RISK SHARING WITH THE MONARCH:

CONTINGENT DEBT AND EXCUSABLE DEFAULTS IN THE AGE OF PHILIP II, 1556–1598[*]

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Abstract: Contingent sovereign debt can create important welfare gains. Nonetheless, there is almost no issuance today. Using hand-collected archival data, we examine the first known case of large-scale use of state-contingent sovereign debt in history. Philip II of Spain entered into hundreds of contracts whose value and due date depended on verifiable, exogenous events such as the arrival of silver fleets. We show that this allowed for effective risk-sharing between the king and his bankers. The existence of state-contingent debt also sheds light on the nature of defaults – they were simply contingencies over which Crown and bankers had not contracted previously.

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I. Introduction

Non-contingent sovereign debt can be destabilizing because it creates a need for pro-cyclical fiscal policies, aggravating cyclical downturns (Eichengreen 2002). Under extreme circumstances, negative shocks lead to defaults; GDP typically falls, trade plummets, and financial systems implode.[1] Economists and policy-makers alike have argued that debt indexed to the capacity to pay can reduce the risk of bankruptcy and smooth consumption (Kletzer, Newbery, and Wright 1992; Borensztein and Mauro 2004; Borensztein et al. 2004). State-contingent debt is conceptually attractive, but few GDP-indexed bonds have been issued (Griffith-Jones and Sharma 2006).[2] Most instances – such as Argentina's and Greece's GDP-linked bonds – followed default episodes.[3] Overall, there is substantial skepticism that governments can successfully issue contingent debt.

In this paper, we examine a case of large-scale issuance of state-contingent debt. Philip II of Spain (r. 1556-98) borrowed funds equivalent to approximately 60% of GDP – the first case in history of sovereign debt reaching proportions broadly similar to those in modern economies. A significant share of this debt carried contingency clauses. When invoked, interest rates were reduced or loan maturities extended. Bankers and Crown signed contingent loan contracts over decades, despite four payment stops.

Why did a 16th century monarch and his financiers succeed where modern states and investment banks fail? We argue that two factors were key. First, the king's need to spend ahead of revenue was particularly large. Expenditure – dominated by war financing

[1] Eaton and Fernandez (1995), Rose (2005).
[2] Some scholars have argued that all sovereign debt is *de facto* contingent (Grossman and Van Huyck 1988).
[3] Greece avoided an outright default through a "voluntary" restructuring.

– fluctuated wildly from year to year; revenue was broadly stable.[4] The need for "intertemporal barter" (Kletzer and Wright 2000) was acute. In this environment, the principal risk for the monarch was a shortfall of liquidity; risk-sharing was therefore valuable.[5] Second, there were observable, verifiable state variables reflecting the strength of the monarch's finances. For example, the size of silver fleets from the American colonies, as well as the yield from individual tax streams controlled by third parties, served as a ready reference for payments due.

Using a hand-collected dataset containing 434 loan contracts between Philip II and his bankers, we analyze the market for contingent debt. Bad news were effectively translated into lower payment obligations or later due dates – risk-sharing between borrowers and lenders worked. The arrangement between lenders and king also survived Philip II's famous defaults. The king suspended payments no less than four times during his long reign. Defaults involved larger shocks than the ones contracted on in individual contingent loans. They also entailed contingencies that were difficult to write into contracts – principally the outbreak and the outcome of wars. Our data show that the pricing of loans did not change adversely after the payment stops. We conclude that all debt was *de facto* state-contingent in circumstances not specified in loan contracts; defaults were excusable (Grossman and Van Huyck 1988).

Our work relates to the debt sustainability literature.[6] Amongst many, Eaton and Gersovitz (1981) and Tomz (2007) have argued that reputational concerns – and indirectly, access to future consumption smoothing – are key in explaining why sovereign

[4] Silver revenues were highly volatile; we describe them below.
[5] Elsewhere, we have shown that Philip II's famous defaults do not reflect insolvency, but were caused by liquidity crises (Drelichman and Voth 2010).
[6] We also contribute to the literature on the hedging of macro risks by new financial instruments (Shiller 1993).

lending occurs at all in the absence of third-party enforcement. Cole and Kehoe (1995) argue that if no banker can enter into credible commitments, reputation alone can sustain a considerable amount of lending. Kletzer and Wright (2000) show how lending can occur under conditions of "anarchy" – that is, in the absence of commitment by both borrower and lender. In contrast, Bulow and Rogoff (1989) emphasize the importance of sanctions – penalties above and beyond the withholding of funds.[7] Empirical work on the relevance of these theoretical approaches includes Eichengreen and Portes (1989), who find that trade sanctions were rare historically. In contrast, Mitchener and Weidenmier (2010) show that sanctions were important in Latin America during the 19th century.

Debt restructurings can be long and time-consuming (Benjamin and Wright 2009). Nonetheless, Kovrijnykh and Szentes (2007) argue that repeated cycles of borrowing and default may be an efficient outcome, with lenders having an incentive to let borrowers escape from debt overhang. Bolton and Jeanne (2007) suggest that contracts that are *ex post* excessively difficult to restructure can be the result of efficient bargaining *ex ante*. Philip II's defaults were resolved quickly and with moderate haircuts, suggesting that the payment suspensions were closer to an implicit contingent contract than to full-scale breakdowns in debt markets.

This paper is part of a larger research project on the debts of Philip II. Elsewhere, we show that Castile's fiscal position was sustainable (Drelichman and Voth 2010), and that lending worked because it was concentrated in the hands of a small, stable group of Genoese bankers (Drelichman and Voth 2011a). We also examine the profitability from the lending contracts over the long run and by lender (Drelichman and Voth 2011b).

[7] Strictly speaking, both the reputation and the sanctions view imply that defaults should not be observed in equilibrium. This implication can be avoided in models with imperfect information (Atkeson 1991), or when markets are incomplete (Kovrijnykh and Szentes 2007; Arellano 2008; Yue 2010).

Finally, we explore the fiscal logic of imperial ambition, comparing Britain and Spain at the height of their power (Drelichman and Voth 2008). Relative to these articles, we make the following contributions: We show that most short-term debt was contingent, that there was effective risk-sharing between Crown and bankers, and that the defaults did not violate the implicit contract between both parties.[8]

II. Historical background

During the 16th century, Imperial Spain was at the height of her powers. Philip II ruled territories from Flanders to the Philippines and from Tierra del Fuego to the Caribbean. After borrowing approximately 60% of GDP from Spanish and foreign lenders, Philip II stopped payments to his bankers four times. His bankruptcies have long been interpreted as signs of a hopeless fiscal situation (Thompson 1994), and lending to the Spanish Crown has often been described as irrational (Braudel 1966). An alternative interpretation stresses the need for sanctions to align a monarch's incentives (Conklin 1998). According to this view, Genoese bankers retaliated after Philip II's default, stopping transfers to the Low Countries. The Army of Flanders promptly mutinied, weakening Spain's position substantially. Lending in 16th century Spain took place in what Kletzer and Wright (2000) call an anarchic environment, without either borrower or lenders having access to a commitment technology. Elsewhere, we show that no effective transfer stop materialized; a shortage of funds was not key for the setback in the Low Countries (Drelichman and Voth 2011a). Philip II's borrowing was most likely sustained through reputational concerns alone.

[8] Cox (2011) argues that, in the absence of third-party commitment, it was not possible to separate insurance from debt contracts. The introduction of ministerial responsibility after the Glorious Revolution would have broken this link in England.

Foreign bankers began to lend to the Crown of Castile in 1519, when Jakob Fugger financed Charles V's bid for the Holy Roman Crown. Charles continued to rely on the Fugger and Welser to finance military ventures. His credit was based on the fast-growing Castilian economy (Alvarez Nogal and Prados de la Escosura 2007). In 1556, Charles abdicated.[9] His son and successor, Philip II, had to contend with a challenging fiscal situation. One of his first decisions was to stop paying interest and principal on the Fugger and Welser loans in 1557 – the first of a total of 13 payment stops by Spain between 1550 and 1913. Lending briefly resumed, followed by another payment stop in 1560. The Crown's settlement with the Fuggers entailed turning over the administration of royal assets, including the masterships of the military orders and the mercury mines at Almadén.

Despite the early defaults, Philip II borrowed on a vast scale. Whenever possible, he issued *juros* – perpetual or lifetime bonds backed by a specific tax stream. Yearly *juro* payments were typically collected from tax farmers or a city. As long as revenue was healthy, they provided a steady source of income for the owner. *Juros* were transferable after payment of a fee. They were often held by merchants and foreign investors, and were considered very safe investments.[10] Philip II never defaulted on their payments during his reign. Yields were correspondingly low (5 to 7 percent between 1550 and 1600).[11]

[9] The standard source on Charles V's loans is Carande (2011).
[10] The account book of Ambrogio Di Negro, a Genoese merchant in the 1560s, shows investments in six different types of *juros* as part of his overall portfolio (Archivio Doria, Fondo Doria, 143). The letters of another merchant, Giorgio Doria, contain specific instructions to his agent in Spain on how to collect the yearly payments of his *juros* (Archivio Doria, Fondo Doria, 490).
[11] For a history of juros, see Toboso Sánchez (1987).

Juros were a cheap source of funding, but they had two major constraints. First, finding buyers for large issues could be challenging. The Crown did not have a distribution network of its own, and had to rely on intermediaries. Also, *juros* could only be issued against "ordinary" revenue. The designation of "ordinary" or "extraordinary" for a revenue stream was controlled by the Cortes – Castile's representative assembly. Without tax increases – also controlled by the Cortes – or a reclassification of extraordinary taxes, the king was faced with a hard ceiling on long-term debt issuance. Lifting it required lengthy negotiations and costly concessions.

Whenever *juro* issuance reached its ceiling, or when the king needed to borrow on short notice, he resorted to *asientos*, short-term loans repaid from extraordinary revenues. Of these, taxes on silver imports were the largest. Silver taxes reached up to 40% of total revenue in good years – but they could also be very low in bad times. Such variability created a strong need for intertemporal smoothing. *Asientos* were supplied by both domestic and international financiers; they often involved transfers abroad. The debt service and repayment of *asientos* was not as automatic as that in the case of *juros*: an explicit payment order (*libranza*) was needed to collect each repayment. Delays were common, as was the rolling over of unpaid debts into new loans.

After 1560, Genoese bankers entered the business, and the volume of lending soon dwarfed earlier levels (Ulloa 1977; Drelichman and Voth 2011a). Genoese loans were typically collateralized with *juros*.[12] Collateralizing short-term sovereign loans with long-term appears paradoxical, since monarchs could default on either. However, *juros*

[12] At first, lending was collateralized with revenues of the *Casa de la Contratación*, which oversaw the assessment and taxation of silver. While the management of the *Casa* was dismal, and the bonds it issued quickly lost up to 50% of their value, collateralization continued with other *juros*. An excellent treatment of the system set up by the Genoese with respect to the *Casa de la Contratación* can be found in Ruiz Martín (1965).

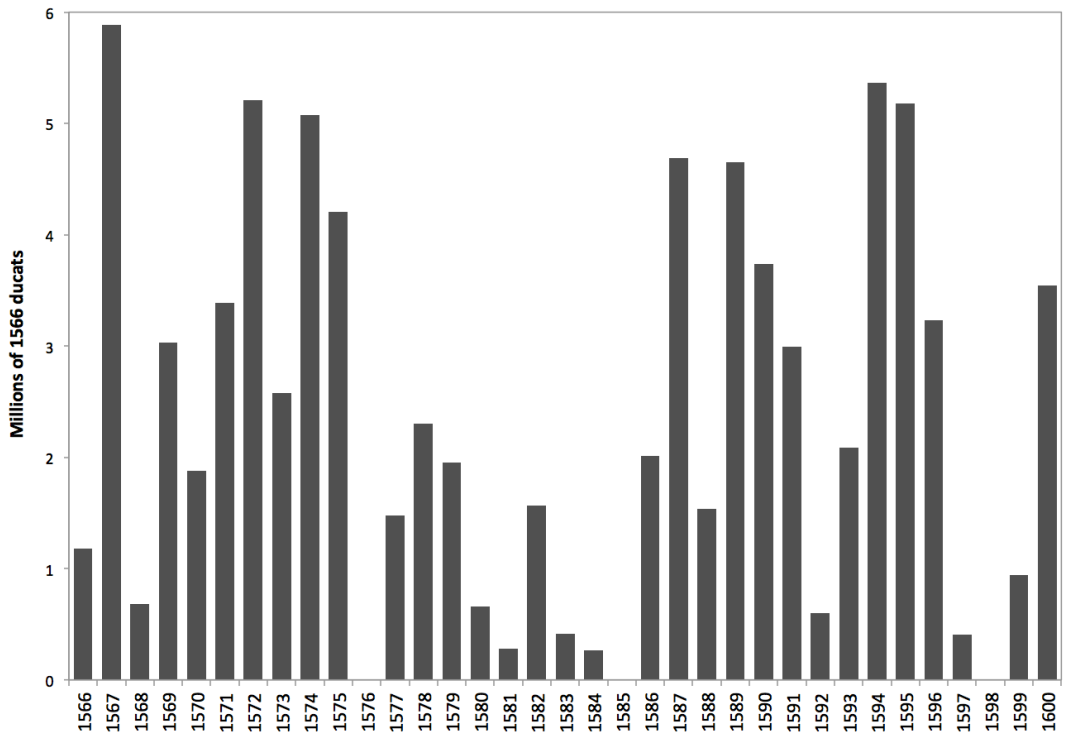
were not only held by bankers, but by many members of the Castilian elite, making a default more costly for the king. Bankers often kept the collateral bonds in lieu of repayment, selling them to European investors and further profiting from the intermediation services.[13]

Figure 1 shows short-term debt issuance (in constant 1566 ducats). After the Genoese entered the market, the king defaulted two more times. On September 1, 1575 he suspended principal and interest payments on loans for 14.6 million ducats, and a lending moratorium ensued. A comprehensive settlement (*medio general*) was reached in October 1577. All outstanding *asientos* were canceled. The king repaid his bankers with *juros*, with an average value of 62% of outstanding debts.[14] Bankers holding collateral *juros* recovered almost 80% of their capital, while uncollateralized loans were reduced by over 50% in value. As part of the settlement, a consortium of bankers offered 5 million ducats in fresh lending.[15]

[13] Selective defaults were technically possible. However, two reasons made them unlikely. First, the king would have no moral justification for defaulting; unlike in the case of *asientos*, investor payments for *juros* were made upfront, and the contractual conditions were unilaterally set by the Crown. Also, a selective default would have likely scared off other investors, and driven up the low interest rates that made *juros* a powerful financing tool in the first place. In this sense, the incentives that supported collateralization of one type of debt instrument with another are similar to those in Broner, Martín and Ventura (2010).

[14] Alvarez Nogal and Chamley (2012) argue that, because *juros* were callable and prevailing interest rates were falling, the defaults and the subsequent settlements can be interpreted as voluntary debt conversions. The results would have been the same if the king had called in all debt, and issued new, lower yielding *juros* in exchange. Our view is the opposite – the payment stops were abrupt, and the restructurings involved substantial haircuts. The haircut rate varied depending on the structure of each contract. Uncollateralized *asiento* holders, for example, received about 50% of their original value in the settlement, while the *juro* rate reduction was much less. These facts are hard to reconcile with a 'voluntary' conversion.

[15] The fact that the bankruptcies were resolved with generous settlements is compatible with interpretations emphasizing the importance of signalling a borrower's type (Cole, Dow, and English 1995). We discuss the details of the settlement in depth in the appendix to Drelichman and Voth (2010). The negotiations during the suspension of payments and the mechanism used by the Genoese to enforce the lending moratorium are described in Drelichman and Voth (2011a).



Source: Drelichman and Voth (2010).

Figure 1: *Asiento* issues

After the 1575 default, little short-term debt was issued. Silver income grew quickly; a lull in the Dutch Revolt reduced military expenditure; and the Cortes of 1575 and 1576 granted a large tax increase. Military events changed this situation starting in 1583. Short-term borrowing increased to finance the 'Invincible Armada', Spain's ill-fated attempt to invade England in 1588. After its defeat, ships and fortifications needed to be rebuilt, while fighting in the Netherlands flared up. Despite the introduction of a new excise tax (the *millones*) in 1591, the king again defaulted on short-term loans in 1596. His last bankruptcy involved only 7 million ducats of principal – much less than in 1575. Its resolution was also faster and caused milder losses for creditors. After just one year, bankers agreed to a 20% across-the-board reduction of principal; lending resumed quickly.

At all times, the majority of royal debt consisted of *juros*. Between 1566 and 1596, *asientos* averaged 12% of outstanding loans. Their share peaked in 1575, when short-term debt accounted for one third of the total. This was an anomalous situation, reflecting a large, rapid run-up of debt. In 1596, only ten percent of debt was short-term. Philip II never defaulted on *juros*. His famous bankruptcies affected only the smaller – but nonetheless significant – part of his obligations.[16]

III. Data

The complete series of 434 *asientos* issued under Philip II, and preserved in the Archive of Simancas, forms the basis of our study. Each contains a brief summary, reporting the names of the lenders, the date, and the total amount involved. Previous work on this series was based on these abstracts (Ulloa 1977), and did not analyze the terms and conditions of the loans in any detail. Our data are based on the full text of the contracts. In addition, we use a comprehensive database on Castile's fiscal position for the period 1566-1598 (Drelichman and Voth 2010).

The full archival series contains 4,997 handwritten pages, with an average of 12 pages per loan. We transcribe every single clause and reconstruct agreed-upon monthly cash flows. In addition, we code up to 89 variables for each *asiento.* These include the date, the identity of the lenders, the principal of the loan, its maturity, the places and currencies of disbursement and repayment, the intended source of funds to be used for repayment, the value and type of any collateral, the presence of any contingent clauses and the events that would trigger them, and the value of any additional privileges granted to the bankers.

[16] Data for total outstanding debt is from Drelichman and Voth (2010).

Calculating the rate of return is complicated several factors. Because of rules against usury, stated rates were lower than the overall return.[17] Allowances for exchange fees, shipping costs, and various other concessions were used to increase profits.[18] To assess the cost of each *asiento*, we reconstruct the contractual cash flows according to the loan covenant. We then calculate the modified internal rate of return (MIRR):

$$MIRR = \sqrt[n]{\frac{-FV\left(\text{positive cash flows}, r_r\right)}{PV\left(\text{negative cash flows}, r_f\right)}} - 1 \qquad (1)$$

where n is the number of periods in the contract, r_r is the reinvestment rate, and r_f is the finance rate. This requires assumptions about r_r and r_f. We use 7.14% (the long-term bond rate) as the reinvestment rate, and 5% as the finance rate.[19]

Table 1 summarizes our data. 20 out of the 434 contracts do not contain sufficient information to reconstruct a complete cash flow.[20] For the remaining ones, we calculate the expected rate of return, both under the baseline scenario, and under any contingencies. For a handful of contracts, the estimated rate of return is very high. These are typically small, short-term loans involving high fixed costs. To mitigate the impact of these outliers, we drop loans with a rate of return over 100% (21 observations accounting for 1.8% of total lending). We thus work with 393 observations. Among these, the

[17] The legal limit against usury had stood at 10% since 1534, when Charles V issued a law to such effect. Philip II confirmed it in 1567. See *Nueva Recopilación, Libro Quinto, Título XVIII, Ley ix.*

[18] Among them were the granting of licenses to export bullion in excess of the amounts required by the contract, life pensions bestowed on the bankers or their relatives, and the conversion of low-yield *juros* into high-yield ones at no cost.

[19] One important reason for choosing the MIRR over the standard internal rate of return (IRR) is that the latter is unsuitable for cash flows that swing from positive to negative multiple times, a very common scenario in our data. In Drelichman and Voth (2011b) we explore in detail the benefits of our rate of return measure and our parameter choices. We also perform extensive sensitivity analysis. Our choice of 7.14% for the reinvestment rate is chosen after the median *juro* rate – *juros* were readily available, and hence obtaining a 7.14% return was easily achievable. The 5% finance rate was chosen after the rate Genoese bankers paid on their deposits.

[20] This is mostly due to material damage to the documents. In a few cases, the clauses were too vague to allow an accurate estimation of cash flows and rates of return.

average loan rate was 20 percent, and roughly half of all loans involved transfers abroad. The mean return rates did not vary when contingent clauses were triggered, while the median increased by one percent. Loans were typically extended for two years, but durations could be much longer.

Table 1: Summary statistics

	mean	median	sd	N	min	max
Rate of return (MIRR)	0.20	0.136	0.17	393	- 0.18	0.95
Foreign exchange dummy	0.41	0	0.49	393	0	1
Transfer dummy	0.62	1	0.48	393	0	1
Contingency dummy	0.69	1	0.46	393	0	1
MIRR under contingency*	0.20	0.146	0.18	408	- 0.06	1.51
Duration	28.75	22	22.63	393	0	140

* 268 contracts had contingency clauses, and several had more than one. We report summary statistics on the MIRR for each of the 408 individual contingent scenarios.

Types of contingencies

Of the 393 contracts we analyze, 270 have at least one contingency clause; many contain several. In total, there are 408 contingent scenarios. Five broad categories can be distinguished. The first two are associated with events outside the control of the king or the bankers: the arrival of the fleet, and the performance of specific tax streams. Two more types are actually options, given to either the king or the bankers. In some cases, the king can delay payments, usually in exchange for some penalty. In others, the banker can request to be paid in *juros* ahead of the loan maturity date. We call these options "king's discretion" and "banker's discretion". Finally, those contracts that carry collateral also have an "execution" clause. This specifies under what conditions the banker may seize and sell the collateral.

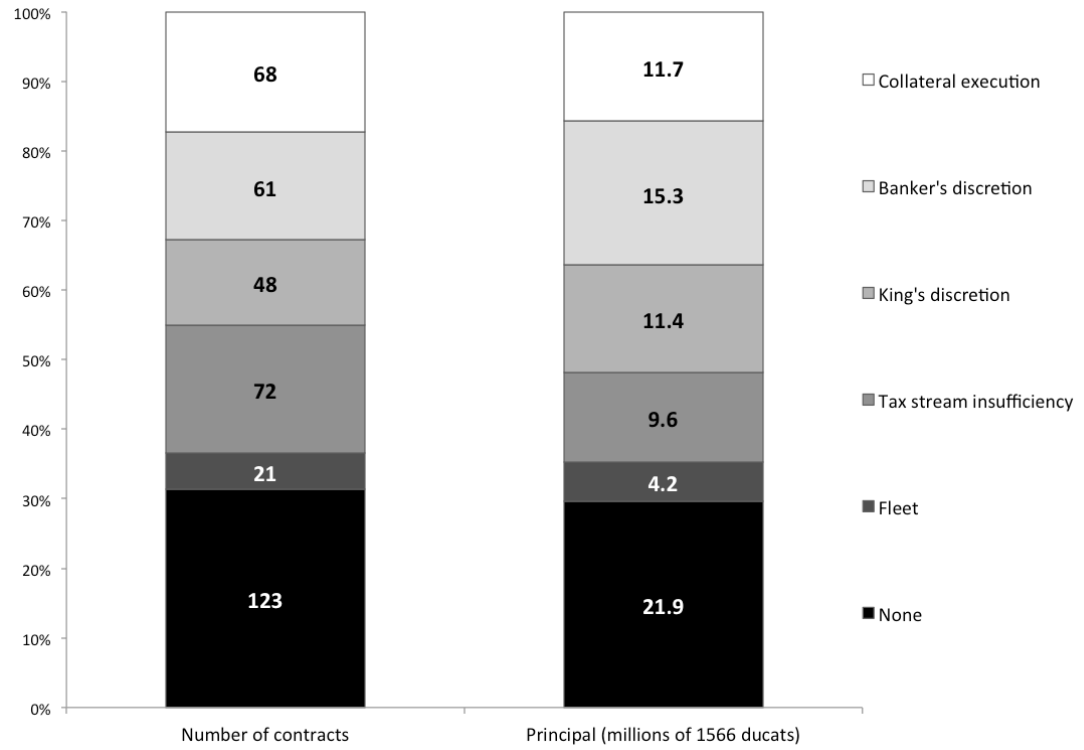


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Figure 2: Distribution of the major contingent scenario, by number of contracts and by principal

Figure 2 plots the frequency and the value of contingencies in our data. Less than a third of contracts were issued without a contingency clause. About 31% of scenarios refer to insufficient revenue for the Crown – either because some taxes fall short, or because the treasure fleets do not arrive on time or in sufficient size. Slightly over 40% of contingent clauses give either the banker or the king discretion to change the timing or the nature of payments. The remaining ones give the banker the right to seize and sell collateral if the king fails to repay.

The use of collateral clauses was not constant over time, as figure 3 shows. Contingent clauses were curtailed during the period 1576-1585, while they were widely used in the run up to the 1575 and 1596 bankruptcies.

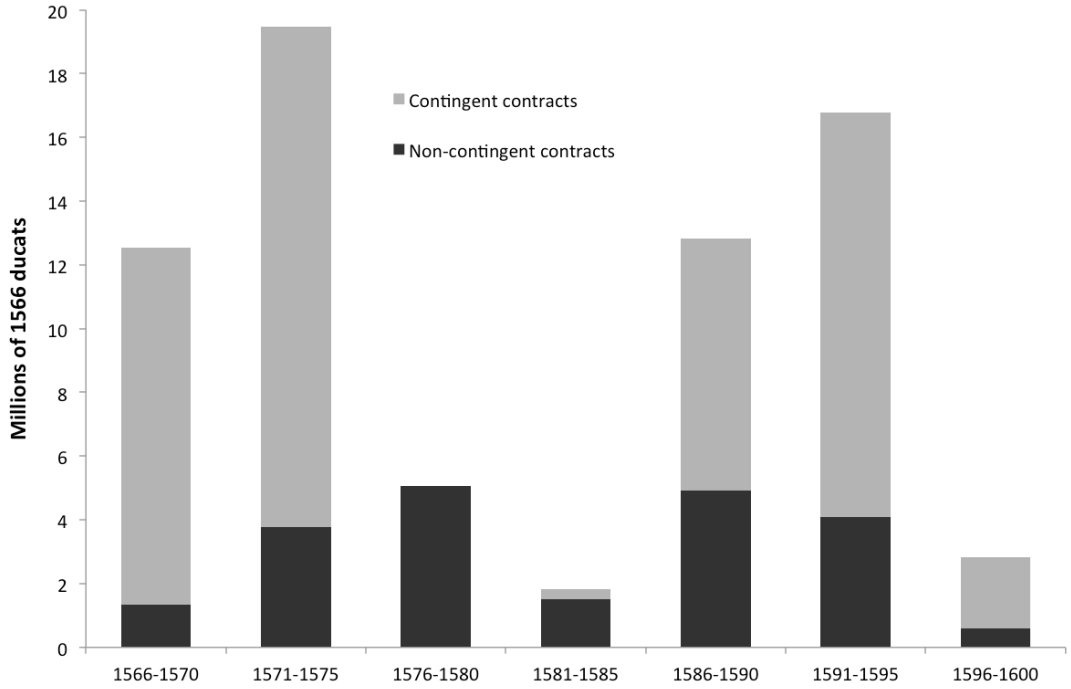

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Figure 3: Contingent and non-contingent borrowing over time.

We now illustrate the working of contingency clauses using specific examples from the primary sources. In 1566, the king enters into a contract with Lucian Centurion and Agustin Spinola. They disburse 38,000 and 57,000 ducats in Flanders in May and September of that year, and are meant to receive one payment in August, using the proceeds from the first silver fleet.[21] If the fleet does not arrive by the end of July, the king promises to pay a penalty rate of 1% per month until full repayment is made. The bankers also receive a *juro* that covers the full value of the contract, which they are allowed to sell in case the king fails to meet his obligations. The original contract without contingency clauses produced an annualized MIRR of 24.1%. If the contingency clauses are invoked, this falls to 15.6%. Thus, the king can insure part of the income risk that

[21] This *asiento* also shows how loans were combined with transfers. The bankers first disburse 38,000 ducats; the king next repays principal and interest on 95,000 ducats; and only afterwards do the bankers disburse the final 57,000 ducats in Flanders. The latter disbursement is therefore a transfer rather than a loan, since the bankers had already received the money from the king.

comes from the highly volatile silver revenue stream. At the same time, the bankers' financial position is largely safeguarded against the risk that the king could not or would not pay through the use of collateral *juros*.[22]

Another *asiento* shows how variable tax revenue could also trigger contingency clauses. In October 1581, Juan Ortega de la Torre lends 60,000 ducats to the king. He is to be repaid from the second payment of the *excusado*.[23] De la Torre is not to be first in line – the contract specifies that Baltasar Cattaneo shall collect his money first. Importantly, the banker will have to do the collecting himself, to which end the king provided him with the necessary documentation. Should the revenue from the *excusado* be insufficient, the banker has the right to be repaid from the *perlados y cabildos* (a minor revenue stream levied on ecclesiastical rents). Other contracts in this category specify that, if the tax revenue in one year is insufficient, the king will pay a penalty interest rate until he can repay with the following year's taxes.[24]

We now turn to a more complex *asiento*. It showcases how multiple contingent clauses could be used to provide insurance for both king and bankers under a variety of scenarios. In 1591, Tomas Fiesco, a Genoese banker, agreed to provide 300,000 Flemish ecus.[25] 200,000 ecus were paid out to the military commander in Flanders, the Duke of Parma, while the rest were delivered at the Italian payment fairs of Besançon. The king paid 75,000 ducats at the signing of the contract, and hence the actual loan was for 218,000 ducats (the rest was a mere transfer of funds). The first disbursement by the

[22] The deeper reason for collateralizing with *juros* is that fiscal centralization in Castile was limited – the king could sometimes not pay the bankers directly, but the City of Seville, say, would still pay holders of *juros*. Thus, the fragmentation of fiscal authority facilitated the continuation of lending.
[23] A tax levied on Church revenue, one of the so-called Three Graces, introduced in 1567.
[24] This example also shows the importance of weak tax collecting powers in determining lending arrangements, with the king effectively outsourcing the right to access taxes already collected.
[25] Archivo General de Simancas (AGS), Contadurias Generales, Legajo 90.

banker, also in April, was for 61,500 ecus. It was followed by 9 equal monthly payments of 26,500 ecus each.

The king promised to repay from a variety of sources. Several of these payments are not contingent: 84,700 ducats from the new *millones* excises in November 1591 and May 1592; another 60,000 from the *Cruzada* ecclesiastical tax, in October and November 1592; 12,000 ducats from the sales of vacant lands; and 30,000 ducats from the extraordinary service. The single largest payment, for 90,100 ducats, was to come from the proceeds of the silver fleet of 1591, which was expected in late summer or early fall. This was followed by a fleet contingency clause: if the silver did not arrive by October, a penalty of 1% per month would apply until the banker was repaid from alternative tax streams –specifically the *subsidio, excusado*, and the ordinary and extraordinary services. Payments from these sources were disbursed by the treasury every four months, in March, July and November.

Even if the fleet arrived on time, the king could unilaterally choose to delay repayment until the maturity of the loan, twelve months later – a case of "king's discretion". It came at a steep cost: if the contingency was invoked, the banker had the right to stop the remaining disbursements (for a total of 53,000 ecus) while still being entitled to collect all the promised repayments on earlier disbursements.

Finally, from January 1592, the banker had the right to request repayment of up to 100,000 ducats of principal and interest in perpetual *juros* – a banker's discretion clause. This contingency allowed the banker to receive safe bonds instead of promised cash payments.

Table 2 shows the cash flows for the Fiesco contract under the baseline scenario, and under each of the fleet and king's discretion contingencies. Because the banker's discretion contingency only affects the payment instruments but not the actual timing or values, we do not report it in a separate column.

Table 2: Net cash flows from the Fiesco contract under three repayment scenarios

	Baseline scenario	Fleet contingency	King's discretion
Apr-91	14,931	14,931	14,931
May-91	-25,884	-25,884	-25,884
Jun-91	-25,884	-25,884	-25,884
Jul-91	-25,884	-25,884	-25,884
Aug-91	-25,884	-25,884	-25,884
Sep-91	-25,884	-25,884	-25,884
Oct-91	-25,884	-25,884	-25,884
Nov-91	124,283	34,183	34,183
Dec-91	-25,884	-25,884	0
Jan-92	-13,948	-13,948	0
Feb-92	0	0	0
Mar-92	0	31,535	0
Apr-92	0	0	0
May-92	54,767	54,767	54,767
Jun-92	0	0	0
Jul-92	0	32,736	0
Aug-92	0	0	0
Sep-92	0	0	0
Oct-92	30,033	30,033	30,033
Nov-92	30,033	63,971	120,133
Yearly MIRR	23.2%	24.0%	39.8%

Note: figures are in ducats. 1 ducat = 1.023 ecus.

The baseline scenario yields a 23.2% return for the banker. While higher than average, this was not an unusual cost for a contract that included transfers to multiple locations, deliveries in several currencies, and repayments sourced from many different tax streams. Under the fleet contingency scenario, the king misses the largest part of the November payment (some 90,100 ducats) in 1591, and makes up the shortfall in March, July, and November of 1592 with 1% monthly interest. The rate of return of the contract increases slightly, to 24%.

The king's discretion scenario is markedly different. The king also misses the 90,100 ducat payment in November of 1591, causing the banker to cancel the December and January disbursements. The king is still obliged to make all promised repayments, including the 90,100 ducat one, which is now due in November 1592. The banker gets paid much later than promised, but since he skips two disbursements totaling over 50,000 ducats, his rate of return increases to 39.8%

It is useful to contrast the two contingencies: the cash flows are identical up to and including November 1591. The missed payment is exactly the same. In one case, however, the reason is an exogenous, verifiable event: the fleet has not arrived. The banker continues to make disbursements as scheduled, while repayments are delayed. The cost of the contract rises marginally. In the second case, however, the fleet has arrived. If the king now fails to pay, he has less of an excuse; the cost of the contract rises substantially.

The fleet contingency insures the king against factors outside his control – adverse Caribbean weather and disruptions to silver production. Because these factors are self-equilibrating in the medium term, the bankers do not charge high insurance premia. The king's discretion contingency is different. It gives the king the option to extend the maturity of his debts without having to borrow new funds, even if the fleet arrived in time. The king is now protected against an unexpected need for liquidity, or the prospect of a rollover crisis. Because these situations would signal mounting pressure on the king's finances (or a lower willingness to use available funds for repayments), the banker demands a hefty premium in exchange for providing that insurance. Finally, the banker's discretion clause insures the lender against a downturn in the king's ability to pay. After

the first eight months of the contract, the banker can swap almost all of his remaining claims for relatively safe long-term bonds of the same present value.

IV. The Economic Impact of Contingency Clauses

In this section, we examine the effect of contingent clauses on cash flows. We also analyze cost and maturity modifications as a function of the Crown's and bankers' interests. Contingent clauses provided ample, bi-directional risk sharing between the king and his bankers. Their use is interesting because they reveal a strong preference to deal with eventualities ex ante, before they materialize, instead of having to renegotiate ex post. This implies that frequent recontracting (in the spirit of Bulow and Rogoff 1989) was not costless in the eyes of Crown and financiers.

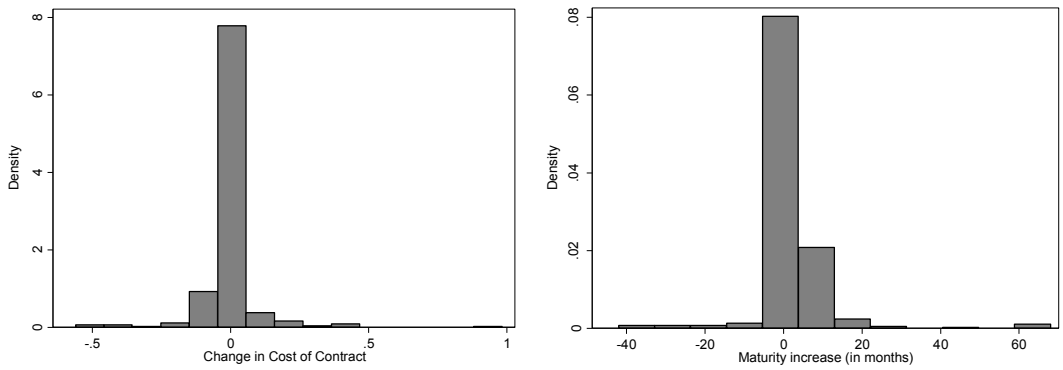

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Figure 4: Changes in the Cost of Contracts and in Maturity (after conditionality clause is invoked)

For each contingent scenario, we compare its MIRR to that of the non-contingent cash flow scenario. Loans that feature contingent scenarios have a baseline return of 20.5%. In aggregate, contingencies do not affect the returns substantially. The median change in the cost of a contract is exactly zero under the average contingent scenario.[26] The left panel

[26] By comparison, the median return of loans that do not have contingent clauses is 19 percent.

in Figure 4 plots the distribution of cost changes. While some contracts saw their cost rise or fall by 20% p.a. or more, most changes are much smaller – the bulk of observations envisage changes of 5% p.a. or so.

Contingent scenarios also affected the maturity of the loans. On average, maturities changed little – an increase of two months with a standard deviation of nine. One hundred and twenty one scenarios allow for a longer maturity, giving the king an average of 9.7 additional months to repay. In 18 cases, there is an early termination date, either because the king could exercise an early repayment clause, or because a missed payment allowed bankers to cancel future disbursements. In these cases, the average termination date precedes the originally scheduled one by 17.6 months. The remaining 269 scenarios do not affect the maturity date, either because they shuffle intermediate repayments, or because they specify a swap of payment instruments.

Table 3: Baseline MIRR, differential MIRR and maturity (in months) by type of contingency.

Contingency type	Frequency	MIRR Differentials		Maturity Differential
		baseline minus non contingent average*	contingency minus baseline	contingency minus baseline
Fleet	26	4.1%	0.4%	2.6
		(0.72)	(0.75)	(0.00)
Tax stream insufficiency	100	-1.6%	-1.7%	4.6
		(0.10)	(0.06)	(0.00)
King's discretion	63	4.3%	4.1%	1.6
		(0.03)	(0.06)	(0.30)
Banker's discretion	102	1.6%	1.5%	-0.2
		(0.08)	(0.04)	(0.84)
Collateral execution	118	-2.1%	-2.3%	2.1
		(0.03)	(0.01)	(0.00)
Total / Average	408	0.0%	-0.1%	2.1

P-values in parentheses.
* Coefficient from a regression of MIRR on contingency type dummy, use of foreign exchange clause, duration, and loan size. Standard errors are clustered at the contract level.

Table 3 summarizes contingent changes in the MIRR and the maturity of loans. The first column shows the differential in the rate of return for each contingency type, relative to contracts without contingencies. The second and third columns report the associated changes in the MIRR and maturity. Modifications reflect changes in the king's fiscal position associated with each contingency type. In case of a fleet-related event, the maturity of the loan was extended for an average of 2.6 months. The cost increased only by a small amount.[27] On average the bankers received some compensation, reflecting only a minor increase in risk. Fleets would eventually arrive, and delays did not convey new information about the solvency of the king. At the same time, bankers on average required some additional compensation *entering* into contracts that had a fleet contingency written into them – on average, the baseline cost was 4.1 percent higher (even if variability was high, and the difference is not statistically significant).

Tax revenue shortfalls were a different matter. Most taxes were collected directly by cities or tax farmers, which had an incentive to maximize revenue. Their performance was independently verifiable by the lenders. The incentives of bankers and those of tax collectors were compatible, and there was no possibility for the king to manipulate the total yields.[28] Tax stream insufficiencies were bad news, since shortfalls were not likely to be offset in the future. However, they did not convey information about the king's type. The associated contingent scenarios gave the king an extra 4.6 months to repay, while reducing rates of return by 1.7 percentage points. Consistent with a risk-sharing arrangement, a negative shock in terms of fiscal revenue resulted in a reduction of

[27] The increase is a mere 0.4%; the difference in cost compared to the baseline is not statistically significant.

[28] The king could, however, manipulate the order in which lenders were paid. Contracts were therefore quite specific in establishing the collection priority of individual lenders with respect to specific tax revenues.

borrowing costs. The baseline cost of loan agreements with a tax shortfall clause was 1.6 percentage points below the average; bankers were willing to offer this type of "insurance" without a premium.

"King's discretion" scenarios involve non-payment without an externally verifiable trigger. The arbitrary postponement of payments by the king was undoubtedly bad news, either because of new, urgent spending needs or because other loans were receiving priority for repayment. Unlike the case of tax stream insufficiencies, the cause of the need for extra liquidity was uncertain, and moral hazard could not be ruled out. The risk to the bankers was increasing compared to the original contract. Risk-sharing implies that this additional risk should be associated with higher promised returns for the bankers. The large differential – 4.1% on average – is consistent with this interpretation. Contracts with a postponement option for the king were also more expensive in the baseline scenario, by an average of 4.3%.

The effect of "banker's discretion" is more difficult to evaluate, as there are liquidity considerations to take into account. These clauses typically allowed bankers to collect part or all repayments in *juros* instead of cash. There was often no reduction in the amount payable, and bankers were allowed to collect the entire current-term interest of the *juros*.[29] This accounts for the increase of 1.5% in the rate of return. In practice this accounting profit probably did not translate into an actual cash-flow advantage. Bankers would have had to sell *juros* on the secondary market, a costly operation that could easily nullify the 1.5% gain. If they chose to keep the bonds, they would have had to wait for coupon payments. A reasonable guess is that "banker's discretion" clauses allowed

[29] *Juro* interest was paid twice yearly. If the banker received *juros* in October, he would be allowed to collect the entire December interest payment, rather than the portion corresponding to the three months he had held the bond. This increases the profitability of the contract relative to a cash payout in December.

lenders to switch their repayments to safer assets without a substantial impact on profitability. Bankers typically entered into these contracts when they had reason to be concerned about the future yield of extraordinary revenues. Whenever *asientos* contained these clauses, they were on average 1.6% more expensive initially for the king.

The final contingency type was collateral executions. These were triggered by the king missing the final payment of the loan. Because the event was pre-defined in the contractual clauses, it was not considered a default. When it was exercised, the cost of the contract fell. Sometimes the contracts specified that the bankers had to wait before being able to sell collateral *juros* – hence the two month average maturity increase, which reduced profitability. Bankers also lost because collateral was not always sufficient to cover the last repayment. When bankers and the king's representatives entered into contracts with a collateral execution clause, the cost was on average 2.1 percentage points lower. This reflects the additional security of holding a collateralized loan.

Our findings suggest that the king was mainly concerned with the risk of a liquidity shortfall; the cost of borrowing mattered less. The majority of short-term loan contracts allowed the postponing of payment or the swapping of payment instruments. Return differences by type of contingency strongly suggest that these options allowed for effective risk sharing arrangements. Instead of having to find fresh funds to redeem maturing debt, the king had the right to extend the maturity of his borrowing, either by delaying payments or by swapping short term debt for perpetual bonds. At the same time, the bankers reduced the risks from the king changing his spending priorities. The most costly eventualities – looking at the combined effect of the higher baseline cost and the cost of the contingency cost – were those triggered at the king's discretion. Here, bankers

received an extra 8.4% in interest. In other words, when the Crown postponed payments without "just cause" in the form of late fleet arrivals or tax insufficiencies, the increase in borrowing costs was particularly large. Bankers realized that writing an option on such eventualities did not contain good news about the king's financial position and priorities, and demanded to be compensated accordingly.

We now take a closer look at the effect of contingent clauses on loan maturities. In table 4, we regress the change in the due date of the loan (in months) on its original maturity, plus a host of controls.

Table 4: Loan duration and contingencies (dependent variable is maturity increase)

Constant	-1.97 (-2.31)**
Fleet	2.14 (2.19)**
Tax stream insufficiency	4.07 (6.19)***
King's discretion	0.44 (0.28)
Banker's discretion	-1.03 (-0.97)
Collateral execution	1.19 (2.02)**
Principal (real)	-1.13 (-0.96)
Duration	0.07 (1.72)*
FX	1.58 (1.88)*
R^2	0.09
N	531

Standard errors clustered at the contract level; t-statistics in parentheses
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

Longer duration loans do not substantially affect maturity extensions in case a contingency clause is invoked – the coefficient is significant, but small. When

contingency clauses are invoked, contracts with a foreign exchange component (FX) are associated with extensions of over a month and a half. Fleet contingencies extend the due date by two months on average – a typical time for finding an alternative repayment source. Tax stream shortfalls are associated with even longer extensions – four months on average. Collateral executions add only one month. King and banker discretion clauses mainly reshuffled payments before the maturity of the loan, and hence are not significantly associated with changes in the due date.

In figure 5, we examine the evolution of contingency clauses by five-year intervals. In the years before the 1575 bankruptcy, over 50% of clauses are associated with collateral executions. At the same time, almost 25% refer to shocks that reduce the Crown's revenue, such as fleet arrival and revenue shortfalls. Collateral execution clauses vanish as a category after the 1575 default. There is little borrowing – and hence few contingencies – up to 1585, when the preparations for the Armada trigger a new round of *asientos*. In the last fifteen years of the sample, banker discretion clauses become the top category, followed by revenue shortfalls.

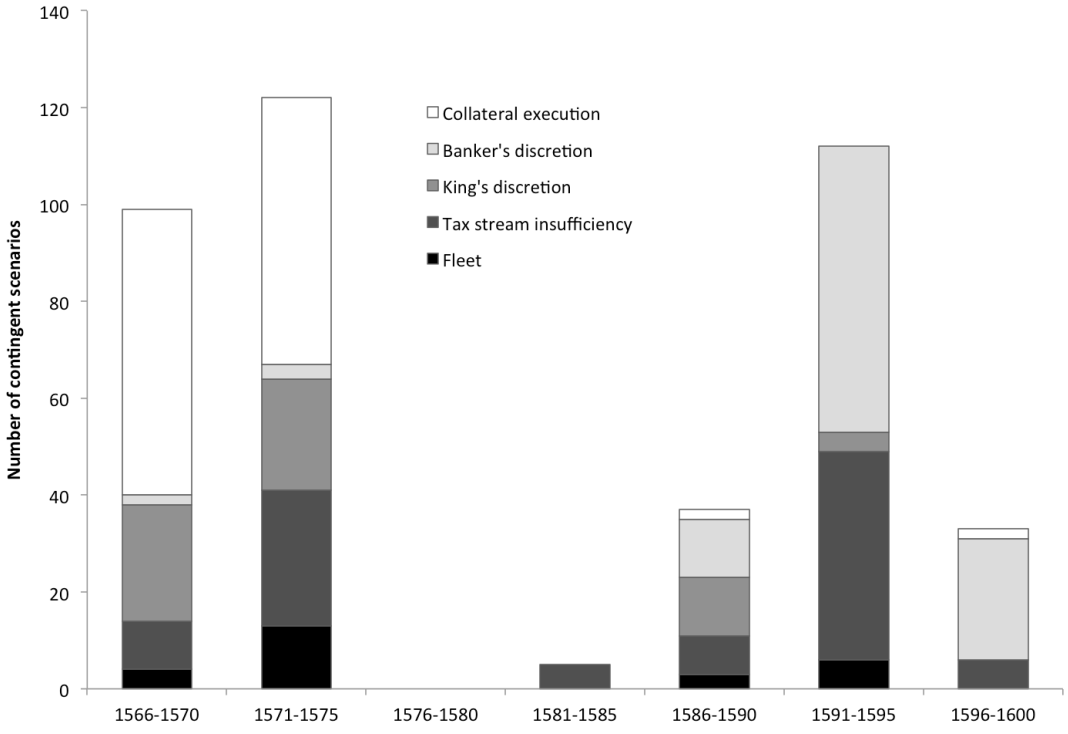

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Figure 5: Number of contingent scenarios by type and by period

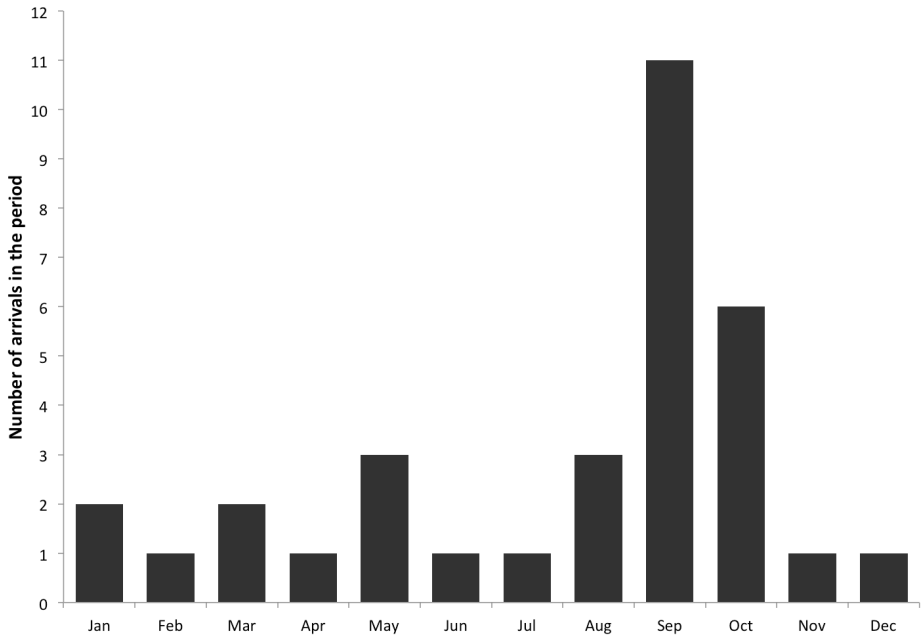
The use of contingent loans was not affected by the 1575 default – their share is roughly constant before and after.[30] Their composition, however, was significantly altered. Before 1575, most contingent contracts had collateral clauses. During the 1575 bankruptcy, the Crown declared that *asientos* had been illegal, and payments on the collateral bonds were suspended. Bankers were prevented from selling them in the secondary market. The 1577 settlement reversed these restrictions. Nonetheless, few bankers were interested in collateral execution clauses afterwards. They instead used "banker's discretion", which allowed for *juros* to be sold at will. Banker's discretion clauses were also priced to offset the cost of collecting and transferring the *juros*. In essence, bankers learnt how to better protect themselves – if before they had to wait for the king to miss a payment to switch to safe assets, now they could do it at the slightest hint of trouble.

[30] The exception was the 1576-1580 period, when most lending came from the 1577 settlement.

Why was it in the interest of bankers and the king to write these contracts? Three facts are key: first, the absence of asymmetric information as a result of primitive means of communication, and the extraordinary opportunities for intertemporal barter at a time of urgent, sudden spending needs. Second, the pricing of loans and the effect of duration on interest cost suggests that the Crown principally struggled with liquidity issues, not solvency problems.[31] Third, the fragmented nature of fiscal authority ensured that the Crown's borrowing could be effectively collateralized by other debts.

Both silver revenue and tax farming facilitated the use of contingencies. Silver was a major source of revenue for servicing *asientos*. News from the New World about silver production travelled at the same speed as galleons full of bullion, the king had no informational advantage vis-à-vis his bankers. There was also no way to hide the arrival of a fleet from the Indies. Also, the time of fleet arrival varied considerably (figure 6).

[31] In Drelichman and Voth (2010) we also show that the king's fiscal position was sustainable in the long run.



Source: Morineau (1985)

Figure 6: Frequency of fleet arrivals

The key reasons why conditional contracts could be written on fleet revenues – new information about the king's fiscal position was independently verifiable, and neither party had advance knowledge – also favored tax farming. Tax farmers had strong incentives to maximize revenue, and were not in the employ of the king. Revenue shortfalls reflected adverse shocks, not royal manipulation.

V. Contingent Debt and Excusable Defaults

We now turn to the nature of defaults. King and bankers contracted over a large number of different states of the world, and found an effective way to share risks. Nonetheless, some eventualities could not be written into loan covenants.[32] Default under these conditions was also a form of risk-sharing, and it did not differ fundamentally from the contingencies foreseen in loan documents; it simply extended the sharing arrangements

[32] Shocks arising from military defeat are an obvious case in point – it would be hard for the Crown to contract on the possibility of the Armada sinking, say.

already in place to a different situation. We argue that the famous defaults of Philip II were excusable (in the sense of Grossman and van Huyck 1988).[33] While violations of the letter of lending contracts occurred, these were anticipated by both sides, and were not contrary to lenders' original expectations. To support this argument, we need to demonstrate that defaults occurred in times of exogenous, independently verifiable adverse shocks, and that there were no significant negative changes in loan conditions after an actual default.[34]

Modern-day sovereign bonds issued in New York or London are said to be in default when the borrower has missed a single contractual payment. No such definition was agreed ex ante in sixteenth century dealings between Crown and bankers. At the time, neither side could firmly commit to servicing debts or to taking deposits. Actual outcomes could fall somewhere between full compliance and default: 1) full compliance with the baseline scenario, as detailed in the original contract, 2) use of contingency clauses, 3) violation of one or more of the clauses, followed by a rescheduling, 4) full suspension of payments to all creditors, followed by a general settlement, 5) outright repudiation.

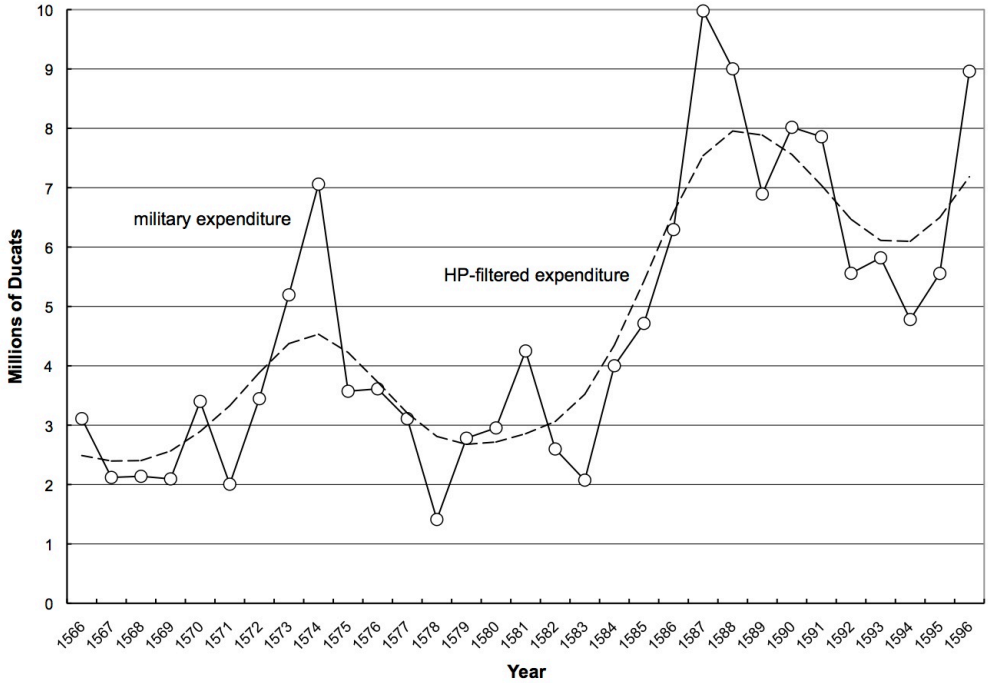
Because contracts already encompassed a wide range of states of the world, lenders were aware that repayment according to the letter of the loan contract was not always possible. At the same time, since contingencies were incorporated into loan documents, the Crown tried hard not to violate explicit loan conditions. If defaults are excusable, lenders' outcomes should reflect a borrower's fiscal position. Importantly,

[33] In Drelichman and Voth (2011b), we surmise that defaults were excusable; here, we argue the case based on a close reading of loan conditions and fiscal conditions.
[34] If there had been changes in actual loan conditions, these could also be rationalized by Bayesian updating (about, say, the strength of the Spanish navy). In this sense, demonstrating that rates did not change is requires the 'strong' version of our hypothesis to hold.

differences should be driven by exogenous shocks – events beyond the control of the borrower. In normal times, the king should live up to the letter of his obligations. When some minor shocks occur, he will invoke emergency clauses. Larger shocks will see him violate some of these clauses, only to compensate lenders later. Full-blown moratoria reflect larger negative shocks, and are driven by events that cannot be contracted over ex ante. Finally, for defaults to be excusable, repudiation should never be observed. This is the easiest part of the argument – Philip II never repudiated a loan.

Default in Verifiably Bad States of the World

For the Grossman and Van Huyck interpretation to be correct, defaults have to occur in bad states of the world. This was true under Philip II. Twin shocks hit his finances in 1575 and 1596 – military expenditures surged, and revenue from the New World was low.



Source: Drelichman and Voth (2010)

Figure 7: Military expenditure, actual and HP-filtered, 1566-1596

From year to year, expenditure on armies and fleets varied considerably. The three spikes – 1572-75, 1587-88, and 1596 – reflect the escalation of the Dutch revolt, the Armada, and war with Britain. In two of these cases, the king defaulted.

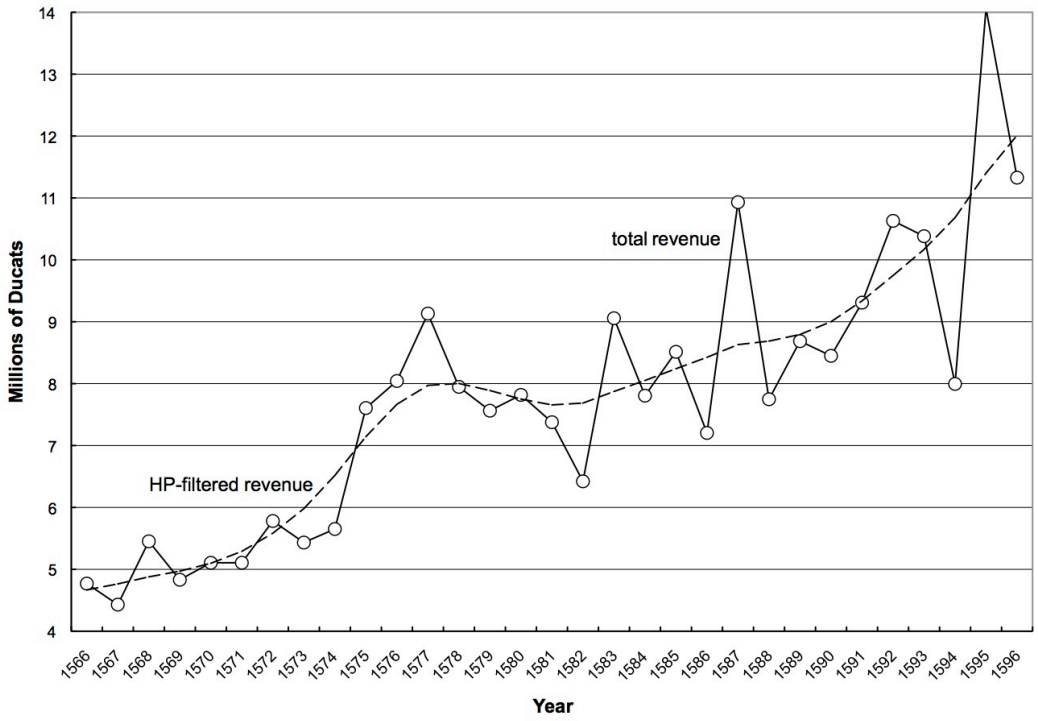
At first pass, the exogeneity of these shocks can be debated. It takes two powers to fight – it was not only the Dutch who rebelled and the English who supported them that contributed to bloodshed and high costs. Spain also had to decide to fight in order to keep control over its provinces intact, and the Mediterranean free from Ottoman influence. To what extent do we want to think of the Spanish strategy as a choice variable, and to what extent does it reflect a largely exogenous shock?

The Dutch revolt had been simmering for a few years, and responding to it was a deliberate policy choice. Its escalation into a full blown – and costly – war of independence, however, was beyond the imagination of Spain's ruler (and arguably, among European observers). The Armada was an intentional strategic move, planned and budgeted for over a period of years. Its failure was always a possibility and, in line with the requirements of the excusable defaults literature, it did not lead to a payment stop. The 1596 escalation of the Anglo-Spanish war was initiated by Britain; it required a major military effort on the part of Spain. These expenditure shocks were large. In 1574, military spending accounted for 93 percent of all expenditure (without debt servicing costs); it exceeded Crown revenue by 25 percent. In 1588, it also exceeded revenue, by 16 percent (while staying below total revenue in 1596).[35]

Philip II could have walked away from his possessions in the Low Countries. Doing so would probably have made the Spanish position unsustainable in many territories outside Castile – according to what Geoffrey Parker (1998) called the "domino

[35] All figures are from Drelichman and Voth (2010).

theory" of Spanish hegemony. Neither the war against the Ottoman Empire, nor the fighting in the Low Countries (of which the Armada was an integral part) were offensive wars as such; all of them were designed to protect revenue-generating territories. The fact that fighting back required decisions and effort does not detract from the basic observation that negative initial shocks to Philip II's military position drove the need for armaments, fighting, and funding.



Source: Drelichman and Voth (2010)

Figure 8: Crown revenue, actual and HP-filtered, 1566-1596

Figure 8 shows revenues compared to an HP-filtered trend during the final 30 years of Philip II's reign. Revenue did not fluctuate as much as military expenditure. The king only defaulted in those years when revenue was markedly below trend and expenditures were simultaneously above trend. This confluence of expenditure and revenue shocks occurred in the mid-1570s, for several years in a row. As Figure 8 shows, there were also

many years when revenue was significantly below trend, and the king did *not* default. This does not contradict our hypothesis that the king's defaults were excusable because they occurred in bad states of the world. The king does not have to default in *all* bad states; what matters is that he never defaults in good times. The observation is also easy to rationalize – silver revenues contributed importantly to volatility in the 1580s. Years of low revenue typically alternated with years of high revenue. Normal fluctuations were smoothed by extra *asiento* borrowing. Combined with risk-sharing elements in the loan contracts (such as the one with Tomas Fiesco), the Crown coped with most fluctuations. In years of extraordinary pressure, a payment stop was declared and a general renegotiation became necessary.

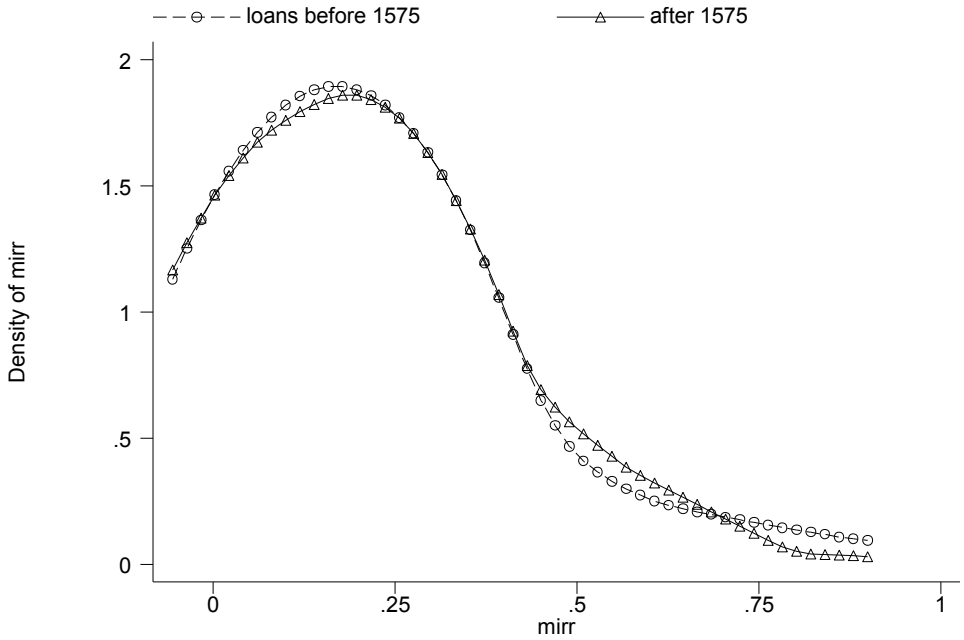
The events that caused fiscal difficulties were easy enough to confirm and identify. Only one or two silver fleets reached Spain every year. The cargo of the arriving ships was a key determinant of Crown revenue. Once the ships had arrived, it proved impossible to suppress information on the size and value of the fleet.[36] Commercial gazettes all over Europe carried details on the value of treasure brought from the Indies; a major determinant of the king's fiscal position became public knowledge almost instantly. Military events such as the escalation of fighting in the Netherlands after 1568 were also simple to verify. While not all years of high military expenditure or of revenue shortfalls led to payment stops, every default during Philip II's reign occurred when the king's fiscal position was poor. Importantly, strained finances reflected exogenous events, and not poor fiscal policy – they were caused by the Dutch rebellion flaring up and by Caribbean storms.

[36] See Morineau (1985).

No adverse change in loan conditions

Defaults occurred in 'bad times'; bankers to Philip II shouldered some of the king's fiscal risks, effectively providing insurance. The key question is if the defaults were *de facto* anticipated. If so, they were simply another instance of claims falling due on an insurance policy – with the Crown's finances stretched, contracts could not be honored to the letter.

If lenders did not understand that they were *de facto* holding contingent debt, and if the defaults were not excusable, then loan conditions after 1575 should have changed for the worse.[37] Figure 9 presents the distribution of interest rate (MIRR) on *asientos* before and after the 1575 default. As is readily apparent, there is no systematic shift in the cost of loans. The range, means, and medians of both distributions are virtually identical. A t-test finds no evidence that the king's access to credit became more expensive.[38]



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[37] In Alfaro and Kanczuk (2005), rising interest rates after a default act as a punishment for borrowers that violated the original loan contract in a context of contingent lending.
[38] We obtain a value of 0.68 [p-value 0.49]

Figure 9: Rate of return on short-term loans, before and after 1575

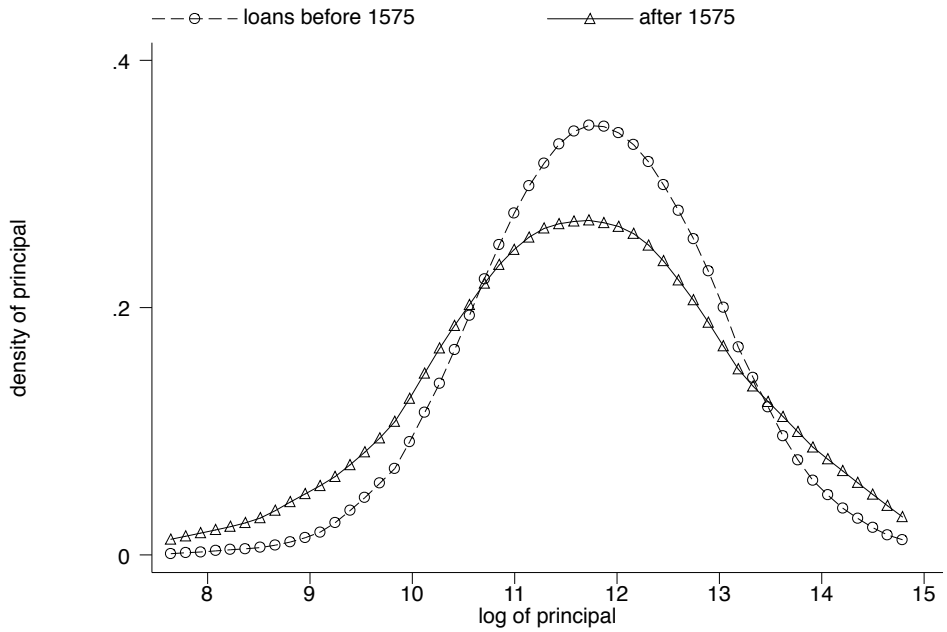

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Figure 10: Size of loans, before and after 1575

Alternatively, the quantity lent could have gone down. This is not what we find – the principal of loans did not decline. In figure 10, we plot the log size of loans before and after 1575. The average dropped from a log value of 11.86 to 11.83 (p-value 0.78). While the distributions are not identical, there is no systematic difference in the size of loans.[39]

Next, we examine the cost of borrowing in detail. In table 5, column 1, we regress rates of return on principal lent, foreign exchange clauses, and duration, as well as a post-1575 dummy. We find that longer-duration lending, on average, was less expensive, a result that is consistent with the fixed cost of underwriting *asientos* and the relatively cheaper alternatives available to the king for long-term borrowing. The size of a loan was not a significant determinant of its cost. Foreign exchange transactions raised the cost of

[39] A t-test has a value of 0.48 [p-value 0.63]

borrowing by over 6% on average. Lending became 5% cheaper on average after the 1575 default. If we estimate with banker fixed effects (column 2), the dummy variable for post-1575 loses its significance – the same bankers lent at the same rates at before, but bankers offering "dear" credit now played a smaller role. The post-1575 dummy becomes significant if we use robust regression estimation instead, and the size and significance of the coefficient is similar to simple OLS (column 3). The results do not suggest that the 1575 default caused bankers to suddenly update their beliefs about the riskiness of lending to Philip II: They did not begin charging him more to compensate for higher perceived risk. If anything, the cost of borrowing dropped substantially after the resolution of the bankruptcy.

Table 5: Correlates of borrowing costs (dependent variable: MIRR)

	(1) OLS	(2) OLS	(3) Robust regression	(4) OLS	(5) OLS	(6) OLS	(7) OLS
	All years	All years	All years	< 1576	>1575	All years	All years
Duration	-0.0025***	-0.0027***	-0.0006***	-0.0023***	-0.0035**	-0.0025***	-0.0025***
	(-6.65)	(-6.03)	(-3.27)	(-3.93)	(-4.39)	(-6.35)	(-4.10)
FX clause	0.066***	0.048**	0.024***	0.029	0.071**	0.059**	0.040
	(3.82)	(2.35)	(2.63)	(0.99)	(2.34)	(2.40)	(1.05)
Principal	0.035	0.065	0.026	-0.145	0.150**	0.372	0.048
	(1.05)	(1.58)	(1.44)	(-1.56)	(2.69)	(1.30)	(1.20)
after 1575 dummy	-0.050***	-0.089	-0.066***			-0.051***	-0.067*
	(-3.01)	(-1.62)	(-2.69)			(-3.08)	(-1.82)
Debt/revenue ratio						0.010**	0.008
						(2.21)	(1.09)
Fiscal balance						0.001	-0.001
						(0.26)	(-0.21)
Constant	0.264***	0.461***	0.212***	0.403***	0.359***	0.206***	0.206***
	(14.45)	(4.30)	(4.42)	(4.65)	(3.98)	(5.18)	(4.06)
Banker fixed effects	no	yes	yes	yes	yes	no	yes
N	393	393	383	181	212	381	381
Prob > F	0.000	0.000	0.000	0.010	0.012	0.000	0.001
adj. R^2	0.137	0.130		0.133	0.146	0.149	0.155

t-statistics in parenthesis
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Standard errors clustered at the year level in columns (6) and (7).

In specifications (4) and (5), we estimate the basic regression for the period before and after 1575. Lending for a longer period was associated with significantly lower cost of financing. Before 1575, extending the duration of loans by one year (roughly one standard deviation) was associated with a 2.4% fall in the cost of borrowing; thereafter, the decline is 4%. If we test for the significance of the difference in the two coefficients by estimating jointly, and interacting the duration variable with the post-1575 dummy, we find a strong, significant, negative result (beta coefficient -0.015, t-statistic -3.05). Column 5 also shows a significant coefficient for principal, the size of a loan. This is in contrast to the result prior to 1575. At the same time, if we interact the post-1575 dummy

with the size of principal offered, we do not find a statistically significant shift in terms of loan pricing in response to lending volume. Overall, the only major changes in loan pricing after 1575 favored the Crown.

In columns (6) and (7), we add two fiscal indicators as explanatory variables –the debt-to-revenue ratio and the fiscal balance.[40] In column (6), the debt-to-revenue ratio is significant at the 5% confidence level, indicating that a unit rise of the ratio resulted in an additional 1% in borrowing costs for the king. Once banker fixed-effects are added, however, the coefficient is no longer significant. This implies that, as debts mounted, only a subset of "premium" bankers continued to operate in the short-term debt market. The fiscal balance, in contrast, is never significant; bankers evidently did not take fluctuations in the budget into account when pricing loans.[41]

In sum, 16th century Spanish defaults occurred in "bad times". They did not make loans more expensive, and the Crown's borrowing did not decline afterwards. This makes it likely that defaults were excusable in the sense of Grossman and Van Huyck (1988).

VI. Conclusions

Over the last 800 years, periods of debt accumulation have often been followed by default (Reinhart and Rogoff 2009). Despite these disruptions, the market for sovereign debt has not simply disappeared. What accounts for this resilience? We use a unique case study of serial defaults by a single sovereign to demonstrate that excusable defaults are an important factor. Analyzing over 400 loan covenants, hand-collected from the archives, we show that a significant share of short-term loans contained contingency clauses. Loan

[40] Data from Drelichman and Voth (2010).
[41] It should be noted that neither the debt stock nor the revenue ratio were readily available statistics. Oft he two, estimating the fiscal balance is substantially more difficult. This is true today, as it must have been for contemporaries (Drelichman and Voth 2010).

modifications allowed effective risk-sharing between king and bankers – an institutional solution that offered many of the desirable properties that contingent debt would have today (Borensztein and Mauro 2004).

Contingent clauses and defaults were simply different points in the same spectrum of outcomes tied to uncertain realizations of the state of the world. While the loans were contracted over many possible scenarios, some could not be included or foreseen. When large, negative, and not previously foreseen events materialized, the king suspended payments: contracting over the Armada's defeat, for example, was not feasible. A similar argument has been made for England before the Glorious Revolution. Gary Cox (2011) concludes that defaults there constituted the equivalent of insurance claims coming due. Lenders effectively insured the fortunes of English monarchs in their wars – if the outcome was good, they were repaid; if not, kings defaulted. Our analysis of Philip II's borrowing expands this view, adding a wider range of contracting instruments, and several types of potential outcomes.

Philip II's payment stops also did not surprise his lenders. Bankers did not adjust their terms and conditions in a major way after the most severe default of Philip II's reign, in 1575. Lending continued along similar lines as before, and resulted in relatively generous rates of return for creditors. Combined with the fact that a strikingly high proportion of loans contained contingency clauses, we argue that sovereign debt at the dawn of government borrowing was *de facto* contingent. Defaults also occurred in verifiably bad states of the world. In sum, these results strongly support the view that sovereign defaults can be excusable (Grossman and Van Huyck 1988).

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