

THE THEORY OF  
SOVEREIGN DEBT  
AND SPAIN UNDER  
PHILIP II

James Conklin

# THE THEORY OF SOVEREIGN DEBT AND SPAIN UNDER PHILIP II (\*)

James Conklin

(\*) This paper evolved from dissertation research and was completed while the author was a visiting fellow at the Banco de España. The Ministry of Culture of Spain and the Mellon Foundation through the Institute of Latin American Studies of the University of Texas contributed funding. The staff of the Archivo General de Simancas provided valuable assistance. Thanks to seminar audiences at the Minneapolis Federal Reserve Bank, the Hoover Institution and the Banco de España. Thanks to Javier Díaz-Giménez, Scott Freeman, Ed Green, Avner Greif, Preston McAfee, Thomas Sargent, and Barry Weingast for helpful comments and discussions. Special thanks to Robert E. Hall, my dissertation advisor. The standard disclaimer applies.

Banco de España - Servicio de Estudios  
Documento de Trabajo nº 9623

In publishing this series the Banco de España seeks to disseminate studies of interest that will help acquaint readers better with the Spanish economy.

The analyses, opinions and findings of these papers represent the views of their authors; they are not necessarily those of the Banco de España.

ISSN: 0213-2710

ISBN: 84-7793-500-9

Depósito legal: M. 29035-1996

Imprenta del Banco de España

## Abstract

This paper examines lending by a Genoese-led cartel to Philip II of Spain (1556–1598) from the perspective of theory on sovereign debt. I find that a class of debt models which assumes lenders have an additional penalty beyond denying future credit accounts for the principal features of the episode. In particular, a version of Bulow and Rogoff (1989b) with asymmetric information accounts for the Genoese's imposition of an embargo on payment transfers to Philip II's Army of Flanders. In addition, this model's predictions for debt ceilings corresponds to evidence on the Crown's debt ceiling and estimates of lower bounds on the value of the Genoese's penalty and the Crown's ability to repay. Evidence from the episode goes against debt models that posit that implicit insurance is essential to the self-enforcement of sovereign debt: when Philip II lost the Armada in 1588, easily the biggest "bad shock" of the reign, there was no default, bankruptcy, or effort to reschedule debt held by the Genoese cartel.

## I. Introduction

The history of sovereign lending over the last five hundred years is marked by numerous episodes of partial default or repudiation. Medieval princes, absolute monarchs, dictators and democratic regimes alike have been reliable and poor credit risks at one time or another. In more recent times, the rapid expansion of lending to LDCs in the 1970s led to a series of reschedulings and partial defaults in the 1980s. Another expansion of international capital flows to a more select group of LDCs in the late 1980s and early 1990s has created concern that similar consequences may arise again. The sustainability of the debt of nations such as Belgium, Canada, Italy or the U.S. is not beyond question. Risk of sovereign default is an enduring phenomenon, appears likely to remain, and poses a major obstacle to the movement of capital across national borders and the conduct of fiscal policy.

A number of theories in the literature on sovereign debt make various predictions about the level of sustainable debt.<sup>1</sup> Bulow and Rogoff (1989a) show that a sovereign will not repay and that lenders will not lend if the only threat lenders possess is to indefinitely cut off future loans. That is, "reputation" arising through repeated interaction does not necessarily provide the sovereign sufficient incentive to repay.<sup>2</sup> Addressing the challenge posed by this result, two broad classes of models elaborate environments where reputation does sustain positive debt. The first class of models posits that sovereigns borrow to smooth expenditures and that partial defaults and debt reschedulings represent implicit state-contingency in sovereign lending agreements. If lenders can cut off all other alternatives for insurance, including self-insurance through savings, as well as future lending, then debt is sustainable. In these models the state-contingency of lending is essential to the enforcement mechanism of the contract.<sup>3</sup> The second class of models that supports sovereign lending assumes that sovereigns do have access to alternative vehicles

---

<sup>1</sup>The seminal article on international sovereign lending in the contemporary analytical idiom is by Eaton and Gersovitz (1981).

<sup>2</sup>This result strikes many as surprising. It works as follows: production for the sovereign's economy is specified as  $f(I_{t-1}, z_t)$ , where  $I_{t-1}$  is investment and  $z_t$  is an exogenous shock. It must always be at least as good for the sovereign to use the amount it is scheduled to repay,  $s(z_t)$ , as it is to keep the sum for its own use. If one assumes that

1. the sovereign can use some portion of  $s(z_t)$  to buy an insurance agreement that spans all contingencies,  $g(z_{t+1})$ , from financiers other than its lenders
2. lenders can impose no penalty other than refusing to lend in the future,
3. the contingent savings market is competitive,  $E_t g(z_{t+1}) = (1 + r)s(z_t)$ , and
4. contingent savings deposits do not give negative payouts,  $g(z_{t+1}) \geq 0$ ,

then the debt ceiling that makes the sovereign indifferent between repudiation and repayment is zero. The intuition of the result is that in the presence of perfect insurance markets, insurance is as good a way to buy insurance as state-contingent debt.

<sup>3</sup>Grossman and Van Huyck (1988), Atkeson (1991).

for savings and insurance, however lenders, in addition to cutting off future lending, can impose broader and more costly penalties than those narrowly pertaining to the loan contract itself.<sup>4</sup> In this class of models, any state-contingency lending contracts might exhibit is incidental to their enforceability; the threat of an additional penalty is what sustains lending.

The reign of Philip II of Spain (1556-1598) provides an unusually good test episode for these two classes of theories. The episode allows us to

1. observe the debt ceiling Philip II's lenders imposed
2. bound below the cost of penalties to the sovereign
3. bound below the sovereign's ability to repay.

My main result is that the episode provides broad support for the additional penalty class of models. Specifically, two events during the episode, *i.*) an embargo of specie shipments imposed by Genoese lenders on Philip II's Army of Flanders during a royal bankruptcy in 1575 – 1578, and *ii.*) the lack of a default, bankruptcy, or effort to reschedule debt by Philip II after losing the Armada in 1588, give broad support for an asymmetric information version of the model of Bulow and Rogoff (1989b) and provide clear evidence against the implicit-insurance class of debt models.

#### *Historical Significance*

The relationship between military power and economic growth is a central question in history, political economy, and international relations.<sup>5</sup> A dilemma all sovereigns face, commonly referred to as the fiscal commitment problem, is a core determinant of this relationship: the need to protect citizens and enforce contracts compels the state to finance a military, yet the fiscal pressure of military competition tempts the state to abrogate the very contracts it is charged with enforcing in order to raise revenue.<sup>6</sup>

The reign of Philip II (1556-1598) bears significantly on the proposition that fiscal commitment determines the relationship between military power and economic growth. The reign

---

<sup>4</sup>Bulow and Rogoff (1989b) show that if lenders impose a trade embargo on a sovereign who attempts repudiation positive debt can be supported. Fernandez and Rosenthal (1990) use a framework where favorable commercial treaties, financial advantages and other benefits are extended to good borrowers. Cole and Kehoe (1994) show that if other international strategic relationships, such as cooperation over rights to a common, non-excludable resource, are linked to debt the sovereign will repay.

<sup>5</sup>Brewer (1988), Fox (1991), Kennedy (1987), North (1981), Rosenberg and Birdzell (1986), Tracey (1985), Schultz and Weingast (1995).

<sup>6</sup>Greif, Milgrom and Weingast (1994) focus on the commitment problem during the Middle Ages. Sargent and Velde (1995), address how the French state dealt with the military-fiscal dilemma from 1780 to 1800. Bordo and White (1991) consider the same theme in a comparison of English and French monetary policy during the Napoleonic Wars.

marked the last credible attempt by a European dynasty to gain domination over the continent until Napoleon. The events of the half-century revealed that the landscape of dynastic-military competition would be one of “political *plurality* in Europe, containing five or six major states, and various smaller ones” for the next two centuries.<sup>7</sup> The historical contribution of this analysis is that it unveils the mechanics of the commitment arrangements that sustained the Spanish Crown’s debt. The paper reveals how the constraints posed by these arrangements affected the Crown’s military outcomes. The results provide a valuable comparison to later European military contests which were shaped by the dynamics of the fiscal commitment problem to an equally large degree.<sup>8</sup>

### *The Events*

From 1556 to 1598, Philip II waged war against the Ottoman Empire, Dutch rebels, Portugal, France, England, and principalities in Italy and Germany. His navy engaged foes and privateers throughout the Mediterranean, Atlantic, Indian and Pacific Oceans. As a whole, these military enterprises were successful: the Ottoman empire ceased to be either a land or naval threat to Europe after the Battle of Lepanto (1571), Spain’s colonial possessions were solidified and generated increasing revenues, and the empire was expanded with the addition of Portugal, its colonies, and the Philippines. The continuing rebellion by Dutch rebels in the Low Countries, engaged by Spain’s Army of Flanders, and the loss of the Armada in 1588 are prominent exceptions to the otherwise preponderant success of Spanish arms during the period.

The revenues the Crown depended on to meet volatile and increasing military expenditures were also volatile and increasing. This created three financial necessities: to anticipate increasing revenues,<sup>9</sup> to cover the difference between fluctuating revenues and expenditures, and to transfer specie from Castile to the king’s troops fighting outside of Spain.

The Crown contracted international credit through the *asiento*, a high interest, short-term debt contract, lent by a Genoese-led cartel.<sup>10</sup> In sixteenth century usage “*asiento*” was a general term that described a variety of contracts, and the Crown often contracted specie transfers or foreign exchange transactions within the same contracts that governed lending. The Crown typically owed creditors three to four million ducats in *asientos* (roughly one half of a typical

---

<sup>7</sup>Kennedy (1987), p. 31.

<sup>8</sup>North and Weingast (1989), Parker (1985), Sargent and Velde (1995), Tracey (1985), White (1989).

<sup>9</sup>Military contests during the period were as much contests of finance as anything else. The power that could spend the most for a sustained period generally won, and outspending rivals at critical junctures was crucial. Sovereigns who believed that revenues and spoils of war offset its costs were quickly disabused of the expectation.

<sup>10</sup>*Asientos* were lent by a number of international lenders, among them Spanish men of commerce, Flemish financiers, Florentine merchants, and wealthy investors in Germany. However the Genoese were by far the most prominent lenders in the cartel. Below, I will refer to the entire group of lenders as simply “the Genoese”.

year's total revenues), though the figure rose on various occasions above eight million, once to fifteen million (over two years' revenues).

There were three royal "bankruptcies" during the reign in 1557, 1575, and 1596.<sup>11</sup> When settled relatively cooperatively, as in 1557 through 1560, and in 1596 through 1597, the Crown emerged from bankruptcy with its finances and military prospects improved. When settled slowly and acrimoniously, as happened in the long negotiations of 1575 through 1578, the king's armies floundered for lack of funds.<sup>12</sup> Contrary to common perception, the Spanish Crown's bankruptcies were not wholesale repudiations of obligations to creditors nor signs of Crown insolvency. Rather, they were events where diverse creditors re-elaborated and swapped claims upon the Crown, apparently with the aim of solidifying their claims' collectability in the future.<sup>13</sup> On the occasion of the bankruptcy of 1575, the Crown resisted the demands of the Genoese-led cartel. The stand-off that resulted led the Genoese to impose a three-year embargo on all currency transfers and letters of exchange between the Crown and its agents and troops in the Low Countries where it was engaged in a major campaign against Dutch rebels. A direct consequence of this measure was that in November, 1576, troops of the king's own Army of Flanders mutined and sacked Antwerp because they had not been paid. This was a grave military set-back for Philip. Shortly afterward, the king began negotiating with the Genoese once again. In the end, the bankruptcy of 1575, like those of 1557 and 1596, was concluded with the Crown paying off its arrears in *asientos* with a combination of specie and newly issued *juros*.<sup>14</sup> In early 1578 the Genoese ended their embargo on transfers of payment to the Crown's troops and agents abroad.

Despite the frequency, and on the one occasion acrimony, of the Crown's bankruptcies, the Crown repaid its *asiento* creditors to the extent that each bankruptcy was settled to the satisfaction of the Genoese: they resumed financial services immediately afterward and made high ex post positive returns on lending to the Crown relative to their other opportunities.<sup>15</sup>

#### *The Argument*

The additional penalty class of debt models accounts for why Philip II repaid his lenders.

---

<sup>11</sup>It has been generally thought that there was a bankruptcy in 1560. Professor Felipe Ruiz Martín has kindly pointed out to me that his more recent readings of archival documents indicate that the negotiations between bankers and the king in 1560 were actually a continuation of the 1557 bankruptcy and not an independent event.

<sup>12</sup>Braudel (1972) v. I p. 506; Braudel (1979) p. 168; Lynch (1981), Parker (1985).

<sup>13</sup>Thompson (1994a) states, "Conventionally, the series of Crown 'bankruptcies' ... have been taken as an indicator of ... fiscal crisis. However [their] periodicity suggests that, rather than manifestations of 'crisis', these were an integral part of the financial system of the Monarchy. These events ... were a rescheduling of debts, but they did not mean the Crown was without resources."

<sup>14</sup>*Juros* were annuity-like bonds with varying properties, funded on particular tax sources within Castile and held by Castilian subjects.

<sup>15</sup>Braudel (1979) p. 167, Conklin (1994).



The Genoese had a penalty technology to use against the Crown, a boycott on specie delivery from Spain to the king's troops in Flanders. I reject the implicit insurance class of debt models: the most clearly identifiable a bad shock during Philip's reign was the loss of the Armada in 1588. This event elicited no concessionary terms from the Genoese, nor did it provoke a royal bankruptcy or a rescheduling of payments from the king. Within the additional penalty class of debt models, the assumptions of Bulow and Rogoff (1989b) most closely match the circumstances of Philip II and his Genoese lenders. However the assumption of perfect information this model makes is implausible for sixteenth century Europe. Relaxing the assumption should change the implications of their model in predictable fashion. Their current results predict no punishment phases along the "path of play". Models of repeated strategic interaction with imperfect information predict punishment phases along the path of play.<sup>16</sup> Events during Philip II's reign are consistent with this modification: the Genoese's penalty was imposed on the Crown, that is, it occurred along the path of play.

The paper is organized as follows: section II summarizes theory. Section III covers more historical background. Section IV considers whether contracts between the Crown and the Genoese conformed to predictions of the implicit insurance class of models; it concludes they did not. Sections V and VI test the claim that the additional penalty class of models accounts for lending by the Genoese to Philip II. Section V examines whether episode fulfills the main requirement of the additional penalty class of models: whether the Genoese had a penalty, and if it was comparable to those specified in the literature. Section VI compares Bulow and Rogoff's (1989b) model's predictions to estimates of lower bounds on the Crown's ability to repay, the value of the Genoese's penalty, and the Crown's debt limit. Section VII concludes.

## II. Theory on Sovereign Debt

The argument draws on three specific models, the first two from the implicit insurance class of models, the third from the additional penalty class of models.

*Grossman and Van Huyck (1988)*. The model of Grossman and Van Huyck posits that if a sovereign has limited access to insurance, and as well seeks to borrow to increase production in the future, the lending contract serves both to provide capital and to insure against adverse shocks. If the sovereign has *no other means available for saving or insuring itself*, reputational equilibria with positive lending arise where lenders offer the sovereign implicit insurance. If the sovereign is enduring a bad year, it requests lower payment by initiating a partial default.

---

<sup>16</sup>Atkeson (1991), Abreu, Pearch and Stacchetti (1986, 1990). See discussion of theory, below.

Because partial defaults do not represent abrogations of the true implicit agreement, lenders do not invoke moratoria on new lending or other sanctions that other literature predicts. The model of Grossman and Van Huyck also predicts that true abrogations of the implicit debt agreement (“repudiations”) are most likely to occur when a sovereign receives a favorable shock because its scheduled repayment is high and its lenders will not forbear a partial default.

*Atkeson (1991)*. Atkeson considers an environment similar to Grossman and Van Huyck, however assumes asymmetric information between sovereign and lenders: the latter are not able to monitor whether the government consumes or invests the proceeds of the loan. Moral hazard prevents lenders from offering the sovereign full insurance, which would diminish the sovereign’s incentive to invest the proceeds of the loan. Atkeson’s model shows that the optimal lending contract under risk of repudiation and moral hazard specifies that in the worst possible state of nature (i.e., lowest realizations of output) a capital flow from the borrowing country to the lenders and as well, a fall in consumption and investment. Atkeson attributes low realizations of consumption and investment in LDCs and reverse capital flows to lenders in the early 1980s to the presence of moral hazard. The character of asymmetric information in Atkeson’s model is similar to that in the models of Abreu, Pearce and Stacchetti (1986, 1990). They show that in cartels, in the presence of moral hazard, “punishment phases” occur on the equilibrium path. The worst outcomes in the random process that is correlated with each player’s action will happen with positive probability no matter how cooperative players are. Nevertheless, if punishments are not invoked in these worst states, players will not have incentive to cooperate in the first place. Abreu (1988) and Abreu, Pearce and Stacchetti (1990) show that worst punishments, those that deliver the lowest present value and hence support the most cooperation, produce incentives where players “go along with their own punishments.” The negative capital flows of Atkeson’s model are of this character.

*Bulow and Rogoff (1989b)*. The results of the model are that *i.*) if lenders have access to a sanction above and beyond the ability to prevent the sovereign from acquiring credit in the future, then positive debt is sustainable; *ii.*) lenders will impose a debt ceiling on sovereigns; *iii.*) this ceiling may be well below the present value of debt service payments the sovereign can feasibly make; *iv.*) the debt ceiling increases with the severity of the punishment lenders can impose, and decreases with the opportunity cost of funds (the real interest rate) of the lenders. The model incorporates the fact that the credibility problem in sovereign lending is two-sided – just as the sovereign cannot commit to repay *ex ante*, lenders cannot commit to “walk away from the table” and implement an inefficient sanction if by renegotiating they can

salvage more value from the contract. That is, ex post, lenders may be “tempted” into not carrying out sanctions in return for compensation greater than they would receive implementing the punishment, but less than the full value of payments initially contracted. The implication is that ex ante, lenders don’t lend so much as to put themselves in such a situation. Two-sided bargaining accounts for the restrictive predictions for debt ceilings.

### III. Military Finance during the Reign of Philip II

#### *Revenues and Expenditures*

The Spanish Crown’s revenues were of four general categories: *i*) ordinary rents; *ii*) extraordinary rents; *iii*) income from the Indies; and *iv*) extraordinary expedients. The first two revenue sources largely came from within Castile and were stable and increasing throughout the reign.<sup>17</sup> Income from the Indies and expedients fluctuated and also grew during the period. See Figures 1 and 2.<sup>18</sup> Military expenditures accounted for the majority of spending and were volatile. See Figure 3.

#### *Asientos*

When financing immediate military or domestic expenditures, the Crown contracted with a group of foreign financiers led by Genoese. The principal contract between Crown and its financiers was the *asiento*. An *asiento* covered one or a combination of three specific transactions: an unsecured short-term loan, a transfer of payment, and a currency exchange contract. Typically, *asientos* contracted with the Crown had all three components.<sup>19</sup> Many *asientos* were contracted for the purpose of “rolling over” earlier *asientos* that had matured and that the Crown could not fully retire. Interest rates on *asientos* ranged from 8 to 22%, with 12% being typical. Fees for exchange and transfer ranged from 6 to 12% of principal.<sup>20</sup> Data on principal outstanding on *asientos* appears in Figure 4.

---

<sup>17</sup>While all Philip II’s European subjects paid taxes, only Castile and the colonies in the Indies generated enough surplus to provide revenues for war. Revenues provided by Flanders, for example, were far less than expenditure on war and administration in that kingdom.

<sup>18</sup>The data presented in this and other figures below have been collected from sources that vary from original archive documents to informed guesses by experts such as Ulloa. These sources are: Archivo General de Simancas, CJH 364-6, 501-504; Artola (1982), Braudel (1972), Carande (1949, 1990), Dominguez-Ortiz (1983, 1981), Hamilton (1934), Lovett (1972, 1980, 1982), Lynch (1981), Ruiz Martín (1965, 1991), Parker (1972), Thompson (1977), Ulloa (1986). All sources were not necessarily consistent. What discretion I used in adjudicating them was guided by accounting identities and preference for the intermediate figure. They can be obtained on diskette from the author.

<sup>19</sup>For example, the Crown might contract in Madrid for a certain number of gold florins to be delivered in Bruges and the Crown would pay the banker in Madrid. When the Crown paid, it paid in silver *reales*, not the coin that had been delivered abroad. Finally, the Crown would not have to deliver the agreed quantity of silver for a number of months or even more than a year. Agreements specifying payment upon the arrival of the Indies fleet were also common.

<sup>20</sup>For more background on *asientos* see Braudel (1972), Carande (1949, 1990), Lovett (1972, 1980, 1982), Ruiz Martín (1965, 1990), and Ulloa (1986).



Figure 1: Crown Expenditures (solid line) and Revenues (dotted line)

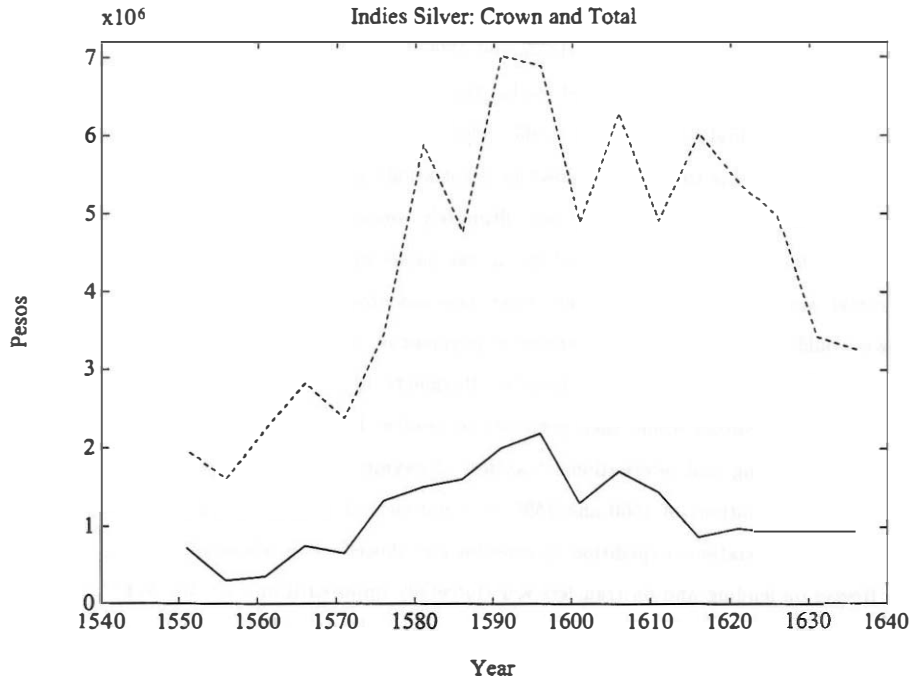


Figure 2: Silver Remittances from the Indies, 5-year averages. Crown's share (solid line) and Total (dotted line)

### *The bankruptcies*

The bankruptcies of 1557, 1560, 1575, and 1596 were similar in nature.<sup>21</sup> The bankruptcy of 1557 was not definitively concluded, rather the Crown came into some unexpected funds and was able to delay final reckoning until 1560. The bankruptcy of 1575 at the outset appeared to be quite different, due to the break-down in negotiations and the imposition of the embargo of transfer of payments. Nevertheless it was ultimately concluded in the same fashion as those of 1560 and 1596. To trace a general outline, at the outset of a typical bankruptcy the Genoese-led cartel would cease to extend the Crown new *asientos* in the quantities it wanted. The Crown would then announce a suspension of payment on *asientos* and other accounts payable in arrears. This was known as the “*decreto*”. Payments on *juros*<sup>22</sup> were not suspended.<sup>23</sup> The Crown and its creditors would then negotiate to resolve the suspension. Creditors would slow or halt new lending and international transfers of payment until terms were settled. During the shorter negotiations of 1560 and 1596, it is not clear if a freeze was imposed or if in the confusion of negotiations expedition of *asientos* was slowed. It is abundantly clear, however, that freezes on lending and on transfers were forcefully imposed from 1575 to 1578.<sup>24</sup> The two freezes were separate measures: the freeze on transfers could have been eased even as new loans were denied, since the king could have simply paid silver up front for new transfers. However both measures were imposed, with the consequence that the Crown’s capacity to make war beyond its borders was seriously impaired until it reached agreement with its lenders.

The agreements that concluded the negotiations, called “*medios generales*”, stipulated that:

1. lenders of *asientos* be repaid in large part with *juros*, the remaining portion in specie.
2. lenders accept a write-down on principal. The write-down might be implicit, in that the *juros* the lenders accepted paid low interest and traded below face-value in secondary markets. The write-down also might be negotiated explicitly.
3. the lenders end the freeze on financial services, in particular, that they resume transfers of payment to the king’s troops abroad.

---

<sup>21</sup>For the bankruptcies of 1557 and 1560, Ruiz Martín (1965) and Ulloa (1986). For the bankruptcy of 1575, Braudel (1979), Lovett (1980, 1982), Parker (1978), Ruiz Martín (1990), and Ulloa (1986); for the bankruptcy of 1596, Castillo-Pintado (1973) and Ulloa (1986).

<sup>22</sup>The annuity-like instruments held by subjects within Castile.

<sup>23</sup>This suggests that *juros* and *asientos* were backed by different commitment mechanisms. This thesis is pursued in Conklin (1994). The issue of domestically-held *juros* was instrumental in resolving bankruptcy negotiations between the Crown and its international lenders. Because the primary focus of this study is on international Crown borrowing, discussion below covers *juros* only to the extent that they bear on international debt. For a history of *juros* see Castillo-Pintado (1963).

<sup>24</sup>See Appendix for more detail on the bankruptcy of 1575.

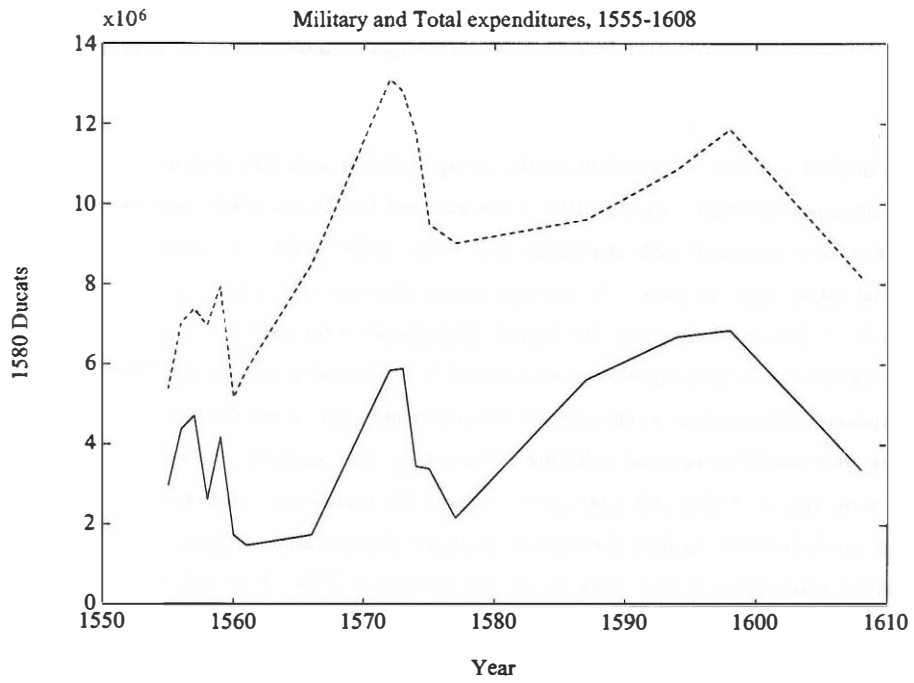


Figure 3: Crown Expenses, Military (solid line) and Total (dotted line)

Simultaneously the king would negotiate with the *Cortes*, the representative body of the towns and villages under royal jurisdiction, an increase in taxes in order to fund the new *juros*.<sup>25</sup>

#### **IV. Evidence of implicit insurance in asiento contracts**

The implicit insurance class of debt models are appealing because they account for many facts of contemporary defaults among LDCs. Grossman and Van Huyck (1988) point out that “(1) Defaults are associated with identifiably bad states of the world. (2) Defaults are usually partial rather than complete. (3) Sovereign states often are able to borrow again soon after default.”<sup>26</sup> One could argue that the Spanish bankruptcies in the sixteenth century generally fit the description just given and that *asientos* should be interpreted as having an implicit insurance component. This position would interpret the proximate cause of the Spanish bankruptcies as being “bad shocks” as opposed to hitting a debt ceiling. The regularity and rapid conclusion of the bankruptcies of 1560 and 1596 appear to favor this explanation. However other historical facts speak decisively against the implicit insurance interpretation. Firstly, if ever Philip II received a bad shock, it was when he lost the Armada in 1588. If he and the Genoese had followed the equilibrium described by Grossman and Van Huyck, surely the insurance would have kicked in at this point.<sup>27</sup> In addition, in order to support positive debt in equilibrium, Grossman and Van Huyck rely on the assumption that the sovereign has no access to other assets to insure against shocks or to save. The Crown had available at least one asset to use in this manner, the proverbial war chest. This fact and Bulow and Rogoff’s (1989a) no-lending result suggest that Genoese needed some additional sanction to enforce their claims on the Crown.

#### **V. Evidence on the Genoese’s Penalty**

Evidently, by their actions during the bankruptcy of 1575, the Genoese possessed the ability to halt transfers of payment used to pay and provision the king’s army in Flanders. The halted transfers of 1575–1578, however, do not necessarily constitute incontrovertible evidence that the Genoese “played” an equilibrium resembling that of lenders in Bulow and Rogoff’s model. In light of the large sums owed them by a Crown suspending payment, the Genoese may have

---

<sup>25</sup>There are many puzzling features about the bankruptcies that this study does not purport to explain. Among them, why the Crown paid out *juros* to the Genoese in bulk at bankruptcies, instead of issuing the *juros* itself and not running up arrears with the Genoese at all. Conklin (1994) accounts for some of these anomalous features.

<sup>26</sup>Grossman and Van Huyck (1988) p. 1088.

<sup>27</sup>Ulloa (1986) shows that in 1588 and 1589, the king had at from 4 to 6 million ducats in arrears to Genoese bankers. P. 810. However rather than calling on the Genoese, Philip called on the *Cortes de Castilla* for more funds.



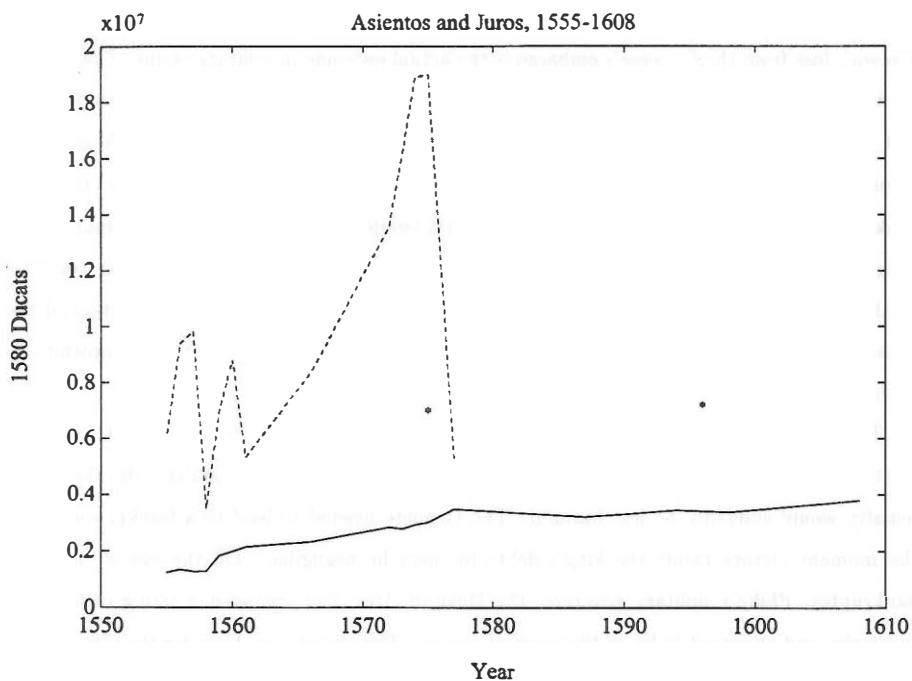


Figure 4: Debt Service on Juros (solid line) and Principal Outstanding on Asientos (dotted line)

been simply unable to clear letters of exchange on European bourses. However this was not the case. The Genoese remained active during the bankruptcy, and cleared letters of exchange on the behalf of other clients.<sup>28</sup> Moreover, throughout Philip's reign, the Indies fleet arrived every year with silver of roughly one fourth annual expenditure. The fleet arrived during bankruptcy negotiations as well, enabling the Crown to pay up front for letters of exchange. Still, the Genoese did not execute transfers.

The Genoese's boycott on transfers inflicted appreciable losses on the Crown, losses that quite plausibly were of the same or greater magnitude than a trade embargo, the interpretation of the model's punishment given by Bulow and Rogoff. One measure of this magnitude is the Crown's annual expenditure in Flanders, estimated at 2 million ducats a year.<sup>29</sup> At roughly one fourth of the annual royal budget, this figure apparently reveals that the Crown had a strong desire to fight there. If the Crown received some "consumer surplus" in its military expenditures,

<sup>28</sup>Ehrenberg (1928), p. 120. Ruiz Martín (1990), p. 28.

<sup>29</sup>Thompson (1977), p. 268.

its utility loss to not being able to fight there would even be higher. A second measure of the Crown's loss from the Genoese's embargo is the actual outcome in military terms. The sacking of Antwerp on November 1576 by Philip's own troops was a military disaster. Though it was not uncommon for sovereigns of the period to owe their soldiers arrears of as much as two or even three years (the king's Dutch opponents also owed arrears to troops), it was critical to make regular and periodic partial payments so that troops could eat.<sup>30</sup> The mutiny spurred the king's Dutch opponents to more aggressive offense and interrupted commerce and tax revenues in the heart of the Spanish Netherlands. Shortly after the king ascertained the extent of the deterioration of his military position, he moderated his demands and re-initiated negotiations with his creditors.

The effectiveness of the Genoese's penalty hinged critically on the fact that the Crown was fighting an ongoing war in Flanders: were the king to have won in Flanders, the Genoese's penalty would suddenly be less harmful. The Genoese needed to lend in a fashion such that the moment victory came, the king's debts to them be negligible. On the eve of the 1575 bankruptcy, Philip's military governor, the Duke of Alva, had compiled a string of military successes, and appeared to be on the verge of victory. This posed a problem for the Genoese, as their claims against the king not covered by collateral<sup>31</sup> were in the neighborhood of 7 million ducats, about one year's revenues for the Crown. While there is no direct evidence,<sup>32</sup> the logic of sovereign debt theory suggests that the Genoese had ample motive to undo Philip II in Flanders for fear he might not repay them once he had won.

#### *Circumventing the Penalty*

A possible reaction by the Crown to the Genoese embargo would have been to circumvent it by exchanging and transporting specie itself. A number of factors that made this option impractical, however. Hostilities with France ruled out the most direct overland route to Flanders. Poor relations with England meant that Spain risked losing any specie it tried to ship through the English channel.<sup>33</sup> Finally, the costs and risks of shipping silver specie along the

<sup>30</sup>O'Neill (1984). Just as lenders rendered their agreements with sovereigns self-enforcing, so did the mercenary troops. If a sovereign reneged on its obligations beyond a certain, tolerated degree, troops mutinied.

<sup>31</sup>This collateral was *juros de resguardo*, domestically funded annuities that the Genoese were allowed to sell (and hence recover their capital) on the condition that once the Crown repaid the *asiento*, the banker had to produce and return a security of equal value. See the Appendix for more detail.

<sup>32</sup>Ruiz Martín (1990) hints that the Genoese may have had a hand in inciting the troops to mutiny in Antwerp (p. 12), as does Braudel (1972) v. I p. 507. Geoffrey Parker finds this implausible given the Genoese's ultimate interest in the Crown's final success. However, he confirms the effectiveness of the Genoese refusal to write or honor any bill of exchange for the King of Spain from 1575 to 1578, that this led to the sack of Antwerp, and that the sack was the decisive event in turning the bankruptcy negotiations in the Genoese's favor (telephone interview with Professor Parker, at New Haven, CT from Austin, TX, May 1994).

<sup>33</sup>During the bankruptcy of 1575, the Crown sent 800,000 ducats of bullion to Laredo, a port on Spain's

Spanish Road were deemed to be too great as well.<sup>34</sup> The Crown could simply not deliver the necessary amounts of silver specie to Flanders on its own behalf. International financiers were able to make the transfer because they could exploit net flows of international payments to write letters of exchange to the Low Countries, for the most part avoiding physical transport of specie altogether.<sup>35</sup>

#### *Maintaining the Cartel*

The Crown's other potential option to get around the embargo was to entice other financiers or even renegade members of the Genoese cartel to conduct transfers on its behalf. The Genoese, in response, had to provide their coalition members with incentives strong enough to prevent them from going over to the side of the Crown. The problem of preventing coalition defections is well-known in game theory. In order for a coalition to credibly impose a penalty, no member may gain more by defecting than by participating in imposing the penalty. This would imply that the Genoese too had to have intra-coalition promises and penalties.<sup>36</sup> The obvious measure for the Genoese was to kick a defector out of the lending cartel in the future.<sup>37</sup> A banned lender would lose access to information and coordinated efforts that made the operations of the Genoese operations so profitable in the first place.<sup>38</sup> Loss of citizenship and other rights within Genoa might have been a possible threat as well. During the bankruptcy of 1575, the Fugger came to the Crown with an offer to exchange and ship currency to Flanders in return for being exempted from the bankruptcy decree,<sup>39</sup> an offer the Crown was quite willing to

northern coast, to be shipped to Flanders through the English channel. Crown officials responsible for the transfer ultimately shipped less than half of it, determining that the risks of weather and seizure by the English too great. Lovett (1982), p. 4. Braudel (1972) v. I p. 506 confirms the English blockade on Spanish shipping through the channel.

<sup>34</sup>The Spanish Road was an overland route from Lombardy in Northern Italy to the Low Countries. It ran along the Rhine valley through non-hostile duchies and principalities. In the late sixteenth and early seventeenth centuries it was of enormous strategic importance to Spain, as it was the principal if not the only route by which Spain could move Spanish and Italian troops and Albanian mercenaries to Flanders. See Parker (1972) for a history. Braudel (1972) v. I. p. 542 states that 50 arquebusiers were required to accompany a transfer of specie from Genoa to Flanders in the latter sixteenth century.

<sup>35</sup>International financiers of the period were not always able to count on trade flows to balance international payments. In such situations financiers arranged physical transport of specie, preferably gold, to clear payments. In these cases it was standard practice to re-insure the specie shipped. Lovett (1982), p. 15., recounts an incident where Elizabeth of England seized a number of pay ships in 1569. The ships were contracted through the Genoese, who received 120,000 ducats in compensation for the loss thanks to their reinsurance. This immediately leads one to ask why the Crown did not seek to reinsure large quantity shipments of specie through the channel in 1575. While I have found no direct evidence, the Genoese may have been able to extend their boycott on the Crown to reinsurance.

<sup>36</sup>See Greif (1989, 1993), Greif, Milgrom and Weingast (1994), and Weingast (1995) for strategic analysis of these issues in the context of Europe in the middle ages.

<sup>37</sup>For example Braudel (1972) v. I indicates that in the great commercial and financial fair of Piacenza the Genoese controlled right of admission.

<sup>38</sup>Braudel (1972) v. I p. 505; Ruiz Martín (1990), p. 41; 102-103.

<sup>39</sup>Lovett (1982), p. 4, Ruiz Martín (1990), pp. 18-19.

accept.<sup>40</sup> Nevertheless, the Fugger were unable to deliver the quantities of specie that the Crown needed.<sup>41</sup> In no small part, this failure was due to countermeasures and harassment by the Genoese and their agents.<sup>42</sup> Genoese prevailed by 1578 and in the end, the Fugger were not exempted from the suspension decree. Just as with the Fugger, any single defector from the cartel would not be able to deliver on the scale of the coalition as a whole and not be successful in striking and executing contracts with the king.<sup>43</sup>

In summary, during the bankruptcies of 1557 and 1596, the Crown accepted the need to negotiate with the Genoese in good faith and settled its arrears quickly. In 1575, it attempted to repudiate its debt, and in the course of this action tried, in two ways, to circumvent the Genoese's penalty. First by shipping specie itself, second by attempting to lure defectors from the Genoese-led coalition to make transfers on its behalf. Neither measure succeeded, and the Crown repaid its lenders.

#### *The Monopoly on Specie Transfer*

The Genoese-led cartel's dominance in the clearing of bills of exchange and large scale specie transfer was a critical element in the success of the embargo. The Genoese's advantages in this business included an extensive network of depositors throughout Europe,<sup>44</sup> the capacity to integrate lending, specie exchange, trade and insurance services, and a strong presence in the great fairs and exchanges throughout the Mediterranean and Western Europe.<sup>45</sup> Through these resources, the Genoese were able to capture increasing returns to scale in international financial services. More decisive, however, was Genoa's geographic proximity to Venice which allowed its financiers to clear a three-way market in spices and luxury goods (which originated in the Far East and passed through Northern Italy on their way into Europe), silver (the Spanish Crown's means of payment to the Genoese), and gold (received from Dutch and Flemish merchants in exchange for Far Eastern luxuries).<sup>46</sup> The Portuguese would seem natural competitors to the

<sup>40</sup>Ruiz Martín (1990) documents that certain royal counsellors advocated this same bankruptcy decree in order to allow Castilian commercial interests a foothold in the business of financing the king (p. 19).

<sup>41</sup>During the early 1570s, payments from Castile to Flanders averaged well over two million ducats a year; transfers by the Fugger amounted to just one million ducats over the entire three years of the bankruptcy. Ulloa (1986), p. 795.

<sup>42</sup>Ehrenberg (1928) p. 126 reports on these efforts by the Fugger: "Direct bill transactions between Spain and Antwerp were now [by the late 16th century] absolute; but the Fugger were very nervous about using the new markets, especially the Genoese bill fairs, but also Lisbon, Lyons and Florence." This nervousness arose from the hostility of Genoese toward competitors breaking the boycott.

<sup>43</sup>This consequence was visited upon the Fugger in the aftermath of the events of 1575-1578: "[Their action] roused the other creditors against the Fugger, so that they tried to do them at Court all the harm they could." Ehrenberg (1928), p. 125. In 1596 the New Christian financiers of Lisbon and the Fugger offered to circumvent potential Genoese embargos, however the Crown did not make use of their offers. Braudel (1972) v. I p. 514.

<sup>44</sup>Ruiz Martín (1990), pp. 82-105.

<sup>45</sup>Such as Antwerp, Lyon, Medina del Campo, and Piacenza.

<sup>46</sup>Specifically, net flows of silver went to the Far East in exchange for luxury goods (spices, etc.). Those luxury

Genoese in clearing international balances of payments because they had cheaper transportation to the Far East than the Venetians. However precisely during this time period (1550–1625) the Portuguese lost military and political control over the hinterlands of their Persian and Indian factories (fortified trading posts). The Venetians, though they had higher transport costs with their overland routes, did more business than the Portuguese because they had better relations with local political powers.<sup>47</sup>

*Why we observe the penalty*

The model of Bulow and Rogoff (1989b) assumes perfect information and common-knowledge and predicts that no punishment-phases take place along the path of play. While these assumptions were necessary for tractability and enhanced the clarity of the model, they hardly apply to late sixteenth century Europe. There, communication and transport conditions varied constantly due to changes in technology and also through interaction with the elements, geography and changing political circumstances. It is far-fetched, at best, to think that the Genoese cartel and the Crown knew each other's strategies, knew the other knew its strategy, and had sure knowledge of the action space available to each other. Relaxing assumptions about information should change the model's implications in predictable fashion. In other models of dynamic strategic interaction under imperfect information, punishment-phases take place along the path of play. In Atkeson (1991), in the worst output outcomes, the sovereign endures low consumption, low investment and a reverse capital flow. In models of oligopoly and in general models of multiple player games, the addition of information imperfections induces punishment-phases along the path of play.<sup>48</sup>

Hence, given the nature of information in the sixteenth century, I conjecture that on occasion a punishment-phase would occur along the path of play. I interpret the Genoese embargo of

---

goods that were traded to Northern Europe were ultimately paid for in gold coin. Hence, in aggregate, traders and by extension their agents in the Low Countries were "long" gold, and "short" silver, the specie demanded in the Far East for the next trading venture. The Spanish Crown was long silver (received from its American colonies) and short gold (needed to pay troops in Flanders). The Genoese cleared the traders' long position in gold for the Crown's short position by letters of exchange: traders would receive delivery of silver in Seville, Medina del Campo, or Madrid (which was as convenient as Antwerp or any other commercial center of the time in terms of shipping it to the Far East). On the other side of the transaction, the Crown received gold in the Low Countries and delivered silver to Seville, Madrid or Medina del Campo. Of course a clearing of balance of payments would not exactly match Crown demands for gold with traders' demands for silver, so specie would have to be transported between Mediterranean fairs and trade centers and the Low Countries. Braudel (1972) v. I p. 543–570; Braudel (1979); Ruiz Martín (1990).

<sup>47</sup>Boyajian (1983), *Introduction*, Braudel (1979), p. 170. The situation favoring Venice reversed to favor the Portuguese by the 1620s. Not surprisingly, the Genoese suffered unusually large write-downs in the bankruptcy of 1627, and afterward were replaced by New Christian financiers of Lisbon as the principal lenders to Philip IV. By 1627, the Genoese threat to prevent the king from transferring funds to provision troops was no longer sustainable. Though the Genoese retreated from royal lending, this bankruptcy by no means spelt the ruin of the city-state.

<sup>48</sup>Abreu, Pearce and Stacchetti (1986, 1990). See theory section, above.

1575 to 1578 as precisely this. I attribute the information imperfection to the fact that the Crown could not monitor the implementability of the Genoese's penalty. That is, the Crown had less information than the Genoese as to its ability to transfer specie either on its own or through non-cartel financiers.

*Generality of the circumstances surrounding the penalty*

The Genoese's willingness to lend to Philip II depended upon their logistical and financial resources in a region of strategic importance, and their ability to use the withdrawal of these resources as a penalty. Given the close connection between credit and war, we might expect to see a general relationship between who a sovereign's lenders are and how much influence they have over the sovereign's vital strategic interests. Philip II's father, Charles V, used the Fugger of southern Germany as his principal bankers. Their sway and political importance in that region were important to Charles because he was Holy Roman Emperor.<sup>49</sup> Philip II, who did not inherit his father's Austrian possessions nor the Holy Roman imperial title, quickly came to employ the Genoese as his principal financiers. The Low Countries were of far greater importance during his reign and the Genoese had a heavy commercial and financial presence in that region. Within a year of Philip's accession, the Fugger found that the Genoese's claims on the Crown received a much higher priority than their own. In 1563 the Fugger were still trying to collect claims from before the bankruptcy of 1557.

## VI. The Debt Ceiling

The model of Bulow and Rogoff (1989b) predicts a debt ceiling below the present value of debt service payments the government can feasibly make. The model also predicts a debt ceiling below, possibly well below, the present value of the loss of enduring the lender's penalty. To determine if a debt ceiling due to a "credibility constraint" was binding as predicted by Bulow and Rogoff's model, I estimate lower bounds on these two ceilings and compare them to the Crown's actual debt limit.

*The present value of revenues available for servicing asientos*

To calculate the present value of government revenues available for servicing *asientos*, I do not consider all of the Crown's revenues. The Crown's total fiscal liabilities included many obligations besides *asientos*. The present value of all revenues yields an upper bound on a ceiling for all liabilities instead of *asientos* alone. Nearly all of the Crown's Indies income was

---

<sup>49</sup>Charles borrowed from the Fugger 530,000 of the 850,000 florins he used to bribe the Electors for the title. Such was the simplicity of politics in an earlier time that the bribe won the young king unanimous election on 28 June, 1519.

Table 1: The Present Value of Indies Revenues up to 1660 (in ducats)

Discount rate:	In 1550:	In 1575:	In 1600:
2%	54,349,772	67,241,644	40,519,654
5%	20,868,554	37,250,480	22,837,321
10%	8,560,810	20,092,291	11,412,302

paid over to the Genoese-led cartel for service on *asientos*.<sup>50</sup> Therefore I use the net present value of Indies revenues for a bound for a debt ceiling based on revenues available to service *asientos*. Because many other tax sources within Castile were used to retire *asientos* when Indies revenues were not sufficient, this bound is biased downward, making it a conservative estimate.<sup>51</sup> The Crown's share of Indies silver is shown in Figure 2. These figures are given in five year averages, accounted in *pesos* of 450 *maravedís*.<sup>52</sup> Table 1 shows the net present value of these revenues with the series truncated at 1660 assuming various discount rates.<sup>53</sup> For example, in 1575, using a 5% discount rate, the present value of Indies revenues for the next 85 years was over 37 million ducats.<sup>54</sup>

#### *The present value of enduring the Genoese's penalty*

I construct an estimate of the present value of the Genoese penalty by assuming the Crown valued warring, or war's expected outcome, at least as much as the resources it spent on war. Under this assumption the present value of military expenditures in the Low Countries yields a conservative estimate of the loss of not being able to war in Flanders. Though we do not have these complete data, Thompson (1977) provides fairly accurate figures for selected years over the period, shown in Table 2. Crown expenditure ranges from 2 to 4 million ducats a year; 1.6 to 3.2 million in ducats if deflated to 1550 prices.<sup>55</sup> Exceptionally low expenditure levels occurred in 1577, during the Genoese embargo and in 1608, on the eve of the 12-years' truce. All told, the Crown spent about 2 million ducats (deflated) a year on military expenditures in

<sup>50</sup>Ulloa (1986), pp. 774–787.

<sup>51</sup>At the conclusion of each bankruptcy, the Genoese accepted *jurros* which were funded by ordinary rents from within Castile.

<sup>52</sup>The ducat contained 375 *maravedís*.

<sup>53</sup>By 1660 Spain was no longer a military power of significance in Europe and ceased contracting *asientos* in large amounts. While a Genoese banker or Spanish sovereign would not have known the end game was in 1659 (the Treaty of the Pyrenees), this exercise approximates the expected present value of revenues available to pay *asientos* with the ex post realization.

<sup>54</sup>Although *asientos* contracts quoted interest rate payments of 8% to 20%, these rates should not be considered "interest." Ex post returns on *asientos*, incorporating the impact of periodic bankruptcies, tended to be in the 4% to 8% range at a time when interest rates in Genoa were between 2% and 3%. Hence, the function of high interest payments seemed to be for the purpose of faster capital recovery given the "haircut" to principal that bankruptcies inevitably entailed. This form of contracting strikes me as curious, however its explanation lies beyond the scope of this inquiry.

<sup>55</sup>Price indices are from Hamilton (1934).

Table 2: Military Expenditures in Flanders, Various Years

Year:	Expenditure (in ducats):	Deflated Expenditure:
1566	0.48 million	0.48 million
1572	1.8 million	1.67 million
1577	0.9 million	0.86 million
1588	2.73 million	2.44 million
1594	4.1 million	3.24 million
1598	3.45 million	2.36 million
1608	2 million	1.35 million
1621	3.1 million	2.17 million

Flanders. Table 3 presents the present value of expenditure streams of 1, 2 and 3 million ducats at various interest rates at an eighty-year horizon. At a discount rate of 5%, the present value of the Genoese penalty would be just over 40 million ducats.

*The Crown's actual debt ceiling*

Determining a sovereign's actual debt ceiling is complicated by some considerations. Firstly, judging from theory, a debt ceiling may change over time according to fluctuations in the real interest rate available to lenders on other investments and in the factors governing the severity of retaliatory sanctions. Also, theory does not identify how to distinguish whether a maximum level of indebtedness represents a sovereign hitting its ceiling, or simply a coincidental peak nowhere near the ceiling. Fortunately, circumstances in the Spanish episode allow us to identify the Crown's actual debt ceiling. The Genoese initiated each bankruptcy by withholding further lending to the king: Lovett states, "the bankruptcy of 1575 took place because the bankers refused to advance any more money, and the king resumed for his own use the revenues assigned to pay royal debts."<sup>56</sup> Lovett also states that the Genoese were able to anticipate Philip's decrees of suspension of payment better than the king's closest counsellors.<sup>57</sup> This would be an easy forecast to make given the Genoese themselves initiated the decree by refusing to lend more. Castillo-Pintado (1973) also suggests that in 1596 it was Genoese hesitance to lend more to the Crown that led to that bankruptcy. Therefore, I identify the Crown's debt ceiling by the quantity of arrears in *asientos* not backed by collateral on the eve of each bankruptcy. Figure 4 shows the total principal owed on *asientos* 1555-1577 by a dotted line. The three peaks on the *asientos* series reflect outstanding principle the eve of the three early bankruptcies. The starred point in 1575 represents the total principal of *asientos* less the value of the *juros de*

<sup>56</sup>Lovett (1982) p. 1.

<sup>57</sup>Lovett (1980) p. 909.



Table 3: The Present Value of 1, 2 and 3 Million Ducats over an 80-year Horizon

Discount rate:	Annual Expenditure:	Present Value of Expenditure:
2%	1 million	40.54 million
	2 million	81.08 million
	3 million	121.62 million
5%	1 million	20.58 million
	2 million	41.15 million
	3 million	61.73 million
10%	1 million	10.99 million
	2 million	21.98 million
	3 million	32.97 million

*resguardo* given as collateral by the Crown.<sup>58</sup> The starred point in 1596 shows the value of principal outstanding in *asientos* on the eve of the 1596 bankruptcy.<sup>59</sup> The graph shows that uncollateralized arrears on *asientos* fell in the range of 7 million to 9 million ducats on the eves of each of the bankruptcies. I interpret this range to indicate the Crown's effective debt ceiling. Consistent with Bulow and Rogoff's (1989b) model of sovereign debt, this ceiling-range is below the range of present value of revenues (9 – 60 million) and the present value of losses incurred by sanctions (11 – 120 million).

*Other features of the episode accounted for by the debt ceiling*

The debt ceiling predicted by theory accounts for why the Crown and the Genoese conducted a *juro-for-asiento* swap at the conclusion of each bankruptcy.<sup>60</sup> Because the Crown was at its debt ceiling, the Genoese could not roll-over more *asientos* without undermining the mechanism that backed their claims. Nevertheless, to continue a profitable relationship with the Crown, they needed to find a way to allow it to defer payment. By accepting newly issued *juros* as payment for *asientos*, the Genoese enabled the Crown to float more debt yet no longer be near its *asiento* ceiling. The Genoese would then sell the *juros* to Castilian subjects, liquidating their position. The Genoese accepted *juros* because they could unload them right away. However this begs the question of credibility once more: a Castilian subject would not accept a *juro* from a king just emerging from bankruptcy unless he had some leverage over the king. The historical record reveals that the Crown did honor its debts in *juros*, and that annual real debt service

<sup>58</sup> *Juros de resguardo* were annuity-like instruments granted to the Genese as backing for *asientos* in the years between 1562 and 1575. See the Appendix A, below.

<sup>59</sup> Data on principal outstanding are not available for the years between 1578 and 1596.

<sup>60</sup> Providing an general rationale for the Spanish system of finance and its periodic bankruptcies lies well beyond the objective of this passage. Such an exercise would have to consider the political economy of taxes voted to service *juros*, the credibility mechanism backing *juros*, and a host of other issues. Here I explain only the *asiento-for-juro* swap feature of the bankruptcies.

on *juros* grew for decades after the conclusion of Philip II's reign. I conclude from this that an alternative credibility mechanism backed *juros*, and that during Philip's reign the Crown was below its ceiling in *juros*.<sup>61</sup>

## VII. Conclusion

This paper examined *asiento* debt contracts between Genoese lenders and Philip II of Spain (1556-1598) from the perspective of theory on sovereign debt. The episode provides an unusually good test of two types of theories on sovereign debt, the additional penalty class of models, and the implicit insurance class of models. The additional penalty class of debt models accounts for why Philip II repaid his lenders. The Genoese had a penalty technology to use against the Crown in the event of attempted repudiation, an embargo on specie delivery from Spain to the king's troops in Flanders, and they used it. The implicit insurance class of debt models was rejected: the most clearly identifiable a bad shock during Philip's reign was the loss of the Armada in 1588. This event elicited no concessionary terms from the Genoese, nor did it provoke a royal bankruptcy or a rescheduling of repayments by the Crown. Moreover, the Crown had the capacity to self-insure through savings, a violation of the assumptions of this class of models. Because the episode allows us to observe the debt ceiling Philip II's lenders imposed, bound below the cost of penalties to the sovereign, and bound below the sovereign's ability to repay, I was able to test implications of Bulow and Rogoff's (1989b) model of sovereign debt. The facts of the episode were found to correspond to the predictions of the theory.

---

<sup>61</sup>Conklin (1994) analyzes the credibility mechanism that backed *juros*.

## Appendix A: Summary of the Bankruptcy of 1575

The bankruptcy of 1 September 1575 was distinct from the bankruptcies of 1557, 1560 and 1596 in important ways that illuminate much about the underlying mechanisms of commitment of Philip II's debt.<sup>62</sup> On the eve of the bankruptcy, arrears in *asientos* had gotten especially high. Also, the negotiations in the aftermath of the *decreto* were particularly acrimonious. This may have been by design, for the Crown attempted to circumvent its Genoese creditors and use other financiers. This attempt ultimately failed, however. Finally, the Crown's intransigence delayed resolution of the bankruptcy for three years. While this surely tested the Genoese's capacity to maintain their embargo, it also made the consequences suffered by the Crown far more grave than in the other bankruptcies.

The reason the floating debt was allowed to mount was the Crown's military situation, fighting Dutch rebels and the Turk simultaneously. It covered the large increase in expenditures by delaying payments to royal provisioners, noble officers who could be counted upon to finance their own companies, and most importantly, with Genoese credit. As obligations in *asientos* rose, the Genoese bankers demanded that the Crown grant them some form of security. Presumably, the alternative for the king was getting cut off from new lending. The king offered this security in the form of high yielding *juros*. There were two classes of such *juros*, the *juro de resguardo* and the *juro de caución*. A key condition in the transactions of both instruments was that if the Crown failed to pay back the principal on a given *asiento*, the banker got to keep the *juro*. What was more, the Crown had to continue to pay the difference between the original interest rate on the *asiento* and the interest rate on the *juro*, typically 2-5%, until the *asiento* was repaid. The *juro de resguardo* could be resold by the Genoese on the condition that when the Crown came to redeem the collateral security (repay the principal on the associated *asiento* and recover the *juro*) the banker had to produce a *juro* of equal face value, though not necessarily the original instrument.

At some point between 1561 and 1575, the Crown began issuing large quantities of *juros de resguardo* to the Genoese, in parallel with the new issue of *asientos*. It was long standing practice by the Crown to issue *juros* with greatly varying interest rates and reliability, yet treat all the instruments as having the same legal value at par.<sup>63</sup> With the issue of *juros de resguardos*, the Crown's legalistic fiction concerning the face value of *juros* bit with a passion:

<sup>62</sup>Background on this case comes from Lovett (1980, 1982), Ulloa (1986), and Ruiz Martín (1990).

<sup>63</sup>The practice enabled the Crown to differentially default on different subjects on those occasions when it repaid obligations in *juros* instead of currency.

the Genoese sold high interest (10%) *juros de resguardo* at what may well have been a premium over their face value, knowing that when the Crown came around to redeem the security they could produce a low interest (3.5%) or unreliable *juro*, of equal legal value. The latter security could be easily purchased at a discount from a client in the Genoese's network of Castilian depositors. The *juro de caución* could not be resold to a client<sup>64</sup> and never became a form of guarantee or security that the Genoese would accept. Moreover, the Genoese took the proceeds from the sale of the *juros de resguardo*, and re-invested in *asientos*, demanding higher interest rates and more *juros de resguardo* for security. It was estimated by one royal official that debt service on *juros de resguardo* issued within the five years preceeding the bankruptcy amounted to 480,000 ducats a year (out of revenues of about 6 million ducats).

By 1575, revenues suitable for the funding of new *juros de resguardo* were exhausted and the coalition of bankers ceased to provide new lending. Philip II took an antagonistic posture towards the lenders for abandoning him in his hour of need. Thus began the acrimony of the bankruptcy of 1575. Whether because of the severity of the Crown's stance or the sheer magnitude of the assets involved, the *decreto* caused panic in financial centers Spain, in Antwerp, and in Genoa as well.<sup>65</sup> In the *decreto* the king ordered an investigation into every *asiento* struck since 1560 to look into the possibility of illegal profits and usurious practices by the Genoese. The Genoese objected on the grounds that the Crown's own ministers originated every single *asiento*, and that the ministers themselves, largely jurists and theologians, were experts on usury laws.<sup>66</sup> The bankers refused to capitulate to a renunciation of a large portion of the principal owed, which was estimated at over 15 million ducats (this figure does not deduct the value of the *juros de resguardo* ceded to the Genoese as security on *asientos*).

This standoff that lasted well into 1576, during which time the Genoese imposed an embargo on specie transfer on Philip. The Crown was unable to get appreciable funds to its troops in Flanders, with the result that in November 1576 troops mutinied over arrears and sacked

---

<sup>64</sup>There is some conflict between the accounts of Lovett (1982, p. 6) and Ruiz Martín (1990, p. 14) on this point. Lovett does not distinguish between the two instruments, and states that beginning in 1566 the Crown granted the Genoese permission to alienate *juros de resguardo* as an expedient to encourage them to be more forthcoming on new *asientos*. Ruiz Martín, on the other hand, explains that from its inception in 1561, the *resguardo* could be alienated, and the *caución* could not. In 1566 the Crown came to depend heavily on the *resguardo* as the Genoese placed great importance on the right to sell the asset.

<sup>65</sup>Ulloa (1986) p. 790: "Las consecuencias inmediatas de la suspensión de pagos fueron el pánico en España y Génova; grandes quiebras y una paralización de muchas actividades económicas en la primera."

<sup>66</sup>20 years later, during the negotiations following the *decreto* of 1596, the Genoese brought along a team of theologians to debate such matters if they came up. In fact, some of the king's counsellors did object to the proposed *medio general* as being too generous to the lenders. However the Genoese's expert theological witnesses dispatched with the reservations and the negotiations continued placidly and without delay. Ulloa (1986), p. 821.

Antwerp, a strategic *entrepôt* in Spanish possession. Just as difficult for the Crown, new sieges in the 1575, 1576 and 1577 campaigning seasons (May through October) were ruled out. The Duke of Alba, who in 1574 seemed on the verge of final victory, suffered grave reverses to William (the Silent) of Orange by 1578. The bankruptcy was resolved when the king finally moderated his demands. Philip conceded that total debt owed was 15,184,464 ducats, omitting debts contracted in Antwerp and Bruges. The Crown conceded title on the *juros de resguardo* altogether, with a capitalized value of 8,132,983 ducats. If annual payment on these *juros* was 480,000 ducats, this capitalized value is computed at roughly 6%, not the 10% that some of the *juros* paid.<sup>67</sup> On the net of 7 million ducats still owed, the bankers accepted a write-down of 2,245,673 ducats on the premise of illegal profits. Of the remaining 4.8 million ducats, two-thirds were converted into *juros* of 3.5%, and one-third was repaid in specie. The agreement also stipulated that the bankers be allowed to re-pay Castilian depositors in 3.5% *juros* at par (this device was referred to as *de misma moneda*). The final term of the agreement was for the Genoese coalition to provide 5 million ducats in new *asientos* over the course of the following six years.<sup>68</sup> Thus, in the end, the bankruptcy was concluded in similar fashion to those of 1560 and 1596.

---

<sup>67</sup>Ulloa (1986) notes that the king did cede title at a discount on poor-performing *juros de resguardo*, p. 791.

<sup>68</sup>These funds were provided by the consortium of Nicolao de Grimaldo and Esteban Lomelin; Juan de la Torre, Lucian Centurion and Agustin Espinola; Esteban Grillo and Baltasar Catano; and finally Domingo Lercaro, Bernaue Centurion and Viucenzio Gentil. Lovett, 1982, p. 18. A comment by Lovett suggests that these 5 million were to be delivered in lump sum and that their delivery was an impressive display of Genoese financial might (p. 18). Ulloa (1986), with different sources, concludes differently: the 5 million was actually to be delivered in 100,000 ducat increments for two months, and then in 200,000 ducat increments on a monthly basis over the rest of the year. The remainder of the sum had to be delivered before 1584. The Genoese were not obligated to fulfill subsequent deliveries if the king fell into arrears on earlier ones. It is apparent from Ulloa's account that the king was more concerned with lifting the embargo on specie delivery than securing more credit.

## References

- [1] Abreu, Dilip, David Pearce and Ennio Stacchetti. 1986. "Optimal Cartel Equilibria with Imperfect Monitoring, *Journal of Economic Theory* 39: 251-269.
- [2] Abreu, Dilip, David Pearce and Ennio Stacchetti. 1990. "Toward a Theory of Discounted Repeated Games with Imperfect Monitoring, *Econometrica* 58: 1041-1063.
- [3] *Actas de las Cortes de Castilla*. Tomos 37-41.
- [4] *Archivo General de Simancas*. CJH 364-366; 501-504.
- [5] Artola, Miguel. 1981. *La hacienda del antiguo régimen*. (Madrid: Banco de España/Alianza).
- [6] Atkeson, Andrew. 1991. "International Lending with Moral Hazard and Risk of Repudiation," *Econometrica* 59(4): 1069-1089.
- [7] Barrett, Ward. 1990. "World Bullion Flows, 1450-1800," in James D. Tracy, ed., *The Rise of Merchant Empires: Long Distance Trade in the Early Modern World, 1350-1750*. (Cambridge, 1990): 224-254.
- [8] Bordo, Michael and Eugene N. White. 1991. "A Tale of Two Currencies: British and French Finance During the Napoleonic Wars," *Journal of Economic History* 51(2): 303-316.
- [9] Braudel, Fernand. 1972. *The Mediterranean and the Mediterranean World in the Age of Philip II*. (New York: Harper and Row).
- [10] Braudel, Fernand. 1979. *The Perspective of the World: Civilization and Capitalism 15th-18th Century* (vol. 3). (New York: Harper and Row).
- [11] Brewer, John. 1988. *The Sinews of Power: War, Money and the English State, 1688-1783*. (Cambridge, MA: Harvard).
- [12] Boyajian, . 1983. *Portuguese Bankers in the Court of Spain*. ( ).
- [13] Bulow, Jeremy and Kenneth Rogoff. 1989a. "Is to Forgive to Forget?" *American Economic Review* 12: 497-513.
- [14] Bulow, Jeremy and Kenneth Rogoff. 1989b. "A Constant Recontracting Model of Sovereign Debt," *Journal of Political Economy* 97(1): 155-178.

- [15] Carande, Ramon. 1949. *El credito de Castilla y el precio de la política imperial*. (Madrid: Real Academia de Historia).
- [16] Carande, Ramon. 1990. *Carlos V y sus banqueros*. (3rd ed.) (Barcelona: Editorial Critica).
- [17] Castillo-Pintado, Alvaro. 1963. "Los juros de Castilla. Apogeo y fin de un instrumento de credito," *Hispania* 89: 43-70.
- [18] Castillo-Pintado, Alvaro. 1973. "'Decretos' et 'Medios Generales' dans le système financier de la Castille. La Crise de 1596." *Melanges en l'Honneur de Fernand Braudel. Histoire économique du monde méditerranéen, 1450-1650*. v. I. Paris.
- [19] Conklin, James A. 1994. "Time Consistency and Commitment: An Observation on a Mechanism from Sixteenth Century Spain," Mimeo, University of Texas.
- [20] Dominguez-Ortiz. 1983. *Política y hacienda de Felipe IV*. (Madrid: Ediciones Pegaso).
- [21] Dominguez-Ortiz. 1981. "Un presupuesto de la Real Hacienda de Castilla para el año 1611," *Hacienda Publica Española*. (Madrid: Instituto de Estudios Fiscales).
- [22] Eaton, Jonathon, and Mark Gersovitz. 1981. "Debt with Potential Repudiation: Theoretical and Empirical Analysis," *Review of Economic Studies* 48: 289-309.
- [23] Ehrenberg, Richard. 1928. *Capital and Finance in the Age of the Renaissance*. (New York: Harcourt, Brace and Co.)
- [24] Elliot, J.H. 1964. *Imperial Spain, 1469-1716*. (New York: St. Martin's Press).
- [25] Elliot, J.H. 1986. *The Count-Duke of Olivares: Statesman in an Age of Decline*. (New Haven: Yale).
- [26] Fox, Edward Whiting. 1991. *The Emergence of the Western World*. (New York: Blackwell).
- [27] Greif, Avner. 1989. "Reputation and Coalitions in Medieval Trade: Evidence on the Maghribi Traders," *The Journal of Economic History* 49(4): 857-882.
- [28] Greif, Avner. 1993. "Contract Enforceability and Economic Institutions in Early Trade: the Maghribi Traders' Coalition." *American Economic Review* 83: 525-548.
- [29] Greif, Avner. 1994. "Cultural Beliefs and the Organization of Society: A Historical and Theoretical Reflection on Collectivist and Individualist Societies." *Journal of Political Economy* 102: 912-950.

- [30] Greif, Avner, Paul Milgrom and Barry Weingast. 1994. "Coordination, Commitment and Enforcement: The Case of the Merchant Guild." *Journal of Political Economy* 102: 745–776.
- [31] Grossman, Herschel, and John B. Van Huyck. 1988. "Sovereign Debt as a Contingent Claim," *American Economic Review* 78: 1088–97.
- [32] Hamilton, Earl J. 1934. *American Treasure and the Price Revolution in Spain, 1501-1650*. (Cambridge: Harvard University Press).
- [33] Hauser, Henri. 1929. "The European Financial Crisis of 1559." *Journal of Economic and Business History* 2: 241–255.
- [34] Homer, Sidney and Richard Sylla. 1991. *A History of Interest Rates*. Third ed. (Rutgers University Press: New Brunswick).
- [35] Kennedy, Paul. 1987. *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000*. (New York: Random House).
- [36] Lovett, A. W. 1972. "Juan de Ovando and the Council of Finance (1573-1575)," *Historical Journal* 15(1): 1–21.
- [37] Lovett, A. W. 1980. "The Castilian Bankruptcy of 1575," *Historical Journal* 23(4): 899–911.
- [38] Lovett, A. W. 1982. "The General Settlement of 1577: An Aspect of Spanish Finance in the Early Modern Period," *Historical Journal* 25(1): 1–22.
- [39] Lovett, A. W. 1986. *Early Habsburg Spain, 1517–1598*. (London: Oxford University Press).
- [40] Lynch, John. 1981. *Spain Under the Hapsburgs*. (Oxford.)
- [41] Morineau, Michel. 1985. *Incroyables gazettes et fabuleux métaux: les retours des trésors américains d'après les gazettes hollandaises*. (New York: Cambridge University Press).
- [42] Motomura, Akira. 1994. "The Best and Worst of Currencies: Seignorage and Currency Policy in Spain, 1597–1650," *Journal of Economic History* 54(1): 104–127.
- [43] North, Douglass and Paul Thomas. 1973. *The Rise of the Western World*. (New York: Cambridge University Press).
- [44] North, Douglass. 1981. *Structure and Change in Economic History*. (New York: Norton).



- [45] North, Douglass and Barry Weingast. 1989. "Constitutions and Commitment: The Evolution of Institutions governing Public Choice in Seventeenth-Century England," *Journal of Economic History* 49(4): 803-831.
- [46] O'Flynn, Dennis. 1982. "Fiscal Crisis and the Decline of Spain (Castile)," *Journal of Economic History* 42: 139-147.
- [47] O'Neill, . 1982. *The Pursuit of Power*.
- [48] Parker, Geoffrey. 1972. *The Army of Flanders and the Spanish Road, 1567-1659: the Logistics of Spanish Victory and Defeat in the Low Countries*. (Cambridge: Cambridge University Press).
- [49] Parker, Geoffrey. 1978. *Philip II*. (Toronto: Little, Brown and Co.).
- [50] Parker, Geoffrey. 1985. *The Dutch Revolt*. (London: Penguin).
- [51] Rosenberg, Nathan and Luther Earle Birdzell. 1986. *How the West Grew Rich: the Economic Transformation of the Industrial World*. (New York: Basic).
- [52] Rubenstein, Ariel. 1982. "Perfect Equilibrium in a Bargaining Model." *Econometrica* 50 (January): 97-109.
- [53] Ruiz Martín, Felipe. 1965. "Un expediente financiero entre 1560 y 1575. La hacienda de Felipe II y la Casa de la Contratación de Sevilla," *Moneda y Credito* 92: 3-59.
- [54] Ruiz Martín, Felipe. 1968. "Las finanzas españolas durante el reinado de Felipe II," *Cuadernos de Historia*: 109-173.
- [55] Ruiz Martín, Felipe. 1990. *Pequeño capitalismo gran capitalismo: Simon Ruiz y sus negocios en Florencia*. (Madrid: Editorial Critica).
- [56] Sargent, Thomas and François Velde. 1995. "Macroeconomic Features of the French Revolution." *Journal of Political Economy* 102: 474-518. Hoover Institution.
- [57] Schultz, Kenneth A. and Barry R. Weingast. 1995. "The Democratic Advantage: the Institutional Sources of State Power in International Competition." Working Paper, The Hoover Institution, Stanford University.
- [58] Thompson, I.A.A. 1977. *War and Government in Hapsburg Spain, 1560-1620*. (London: The Athlone Press).

- [59] Thompson, I.A.A. 1994a. "Castile: Polity, Fiscality, and Fiscal Crisis." In Philip Hoffman and Kathryn Norberg, eds., *Fiscal Crises, Liberty and Representative Government, 1450-1789*. (Palo Alto: Stanford University Press).
- [60] Thompson, I.A.A. 1994b. "Castile: Absolutism, Constitutionalism, and Liberty." In Philip Hoffman and Kathryn Norberg, eds., *Fiscal Crises, Liberty and Representative Government, 1450-1789*. (Palo Alto: Stanford University Press).
- [61] Tracey, J.D. 1985. *A Financial Revolution in the Netherlands*. (Berkeley and Los Angeles: University of California Press)
- [62] Ulloa, Modesto. 1986. *La hacienda real de Castilla en el reinado de Felipe II*. (Madrid: Fundación Universitaria).
- [63] Ulloa, Modesto. 1975. "Castilian Seignorage and Coinage in the Reign of Phillip II." *Journal of European Economic History* 4: 179-86.
- [64] Weingast, Barry R. 1995. "The Political Foundations of Limited Government: Parliament and Sovereign Debt in 17th and 18th Century England." Manuscript, prepared for the conference, "The Frontiers of Institutional Economics", Washington University, St. Louis, MO.
- [65] White, Eugene. 1989. "Was there a solution to the Ancien Régime's Fiscal Dilemma?" *Journal of Economic History* 49: 545-568.

æ

## WORKING PAPERS (1)

- 9406 **Juan José Dolado, José Manuel González-Páramo y José M.ª Roldán:** Convergencia económica entre las provincias españolas: evidencia empírica (1955-1989).
- 9407 **Ángel Estrada e Ignacio Hernando:** La inversión en España: un análisis desde el lado de la oferta.
- 9408 **Ángel Estrada García, M.ª Teresa Sastre de Miguel y Juan Luis Vega Croissier:** El mecanismo de transmisión de los tipos de interés: el caso español.
- 9409 **Pilar García Perea y Ramón Gómez:** Elaboración de series históricas de empleo a partir de la Encuesta de Población Activa (1964-1992).
- 9410 **F. J. Sáez Pérez de la Torre, J. M.ª Sánchez Sáez y M.ª T. Sastre de Miguel:** Los mercados de operaciones bancarias en España: especialización productiva y competencia.
- 9411 **Olympia Bover and Ángel Estrada:** Durable consumption and house purchases: Evidence from Spanish panel data.
- 9412 **José Viñals:** Building a Monetary Union in Europe: Is it worthwhile, where do we stand, and where are we going? (The Spanish original of this publication has the same number.)
- 9413 **Carlos Chuliá:** Los sistemas financieros nacionales y el espacio financiero europeo.
- 9414 **José Luis Escrivá and Andrew G. Haldane:** The interest rate transmission mechanism: Sectoral estimates for Spain. (The Spanish original of this publication has the same number.)
- 9415 **M.ª de los Llanos Matea y Ana Valentina Regil:** Métodos para la extracción de señales y para la trimestralización. Una aplicación: Trimestralización del deflactor del consumo privado nacional.
- 9416 **José Antonio Cuenca:** Variables para el estudio del sector monetario. Agregados monetarios y crediticios, y tipos de interés sintéticos.
- 9417 **Ángel Estrada y David López-Salido:** La relación entre el consumo y la renta en España: un modelo empírico con datos agregados.
- 9418 **José M. González Mínguez:** Una aplicación de los indicadores de discrecionalidad de la política fiscal a los países de la UE.
- 9419 **Juan Ayuso, María Pérez Jurado and Fernando Restoy:** Is exchange rate risk higher in the E.R.M. after the widening of fluctuation bands? (The Spanish original of this publication has the same number.)
- 9420 **Simon Milner and David Metcalf:** Spanish pay setting institutions and performance outcomes.
- 9421 **Javier Santillán:** El SME, los mercados de divisas y la transición hacia la Unión Monetaria.
- 9422 **Juan Luis Vega:** Is the ALP long-run demand function stable? (The Spanish original of this publication has the same number.)
- 9423 **Gabriel Quirós:** El mercado italiano de deuda pública.
- 9424 **Isabel Argimón, José Manuel González-Páramo y José María Roldán:** Inversión privada, gasto público y efecto expulsión: evidencia para el caso español.
- 9425 **Charles Goodhart and José Viñals:** Strategy and tactics of monetary policy: Examples from Europe and the Antipodes.
- 9426 **Carmen Melcón:** Estrategias de política monetaria basadas en el seguimiento directo de objetivos de inflación. Las experiencias de Nueva Zelanda, Canadá, Reino Unido y Suecia.
- 9427 **Olympia Bover and Manuel Arellano:** Female labour force participation in the 1980s: the case of Spain.

- 9428 **Juan María Peñalosa:** The Spanish catching-up process: General determinants and contribution of the manufacturing industry.
- 9429 **Susana Núñez:** Perspectivas de los sistemas de pagos: una reflexión crítica.
- 9430 **José Viñals:** ¿Es posible la convergencia en España?: En busca del tiempo perdido.
- 9501 **Jorge Blázquez y Miguel Sebastián:** Capital público y restricción presupuestaria gubernamental.
- 9502 **Ana Buisán:** Principales determinantes de los ingresos por turismo.
- 9503 **Ana Buisán y Esther Gordo:** La protección nominal como factor determinante de las importaciones de bienes.
- 9504 **Ricardo Mestre:** A macroeconomic evaluation of the Spanish monetary policy transmission mechanism.
- 9505 **Fernando Restoy and Ana Revenga:** Optimal exchange rate flexibility in an economy with intersectoral rigidities and nontraded goods.
- 9506 **Ángel Estrada and Javier Vallés:** Investment and financial costs: Spanish evidence with panel data. (The Spanish original of this publication has the same number.)
- 9507 **Francisco Alonso:** La modelización de la volatilidad del mercado bursátil español.
- 9508 **Francisco Alonso y Fernando Restoy:** La remuneración de la volatilidad en el mercado español de renta variable.
- 9509 **Fernando C. Ballbriga, Miguel Sebastián y Javier Vallés:** España en Europa: asimetrías reales y nominales.
- 9510 **Juan Carlos Casado, Juan Alberto Campoy y Carlos Chuliá:** La regulación financiera española desde la adhesión a la Unión Europea.
- 9511 **Juan Luis Díaz del Hoyo y A. Javier Prado Domínguez:** Los FRAs como guías de las expectativas del mercado sobre tipos de interés.
- 9512 **José M.ª Sánchez Sáez y Teresa Sastre de Miguel:** ¿Es el tamaño un factor explicativo de las diferencias entre entidades bancarias?
- 9513 **Juan Ayuso y Soledad Núñez:** ¿Desestabilizan los activos derivados el mercado al contado?: La experiencia española en el mercado de deuda pública.
- 9514 **M.ª Cruz Manzano Frías y M.ª Teresa Sastre de Miguel:** Factores relevantes en la determinación del margen de explotación de bancos y cajas de ahorros.
- 9515 **Fernando Restoy and Philippe Weil:** Approximate equilibrium asset prices.
- 9516 **Gabriel Quirós:** El mercado francés de deuda pública.
- 9517 **Ana L. Revenga and Samuel Bentolila:** What affects the employment rate intensity of growth?
- 9518 **Ignacio Iglesias Araúzo y Jaime Esteban Velasco:** Repos y operaciones simultáneas: estudio de la normativa.
- 9519 **Ignacio Fuentes:** Las instituciones bancarias españolas y el Mercado Único.
- 9520 **Ignacio Hernando:** Política monetaria y estructura financiera de las empresas.
- 9521 **Luis Julián Álvarez y Miguel Sebastián:** La inflación latente en España: una perspectiva macroeconómica.
- 9522 **Soledad Núñez Ramos:** Estimación de la estructura temporal de los tipos de interés en España: elección entre métodos alternativos.
- 9523 **Isabel Argimón, José M. González-Páramo y José M.ª Roldán Alegre:** Does public spending crowd out private investment? Evidence from a panel of 14 OECD countries.

- 9524 **Luis Julián Álvarez, Fernando C. Ballabriga y Javier Jareño:** Un modelo macroeconómico trimestral para la economía española.
- 9525 **Aurora Alejano y Juan M.ª Peñalosa:** La integración financiera de la economía española: efectos sobre los mercados financieros y la política monetaria.
- 9526 **Ramón Gómez Salvador y Juan J. Dolado:** Creación y destrucción de empleo en España: un análisis descriptivo con datos de la CBBE.
- 9527 **Santiago Fernández de Lis y Javier Santillán:** Regímenes cambiarios e integración monetaria en Europa.
- 9528 **Gabriel Quirós:** Mercados financieros alemanes.
- 9529 **Juan Ayuso Huertas:** Is there a trade-off between exchange rate risk and interest rate risk? (The Spanish original of this publication has the same number.)
- 9530 **Fernando Restoy:** Determinantes de la curva de rendimientos: hipótesis expectacional y primas de riesgo.
- 9531 **Juan Ayuso and María Pérez Jurado:** Devaluations and depreciation expectations in the EMS.
- 9532 **Paul Schulstad and Ángel Serrat:** An Empirical Examination of a Multilateral Target Zone Model.
- 9601 **Juan Ayuso, Soledad Núñez and María Pérez-Jurado:** Volatility in Spanish financial markets: The recent experience.
- 9602 **Javier Andrés e Ignacio Hernando:** ¿Cómo afecta la inflación al crecimiento económico? Evidencia para los países de la OCDE.
- 9603 **Barbara Dluhosch:** On the fate of newcomers in the European Union: Lessons from the Spanish experience.
- 9604 **Santiago Fernández de Lis:** Classifications of Central Banks by Autonomy: A comparative analysis.
- 9605 **M.ª Cruz Manzano Frías y Sofía Galmés Belmonte:** Credit Institutions' Price Policies and Type of Customer: Impact on the Monetary Transmission Mechanism. (The Spanish original of this publication has the same number.)
- 9606 **Malte Krüger:** Speculation, Hedging and Intermediation in the Foreign Exchange Market.
- 9607 **Agustín Maravall:** Short-Term Analysis of Macroeconomic Time Series.
- 9608 **Agustín Maravall and Christophe Planas:** Estimation Error and the Specification of Unobserved Component Models.
- 9609 **Agustín Maravall:** Unobserved Components in Economic Time Series.
- 9610 **Matthew B. Canzoneri, Behzad Diba and Gwen Eudey:** Trends in European Productivity and Real Exchange Rates.
- 9611 **Francisco Alonso, Jorge Martínez Pagés y María Pérez Jurado:** Weighted Monetary Aggregates: an Empirical Approach. (The Spanish original of this publication has the same number.)
- 9612 **Agustín Maravall and Daniel Peña:** Missing Observations and Additive Outliers in Time Series Models.
- 9613 **Juan Ayuso and Juan L. Vega:** An empirical analysis of the peseta's exchange rate dynamics.
- 9614 **Juan Ayuso Huertas:** Un análisis empírico de los tipos de interés reales *ex-ante* en España.
- 9615 **Enrique Alberola Ila:** Optimal exchange rate targets and macroeconomic stabilization.

- 9616 **A. Jorge Padilla, Samuel Bentolila and Juan J. Dolado:** Wage bargaining in industries with market power.
- 9617 **Juan J. Dolado and Francesc Marmol:** Efficient estimation of cointegrating relationships among higher order and fractionally integrated processes.
- 9618 **Juan J. Dolado y Ramón Gómez:** La relación entre vacantes y desempleo en España: perturbaciones agregadas y de reasignación.
- 9619 **Alberto Cabrero y Juan Carlos Delrieu:** Elaboración de un índice sintético para predecir la inflación en España.
- 9620 **Una-Louise Bell:** Adjustment costs, uncertainty and employment inertia.
- 9621 **M.ª de los Llanos Matea y Ana Valentina Regil:** Indicadores de inflación a corto plazo.
- 9622 **James Conklin:** Computing value correspondences for repeated games with state variables.
- 9623 **James Conklin:** The theory of sovereign debt and Spain under Philip II.

---

(1) Previously published Working Papers are listed in the Banco de España publications catalogue.

**Queries should be addressed to:** Banco de España  
Sección de Publicaciones. Negociado de Distribución y Gestión  
Telephone: 338 51 80  
Alcalá, 50. 28014 Madrid