate movements increased. In this context, the impact of a 5 percent change in the exchange rate on the domestic debt stock in 2018 was calculated as 290 million TL. However, this amount increased to 4.3 billion TL in 2019 and 13.3 billion TL in 2020. Although the share of foreign currency domestic borrowing in total borrowing has been reduced in 2020, the effect of the 5 percent exchange rate increase, depending on its high share in the stock, reached 19.4 billion TL in 2021 and 25.7 billion TL in 2022 (Figure 2).

**Figure 2:** Effect of 5 percent exchange rate increase on foreign currency debt stock (billion TL)

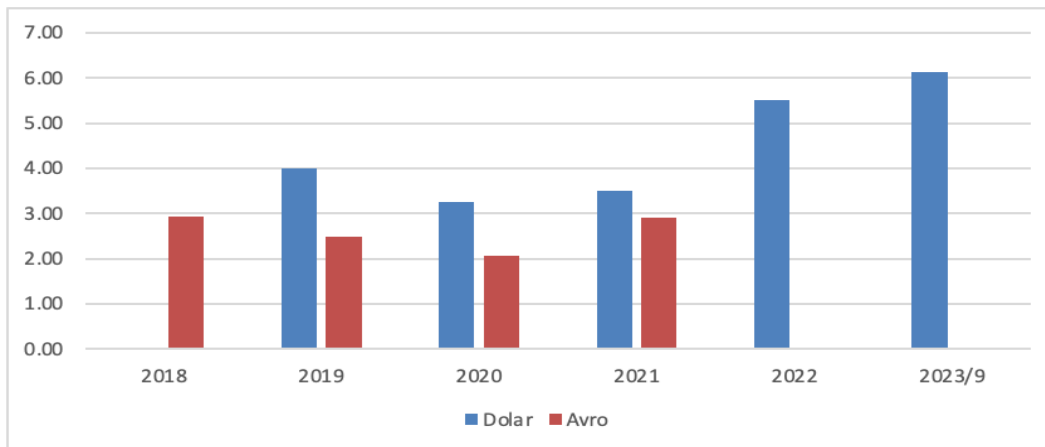


**Source:** Author's calculation based on the Ministry of Treasury and Finance data.

Public debt management's main objective is to borrow at the lowest possible cost in the medium and long term at a prudent level of risk level (IMF and World Bank, 2001 and 2014). On the other hand, Figure 2 shows that following the re-issuance of foreign currency bonds in the domestic market the risk position of the debt portfolio has deteriorated significantly, and the domestic debt stock has become exposed to the exchange rate movements.

On the other hand, although interest rates in international financial markets are unusually low or even negative, the Treasury pays an average annual interest of 3.5 – 6.0 percent on domestic borrowing in US dollars, while the annual interest rate on borrowings in Euro is in a range of 2 - 3 percent (Figure 3).

**Figure 3:** Interest rate on the domestic bonds in foreign currency (%)



**Source:** Author's calculation based on the Ministry of Treasury and Finance data.



The Treasury's domestic foreign currency bond issues are mainly with 1-2 years maturity. It is noteworthy that until 2022, when the US Federal Reserve and the European Central Bank started to increase the yield of 1–2-year US bonds were 0.12 – 0.14 percent, and the Euro bond yields of Germany and France were in between negative, 0.65 – 0.75 percent. In the same period, the bond yields of Italy, one of the most indebted countries in the Eurozone, were negative 0.35 – 0.55 percent. Furthermore, the yield on Greece's 6-month bonds, which is the country closest to Türkiye's credit score in the Eurozone, was negative 0.2 percent, while the yield on its 5-year bonds was 0.15 percent. Therefore, in the 2018 – 2022 period, the Treasury paid an additional 400-600 basis points while borrowing domestically in US dollars and around 250 – 350 basis points in Euro, due to the risk premium paid to the local investors. Furthermore, at the cost of assuming a significant exchange rate risk.

In the process that resulted in the re-emergence of the original sin, , relatively high funding costs compared to other countries and accumulation of risks indicate that the domestic foreign currency borrowing strategy was neither in line with the IMF and the World Bank's (2001 and 2014) debt management objectives to ensure the lowest possible cost with a reasonable level of risk, nor the strategic benchmarks set by the Treasury (MOTF 2022): "borrowing mainly in TL and reducing the domestic debt in foreign currency".

Although the government's borrowing through foreign currency-denominated bonds and lease certificates seems to provide a cost advantage relative to Turkish lira funding in the short term, it increases the fragility of the economy against possible exchange rate shocks due to mismatches between assets and liabilities, and makes it vulnerable to fiscal and financial crises, as is frequently emphasized in the literature and experienced in the pre-2012 period. (Cangöz, 2022).

## CONCLUSION

The Ottoman Empire's first domestic borrowing was in 1683, after the Second Siege of Vienna and the Treasury borrowed 327.5 million coins under the name "İmdadı Seferiye". After the establishment of the Republic of Türkiye, the first domestic borrowing was the "Ergani Loan" of 12 million Turkish liras. In 1985, the first government domestic debt securities auction was held. Until 1996 when the Treasury issued the first foreign currency domestic debt, domestic borrowing was in Turkish lira over the last three centuries (Cangöz, 2021). In 2010 within the scope of a strategy to minimize the exchange rate risk, the Treasury stopped the issuance of foreign currency denominated domestic bonds. However, the Treasury resumed domestic foreign currency borrowing in 2018, first with a public offering and then with the issuance of government securities and lease certificates to institutional investors.

Türkiye, like other countries, issued foreign currency debt in the domestic market mainly due to the lower financing costs in US dollars and Euros compared to the Turkish lira. However, it resulted in a currency mismatch given that debts are in foreign currency, but income is in national currency. Going back to Eichengreen and Housman (1999), there is a large literature on the currency mismatch of government debt evidencing that external factors such as exchange-rate shocks, and economic crises can create challenging conditions for foreign currency-denominated debt service, limit the government's access to debt market and ultimately can lead to a default. Overall, as stated by Eichengreen et al. (2023), the original sin can cause serious problems for domestic economic and financial systems.

Since Türkiye historically has not issued in national currency in international markets, the original sin indicator (OSIN) is measured as one in this study, indicating the above drawbacks. On the other hand, the domestic original sin indicator in Türkiye was first reduced down to zero from 2003 to 2012 with the suspension of foreign currency domestic debt issuance but increased to its historically highest level in 2023 following the re-emergence of foreign currency borrowing.

The original sin hypothesis suggests that the weakness of local currency debt markets is an important reason for countries to issue foreign currency domestic debt. However, in the case of Türkiye, despite reducing the domestic original sin indicator to zero demonstrates that the local currency debt market is deep and liquid enough, the government resumed foreign currency borrowing in the domestic market. The government's motivation was mostly low-interest rates in hard currency funding, as global economic and financial conditions are among the determinants of original sin (Hale et al., 2020 and Arslanalp, Drakopoulos, Goel, and Koepke, 2020).

Although borrowing was made in foreign currency due to cost concerns, the payment of risk premium reaching 600 basis points in hard currency domestic borrowings significantly increased the cost of borrowing. In addition, risk indicators have deteriorated due to currency mismatch and vulnerability to exchange rate shock and other external shocks has reached historical high levels. As a matter of fact, while the original sin has been increasing debt repayments grew due to the increased dollar exchange rate from 6 TL in 2018, to 29 TL in 2023.

In response, taking the advantage of having a well-functioning government bond market phasing out foreign currency domestic borrowing on a schedule can reduce the sensitivity of the debt portfolio to the exchange rate movements, and increase the liquidity of TL instruments in financial markets.



## AUTHOR STATEMENT / YAZAR BEYANI

Researcher declared that all contributions to the article were his own. Researcher have not declared any conflict of interest.

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