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A Pound of Flesh for the King*

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Abstract

This paper provides a simple model of banking in the shadow of expropriation, which sheds light on the credit markets of XIIIth Century England and the economic reforms introduced by the Angevin Kings. We argue that the fear of expropriation induced bankers to liquidate loans early and reduced the volume of trade in the credit market. To solve this commitment problem, the nobility imposed a restriction on the ability of the king to profit from the loans that fell into his hands. The subsequent demise of these reforms was likely to contribute to the decay of Jewish bankers under Henry III and their eventual expulsion in 1290.

1 Introduction

Magna Carta is arguably one of the most important landmarks in Constitutional History. Widely seen as the founding stone of modern constitutions and legal systems, it is often remembered for its articles on equality before the law and taxation with representation. The Charter, however, specifies a broad set of rights and duties for free citizens, noblemen and the king, ranging from restrictions on feudal impositions of husbands for widows to the use of standardized measures for ale across the Kingdom. Generally speaking, the Charter enhanced the position of the wealthier earls and barons and set checks and balances to the royal power. The Charter also contains a number of clauses regulating moneylending by Jewish financiers. Lending money with interest was prohibited by the Roman Church so Jewish bankers (almost) monopolized credit markets in England from the end of XIIth century to the second part of the XIIIth. Jews lived in some of the biggest English towns and were under the direct protection of the King, who could do with them as he pleased (they are often referred to as part of his property). They made their fortunes lending money to landowners at interests ranging from 10% to 50% yearly.¹ While profitable, this

*I owe many thanks to Marc Goni for helpful discussions.

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¹The typical contract specified a payment of one to two pence a pound per week. Higher interest rates were banned by law, even for Jews. See, e.g., Schofield and Mayhew (2002)

business was subject to substantial taxation and risk of expropriation by the king, who also received a third of the estate of any deceased banker. The nobles, however, did not attempt to restrict the prerogatives of the king in his relation with the Jews. This feature has puzzled many historians. In his recent work on the Charter, David Carpenter² argues that

Equally part of the kings' own were the Jews, whom he could tallage as he wished. There was not even a suggestion in 1215 that these tallages, (...), should be made subject to the common consent of the kingdom, although in fact such tallages pressed down indirectly on all who owed the Jews money. After all, the only way the Jews could pay taxes was to get money in from debtors. The king could also find many reasons for taking the assets of Jews, which were essentially the debts that were owed them, into his own hands. As a result, the debtors ended up owing their money to the Crown. Chapter 10 of the Charter sought, in this case, to reduce the king's potential profit. He was only allowed to exact the original debt, rather than the debt plus interest."³

In this paper I argue that this arrangement should be understood as a solution to a two-sided commitment problem in the lending relation between noblemen and Jewish bankers under the shadow of expropriation by the king. The king could not commit not to expropriate bankers' portfolio. Higher risks of expropriation decreased the amount of credit in the economy but increased interest rates, which further increased the benefits of seizing the assets of the bankers. In order to break this upwards spiral, the king and the nobles agreed that the Crown was not to receive interest on the loans that fell into its hands. This change in the rules of the game, however, created a new commitment problem. The nobility, whose power to impose or relieve taxes was secured by this very Charter, now strictly preferred the king to expropriate the bankers so that they would benefit from a lower interest rate. To alleviate this second problem, they gave up their right to interfere in the taxation levied on the Jewish bankers.

In order to clarify this argument, I present a simple theoretical model of banking under complete information. In the model, a nobleman with a risky project makes an offer for a loan to a banker in return to a pre-specified interest. If the project fails, the banker can either refinance the debt or liquidate it. Liquidation is inefficient. The banker, however, is also subject to expropriation by the king. In this simple environment, I show that if debts are easier to tax than more liquid assets, the probability with which bankers will refinance the debt is lower than in the *laissez-faire* allocation, leading to a reduction in total output. By committing not to extract interests from seized loans, the king restores

²See Carpenter (2015), page 169.

³Other classical scholars were equally puzzled. For instance, Holt (2015) claims that 'The Clauses Concerning the Jews do not appear to embody any new principle' and Richardson (1983) claims that '[The barons] seem to have been pushing an open door'

efficiency in the credit market and the welfare of barons is greatly enhanced.

This argument requires the assumption that loans were easier to tax than other assets. First notice that Jews could not own land directly so that, if a mortgage had to be liquidated, the borrower had to sell off the land. It follows that the portfolio of a banker consisted of two types of assets: loans and chattels (or movable assets, including cash). Second, and most important, the king had at his disposal one of the very first bureaucratic institutions in medieval England: the *Exchequer of the Jews*. This branch of the Exchequer, registered all legal debts issued by Jewish bankers and managed the repayment of those debts that had fell into the kings' hands. I will show how the Exchequer of the Jews decisively contributed to increase the risk of expropriation of Jewish debts in the XIIIth century and, perhaps, led to the very collapse of Jewish financiers by the end of the century.

The importance of this subject is hard to overlook. In XIIIth century England, the nobility and the king struggled over alternative arrangements of the legal position of the Jews as a way to extract rents from each other. Four crucial moments defined this process. First, in 1189 a pogrom wiped out the Jews of the town of York inducing Richard I to protect Jewish bankers and develop the Exchequer of the Jews. Second, in 1215 a group of northern barons rebelled against the king, leading to the signing of the Magna Carta, which, as we have seen, included provisions on Jewish banking. Third, in the 1260s, grievances over Jewish debts certainly contributed to the Second Baron War in which Henry III further lost power vis-a-vis the nobility and was forced to ban their money lending activities. Finally, in 1290, Edward I decided to expel the few Jews that remained in the country. I argue that Chapter X in Magna Carta offers a privileged window through which identify the economic incentives underlying this secular fight.

While the present paper is mostly concerned with this historical arrangement, the insights derived from it may be applied to many other contexts. The issue of the taxation (or subsidization) of financial institutions is at the heart of many present debates and has played a big role in the development of capital markets in many developing countries. Different groups have different incentives to protect/extract rents from capitalists and this has an effect on the allocation of resources in the economy. In this sense, Chapter 10 in Magna Carta provides one of the earliest attempts to construct a political arrangement that balances the power of different groups, conducing to substantial welfare gains.

More generally, this article contributes to the extensive literature on the role of checks and balances in securing economic growth. In their seminal contribution, Douglas North and Barry Weingast (North and Weingast, 1989) provide a similar narrative of a later constitutional development in England: the Glorious Revolution.⁴ In this paper, I study a more complex environment in which a third social group, the Jews, had a fundamental role

⁴Similar works include Levi (1998) and the more recent contributions by Acemoglu and Robinson, conveniently summarized in Acemoglu and Robinson (2005), and Aguiar and Amador (2011)

in the economy but no civil rights or political power. Catholic nobles after the restoration of William and Mary, Huguenots after the Edict of Nantes, Jewish bourgeoisie in the Interwar period are only some of the better-known examples in the History of Europe. But this issue is far from being exclusive of our past. Chinese Indonesians, who hold most of the corporate wealth of the country despite accounting for less than 2% of the Indonesian population, came under increasing pressure with the ascension of Suharto to power and currently hold almost no political power. Similarly, the tiny Lebanese population of Ivory Coast and other West African countries holds a powerful economic position but has been subject to constant marginalization and limited political rights (Bierwirth, 1999). These groups, who hold economic power but limited political rights, have received very limited attention in the economics literature.

This article contributes to our understanding of medieval and early modern credit markets,⁵ with a particular focus on the issue of refinancing and liquidation of lending contracts. Closest to this paper is the work of Mark Koyama, who focuses specifically in Jewish banking in medieval England. Koyama (2010b) provides a rational choice theory of the expulsion of Jews by Edward I, with a special focus on the role of the Exchequer of the Jews. Koyama (2010a) provides an insightful model of medieval banking under the assumption that Jewish bankers held monopolistic power but were subject to increasing scrutiny that led to a progressive sophistication of their contractual arrangements. In my model, I rather focus on the relation between the nobility and the king as mediated by their relation with bankers, highlight the importance of renegotiation and early termination of loans and discuss the effects of the reform in Magna Carta.

The theoretical literature on dynamic debt contracts has focused on other issues. (Hart and Moore, 1998) provides a model of debt and renegotiation in which the entrepreneur cannot commit to repay his debt and liquidation is used as a threat. They study the effects of the bargaining power of each of the parties on the equilibrium outcome. In contrast, we assume away enforceability issues and study the interaction with a third-party (the king). Dewatripont and Maskin (1995) focused on the adverse selection of borrowers who expect their lenders to refinance underperforming loans ex-post. They show that limited budgets may act as a commitment mechanism for lenders and lead to ex-ante welfare gains despite occasional losses from early liquidation.

The literature on contract enforcement and expropriation is vast. Starting with La Porta, Lopez-de Silanes, Shleifer, and Vishny (1997), a large literature has emerged to study the role of the legal environment and the rule of law on the economic activity and the financial markets in particular. The evidence is broadly consistent with the view that stronger legal systems based on common law are correlated with larger and more efficient capital markets.

⁵This is a major topic in Economic History. Some recent significant contributions are Botticini (2000), Drelichman and Voth (2011)

2 Historical Background

In this study I focus on the credit markets in XIIIth Century England and during King John's reign in particular. This period has received major attention from historians and economic historians. Classic works focussing in this period are Holt's *Magna Carta* (Holt (2015), in a new edition) and 'Northeners' (Holt (1992)), . Credit markets and the role of Jewish bankers has also received wide attention, starting from the work of H.G. Richardson (Richardson, 1983). P. Schofield and N.J. Mayhew put together a fascinating collection of articles that sheds light on the institutional arrangements that prevailed in English credit markets around AD 1200.

The Angevin Kings and the road to Magna Carta

Following the death of his older brother, Richard I, in the Third Crusade, King John was crowned king of England and Normandy in Westminster Abbey in 1199. From his brother he inherited a substantial Empire spanning Britain, Ireland and the Northwest of current-day France but limited resources and an ever-increasing threat from Philipp Augustus, king of the Francs. This threat rapidly materialized and before 1210 he had already lost his continental possessions. In a period of secular inflation (Barratt, 1996) and ever decreasing royal income, King John resorted in ever increasing taxation and discretionary expropriation in order to finance his failing european campaigns. This, and other grievances, led the barons of England and Wales to rebel in 1212-1215 eventually forcing the king to accept most of their demands, listed in the 'Article of the Barons'. After intense negotiations, in August 1215, King John signed a new Charter of rights that later became known as Magna Carta.⁶

King John and Jews

In John's reign there were probably not more than five thousand Jews in England, living in the major towns. Given the Church's ban on usury, they constituted the main source of credit. Loans extended by Jews benefited large sectors of the English society, but first and foremost the landed elite. Knights and Barons account for the bulk of the recipients of Jewish credit in the beginning of the XIIth century (Schofield and Mayhew, 2002) The king could obtain revenue from the Jews from three different sources. First, he obtained what we may term 'feudal income' (a combination of fines, bribes, tariffs and other sorts of 'standard' taxes), representing around 2.3% of royal income (Barratt, 1996). Second, the king received a third of the estate of any deceased Jew. Finally, the king also levied very heavy tallages on the Jews. King John demanded a tenth of all the debts that were owed them in 1207. Three years later he imposed tallage of £44000 on them. In order

⁶The king signed two Charters at Runnemeyde. The second one regulated the Royal Forest and was significantly shorter. The name Magna simply referred to the fact that this Charter was longer

to execute such draconian taxes, he resorted to effective measure. For instance, a certain Isaac the Jew of Norwich had a tooth knocked out each day until (with seven down) he agreed to pay 10,000 marks. Thus, many Jewish debts ended up in the hands of the Angevin kings and in those of King John, in particular. These included some pertaining to the biggest nobles in the realm. Gilbert de Gant, for example, a leader of the 1215 rebellion in Lincolnshire, owed £800, which in 1211 he was told to pay off in two years. On failing to keep the terms he forfeited a £200 pardon and the debt went back up to £1000.

The Exchequer of the Jewry

Following Henry II's decision to expropriate Christian and Jewish money lenders, the Great Exchequer established a subsidiary office, the so-called Exchequer of the Jewry to handle the dealings pertaining to Jewish bankers. This office began to operate around 1180 and would do so until the expulsion of the Jews by Edward I in 1290. One hundred years earlier, in 1190, a mob of heavily indebted individuals, including the bishop of Durham, wiped out the Jewish community of York. A large number of knights and members of the lower nobility classes had borrowed substantial amounts with the hope of obtaining royal offices with the ascension of Richard I to the throne. Fearing foreclosure, the debtors burned the financial records, leaving no trace of their outstanding debts (Stow, 2009). As a response, in 1194 Richard I introduced a battery of new measures, usually referred to as the 'Ordinance of the Jews' aimed at preventing another similar incident. Among other modifications, the Ordinance of the Jews determined that all debts owed the Jews had to be registered and certified by the Exchequer of the Jewry, which became one of the earliest modern bureaucratic institutions in England. Each Jewish banker was attached to a local branch of the Exchequer where he had his own *archae* or strong box in which a tripartite bond and copies of any original debt contract. A mixed group of clerks, Christians and Jews would then approve such transactions and help enforcing them if one of the parties decided to sue for infringement.

Jews in Magna Carta

Among a wide range of far-reaching reforms, Magna Carta introduced two modifications in the legal environment in which Jewish bankers operate. Chapters 10 and 11 gave protection to the heirs and the widow of any deceased man who owed money to Jewish bankers. This measure was apparently a re-establishment of the old status quo under Richard I and Henry II. John had abolished the protection that his nobles had once enjoyed against interest on Jewish debts accruing during their minorities.

Chapter 10 also restricted the king to receive only the principal of any loan that falls into the hands of the Crown. This restriction was completely novel. In the past, the king

was to received all the interest that a Jewish debt had accumulated down to that point. Since interest rates were substantial, this restriction had important implications. Take the example of Simon of Kyme's debt, which ended up in the hands of King John. Out of £1,217 owed to the Exchequer, only £853 corresponded to the capital (or 'catallum'). The likely aim of chapter 10 of the Charter was to limit the king, when he took possession of a debt, simply to the 'catallum'.

The chapter is open to interpretation. For instance, Holt argues that the king's concession should be merely seen as applying to the narrow case of debt stipulation into his hands during minority (Holt, 2015). Other scholars, however, agree that the concession was understood as applying all Jewish debts in royal hands. This is certainly supported by a previous concession made by King John in 1212 in which he had ordered the sheriffs, his local officers, to summon before him all those who owed him Jewish debts. He wished, he said, to give them relief by henceforth only demanding the 'catallum'.

3 Model

We start by presenting a simple model of lending with public information. The economy lasts two periods and there is no discounting. It is populated by two types of agents: nobles and bankers.⁷ Every agent is risk neutral and we assume that bankers have initial wealth $w_o > 2$.

Noblemen have access to an investment opportunity (most commonly a piece of land). By investing 1 unit of output, the nobleman gets access to a random stream of revenue $y_t \in \{0, \bar{y}\}$. Let p_t be the probability that output is high in the period $t = 1, 2$ so that $y_t = \bar{y}$. With complementary probability output is low and so $y_t = 0$. All these parameters are commonly known by all agents.

In order to finance this investment, the nobleman asks for a loan to a financier. The financier lends one unit of period-1 consumption to the nobleman. If output is high in period 1, the nobleman pays back R units of consumption at period 1 and the contractual relationship ends. If output is low, the banker decides whether to liquidate the investment or refinance the project. Refinancing requires putting down one more unit of output in period 1 and yields $y = \bar{y}$ with probability $p_2 \leq p_1$. In case of liquidation, the banker obtains α , with $\alpha < 1$ measuring the cost of liquidation.⁸ This cost may capture the legal expenses required to liquidate the loan or the discount in the price of the land in case of a mortgage.⁹ We assume that Jewish bankers compete for projects and, hence, derive zero

⁷While also churchmen and other free men engaged in borrowing during this period, the bulk of the loans were extended to members of the Knightly and Baronial classes. See, e.g. Hillaby (1988)

⁸Alternatively, one can think as the second period's opportunity as a different type of investment in which the probability of success is lower.

⁹Since Jews could not own land, mortgage could only be enforced by selling the land in a secondary market (Elman, 1937).

expected profits in equilibrium.¹⁰

The timing is as follows.

1. A noble and a Jewish banker meet. The nobleman makes a take-it-or-leave-it offer to the banker.
2. If the banker rejects, the game ends and both get zero.
3. If the banker accepts, investment takes place and output is realized and is observed by both.
 - (a) In case of high output, the nobleman repays R and receives $\bar{y} - R$.
 - (b) In case of low output, the nobleman makes another take-it-or-leave-it offer to the banker in order to refinance the project.
 - i. If the banker rejects, he liquidates the project and receives α units of consumption.
 - ii. If he accepts, the nobleman commits to repay R_2 units of output if output is high. If refinancing is agreed, investment takes place and output is realized and observable.
 - A. In case of high output, the nobleman obtains $\bar{y} - R_2$ and the banker receives R_2 .
 - B. In case of low output, the project is finally liquidated and the banker obtains α .¹¹

We assume that liquidation is inefficient so that $\alpha < p_2\bar{y} + (1 - p_2)\alpha - 1$.¹²

We solve the model backwards, in the second period, the banker will refinance only if

$$p_2R_2 + (1 - p_2)\alpha - 1 \geq \alpha \quad (1)$$

or $p_2R_2 - p_2\alpha \geq 1$. Since noblemen have all the bargaining power, let $R_2^* = \frac{1+p_2\alpha}{p_2}$ be the optimal interest rate in the second period. In the first period, interest rate is such that

$$p_1R_1 + (1 - p_1)\alpha - 1 \geq 0 \quad (2)$$

where we have used the fact that the financier will be indifferent between liquidating the project or not. Thus, $R_1^* = \frac{1-(1-p_1)\alpha}{p_1}$. Notice that a better liquidation technology, α reduces the interest rate that the nobleman has to offer in the first period since the

¹⁰As long as noblemen had substantial bargaining power, all our results go through. See Section 7 for a discussion.

¹¹For simplicity we assume that the first investment has fully depreciated. This would not change our results.

¹²Notice that this implies that investment is efficient in the first period too.

banker can obtain higher returns in case of failure. For instance, if $\alpha = 1$, then the banker suffers no risk and the interest rate equals to 0. On the other hand, an improvement in the liquidation technology improves the outside option of the banker at the refinancing stage, which increases the interest rate in the second period.

Since we have assume that bankers are subject to a free-entry condition, noblemen derive utility $(p_1 + (1 - p_1)p_2)\bar{y} - (2 - p_1)$ which coincides with overall welfare.

4 The King

We now introduce a third type of agent: the king. The king obtains resources from the bankers via taxation of mobile assets (chattels and money), inheritance and direct expropriation (tallages). Let τ be the tax rate over liquid assets and ϕ be the probability that the king expropriates the assets (loans) of a banker. The king's objective is to raise total revenue E in order to finance its campaigns.

I model the decision of how to raise revenue as a classical cost-benefit analysis for the king. In particular, we assume that taxing liquid assets and seizing loans is costly. Let $C_\tau(x)$ be the cost of enforcing a tax rate over liquid assets x and let $C_\phi(x)$ be the cost of seizing a fraction x of the assets of a banker. For expositional purposes we assume that $C_\tau(x) = \frac{1}{2}x^2$ and $C_\phi(x) = \frac{c}{2}x^2$ if x is the rate of expropriation. All results would go through with strictly convex cost function. Notice that c measures the relative efficiency of taxation.

Efficiency in taxation greatly varied over this period. When Richard I set a tax of 25% of all chattels in his realm to pay for his ransom, the total revenue was substantially below £90.000, while King John's great tax of 1/13 managed to extract £57.000. In order to achieve so, however, he had to deploy a veritable army of public servants to gather information and enforce the tax (Carpenter, 2015).

The king lacks commitment so that taxes and expropriation rates are set after all financial decisions have been made.

Since bankers are risk-neutral and care about expected consumption, taxation of liquid assets does not affect their decision whether to issue loans. The fear of expropriation, however, does affect their incentives. In the second period, the banker will refinance only if

$$(1 - \phi)(p_2R_2 + (1 - p_2)\alpha) - 1 \geq \alpha \quad (3)$$

To understand this equation notice that with probability ϕ the debt will be expropriated from the banker and so refinancing brings about a loss of the unit of investment. If the debt is liquidated the banker can eat its proceedings now and so avoids the potential loss.

Thus we have

$$R_2^{**} = \frac{1 + \alpha(1 - (1 - \phi)(1 - p_2))}{(1 - \phi)p_2} > \frac{1 + \alpha p_2}{p_2} = R_2^*$$

Notice then that if $R_2^{**} > \bar{y} > R_2^*$ bankers will not refinance even if it is efficient to do so. Let $1 > \phi_2 > 0$ be the maximum expropriation probability such that renegotiation occurs. In the first period we have

$$(1 - \phi)(p_1 R + (1 - p_1)\alpha) - 1 \geq 0 \quad (4)$$

so that $R_1^{**} = \frac{1 - (1 - p_1)\alpha(1 - \phi)}{(1 - \phi)p_1}$. If $R_1^{**} > \bar{y}$ the credit market collapses. Let $0 < \phi_1 < \phi_2$ be the maximum such that the market exists and let $d \in [0, 1]$ be the proportion of debts that are renegotiated.

We can now turn our attention to the problem of the king. As outlined above, the king chooses the expropriation rate ϕ and the taxation rate τ in order to raise E units of revenue. The royal revenue per loan is $G(d)$, defined as

$$\begin{aligned} G(d) &:= \frac{1}{1 + d(1 - p_1)}(p_1 R^* + (1 - p_1)\alpha) + \frac{d(1 - p_1)}{1 + d(1 - p_1)}(p_2 R^{**} + (1 - p_2)\alpha) \\ &= \frac{1}{1 + d(1 - p_1)} \frac{1}{1 - \phi} + \frac{d(1 - p_1)}{1 + d(1 - p_1)} \frac{1 + \alpha}{1 - \phi} \\ &= \frac{1}{1 - \phi} G^*(d) \end{aligned}$$

where the second line uses the fact that bankers must be indifferent between financing or not at each of the two stages in any equilibrium in which the market exists. Notice that, for a given refinancing probability d , in equilibrium, we have that the expropriation probability ϕ must be consistent with the king's problem.

Similarly, let $W(d)$ be the liquid assets in the portfolio of the banker. That is the difference between her initial wealth w_o and the per-banker expected investment $1 + d(1 - p_1)$, i.e. $W(d) = w_o - (1 + d(1 - p_1))$. Hence, total revenue $E = G(d) + W(d)$. The problem of the king is then

$$\min C_\phi(\phi) + C_\tau(\tau) \quad (5)$$

$$\text{subject to } \tau W(d) + \phi G(d) = E \quad (6)$$

The standard equalization of marginal costs across both tasks yields the interior condition

$$\phi = \tau \frac{G(d)}{c W(d)} \quad (7)$$

so that the relative weight of expropriation on royal revenue increases with $G(d)$, and

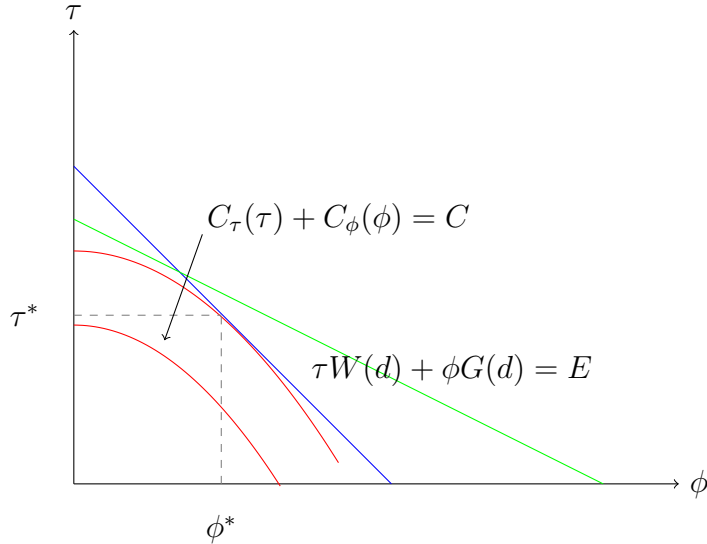


Figure 1: The Optimal Choice of Fiscal Instruments

decreases with $W(d)$ the cost of expropriation. Since $G(d)$ increases in d and $W(d)$ decreases in d , the higher is the rate of refinancing, the higher is the rate of expropriation. The optimal choice of fiscal instruments is similar to a consumer problem, as depicted in Figure 1. The red lines depict the iso-cost curves (the set of combinations of tax rates that require the same collecting expenditure). The green and blue lines represent the combination of taxes that lead to revenue E , with the different slopes capturing different renegotiation rates d .

Notice also that the value that the king can extract from an asset $G(d)$ depends on ϕ since higher expropriation probability increases the interest rates that bankers are able to command, and thus redistributes wealth away from the noblemen. Using the definition of $G^*(d)$ we may rewrite the optimality condition as

$$\phi(1 - \phi) = \tau \frac{G^*(d)}{cW(d)}. \quad (8)$$

The term $\phi(1 - \phi)$ captures the trade-off that the king faces when increasing the expropriation rate, for a given level of refinancing in the credit market. Increasing the expropriation rate leads to a direct effect in royal revenue through a higher frequency of collection and an indirect effect through higher equilibrium interest rates.

Since the king chooses the amount of expropriation ex-post, this second effect does not enter in his optimal decision. We shall assume that $\phi_1 < \frac{1}{2}$ so that revenue is increasing in ϕ in the relevant range.

The term in the right-hand side of (8) does not depend on ϕ . Hence, for every d , there exists a unique solution for this equation. Define $\phi(d; E)$ to be the solution of the maximization problem for a given refinancing probability d and a given expenditure E .

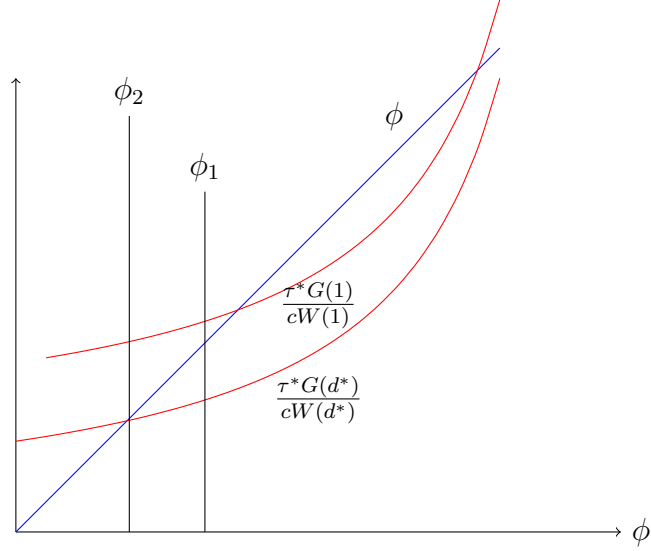


Figure 2: The Equilibrium with Refinancing

Proposition 1. *A unique Equilibrium exists. Furthermore,*

1. *If $\phi(0; E) > \phi_1$, the market collapses and no loans are issued by bankers.*
2. *If $\phi_1 \geq \phi(0; E) \geq \phi_2$, bankers issue loans with interest rate $R_1^{**}(\phi(0; E))$, with $\phi(0; E) \in (\phi_1, \phi_2)$ but under-performing loans are not refinanced.*
3. *If $\phi_2 \geq \phi(0; E)$ but $\phi_2 \leq \phi(1; E)$, bankers issue loans with interest rate $R_1^{**}(\phi_2)$ and refinance them with probability d^* , where d^* solves $\phi(d^*, E) = \phi_2$. In such a case, the interest rate \bar{y} .*
4. *If $\phi_2 < \phi(1; E)$, bankers issue loans with interest rate $R_1^{**}(\phi(2; E))$ and they refinance them in case they fail. The interest rate in the second period is, then, $R_2^{**}(\phi(2; E))$.*

The Equilibrium is depicted in Figure 2 for the case in which $d^* > 0$. The equilibrium must satisfy the optimality condition represented above together with an incentive compatibility constraint that pins down d^* . If all crossing points lie to the right of ϕ_1 , then no active equilibria exist. On the other hand, if all of them lie to the left of ϕ_2 , then the equilibrium is efficient. The more interesting case occurs when d^* has to adjust in order to keep the expropriation incentives at bay. This occurs whenever $\phi(1; E) > \phi_2 > \phi(0; E)$.

The equilibrium market outcome depends on the probability of expropriation at which the marginal net return of expropriation equals that of taxation. If the cost of expropriating assets is too low, expropriation will be very likely and the market would collapse. If the cost is intermediate, two outcomes may occur which, from the perspective of the noblemen have similar consequences. First, it could be that the probability of expropriation is so high that no rollover will happen in equilibrium. In this case, noblemen obtain rents

only if their project is successful in the first period since any failure will trigger the exercise of the securities involved. For lower cost levels, however, there is some renegotiation but the bankers will extract all surplus from such a continuation so that noblemen do not benefit. Their expected utility would depend on the likelihood of expropriation through a reduction of the first-period interest rate. This is the case depicted in Figure 2. If bankers were to refinance all underperforming loans, the expropriation probability would lie to the right of ϕ_1 so no loan would be profitable and d^* adjusts so that the benefits from expropriation equals the costs. Finally, if expropriation is sufficiently unlikely, all loans are refinanced and noblemen can extract rents at both stages.

It follows that noblemen benefit from a reduced likelihood of expropriation both from an ex-ante and an ex-post perspective. First, fears of expropriation reduced the incentives to issue loans and increased interest rates. Second, since the king was unlikely to roll over the debt (as a Christian that was a risky activity for may be conducive to Hell¹³), expropriation led to a worsening of the position of the debtor if bankers did roll over the debt ($d^* = 1$). It follows that in the pre-Magna Carta period, noblemen preferred the king to refrain from extracting excessive rents from bankers, even at the cost of being subject of more demanding taxation themselves.

5 The Exchequer of the Jews

In 1190 a mob of heavily indebted individuals wiped out the Jewish community of York. A large number of knights and members of the lower nobility classes had borrowed substantial amounts with the hope of obtaining royal offices with the ascension of Richard I to the throne. Fearing foreclosure, the debtors burned the financial records, leaving no trace of their outstanding debts (Stow, 2009).

In light of this (and other similar) events, the new king decided to introduce one of the very first bureaucratic institutions in England whose object was to monitor and give legal security to the loans granted by Jewish bankers (Schofield and Mayhew (2002)). The so-called Exchequer of the Jews was to record and sanction all loans granted by Jewish bankers. Each banker had his own *archae* or strong box in which a tripartite bond and copies of the original contract. A mixed group of clerks, Christians and Jews would then approve such transactions and help enforcing them if one of the parties decided to sue for infringement. A reform thus conceived allowed the king to obtain more precise information of the finances of the Jewish bankers but also a more efficient liquidation in case of default. The next Proposition summarizes the implications of such a reform in the context of our model.

¹³As mentioned before, however, Christians did engage in some usury during the middle ages. As P. Lacaïta said in his comment on Dante's *Comedia* 'He who practiced usury goeth to Hell, and he who practised it not tendeth to destitution'

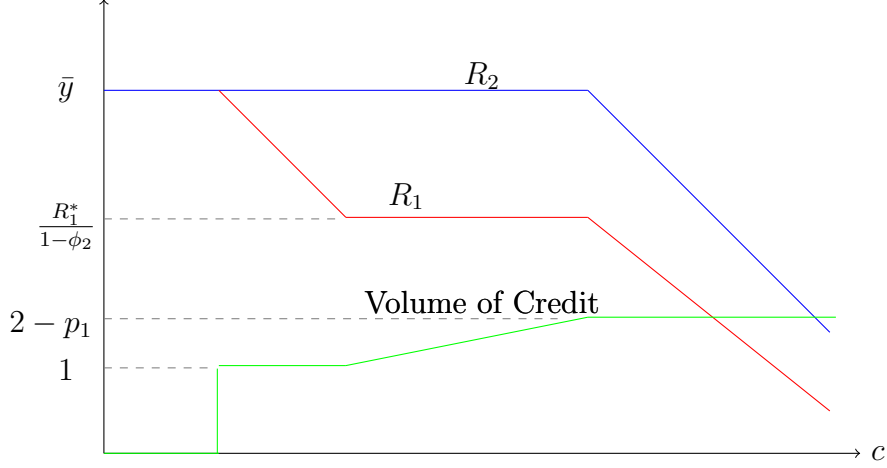


Figure 3: Equilibrium Interest Rates and Volume of Trade as a Function of c

Proposition 2. *The following comparative statics hold:*

1. *A more efficient expropriation system, (lower c), leads to a reduction in the volume of credit and an increase in interest rates. The effects on king's welfare are ambiguous.*
2. *A better liquidation technology α leads to a decrease in first period interest rates and an increase in second period interest rates. If the tax farming technology is sufficiently bad, it leads to a reduction in the volume of trade while if it is sufficiently efficient it leads to an increase in the volume of trade.*

The intuition for the first result is simple. A more efficient monitoring system leads to an increase in the likelihood of expropriation and, thus, to an increase in the effective costs of lending. As a result, credit volume decreases and interest rates increase. While higher interest rates and less tax farming expenditures benefit the king, a lower volume of trade doubtless diminishes his revenue extraction capacity, so that the effect on king's welfare is ex-ante ambiguous. Figure 3 provides a graphical illustration of this result. As the relative cost of expropriating resources increases, interest rates decrease and the volume of trade increases.

The Exchequer of the Jews also affected the efficiency of the liquidation system, which in our model corresponds to an increase in α . The effects of such a change are more subtle. First, higher liquidation efficiency reduces interest rates in the first period, since the risk of default is less onerous for the lender. This shifts ϕ_1 up and, thus may contribute to an increase in the volume of trade. Second, higher liquidation efficiency increases the bargaining position of lenders at the roll-over stage, reducing the likelihood of renegotiation. This leads to a reduction in the volume of trade and an increase in interest rates.

Notice then that the effects of the Exchequer of the Jews on the financial position of both the king and the nobles is ambiguous. Noblemen could benefit from a more efficient financial market through lower interest rates in *de novo* credit, but may also have suffered from higher expropriation rates and higher interest rates in refinanced loans. Similarly the king may have benefited from a more efficient tax collecting system but probably lost if the volume of credit decreased. In order to gauge the magnitude of this effects, then, we must resort on the historical evidence of the time. First, we know that the noblemen opposed the Exchequer of the Jews from its inception (Stow, 2009). This opposition grew during Henry III's reign, as expropriation became increasingly likely and became one of the grievances behind the Second Baron's War (1264-1267). Hence, we may conclude that the overall effect of the institution over landowners' welfare was negative, while its effect on the king's revenue was probably positive.

6 Magna Carta

Among a wide range of far-reaching reforms, Magna Carta introduced two modifications in the legal environment in which Jewish bankers operate. Chapters 10 and 11 gave protection to the heirs and the widow of any deceased man (although probably referred only to nobles) who owed money to Jewish bankers. Chapter 10 also restricted the king to receive only the principal of any loan that falls into the hands of the Crown.¹⁴ From a contractual perspective, the first of these modifications induces a more efficient risk-sharing between creditor and lender since death of the Head of the House was associated with a substantial worsening of the financial position.¹⁵ The second modification, is in our view, more substantial. Following expropriation, the king would obtain only the value of the bond of any loan he seized. Let $\tilde{G}(d)$ be the value for the king of expropriating a bond. We have,

$$\tilde{G}(d) = \frac{1}{1 + d(1 - p_1)}(p_1 + (1 - p_1)\alpha) + \frac{d(1 - p_1)}{1 + d(1 - p_1)}(p_2 + (1 - p_2)\alpha) \quad (9)$$

which is decreasing in d since $p_2 < p_1$. Rewriting this condition we get

$$\tilde{G}(d) = (p_1 + (1 - p_1)\alpha) - (p_1 - p_2)(1 - \alpha) \frac{d(1 - p_1)}{1 + d(1 - p_1)}. \quad (10)$$

¹⁴Whether this was only in case that the debtor died and the heir was under age has been subject to debate among scholars. Holt argues for a narrow view (Holt, 2015) while Carpenter follows a larger tradition in arguing that it referred to all debts (Carpenter, 2015). This distinction is of little importance for the mechanism at play and its implications are mostly quantitative.

¹⁵Since lenders knew the borrowers personally, they were able to anticipate the risk of such situations so that adverse selection seems unlikely to have represented a major concern.

The king prefers bankers not to refinance old loans since they are less likely to succeed and he cannot extract higher interest rates. To facilitate the comparison with the previous case, we assume that w_0 is large enough so that bankers have deep pockets. This is consistent with the situation around 1200 when Britain experienced large trade surpluses and a substantial increase in the monetary base in the economy. In this case, $W(d) \approx w_0$ and so $\frac{\tilde{G}(d)}{W}$ is now increasing in d . Hence we can define $\tilde{\phi}(d; E)$ as the unique solution to

$$\phi = \tau \frac{\tilde{G}(d)}{cW(d)}. \quad (11)$$

with $\phi\tilde{G}(d) + \tau W(d) = E$.

Lemma 3. *An equilibrium after Magna Carta exists and is unique. Furthermore,*

1. *If $\tilde{\phi}(1; E) > \phi_2$ and $\tilde{\phi}(0; E) < \phi_1$, the market collapses.*
2. *If $\tilde{\phi}(1; E) > \phi_2$ but $\tilde{\phi}(0; E) \leq \phi_1$, then only new credits receive financing and $\phi^* = \tilde{\phi}(0; E)$.*
3. *If $\tilde{\phi}(1; E) \leq \phi_2$, then all credits are refinanced and $\phi^* = \tilde{\phi}(1; E)$.*

The differences with the situation before Magna Carta are stark. Partial refinancing is never part of the equilibrium market structure because increasing the likelihood of renegotiating an underperforming debt decreases the incentives for the king to expropriate rents. Therefore, the equilibrium is determined by three (non-overlapping) regions in which we have either no loans, only new loans or a fully efficient market.

From the perspective of the noblemen the reform introduced an obvious immediate benefit in that any loan seized by the court will automatically become cheaper. In addition, their position improved because the king will now have less incentives to seize any loan and this will lead to an increase in the probability that the debt is renegotiated. This further improves the position of the noblemen vis a vis the king.

Proposition 4. *A limitation on the interest that the king may extract from the debts he expropriates, leads to an increase in the volume of trade and a decrease interest rates. Noblemen always benefit with the reform while the welfare of the king is ambiguous.*

Notice that the effective interest rates that noblemen had to pay decreased both because the equilibrium rates decreased and because, in case of expropriation, they were freed from their obligation to pay interest. Indeed, the expected price that a nobleman would pay is $\phi + (1 - \phi)R$. Two factors underlie this result. First, bankers make zero profits in equilibrium, which implies that an increase in the willingness-to-pay of noblemen does not affect the outcome, as long as trade is feasible. Second, a decrease in the interest rates that accrue the crown in case of expropriation reduces the incentives to expropriate and decreases the risk premium.

As I mentioned earlier, the assumption that Jewish financiers make zero profits in equilibrium is not essential for most of our results. Mark Koyama has argued recently that usury laws and the Exchequer of the Jews should be understood as a way to limiting entry in medieval credit markets (Koyama (2010b) and Koyama (2010a)). Indeed, Jewish financiers were forced to live close to one of the towns with an office of the Exchequer (Schofield and Mayhew, 2002). I argue, however, that the very restrictions that the Magna Carta imposes in the interest accruing from Jewish debts would not have enhanced the financial position of the noblemen if they did not have substantial bargaining power in setting the conditions of the loan. Indeed, if Jewish bankers acted as monopolists, a reduction in the interest rate that they could extract following the death of the debtor would only lead to an increase in the pre-determined interest rate. Similarly, the restriction on the king's ability to extract interest of those debts that fall into his hands, would have only benefited the Jewish profits and were likely to increase the fiscal pressure on noble income. Finally, recall that Christian bankers were able to command even higher rates Schofield and Mayhew (2002). It follows that the bargaining power of Jewish financiers in XIIIth century England must have been quite small.

According to our model, these changes further improved the position of the noblemen, irrespectively of whether they eventually became debtors of the Crown. However, this also lead to a reversal in their incentives to dissuade the king not to expropriate their rents. Indeed, following the reform, noblemen would benefit ex-post from any redistribution of rents from bankers to the king. In a way, the very softening of the commitment problem of the king introduced a commitment problem for the noblemen. In order to solve it, the nobles decided to forgo their rights over taxation to the Jews, both in the original draft of the Articles of the Barons and the final version of the Charter. On the other hand, the king probably ended up worse-off once this limitation was implemented since it reduced the effective rate of return of any expropriated unit. Since the credit market was active before the reform, the effects on the volume of trade did not significantly increased the royal revenue.¹⁶

Corollary 5. *After Magna Carta, the nobility had no incentives to restrain the king from ex-post expropriation of Jewish debts.*

Unfortunately, the king's opinion eventually carried the day. As it turned out, none of the future royal charters did not include this restriction to the kings' profit from debts. We can only speculate with the causes of this change, but probably the power of the barons diminished once the rebellion ended. Nonetheless, we can be certain that the removal of the last clause in Chapter 10 decisively contributed to worsening the conditions under which Jewish bankers operated, and, therefore, a reduction in the economic activity in the realm.

¹⁶This is because the expansion of credit occurs through the less profitable refinancing market, which has higher interest rates but lower repayment probabilities.

This is consistent with the historical evidence (Schofield and Mayhew, 2002). During the reign of Henry III (1227-1260), feudal revenue was in constant decline and royal expenses continued to rise. Henry was forced to give a substantial share of his lands to his followers in order to enlarge his support base. In this situation, he resorted to the Jews for funds to continue his campaigns in the Continent. This resulted in a series of tallages in the late 1230s and early 1240s that raised in the order of £60000 (or twice the revenue of the king's properties in a given year). This measure had profound effects on the credit markets of the middle of the century. Prominent Jewish bankers declared bankruptcy and most loans were liquidated early.

The winners from all these grievances were the Christian merchants who evaded the prohibition and engaged in money lending. By 1250, Christians had already the upper hand over Jewish bankers in the credit markets, in particular in the segments of landowners and upper classes. Before 1270, banking was unprofitable for Jewish financiers and by the time they were expelled by Edward I their significance as sources of credit was testimonial. The failure of the noblemen to keep the king at bay over his rights over Jewish debts led to the collapse of the credit market and their own impoverishment.

7 Endogenous Maturity

So far we have assumed that noblemen were restricted to offer one-period contracts to financiers. This restriction is not without loss of generality in this framework. In particular, there are instances in which a two-period contract dominates the one-period contracts we have considered. In a two-period contract, the banker gives 2 units of cash to the noble and the latter commits to repay (R_1, R_2, R_3) in case of success in periods 1, 2 or no success at all. In order to explore this issue we begin with the case of a laissez-faire economy.

The shortcoming of one-period contracts is that, in order to induce efficient refinancing, they must satisfy two incentive constraints: $R_2 \leq \bar{y}$ and $(p_2 R_2 + (1 - p_2)\alpha) \geq 1 + \alpha$. These two constraints may bind even if the constraints in the first period are slack. That is, nobles are extracting positive expected rents from the banking relationship but cannot commit them to the future in order to encourage refinancing.

This restrictionIn a two-period contract, however, bankers expect to make zero profits *across* periods and so rents in the first period could be used to encourage more credit *at period 0*. The zero-profit constraint reads

$$p_1 R_1 + (1 - p_1)(p_2 R_2 + (1 - p_2)R_3) = 2 \tag{12}$$

with $R_1 \leq \bar{y} + 1$, $R_2 \leq \bar{y}$ and $R_3 \leq \alpha$. Plugging the feasibility constraints we get the

necessary condition for trade of two-period loans

$$p_1(1 + \bar{y}) + (1 - p_1)(p_2\bar{y} + (1 - p_2)\alpha) \geq 2. \quad (13)$$

Rewriting, we get

$$p_2\bar{y} + (1 - p_2)\alpha \geq \frac{2 - p_1(1 + \bar{y})}{1 - p_1} \quad (14)$$

Since $\bar{y} > 1$, it follows that $\frac{2 - p_1(1 + \bar{y})}{1 - p_1} < 1 < 1 + \alpha$. Therefore, optimal contracts in a laissez-faire economy are two-period contracts.

Expropriation, however, may substantially affect this trade-off. Two-period contracts "inflate" the balance sheet of bankers because each loan has a bigger principal (2 instead of 1) and lasts longer. Since the king expropriates outstanding loans with a certain probability every year (Schofield and Mayhew, 2002), two-period contracts increase the exposure of bankers to the king. Indeed, the probability that a king expropriates a loan is now $1 - (1 - \phi)^2$ rather than simply ϕ . It follows that if the market is efficient with one-period contracts, two period contracts become suboptimal under the shadow of expropriation. More generally, if p_2 is sufficiently small relative to p_1 , nobles prefer to secure their profits in the first period at the expense of inefficient liquidation and the optimal maturity is inefficient.

Proposition 6. *The shadow of expropriation may lead to a distortion in the optimal maturity. If $p_2 \ll p_1$, Inefficient short-term contracts are offered and not refinanced.*

Hart and Moore (1998) provides a theoretical foundation to short-term debt as a solution to the incentive problem of the borrower who may be tempted not to repay a long-term debt. In our study we highlight another role of short-term debt. Bankers resort to one-period contracts in order to shield from royal expropriation.

8 Conclusion

In this paper I have presented a model of dynamic debt contracts under the shadow of expropriation to understand the motives of the two main actors of medieval Britain (the king and his Barons) through their interactions with the Jewish bankers.. The analysis provides a rationale for the reforms attempted in Magna Carta and, thereby, an explanation for the eventual collapse of Jewish credits markets and the expulsion of the Jews in 1290. Two conclusions are likely to extend broader. First, when subject to substantial risk of expropriation, bankers are bound to use short-term financing and are likely to liquidate loans early. Second, measures that improve the taxing capacity of the ruler without an equivalent improvement of the rule of law lead to substantial welfare losses.

More generally, our analysis sheds light on the economic role of politically disadvantaged minorities. In most cases, social (religious, ethnic, linguistic...) political, and economic discrimination occur simultaneously and, therefore, the economics literature has focused on social groups that suffer all three of them. Often times, however, political discrimination occurs in groups who hold substantial economic power. If this group is sufficiently large, revolution may ensue. But if the group is sufficiently small, this situation may persist over time, and other groups may try to accommodate the law in order to foster their position at the expense of the discriminated group. Future research may provide a more detailed account of these issues.

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A Proofs

Proof of Proposition 1. We prove existence by construction. To see uniqueness, notice from the analysis in the main text that the only candidate for an active equilibrium is a solution to the maximization problem (5), $\phi(d; E)$, which is an increasing function of d . Furthermore, since noblemen have all bargaining power and their utility is strictly increasing in the renegotiation probability, the equilibrium must correspond to the solution of that equation associated with the highest possible renegotiation probability.

First, if $\phi(0; E) > \phi_1$ then in any candidate for an interior equilibrium, $\phi(d; E) > \phi_1$ for any d . As a result, the only equilibrium has no trade, $\phi^* = 0$ and $\tau = \frac{E}{w_0}$.

Second, if $\phi_1 \geq \phi(0; E) \geq \phi_2$, it follows that no renegotiation can occur since any possible solution to the equation (5) lies to the left of ϕ_2 . However, an equilibrium with an active credit market exists in which there is no renegotiation. In this equilibrium,

$\phi = \phi(0; E)$. From the analysis above, it follows that the interest rate is $R_1^{**}(\phi(0; E))$. The tax rates satisfy $\phi^* = c\tau^* \frac{1}{w_o - 1}$ and $\phi^* + \tau^*(w_o - 1) = E$.

Third, if $\phi_2 \geq \phi(0; E)$ but $\phi_2 \leq \phi(1; E)$, then the probability of rolling over the debt must be interior. Since noblemen have all the bargaining power, they must be indifferent between rolling over or liquidating. Hence, $R_2^{**} = \bar{y}$. This implies that d^* is the highest possible rolling over probability consistent with equilibrium. Let that be denoted by d^* . It solves $\phi(d^*, E) = \phi_2$. The tax rates satisfy

$$\phi^* = c\tau^* \frac{1 + d^*(1 - p_2)}{w_o - 1} \quad (15)$$

$$\phi^* + \tau^*(w_o - 1) = E \quad (16)$$

Finally, if $\phi_2 < \phi(1; E)$, then the market equilibrium is efficient and all underperforming debts are rolled over. Since noblemen have all bargaining power, the interest rates are $R_1^{**}(\phi(1; E))$ and $R_2^{**}(\phi(1; E))$ as defined in the text. \square

Proof of Proposition 2. Consider the initial equilibrium (ϕ^*, τ^*, d^*) corresponding to parameters (α, c) and let $c' < c$. It follows from (8) that, $\phi(d^*; E) > \phi^*$. Two cases are possible. First, it could be that $\phi(d^*, E)$ is still consistent with d^* in the sense that a renegotiation d^* is optimal given expropriation rate d^* . In such a case, it follows that $\phi(d^*; E) > \phi^*$ directly. From Proposition 1 and the definition of the interest rates we get the result. Alternatively, it could be that d^* is no longer consistent. If this is so it must be that $d' < d^*$. This shows that credit decreases. If this is the case, then second period interest rates must equal \bar{y} , while first period interest rates depend only on ϕ . Proposition 1 then can be applied to establish the result.

To see that the effect on kings' revenue is ambiguous notice that if $\phi' < \phi_2$ so that the credit market is efficient in both scenarios, then a more efficient tax farming system increases kings' welfare. On the other hand, if $\phi' > \phi_1 \geq \phi^*$, the king can extract some rents under c but not under c' .

Second, notice that increasing α leads to an increase in ϕ_1 and a decrease in ϕ_2 . In addition it increases $G^*(d)$ for any $d > 0$. Hence, the region in which no rollover occurs but the credit market is active expands. Since interest rates in the first period are decreasing in α for given ϕ and $\phi(0; E)$ is independent of α , interest rates decrease in the first period.

Second, in a region in which $d > 0$, an increase in α induces a shift upwards in $G^*(d)$ so that the equilibrium expropriation rates increases. If $d^* = 0$ after the increase in α the market collapses. If $1 > d^* > 0$ after the increase, then the interest rate in the second period is \bar{y} which is the highest possible rate. In all these cases, the volume of trade decreased. Finally, if $d^* = 1$, the interest rate, the volume of trade did not change and the interest rate in the second period increases by applying the definition. \square

Proof of Lemma 3. The proof follows directly from $\tilde{\phi}$ being decreasing in d and $\phi_2 <$

ϕ_1 .

□

Proof of Proposition 4. Since $\tilde{\phi}(0; E) \leq \phi(0; E)$ $\phi(d; E)$ is increasing in d and $\tilde{\phi}(d; E)$ decreases in d . Hence, $\tilde{\phi}(d; E) < \phi(d; E)$ for any $d > 0$. The result now follows by using Lemma 3. □

Proof of Proposition 5. Suppose that $p_1\bar{y} + (1 - p_1)\alpha - 1 = K(p_2(\bar{y} - \alpha) - 1) = K\epsilon$. Two-period contracts require

$$p_1(1 + \bar{y}) + (1 - p_1)(p_2\bar{y} + (1 - p_2)\alpha) \geq \frac{2}{(1 - \phi)^2} \quad (17)$$

$$p_1\bar{y} + p_1 + (1 - p_1)(p_2(\bar{y} - \alpha) + \alpha) \geq \frac{2}{(1 - \phi)^2} \quad (18)$$

$$p_1\bar{y} + p_1 + (1 - p_1)(p_2(\bar{y} - \alpha) + \alpha) \geq \frac{2}{(1 - \phi)^2} \quad (19)$$

$$K\epsilon - (1 - p_1)\alpha + p_1 + (1 - p_1)(p_2(\bar{y} - \alpha) + \alpha) \geq \frac{2}{(1 - \phi)^2} \quad (20)$$

$$K\epsilon + (1 - p_1)\epsilon \geq \frac{2}{(1 - \phi)^2} - p_1 \geq \frac{2 - (1 - \phi)^2}{(1 - \phi)^2} \quad (21)$$

On the other hand, one period contracts without refinancing require

$$K\epsilon(1 - \phi) \geq 1 \quad (22)$$

But if $K\epsilon(1 - \phi) < 1$, we have that

$$K\epsilon + (1 - p_1)\epsilon < \frac{1 + (1 - p_1)\frac{1}{K}}{1 - \phi} \quad (23)$$

$$= \frac{K + (1 - p_1)}{K(1 - \phi)} < \frac{2 - (1 - \phi)^2}{(1 - \phi)^2} \quad (24)$$

for $K > 1$ large enough. □