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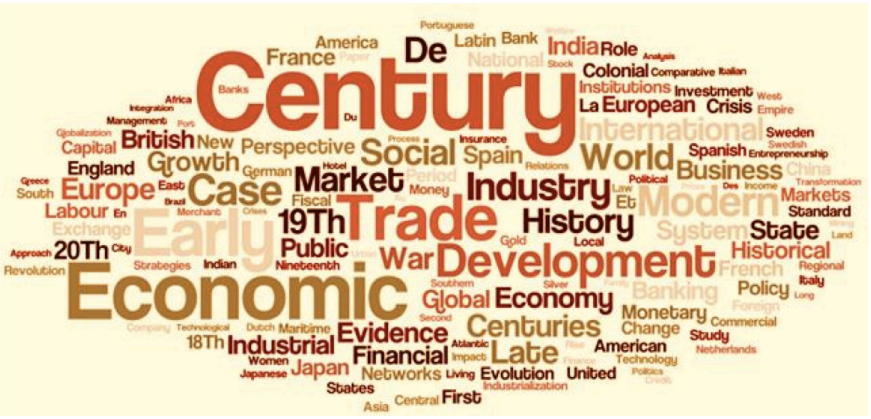


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# *Early Modern Financial Development in the Iberian Peninsula*[♦]


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**Abstract**

Iberian colonies produced the vast majority of world precious metals in the Early Modern period, which increased liquidity in the Iberian Peninsula. In this paper we focus on the relationship between liquidity and financial development – including other relevant variables such as instruments and institutions – to examine the efficiency of the financial systems in Castile and Portugal.



**Keywords**: financial system; public debt; private credit market; precious metals; interest rates.
**JEL**: N13, N23, G15, E44



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## Introduction

Monetary systems of Early Modern Europe were commodity-money systems composed mainly of gold and silver (Esteves and Nogues-Marco 2021). The Iberian colonial expansion granted Europe access to precious metals, with acceptance as a means of payment, at a worldwide scale. The first major increase in Europe's stock of gold in the Early Modern period occurred between 1480 and 1560 through trade with the West African coast while, from the mid-16$^{th}$ until the late 18$^{th}$ century, mines in South America became suppliers of an unprecedented quantity of gold and silver. In total, Iberian colonies produced nearly 85% of the world's silver, and more than 70% of the world's gold in the Early Modern period (TePaske 2010, Costa *et al.* 2013).

The production of precious metals in their colonies impacted the financial systems of both Castile and Portugal. In this paper we focus on the relationship between liquidity and financial development – including other relevant variables such as instruments and institutions – to examine the efficiency of the financial systems in Iberia. For this purpose, we first analyse the volume and the institutional structure of the remittances of precious metals. Second, we consider the relationship between remittances and their liquidity effects as well as the structures and instruments of financial markets. We start by looking into public credit to consider debt management and the cost of public debt service. Then we turn to the private credit market, and focus on financial instruments and trends in interest rates to estimate the cost of private capital. Finally, we summarize our perspective on the main similarities and differences in the development of the financial systems of Castile and Portugal.

## 1. Remittances

Portugal's conquest of Ceuta in 1415 is a symbolic start to European expansion at a time when Europe faced an increasing scarcity of gold. This military success, however, did not give Europe access to North African routes to Timbuktu and the gold mines in the more southerly Mali Empire. Only after the conquest of Tangier in 1436 did the Portuguese presence in the region provide intelligence on trans-Saharan trade routes to the sources of gold. From 1440 onwards, Portuguese maritime expeditions along the West African coast were designed to bypass the trans-Saharan ancestral routes in order to tap into Timbuktu's gold resources.

Investments in the exploration of the West African coast began to show profits in the 1480s. In the Portuguese *El Mina* fortress, commodities purchased in the military strongholds of North Africa (woolen textiles) or imported from Europe (copper and iron goods) were exchanged for gold dust. Once arrived in Lisbon, this gold was coined in the Lisbon Mint House, the main institution empowered to strike coins in Portugal since the foundation of the kingdom[1]. In addition to earlier African Coast gold, the Iberian Empires obtained precious metals from the American colonies. Mexico, Bolivia, and Peru mainly produced silver, while gold was extracted in Brazil and Colombia and, to a lesser extent, in Mexico, Bolivia, Chile, and Peru (Te Paske 2010, Costa *et al.* 2013).

The America discovery created the mirage of precious metals mining wealth as the measure of economic success (Bernal 1999, Stein and Stein 2000). The Castilian legislation forbade the free trade of gold and silver, so their legal exchange was regulated through the institution that administered colonial trade: The *Casa de Contratación* (House of Trade). Merchants had to register the private remittances as soon as their vessels tied up in Seville (or Cadiz from the early 18$^{th}$ century) and pay the import tax for both ingots and coins. Hamilton (1934), who used the official registers of the *Casa de Contratación*, firstly collected information about bullion inflows from the Americas to Spain.

Table 1.1 shows legal remittances of precious metals – both gold and silver – from American colonies to Spain for the period 1503-1660. Unfortunately, official registers have not been preserved after 1660. Similarly, Vogt (1979) collected quantities traded from the African West Coast to Portugal for the period 1487-1561. It is self-explanatory that the minimal contribution of the African posts in supplying gold shortly after the expedition of Cortez, allowed the *Carrera de Indias* (Spanish trade with American colonies) to dominate in this regard.

[1] The Mint House of Oporto closed in 1590. It resumed its functions between 1688 and 1721.

*Table 1.1 – Decennial remittances to Spain and Portugal, 1487-1660*

| | SPAIN | | | | | PORTUGAL | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Silver (tons) | Gold (tons) | Royal remittances (%) | Private remittances (%) | Total (thousand pieces of eight) | Royal remittances (tons) | Private remittances (tons) | Total Gold (tons) | Total Gold (thousand pieces of eight) |
| 1487-1490 | | | | | | 0.7 | 0.1 | 0.8 | 320.3 |
| 1491-1500 | | | | | | 3.43 | 0.69 | 4.12 | 1,622.9 |
| 1501-1510 | | 5.0 | 26.2 | 73.8 | 1,964.3 | 1.60 | 0.32 | 1.92 | 755.6 |
| 1511-1520 | | 9.2 | 26.2 | 73.8 | 3,621.1 | 3.44 | 0.69 | 4.13 | 1,626.5 |
| 1521-1530 | 0.1 | 4.9 | 26.2 | 73.8 | 1,940.0 | 2.05 | 0.41 | 2.47 | 971.3 |
| 1531-1540 | 86.2 | 14.5 | 31.9 | 68.1 | 9,245.1 | 1.86 | 0.37 | 2.23 | 880.2 |
| 1541-1550 | 177.6 | 25.0 | 22.5 | 77.5 | 17,309.6 | 1.20 | 0.24 | 1.44 | 566.9 |
| 1551-1560 | 303.1 | 42.6 | 29.1 | 70.9 | 29,555.3 | 1.20 | 0.24 | 1.43 | 565.2 |
| 1561-1570 | 942.9 | 11.5 | 22.1 | 77.9 | 41,937.3 | 0.14 | 0.03 | 0.17 | 68.5 |
| 1571-1580 | 1,118.6 | 9.4 | 34.1 | 65.9 | 48,240.2 | | | | |
| 1581-1590 | 2,103.0 | 12.1 | 29.3 | 70.7 | 88,026.7 | | | | |
| 1591-1600 | 2,707.6 | 19.5 | 30.2 | 69.8 | 115,169.2 | | | | |
| 1601-1610 | 2,213.6 | 11.8 | 27.0 | 73.0 | 92,330.3 | | | | |
| 1611-1620 | 2,192.3 | 8.9 | 21.2 | 78.8 | 90,398.0 | | | | |
| 1621-1630 | 2,145.3 | 3.9 | 18.3 | 81.7 | 85,971.8 | | | | |
| 1631-1640 | 1,396.8 | 1.2 | 28.2 | 71.8 | 55,299.5 | | | | |
| 1641-1650 | 1,056.4 | 1.5 | 24.7 | 75.3 | 42,244.3 | | | | |
| 1651-1660 | 443.3 | 0.5 | 26.7 | 73.3 | 17,627.6 | | | | |

Sources: for Spain, Hamilton (1934), Table 1 and Table 3. Hamilton (1934) provided data in *peso de mina* of 450 *maravedies.* We convert data to pieces of eight of exchange of 272 *maravedies* of old silver and 512 *maravedies* of *vellon* (Kelly 1835, p. 318). For Portugal, Vogt (1979: Appendix). To convert Portuguese gold from the physical quantities (tons) to a value comparable with Spanish precious metals, we convert tons to pieces of eight of exchange according to the following equivalences: the par of exchange between Portugal and Castile was one crusado of exchange (old crusado of 400 *réis*) equivalent to one ducat of exchange (375 *maravedies*) (Denzel 1994: 141). Therefore, one piece of eight of exchange is equivalent to 272/375 crusados. The gross weight of the old crusado of 400 *réis* was equivalent to 3.5 grams, according to "museu casa da moeda" (www.museucasadamoeda.pt). Fineness is 22 carats (Kelly 1835: 210-211). We assume that the fineness of gold measured in tons is the same as gold coins.

Royal rights over trade and taxation respectively, determined the state's share of the amounts that flowed to the Iberian kingdoms. In the case of Portugal, the gold trade on the African Coast was a royal monopoly. The Crown bore the costs of the military and administrative staff in *El Mina* fortress, and claimed all the profits. Monopoly rights may have been routinely handed out to private investors, but the overwhelming portion of the remittances from the African Coast was the property of the Portuguese Crown (83.3 % of the total). The Crown's prominent role was a unique feature of this earlier stage of colonial expansion and was exclusive to the African gold trade, while bullion exports from the Americas to Spain had been mainly a private business since the inception of the *Carrera de Indias*. The extraction tax for precious metals was 20% (*quinto Real* – Royal fifth) in the 16th and 17th centuries, but was reduced to 10% (*diezmo Real* – Royal tenth) in the 18th century (in 1716 for Mexico and in 1735 for Peru) (Haring 1939: 198). For the period 1503-1660 the percentages were, on average, 26.5% for royal remittances, and 73.5% for private remittances (Table 1.1).

Morineau (1985) questioned the quantities counted by Hamilton (1934) with the divergence in results originating from the different sources consulted. Hamilton used the official registers in the *Casa de Contratación*, whereas Morineau focused his research on Dutch mercantile gazettes, consular reports, and merchants' correspondence. Later, Morineau's quantities for the 18th century were re-counted by García-Baquero (1996), using the data obtained from the vessels' registers. Counting accurate quantities is complex in the case of Spain, due to the high level of smuggling.

Table 1.2. reports South American remittances in the 18th century for Spain and Portugal. In the case of Spain, bullion regulations were intended to prevent bullion outflows. On the one hand, private remittances paid a high import tax (more than 7% for gold and 10% for silver in the 18th century) (Nogues-Marco 2010: 81-82), while on the other hand, the export of precious metals from Spain was forbidden without a licence. Fraud emerged as an inevitable consequence of these bullion regulations because smuggling enabled exporters to ignore the export ban and importers to save the high import tax. In the 18th century, smuggling accounted for around 20% of the total precious metals imported from America (Table 1.2). The smuggling of gold and silver, commodities that were mainly the concern of private business, was led by a cartel of foreign merchants with diplomatic immunity and the necessary international connections to illegally extract and distribute the precious metals outside Spain (Nogues-Marco 2010). Royal remittances were reduced during the 18th century from 16% in the 1710s to only 7.5% in the 1770s. They represented, on average, 12% of the total precious metals legally

imported to Spain (in comparison to the average share of 26.5% for the period 1503-1660), but the share is smaller if we consider the illegal trade of precious metals (Tables 1.1. and 1.2). Remittances experienced a significant reduction in absolute value during the 17th century (Tables 1.1. and 1.2). This was not due to a contraction in mining production in the Americas, but mainly to a dramatic decrease in the amount of precious metals sent to Castile (Yun-Casalilla: 369).

From the early 1700s up to 1780, when Mexico again provided large quantities of gold, Brazil became the main supplier to the world market (Table 1.2). By then, private business controlled an overwhelming share of Brazilian gold remittances, signalling that the Portuguese institutional framework for mining activities was similar to the Spanish one. The royal share of Brazilian gold stemmed from the collection of the one-fifth tax on the gold extracted, whose yield the Crown expected to be shipped to Portugal. In addition, the state levied a 1% *ad valorem* fee on private agents' shipped gold in order to pay for protection costs, which left representative data on the institutional structure of inflows from 1716 to 1808. Costa *et al.* (2013) calculated the quantities based on the official registers generated to control the import tax (1%). Although this documental source is based on official registers and thereby prone to distortion due to evasion, twenty-five annual observations between 1700 and 1760 point to amounts higher than those reported by the Dutch Gazettes used by Morineau (1985). For this reason, Morineau underestimated the inflows in the 1740s and 1760s, while conversely overestimating them in the 1730s (Table 1.2). In any event, data from Portuguese archives providing a complete series for the whole 18th century, - which Morineau's series do not - ensure that gold remittances had a higher significance in the mid-18th century than previously estimated. Additionally, this source permits us to conclude that private remittances hovered around 76% of the total (Table 1.2). In 18th-century Portugal, as in Spain, precious metals were commodities that were mainly the concern of private business.

*Table 1.2 – Decennial remittances to Spain and Portugal, 1700-1800*

| | SPAIN | | | | | | PORTUGAL | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Royal remittances (%) | Private remittances to Spain (%) | Total Spain (thousand pieces of eight) | Total Europe (including Spain) (thousand pieces of eight) | Silver Europe (including Spain) (thousand pieces of eight) | Gold Europe (including Spain) (thousand pieces of eight ) | Royal remittances (%) | Private remittances (%) | Gold (tons) | Gold (thousand pieces of eight ) |
| 1701-1710 | | | 78,500 | 121,800 | 104,000 | 17,800 | | | | |
| 1711-1720 | 16.3 | 83.7 | 65,200 | 102,000 | 86,900 | 15,100 | | | | |
| 1721-1730 | 19.2 | 82.0 | 128,800 | 162,800 | 138,900 | 23,900 | 23.4 | 76.9 | 84.40 | 33,247 |
| 1731-1740 | 14.9 | 85.1 | 90,600 | 122,100 | 105,500 | 16,600 | 22.6 | 77.7 | 91.53 | 36,054 |
| 1741-1750 | 8.7 | 91.3 | 118,600 | 160,200 | 136,600 | 23,600 | 14.5 | 85.5 | 110.30 | 43,448 |
| 1751-1760 | 12.5 | 87.5 | 163,800 | 170,800 | 145,300 | 25,500 | 24.1 | 75.9 | 90.48 | 35,643 |
| 1761-1770 | 5.5 | 94.5 | 154,000 | 159,400 | 135,900 | 23,500 | 29.6 | 70.4 | 80.05 | 31,532 |
| 1771-1780 | 7.5 | 92.5 | 135,300 | 143,300 | 122,400 | 20,900 | 17.0 | 83.0 | 50.91 | 20,054 |
| 1781-1790 | | | 260,000 | 297,800 | 254,000 | 43,800 | 36.9 | 63.1 | 18.11 | 7,134 |
| 1791-1800 | | | 186,400 | 206,400 | 175,700 | 30,700 | 23.6 | 76.3 | 15.94 | 6,279 |

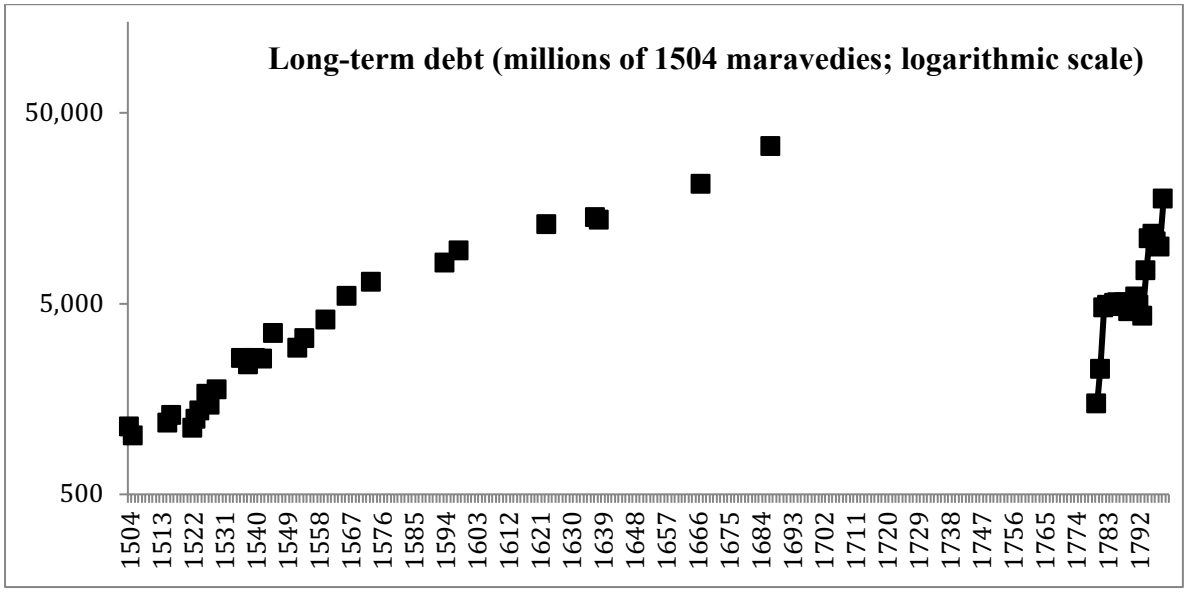
Sources: for Spain: Quantities from Morineau (1985), Tables 70, 72 and 73. Morineau (1985) provided data in *piastres*, which is the name of the piece of eight of exchange in the French language, whose value is 272 *maravedies* of old silver and 512 *maravedies* of *vellon* (Kelly 1835, p. 318). The proportion of royal remittances versus private remittances comes from García-Baquero (1985, Appendix). Data for Portugal is taken from Costa *et al.* (2013). For the conversion of Portuguese gold from the physical quantities (tons) to a monetary unit (pieces of eight of exchange), see Table 1.1.

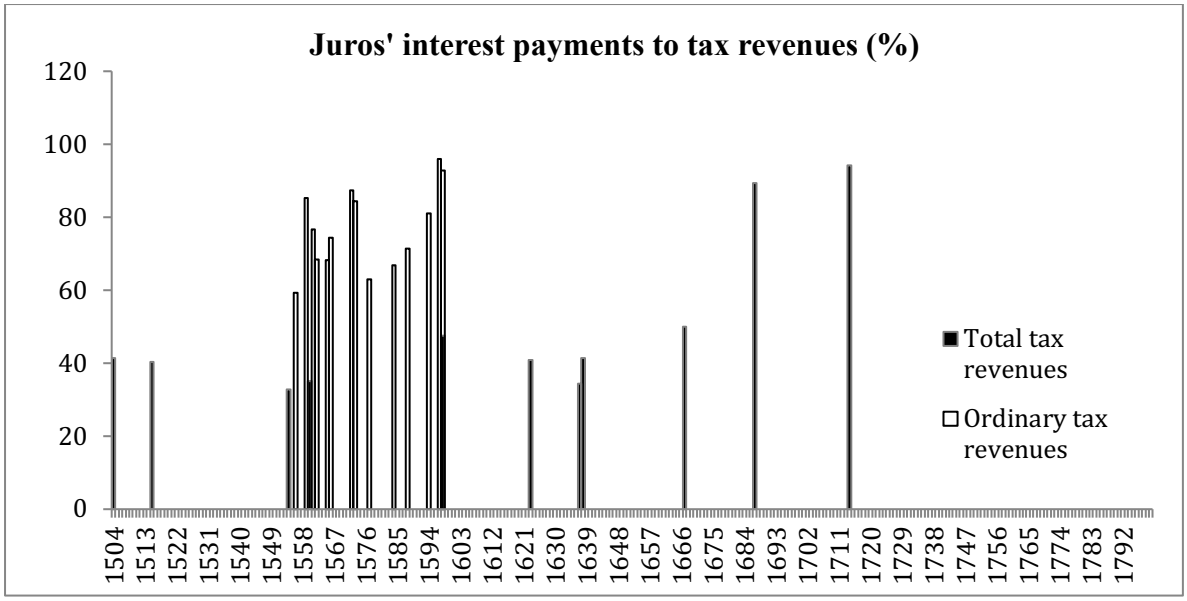
Despite the high level of smuggling, Spain and Portugal were first-order receivers of precious metals. Either private or royal property, the overwhelming volume of remittances arrived already minted in coins of different denominations, thus causing silver and gold to be key inputs for producing commodity money in colonial mint houses. In the next sections, we look further into the relationship between remittances, liquidity cycles, market structure, and financial development in the Iberian Peninsula, and will consider both public and private credit markets.

## 2. Public credit. Debt management and creditworthiness

War expenditure was sustained in Early Modern Europe by the issuing of sovereign debt. In Spain, scholars have stressed the consequences of the Habsburgs' imperial policy on debt increase in the 16th and 17th centuries due to the intense war activity in Europe and overseas. By contrast, the Spanish Bourbon dynasty almost balanced their fiscal budgets and hardly issued any sovereign debt during the 18th century. It was not until the end of the 18th century that debt again increased significantly as a consequence of wars against England and France (Comín 2016; see Figure 2.1).

*Figure 2.1. Long-term debt and interest payment to tax revenues, 1504-1800*






Sources: Marcos (2006), Ruiz Martín (1968, 1990), Dominguez Ortiz (1960), Toboso Sánchez (1987), Artola (1982) and Andrés Ucendo (1999), compiled in Comín (2016, Graphs 7 and 9); and Álvarez-Nogal and Chamley (2014, Figure 2). Long-term debt for years 1714 and 1687 might be overestimated (see Álvarez-Nogal 2009, Table 1.2, footnote b). Ordinary tax revenues were mainly direct taxes and sales taxes. Total tax revenues include public remittances of precious metals. Blanks mean missing data.

Sovereign debt was funded by two debt instruments: *asientos* and *juros*. *Asientos* were short-term debt contracts between the Crown and private bankers, mainly German, Portuguese, and Italian, with the Genoese being the main group that contracted *asientos* in the 16th and 17th centuries (Carande 1965, Ruiz Martin 1968). *Juros* were long-term bonds issued against a specific revenue stream and subscribed mainly by the Spanish (Toboso Sánchez 1987, Álvarez-Nogal 2009). Both instruments were related, as contracts with Genoese bankers introduced the practice of collateralizing *asientos* with *juros* in the 16th century, which the Genoese then sold in the secondary market (Ruiz Martin 1968).

Spain defaulted on sovereign debt thirteen times in the Early Modern period under the following: Philip II in 1557, 1560, 1575 and 1596, Philip III in 1607, Philip IV in 1627, 1647, 1652, 1660 and 1662, Charles II in 1688 and Philip V in 1727 and 1739 (see Artola 1982 for a general overview).

In a sovereign debt system without third-party enforcement, Conklin (1998) argues that Philip II's Genoese lenders linked short-term debt (*asientos*) to international specie deliveries from Spain to the Low Countries in order to create a penalty as an enforcement mechanism. According to Drelichman and Voth (2011, 2014), the early defaults of Philip II appear not to have damaged the long-term lending relationship between the bankers and the Crown, because

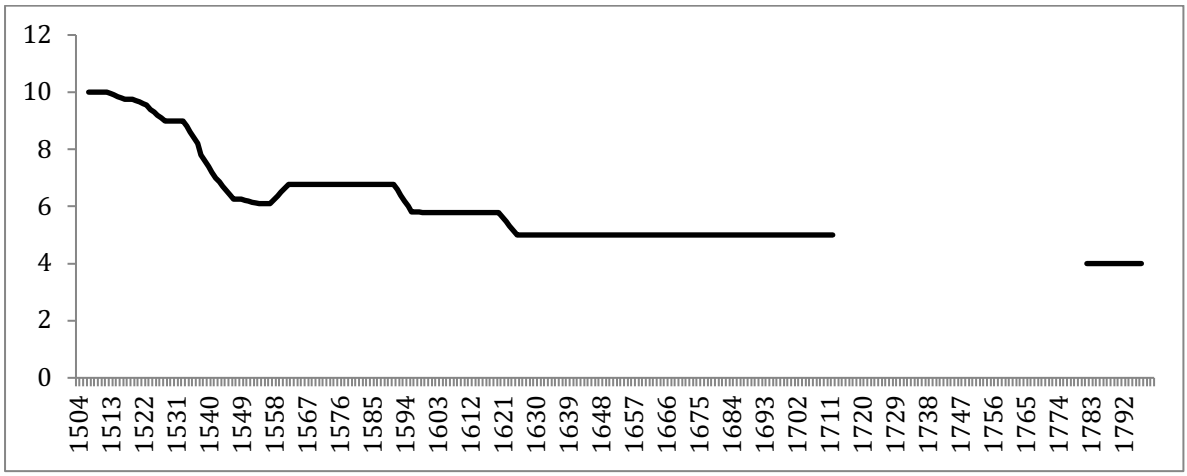
the losses sustained during defaults were more than compensated for by profits garnered in tranquil periods. The reconstruction of the fiscal accounts of Castile during the period 1556-1596 shows that Philip II's debts were sustainable. Silver remittances were used to fund short-term borrowing (*asientos*), but silver revenue was volatile because of the fluctuation in yields of American mines, as well as the challenges of shipping across the Atlantic. Sizable dips in remittances in the years preceding the default coincided with three of the four defaults of Philip's reign (Drelichman and Voth 2010, 2014).

According to Drelichman and Voth (2010), defaults ultimately helped strengthen the fiscal powers of the State because Philip II used them as a negotiating device to raise relevant ordinary taxes, i.e. mainly direct taxes (*servicios*) and sales taxes (*alcabalas*) that had to be authorized by the representative assembly of Castilian municipalities (*Cortes*). The rise in taxes permitted the issuing of new *juros*, which were collateralized by specific taxes. As a consequence, in each default, short-term loans (*asientos*) were converted into long-term debt (*juros*) to repay *asientos* through a *juros* swap. Álvarez-Nogal and Chamley (2014) argue that, indeed, the suspension of payments on the short-term debt (*asientos*) of Philip II were not caused by short-term liquidity crises, but happened when the interest payments of the long-term bonds (*juros*) had reached the ceiling of ordinary taxes (see Figure 2.1). The suspension of payments on *asientos* initiated the negotiations between the Crown and municipalities represented in the *Cortes* to raise the tax ceiling that then permitted the new issuing of *juros* to refinance *asientos*.

Interest rates on long-term debt decreased in the long run, mainly during the 16$^{th}$ century (see Figure 2.2). Indeed, in the 16$^{th}$ century and at least until the mid-17$^{th}$ century, Castile's interest rate on the nominal value of public debt was lower than that of the English or Dutch debt, and at the same level as debt issued by the reputable city-republics of Italy (Yun-Casalilla: 169, Yun and Ramos: 20-25). According to Álvarez-Nogal (2009), there was a growing demand for long-term bonds until the 1620s, which permitted the government to reduce the interest rate on the nominal value from 10% in the early 16$^{th}$ century to 5% in 1625. The most relevant type of *juros -juros al quitar-* had an embedded option that gave the Crown the legal right to redeem the *juro* at any time. This feature was used to reduce *de facto* the interest rate on the nominal value by increasing the principal (an operation known as "*crecimiento*") (Álvarez-Nogal 2009, Álvarez-Nogal and Chamley 2014, 2018). But *juros* depreciated from the 1560s (although mainly after the 1620s) as a consequence of excessive issuing, default, and restructuring, as well as subsequent seizures and delays in the payment of interest. Forced loans to the Crown

such as the expropriation of private remittances in exchange for *juros* were used to fund public expenditures (Toboso Sanchez 1987). The demand for *juros* plunged in the 17th century and they were redeemed from 1685 onwards, and more intensely from 1748 (Toboso Sánchez 1987).

*Figure 2.2. Interest rates on the nominal value of long-term bonds (juros) (%)*




Source: Marcos (2006), Ruiz Martín (1968, 1990), Dominguez Ortiz (1960), Toboso Sánchez (1987), and Artola (1982), compiled in Comín (2016, Graph 10). Blanks mean missing data.

Interest rates on the nominal value however, are not the proper measure of the cost of capital because debt depreciated, i.e. it was traded at a lower value than the nominal value of the bond. Therefore, some evidence on yields is needed. Here two problems arise. On the one hand, the calculation of the yield is complicated because *juros* were financial derivatives that contained embedded options, meaning that the Crown could redeem the bond at any time. Despite the existence of embedded options and other clauses, financial scholars accept the use of the ratio between the interest rate and the market value of the bond as a reasonable approximation of the yields for bonds issued at a very long maturity (Mauro, Sussman, Yafeh 2006). On the other hand, the sovereign debt of Early Modern Spain traded in decentralized markets. As a consequence, information about market values is elusive and we have only anecdotal evidence. For instance, Toboso Sánchez (1987: 147-148) has documented that the market value of *juros* depreciated by one-third after the default of 1575; the yield was 10.17% for an interest rate of 6.78% on the nominal value (Figure 2.2). The market value of *juros* depreciated again during the crisis of 1590s and in that instance, the average depreciation was 18.7% (in 1594), so the yield was around 7.6% for an interest rate of 6.2% on the nominal value (Figure 2.2). Similarly,

Álvarez Vázquez (1987: 265-267) finds that the yield of *juros* bought by the Cathedral of Zamora at the end of the 17th century was between 8% and 9% for the years 1663-1676 and 9% on average for the years 1675-1704, while the interest rate at the time was 5% on the nominal value (Figure 2.2). Unfortunately, empirical evidence on yields is scarce, and more research is needed to extract robust conclusions.

In the case of the Aragon Crown, the limited evidence on effective interest rates shows a higher cost of public capital than in Castile. Short-term fiscal deficits in Catalonia were funded with *asientos* and with credit operations that used bills of exchange. In the case of *asientos*, local private agents charged high interest rates of a minimum of 12% per year (or more in some cases) in 1581 (Hernandez 2003: 201-204). Bill-of-exchange credit operations used change-and-rechange operations between Barcelona and Lyon to fund *de facto* local credit in Barcelona. These operations permitted the circumvention of usury laws and charged high interest rates that fluctuated between 10% per year (in 1582) and 21% per year (in 1585) (Hernandez 1997: 71; 2003: 201-204) (see Nogues-Marco 2018: 10 on the concept of change-and-rechange).

At the end of the 18th century, Spanish debt was traded in the Amsterdam stock market. Tomz (2007: 42-45) reports a yield of 6.1% on Spanish sovereign debt in July 1771 and 5.4% in October 1783, while the interest rate for Castilian holders of domestic *juros* was 4% on the nominal value (Figure 2.2). Additionally, we observe that the yield was higher for Spain than for any other European country in the Amsterdam stock market at the end of the 18th century[2]. However, the yield of the Spanish debt traded in Amsterdam decreased from 5.4% to 4% between 1783 and 1793. Through a policy of regular payments of the interest rates and punctual amortization, the Spanish government signaled its creditworthiness in the Amsterdam capital market, which decreased yields (Tomz 2007: 46).

The information on prices of *juros* in the Portuguese secondary market is still too limited to have a consistent picture of the evolution of yields. So far, the indications about transactions between private investors point to sales at par. In its various iterations, public debt in Portugal was driven by the Crown's participation in colonial endeavours, but colonial rents also facilitated the management of the public debt service, especially in the 18th century. Interest

[2] July 1771 and October 1783, respectively: Austria 3.8% and 3.5%; France 4% and 3.9%; Saxony 4% and 4.9%; Danzig 4.9% and 5%; Denmark 4% (both dates); Leipzig 4.2% and 3.5%; Brunswick Luneburg 5.1% and 4.9%; Mecklenburg 5% and 4%; Sweden 5% and 4.1%; and Russia 5.1% and 4.2%.

rates on the nominal value decreased from 1500 (the first issuance of *juros*) and 1797 when, for the first time, the Portuguese state issued legal tender bonds.

In the 16th century, the provisioning of shipyards and strongholds overseas, as well as expenditures ensuing from the Crown's pepper monopoly, caused the state to borrow on several occasions. Most of the provisioning of public facilities such as shipyards and military arsenals required imports of raw materials for fitting out the fleets, while running the Cape Route required the importation of cargo (mainly copper) to be sold in Asia. In the early years of the 16th century, the market for bills of exchange supported the system of payments. Delays in clearing payments of the bills of exchange drawn on the Antwerp and Medina del Campo fairs eventually increased the outstanding short-term debt. From yearly rates of 12 to 16%, the interests spiked to 25% in the 1540s (Azevedo 1973: 121-122). The stock of the short-term debt doubled every four years and was valued at 778.4 million *réis* in 1557, the service of which represented 67% of the domestic fiscal receipts, net of colonial revenues (Gomes 1883)[3].

War expenditure drove the state's borrowing needs in the 17th and 18th centuries. Short-term loans were mainly a consequence of regular supplies to the army and navy on credit, which was aggravated in periods of war: from 1640 to 1668, during the Portuguese Restoration War (Smith 1975), in the first decade of the 1700s due to Portugal's involvement in the war of the Spanish Succession (1701-1714), and under the Napoleonic threat in the 1790s (Costa 1992). The military provisioning was contracted out to merchant-financiers. Known as *assentos* (as they were also called in Castile), these contracts involved significant amounts, especially during the War of Restoration, when short-term debt may have surpassed the stock of long-term debt (Smith 1975).

Albeit with varying degrees of success, short-term loans were rolled over through the issuance of *padrões de juro*. Like the *juro al quitar* in Spain, a *padrão de juro* was a perpetuity, whose annual payments were assigned to a specific fiscal income. It was fully transferable and negotiable in secondary markets, as a whole or in fractions. In the first decades of the 1500s, these bonds were sold with varying interest rates on the nominal value, ranging between 5% and 8% (see Table 2.1).

To lower the long-term service burden, the state resorted to interest rate reductions. The first of these operations dates from 1563, when *juros* paying 8% were re-sold at 6.25%, thereby

[3] Calculations based on Costa *et al*. (2016: 97). Estimations for the Crown's revenues in 1557 exclude returns provided by the empire.

reducing the public debt service by one-third (Azevedo 1973, 129-131). Notwithstanding it being a common practice in polities that maintained their creditworthiness, the redemption and reselling at a lower interest rate could negatively affect the rating of the state's debt. Indeed, public creditworthiness suffered critical setbacks in the early decades of the 1600s, when the kingdom of Portugal was still part of the Habsburg monarchy. The market for *padrões de juro* during the Dynastic Union was dragged down by general distrust of the sovereign's credit.

*Table 2.1. Evolution of interest rates on the nominal value (perpetuities and life rents), in percentage*

| | Perpetuities | Life annuities (two lives) | Life annuities (one life) |
|---|---|---|---|
| 1501-1550 | 5 – 6,25 | | 10 |
| 1551-1600 | 5 – 8 | | 12.5 |
| 1601-1650 | 5 – 6.25 | 8.33 – 12.5 | 10 – 14.28 |
| 1651-1700 | 4.5 – 5 | 12.25 | 10 |
| 1701-1750 | 5 – 6.25 | | |
| 1751-1775 | 4.5 | | |
| 1776-1800 | 3.5 | | |

Source: Gomes (1883).

Evidence of default is found both in delays in payments of interest and in their partial suspension, as happened in the case of the *padrões de juro* collateralized by fiscal streams collected in the House of India (Lisbon), the state-run institution that organized trade, and shipping to Asia in 1605. Creditors faced either a reduction of 1.75% in interest through the Castilian practice called "*crecimiento*" of the principal (Álvarez-Nogal and Chamley 2014, 2018), or the king's repudiation of the contract (Gomes 1883: 70). Shortly afterwards, no investors were willing to buy *juros*. The Crown then tapped into the financial resources of the towns. Loans to the king were backed up by *padrões de juro* sold by the municipalities and collateralized by local taxes (Hespanha 1993: 224-225).

With the restoration of the Portuguese monarchy, public debt slowly regained credibility. The new king sold new *juros* at 5% and took the opportunity to redeem old *juros* in exchange for property confiscated from Portuguese noblemen who had sided with the Habsburg's Phillip IV (Gomes 1883: 207-211). However, regular budget deficits increased the size of the debt, while creditors faced constraints following monetary measures taken by the government. Debasements affected the real value of the outstanding debt and eventually became a common type of default until 1688 (Costa 2013: 179).

By the late 17th century, new rules regarding the payment of *juros* strengthened the confidence of royal investors, while some marginal operations, including an attempt to introduce tontines, enabled the state to sell some new *juros* at 4.5% (Gomes 1883: 46, 72-73, 79). The vast majority (71%) of *padrões de juro* however, paid 5% interest, with the rest still paying 6,25%, therefore allowing us to estimate the debt stock at some 3,809 million reis in 1680 (Costa and Miranda 2021). This long-term debt grew further to fund Portugal's participation in the War of the Spanish Succession (1701-1714), when 1,102 million *réis* were raised through the issuance of *juros* at 5% and 6,25%, partly to consolidate short-term loans supplied by English merchants who had ensured military provisioning (see Table 2.2).

*Table 2.2. – Consolidated debt in Portugal*

| | Crown's revenues (million *réis*) | interest payments (million *réis*) | % debt service on total revenues |
|---|---|---|---|
| 1607 | 1,302 | 206 | 15.8 |
| 1625 | 1,173 | 179 | 15.3 |
| 1641(*) | 1,612 | 179 | 11.1 |
| 1680 | 1,671 | 227 | 13.6 |
| 1766 | 6,138 | 508 | 8.3 |
| 1802 | 9,511 | 1,113 | 11.7 |
| 1812 | 8,121 | 2,285 | 28.1 |

Sources: Falcão (1859); Hespanha (1994); Biblioteca da Ajuda, cód. 51-VI-19; Dias (1985); Thomaz (1988); Espinha da Silveira (1987).
(*) Without revenues from the empire.

Seeking to reduce the interest rates of the redeemable long-term debt, in 1743, the government set in motion a large-scale operation. Old bonds paying 6.25% were redeemed and re-sold at 5%, while the operation further included the redemption of *juros* paying less in subsequent years. Through this operation, approximately 5,000 million *réis* of public debt were transferred to a single ecclesiastical institution, the patriarchal church (*Sé Patriarcal*) (Azevedo 1973: 374-375). A few years later, new *padrões* were issued by King José I at 4%, and by Queen Maria I at 3.5%, in both cases at a rate lower than the legal ceiling – 5% – set on private interest rates in 1757 (Gomes 1883: 78-79; 321; Costa, Rocha and Brito 2018a).

In the 18th century, alongside the gold shipped on royal account (1% on gold shipped and the surplus of taxes levied in Brazil minus expenditure), other colonial resources contributed to backing up the payment of interest in long-term public debt. Taking a sample of *padrões de juro* from the chancery of King John V (1706-1750), totalling 1519 registers, 17% refer to tax

streams provided by the colonial empire including the 1% tax on gold shipment, the monopoly on Brazilian dyewood trade, the transfer of tax surpluses from Brazil through the jurisdiction of the Overseas Council and the tobacco monopoly. A similar pattern can be found in the *padrões de juro* belonging to the *Misericórdia*, a lay brotherhood that was the wealthiest welfare institution in Portugal and its empire (Abreu 2016; Sá 1997). The branch of the brotherhood in Lisbon, a major lender to the state in the 1700s, held 195.5 million *réis* in *juros*, whose payment was mostly assigned to taxes managed by the Overseas Council (50 million *réis*), and to the tobacco monopoly and Lisbon's custom house, the country's major hub for colonial trade (72.4 million *réis*). Finally, in the late 18th century, when new perpetuities were sold at 3.5% interest on the nominal value, the *Misericórdia* bought *padrões de juro*. Allegedly, this investment was less uncertain compared to real estate, which required expenditure for refurbishing and additional costs for monitoring and finding new tenants (Rodrigues 2019a).

The initial debt-service-reduction operations in the 1600s may have shaken the public's trust in lending to the king. However, against a backdrop of growing revenues from the colonial empire, creditors' caution was overturned in the 18th century (Gomes 1883: 46). The empire allowed a gradual trade-off with creditors, whereby higher interest rates were foregone in favour of secure payments at a lower interest rate.

Hence, over the span of three centuries, the rate of interest on the nominal value fell from 8% to 3.5%. The low risk of default in the 18th century must have contributed to this nominal convergence with the interest rates of British consols. Several signs of the credibility of *padrões de juro* can be found. First, a great number of these securities became either entailed or held by religious institutions. Second, a secondary market of this instrument emerged nonetheless, encouraged by the full property rights assigned to investors. The *Misericórdia* invested idle money from its coffers by buying *padrões de juro* at par from other creditors. Moreover, *padrões de juro* were used as collateral for private credit obligations (Costa, Rocha, Brito, 2018b). We may argue that such a low risk instrument captured the savings of a range of wealthy people and institutions unaware of options with higher returns. For that reason, when the state endorsed the foundation of joint stock companies, it was stated that the possession of shares was as safe as the ownership of *padrões de juro* (Marcos 1997: 184, 189). It is certain that public credit in Portugal propelled the development of the capital market (Godinho 1978).

## 3. Private credit. The efficiency of capital markets

The credit market in the Iberian Peninsula evolved despite the vagaries of an embryonic banking system. At the outset of the Early Modern period, banks played a significant role in private markets in Spain, contrary to what happened in Portugal, which had not any form of financial intermediation based on banks.

In the Late Middle Ages, the "primitive bank of deposit" developed in Spain as well as in other European commercial centres such as Genoa, Venice, Florence, and Bruges (De Roover 1948, 1968; Mueller 1977; Usher 1934, 1943). Within the Crown of Aragon, these banks originated in Barcelona, Valencia, Girona, Zaragoza, and Calatayud between the 13th and the 15th centuries (Sanchez Sarto 1934; Ruiz Martín 1970). In Castile, these institutions, which had already existed in the 15th century, expanded during the 16th century in the main commercial centres, such as Burgos, Valladolid, Toledo, Segovia, Granada, Madrid, and Seville, because of the inflow of American precious metals (Carande 1965, book 1; Ruiz Martín 1970; Tinoco Rubiales 1988). Castilian primitive banks of deposit needed municipal authorization for establishment as well as bankers' personal assets and third-party guarantees as proof of solvency. Despite being known as "public banks" they nevertheless were private banks whose accounting books were public documents that served as the legal registers of banking activity (Tinoco Rubiales 1979: 112). The primitive bank of deposit executed the functions of exchange, deposit, *giro* and credit.

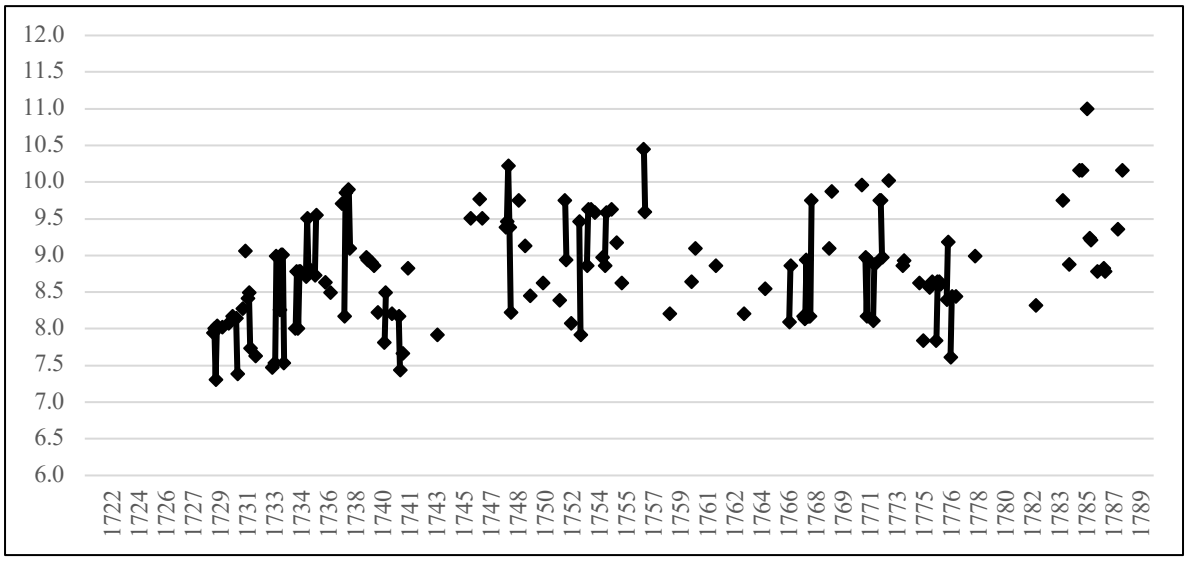
Banking activity developed without a proper regulatory framework; as a consequence, bankruptcies were recurrent. On the one hand, bank runs were frequent and permeated the banking system in the absence of modern protective mechanisms such as deposit insurance or the intervention of a lender of last resort. On the other hand, banks invested in high risk and non-diversified activities, such as large-scale investment in sovereign debt as well as commercial and financial activities related to trade with American colonies (Basas 1964; Ruiz Martin 1970; Tinoco Rubiales 1988). From the end of the 16th century to the early 17th century, the primitive bank of deposit became extinct, as bankruptcies had caused their closure (Lorenzo Sanz 1979: 155-168). From then on, private merchant-bankers funded credit from their own resources, but no institution centralized *giro* activities until the creation of the *Real Giro* in 1752 and, later, the *Banco de San Carlos* in 1782 (Tedde de Lorca 1988).

In 16th century Castile, the primitive bank of deposit paid an interest rate of 7-7.5% for deposits and usury laws established a maximum legal interest rate for credit of 10% (Ruiz Martin 1970:

24; Martín-Aceña *et al.* 2013: 145). This legal ceiling was the same as England had at that time, although the effective interest rate there was *de facto* between 15 and 20% (Flandreau *et al.* 2009a: 171-172). In the case of Castile, Álvarez Nogal (2017: 541) has documented an example of a prominent primitive bank of deposit that formally charged an interest rate of 6.67-7.14% on loans, which implies a net interest spread – the difference between borrowing and lending rates – near zero or even negative, inconsistent with the prevalent high-risk of banking activity. As is evident from studies of other European centres such as Italy and France that were also regulated by maximum legal interest rates for credit, it is probable that simple devices camouflaged the effective interest rate, where, for example, a banker might record a debt larger than the sum actually paid to the borrower (Nogues-Marco 2018). As a result of usury regulations on interest rates, effective interest rates are usually unknown, except for those exceptional cases where private records registered the "true" loan. Therefore, the interest rates registered in official records are only a biased measure of the cost of capital.

To address the efficiency of private capital markets, we should focus on bills of exchange. They constitute the benchmark to calculate private interest rates because this instrument circumvented usury regulations, as the interest rate was hidden in the exchange rate at maturity (Flandreau *et al.* 2009a). The bill-of-exchange was an instrument developed to transfer money and provide credit between distant centres in pre-industrial Europe. Braudel (1992, vol. II: 248) described the boundaries of commercial finance as a "Bell Jar" within Early Modern capitalism that connected European commercial centres. These connections can be tracked through bill-of-exchange quotations registered in the financial and commercial press as well as merchants" correspondence (Flandreau *et al.* 2009b). In addition, they facilitate the calculation of the interest rates embedded in exchange rates. For Cadiz in the 18$^{th}$ century, Nogues-Marco (2011: 65-92) estimated that the hidden interest rates of bills of exchange averaged 8.79% for the period 1729-1788 (see Figure 3.1). This estimate is consistent with the very scarce direct evidence available in primary sources. For instance, according to the archive of the *Banco de San Carlos*, the discount rate in Cadiz in 1786 was 8% (Tedde de Lorca 1988: 131). Cadiz's interest rate was above that of the main financial markets in the 18$^{th}$ century (1720-1789): Amsterdam averaged an interest rate of 3.92%, London 3.8% and Paris 4.59% (Flandreau *et al.* 2009a, 2009b). According to the available empirical evidence, the efficiency of private capital markets in Spain was far below that of the core European financial centres.

*Figure 3.1. Commercial Annual Interest rates (%), Cadiz, 1729-1789*




Source: Nogues-Marco (2011: 65-92). Outliers have been removed.

Outside the bill-of-exchange credit system that connected national and international merchant-bankers, notarized mortgage-backed loans provided domestic credit in the different kingdoms of Spain. Long-term loans were supported by the credit instrument *censos consignativos*. The debtor of the *censo* obliged himself to pay a rent from certain specified properties in return for a sum of money. Sometimes he promised to pay in perpetuity, sometimes for the life of the creditor, and, most commonly, until he redeemed the *censo* by repaying at any time in one lump sum, the capital value of the loan (*censo consignativo al quitar*) (Álvarez Vázquez: 221-223; Fiestas Loza 1993: 582). In the early 18th century, the rate was limited by the usury laws to a maximum of 3% in Castile and 5% in Aragon (Milhaud 2018: 87). However, this interest rate is not comparable with that of plain financial instruments because *censos consignativos* were financial derivatives; the opportunity for the debtor to redeem the *censo* at any time implies the existence of embedded options, which does not facilitate a simple yield calculation (see Nogues-Marco and Vam Malle-Sabouret 2007). Similarly, short-term credit known as obligation contracts – whose maturity was usually less than a year – were registered by notaries and usually collateralized by mortgages. Peña-Mir (2016) has documented obligation contracts at the end of the 18th century (1779-1792) as being oriented to fund agrarian activities in Malaga (Andalusia). Notarized registers do not document the payment of interests for these loans, although indirect evidence declares its existence. There were similar occurrences in France, where notaries hid the interest rates of obligations because usury laws had established a ban on

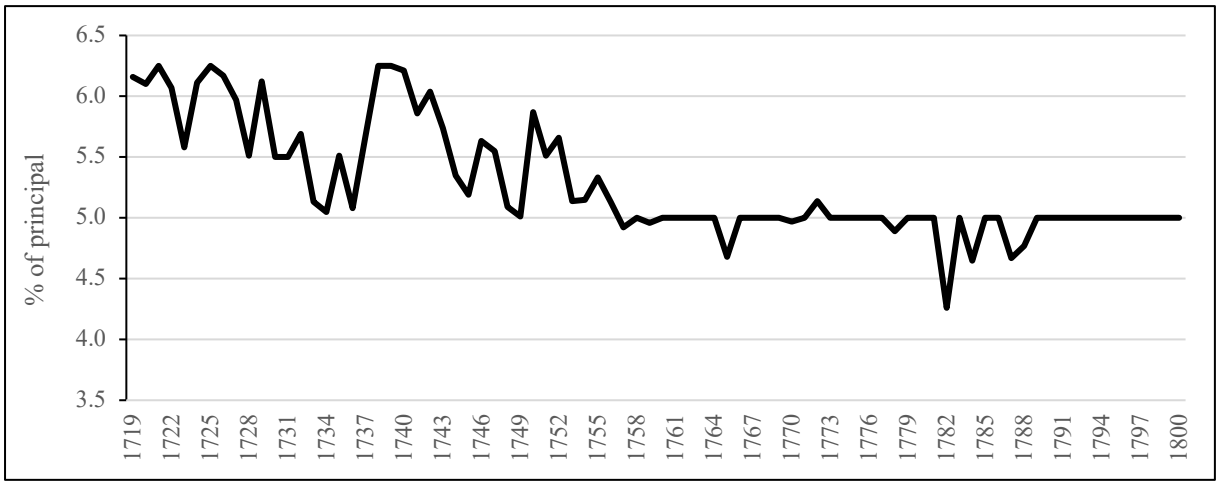
interest for such financial instruments until the time of the French Revolution (Hoffman, Postel-Vinay and Rosenthal 2000: 14-16).

In Portugal, a variety of institutions supplied credit to private debtors, but there is no evidence of primitive banks of deposit. Our survey on private credit thus relies on bilateral contracts, notarized or recorded in probate inventories, as well as on the credit activities of the *Misericórdia.* Given its charitable purpose, this lay brotherhood was often bequeathed substantial legacies (Abreu 2016; Sá 1997). The frequent use of these funds to provide public and private credit makes it an illustrative case with which to examine the credit business.

Both probate inventories and notarial deeds show the common use of short-term obligations (IOUs) with different maturities (usually one year) albeit often including a prorogation clause. Explicit indication of the rate of interest was common and occurred alongside the request for assets or sources of income as collateral. The former seems to be a unique feature of the Portuguese notarized credit with this information being available in any deed. A recent study was able to extract a market interest rate from bilateral contracts, after expunging the idiosyncratic variables (Costa, Rocha and Brito 2018a). It shows a downward trend, with interest rates falling from 6.25% to 5% between 1715 and 1755, the year of the Lisbon earthquake (see Figure 3.2). The wording of thousands of obligations drawn up by notaries in Lisbon attests to the widespread use of Brazilian gold as cash that was channelled to credit activities. Indeed, injections of cash could have had an endowment effect (the prospect of a future increase in income) on raising interest rates, but they were also a source of liquidity supply in a credit market, which reduced interest rates. The liquidity effect, rather than the substantial improvements in enforcement mechanisms through recourse to law courts, explains the downward trend in interest rates until 1757, as will be further illustrated by the *Misericórdia*'s problems in dealing with private credit through legal actions.

As far as the use of notarized credit is concerned, yet another feature differentiates the case study of Lisbon. While the participation of the nobility and professionals is a remarkable feature of notarized credit in Paris, as Hoffman *et al*. (2000) noted, in Lisbon it reports a significant participation by craftsmen and, although less so, by labourers. This suggests that the level of wealth needed for this trade was not critically high. Indeed, a great deal of retail distribution relied on selling on credit, which also explains the common use of informal notes of IOU listed in probate inventories.

*Figure 3.2. Annual Market Interest rates (%), Lisbon, 1719-1800*




Source: Costa, Rocha and Brito (2018a: 1161-1164).

The *Misericórdia*, on the other hand, displays distinct credit relationships with regard to the social rank of debtors. The Lisbon branch of the brotherhood met the demands of the aristocracy, thus corresponding with studies that have already shown the high level of indebtedness of that social group. In the 16th and 17th centuries, aristocrats tended to find credit by issuing interest-bearing instruments called *censos consignativos* (as in Spain) with interest assigned to rents from real estate or seigneurial rights, a practice that became less frequent in the 18th century, thus resulting in that class depending increasingly on credit from the *Misericórdia*. Some in-depth studies illuminate the problems caused by these biased credit relationships connecting them to the composition of the *Misericórdia*'s board of administrators. Members of the aristocracy occupied seats on the board and, because seats were rotational, this gave rise to coalitions between lenders and borrowers, thus threatening the institution's financial soundness. Moreover, a recent study has shown that judicial rulings determining the seizure of assets given as collateral were not effectively enforced, either because of the courts' lack of coercive means or because judges were reluctant to contend with a social group that enhanced the institution's prestige. The state intervened and interdicted the *Misericórdia* from lending to private borrowers in 1775, which reinforced the institution's option of applying its liquidity in public credit (Rodrigues 2019b).

In 1755, the Lisbon earthquake created conditions for a new legal framework. The event was followed by the imposition of a 5% legal cap on interest rates, which put an end to a legal loophole. The legislation, however, explicitly excluded the bottomry loans used in the Cape of Good Hope route. The ruler's aim may have been to steer funds to Asian endeavours, rather

than avoiding a steep rise of interest rates after a demand shock by virtue of the earthquake, which eventually also affected public credit (Costa, Rocha and Brito 2018a; Costa, Rocha and Brito 2018b).

The destruction of wealth caused by the earthquake had a variety of impacts on lenders and borrowers. For survivors, it offered the chance of returns, but also potentially involved high risk given the destruction of collateral, which possibly made 5% too low an interest rate and caused credit rationing. The state's intervention could have made supply more stringent and slowed down the pace of reconstruction. But it is also likely that the legal cap was close to the equilibrium interest rate; demand might have fallen due to the reduced wealth of borrowers. However, the high level of physical capital depletion was not matched by a loss in money wealth in the form of gold coins, mostly for two reasons. On the one hand, a great deal of the private remittances that had arrived in the most recent Brazilian fleets was still stored in the Mint House where 1% tax on remittances was collected. On the other hand, remittances did not stop in subsequent years. Hence, the liquidity effect attributed to gold influxes may have mitigated the impact of the legal cap after the earthquake. At the same time, in 1757 and 1763, the state sponsored the foundation of chartered companies to deal with the north and north-eastern regions of Brazil for twenty years. The stock market experienced outstanding periods of vitality in 1766-1767 and again in 1775 (Costa *et al.* 2019). Thus, in addition to the consequences of the earthquake, new investment options may have changed the landscape of the credit market in Portugal.

In the early 1800s, the state sponsored the foundation of a public bank as a joint-stock enterprise, although it faced resistance from the greatest merchant-financiers of the kingdom (Cardoso 1997). By that time, Portugal's financial system was still based on institutions that had already existed in the 16th century. The church, as well as brotherhoods, such as *Misericórdias* or Hospitals, resorted to credit obligations more often than to *census consignativos*, making the preference for the former the most significant change we observed in the long run in urban markets (Abreu 1990: 57-58; Rocha 1996:190, Rodrigues 2013, 2019.) This change in Portugal seems to have occurred earlier than in Castile or Aragon, where in the mid-18$^{th}$ century, 73% of the rent of the ecclesiastical institutions was still generated by *censos* (Milhaud 2018). If financial development can be assessed through interest rates' trends, institutional resilience does not seem to have had the same effect in Portugal as in other Iberian kingdoms. In any event, much research is needed for a full understanding of the financial hindrances Portugal experienced when the king fled to Brazil in 1808.

## Conclusions

This paper has focused on Early Modern financial development in the Iberian Peninsula. The access to precious metals -gold, and silver- was the major common denominator of the Iberian colonial experience. Remittances were not only a royal affair, but, primarily, a private business. For this reason, we have considered the relationship between liquidity and financial development by examining both public and private credit markets. Our approach has the advantage of considering a more complete scope of financial development contrary to traditional historiography that has generally considered *either* the public *or* the private credit market. At the same time, this approach has also highlighted the limits of our knowledge on the topic and we hope this piece of research will encourage further study.

When analysing the development of public credit in the long run, the first common feature between Castile and Portugal is that both kingdoms used the same financial instruments. Public debt resorted to short-term credit in the form of contracts with syndicates of merchant-financiers (*asientos* for Castile and *assentos* for Portugal), and to long-term credit based largely on perpetuities (*juros al quitar* and *padrões de juro*, respectively). In the case of Castile, the debt service of *juros* was paid over a tax stream on ordinary taxes (excluding public remittances of precious metals), but *asientos* might be paid with public remittances of precious metals or converted to *juros*. It is difficult to disentangle the role precious metals played in the development of public credit from the Crown's bargaining power -*vis-à-vis* that of municipalities- to raise the tax ceiling that permitted the increased issuance of *juros.* In the case of Portugal, the debt service of *juros* was paid over a tax stream that also included gold remittances, although we do not know what proportion of *juros* were collateralized with remittances in comparison with other taxes, such as the tobacco monopoly or import customs. In any case, we know that the ratio of debt-to-tax revenues was much lower in Portugal than in the Habsburgs' Castile.

Another common feature of public credit development in Portugal and Castile is that both kingdoms experienced a long-run reduction of the interest rates on the nominal value of long-term bonds. Liquidity might have played a role. Other variables, such as the long-run reduction of transaction costs and investors' perception of default risk or financial repression, probably also contributed to market performance. More research is needed on the explanatory variables of the capital market development. The strategy we have followed to approach market

development has been to consider the yields instead of the interest rates on the nominal value, as yields take into account market value.

Unfortunately, however, yields are elusive because public debt was traded in decentralized markets. In the case of Portugal, no information about yields is available so far. There is not enough data on market prices of *juros* in the Portuguese secondary market to have a consistent picture of the evolution of yields. The indications about transactions between private investors point to sales at par. In the case of Castile, anecdotal evidence shows a yield of 7.4%-9% at the end of the 16th century and 8%-9% at the end of the 17th century, which indicates a sustained investors' perception of country risk consistent with defaults, despite the reduction of interest rates on the nominal value. Similarly, yields on European sovereign debt traded in Amsterdam in 1771 and 1783 show that Spain had the highest yield; the country risk counteracted the potentially positive effects of liquidity in reducing the cost of public debt, although yields on Spanish debt decreased at the end of the 18th century as a result of an improvement in creditworthiness.

When analysing the development of private credit in the long run, there is a higher degree of complexity. Usury laws established a maximum legal interest rate for credit that makes the measurement of private credit efficiency difficult. Simple devices camouflaged the effective interest rates in Spain, which means that the interest rates registered in official records are only a biased measure of the cost of capital. The case of Portugal is different because usury laws did not affect the private credit market until 1757 when notarized credit explicitly indicated an interest rate. Short-term obligations show a downward trend in the 18th century that is interpreted as the result of the increase in liquidity caused by the remittances of Brazilian gold. The earthquake, however, may have changed the credit market landscape in Portugal, and the 5% ceiling possibly caused credit rationing in the following decade. In the case of Spain, notarized credit did not document the payment of interests, although indirect evidence declares the existence of such. To measure the efficiency of the Spanish private credit market, we have focused on bills of exchange instead of notarized credit. Bills of exchange constitute the benchmark for the calculation of private interest rates because this instrument circumvented usury regulations with the interest rate hidden in the exchange rate at maturity. The hidden interest rate embedded in exchange rates for 18$^{th}$ century Cadiz was above the interest rates of the main financial markets at that time, which indicates that the efficiency of the private capital market in Spain was far below that of the core European financial centres.

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