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Assessment on anti-usury policies**

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Improving Bankruptcy Proceedings or Strengthening Punishments? An Assessment on anti-usury policies

Lisa Crosato* and Lucia Dalla Pellegrina†

Abstract

In this work we shed light on some issues concerning the impact of the efficiency of both bankruptcy proceedings and criminal justice on usury. In the model we show that, while increasing punishment for illegal lenders reduces usury, improving efficiency of bankruptcy proceedings may have perverse effects. We find that if bankruptcy proceedings are very inefficient, usury cannot occur even in presence of very high informal interest rates due to the complete failure of the banking sector; if bankruptcy proceedings are highly efficient further improvements decrease usury while more severe sanctions are ineffective; if bankruptcy proceedings are mildly inefficient, more efficiency is likely to increase the probability that lending takes place through usurious contracts, while strengthening punishments has deterrence effects. This provides policy implications in terms of polarizing the allocation of public resources in case of reforms in the criminal/judicial sector. Finally, simulations of the theoretical model using a lognormal distribution for collateral suggest that changing average collateral and its inequality have opposite effects on the likelihood of usury but do not change the basic predictions of the model, providing evidence that less-developed countries are those requiring substantial interventions in order to curb the phenomenon of illegal credit.

Keywords: illegal financial markets, justice, usury.

JEL Classification: K00, K14, K42.

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1 Introduction

The economic literature has long focused on the impact that the quality of justice has on financial markets (La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1997 and 1998). More specifically, Cristini, Moya and Powell (2001), Bianco, Pagano and Jappelli (2001), Fabbri (2001), Masciandaro (2001b), and Fabbri and Padula (2003), investigate the relationship between law enforcement and legal credit allocation in various regions and countries. However, these contributions have never been concerned about the influence that law might have on the prosperity of the dark side of the financial system, and on incentives mechanisms driving illegal credit demand and supply.

Usury¹ is due to a considerable extent to the cost and availability of legal lending, which strictly depends on the capability of recovering collateral in case of default. This capability reflects the institutional framework governing bankruptcy, and in particular the efficiency of bankruptcy proceedings and related judicial costs. Notwithstanding, usury is a crime, and like all other crimes it is deterred through enforcement and punishment (see Becker (1968) for a general framework, and Dalla Pellegrina (2008a) for an application to crimes in Italy). The aim of this paper is to investigate whether, and in which contexts, it is optimal facing this crime through –and devote public resources towards– improvements in bankruptcy proceedings or strengthening punishments for criminals.

The outstanding literature on illegal lending has not yet contemporaneously analyzed both the inefficiency of bankruptcy proceedings and criminal judicial variables as determinants of usury. Most of the contributions to this field deal with the debated issue of whether it is better imposing usury ceilings² (Blitz and Long, 1965, among others), or deregulating credit markets. In order to provide an answer to this issue, much work has also been done on the micro foundations of usury markets (Masciandaro, 2001a; Masciandaro, 2002; Cifarelli et al., 2002), and this framework constitutes an important pillar to our analysis.

This work fits in this literature but differs from two perspectives. First we analyze a framework where usury ceilings have actually been

¹Usury refers to the charging of relatively high interest rates. In the United States, as in many European countries, for example, usury laws specify the maximum legal interest rate at which loans can be made. Most of these laws state also that it is a crime to use violence or threats to collect usurious interest. Such activity is referred to as “loan sharking”, although that term is also applied to non-coercive usurious lending.

²To the best of our knowledge, no effort has been done so far in order to endogenize these ceilings. This is one of the main points of our analysis.

established without taking part to the debate of whether it is optimal to impose them or not³. Second, we concentrate on the incentive mechanisms driving the choice of becoming criminals. This approach pays much attention to illegal credit supply, departing from the mainstream literature that mainly focuses on demand-driven illegal credit contracts. Thus we offer a comprehensive theoretical explanation of the relationships between legal and illegal lenders, and justice, that drive both usury demand and supply.

We find that increasing the severity of punishments, when this is effective, unambiguously deters illegal lending behaviors. As about the direction of the relationship between usurious credit and the efficiency of bankruptcy proceedings, things are less clear-cut. If bankruptcy proceedings are very inefficient, usury cannot occur even in presence of very high informal interest rates due to the complete failure of the banking sector and the consequent absence of interest rates ceilings. Conversely, if bankruptcy proceedings are highly efficient further improvements decrease usury, while more severe sanctions are ineffective. However, if bankruptcy proceedings are mildly inefficient, more efficiency is likely to increase the probability that lending takes place through usurious contracts, while strengthening sanctions may actually curb usury. The motivations of the ambiguous impact of judicial efficiency are in this case ascribable to the higher incentive of becoming criminals when interest rates ceilings decrease as a consequence of more efficient bankruptcy proceedings, i.e. the opportunity cost of being legal increases (see Dalla Pellegrina, 2008b for an empirical analysis).

Furthermore, we find that usury depends both on the degree of inequality characterizing the collateral distribution and on its median level, although these features do not change our predictions in terms of ambiguities emerging from improvements of courts efficiency. In particular, since illegal financing demand can vary according to the proportion of potential borrowers possessing insufficient collateral to access bank lending, we need to account for heterogeneity in the borrower collateral endowment. To this purpose, we simulate the theoretical model supposing that collateral is distributed according to a standard lognormal distribution⁴, which allows to control for different levels of inequality and median through its shape and scale parameters respectively. The results show that, leaving the severity of punishment unchanged, the more unequally the collateral is distributed, the more likely is that im-

³The reason is due to the fact that, despite the recommendations of the economic literature, most countries still adopt usury ceilings.

⁴The lognormal distribution represents a benchmark for modelling income and wealth distributions across countries and time (Kleiber and Kotz, 2003).

proving the efficiency of bankruptcy proceedings fosters usury, while the opposite holds in response to increasing value of the median collateral.

The paper has policy implications in terms of decisions on whether conveying resources towards the bankruptcy system or the criminal judicial sector. In particular, results suggest polarization of smaller policy interventions towards the sector that is more efficient/effective. Large reforms are instead required to avoid perverse policy outcomes.

Finally, policymakers need to take account of the fact that reforms have not the same effects in every context. In particular, less developed countries, which are often associated with higher court inefficiencies and more severe punishments, together with lower collateral endowments and higher wealth/income concentration, are those requiring larger reforms to reduce usury without incurring in perverse phenomena such those described in this paper.

The paper is organized as follows: in Section 2 we describe a simple model of illegal finance and justice, in Section 3 we simulate the model assuming different distributions for the borrower's collateral. Section 4 concludes.

2 The model

The main purpose of the theoretical approach is to determine which is the impact of judicial variables on usury. In particular, the key factors that drive the analysis are: a) more severe sanctions for illegal lenders, which should directly affect usury via deterrence; b) improvements in the efficiency of bankruptcy proceedings, which should indirectly affect usurious credit through bank interest rates and credit supply changes.

The analysis lasts one period. There is one borrower, an infinite number of identical formal lenders – banks – competing on the financial market, and one monopolistic informal lender⁵ who may decide to be legal or become illegal by requiring usurious interest rates.

The borrower needs one unit of capital to start a project. He/she has no liquidity to be directly used for production purposes, but owns some collateral (C), which is an illiquid and non divisible asset. We assume for the moment that collateral is uniformly distributed, so that

⁵Informal lenders, due to their close relationship with the borrower, have some degree of market power (Ray, 1998). Criminal organizations, in particular (see for example Garoupa, 2000), have monopoly power in their area. For example, in Italy, the Mafia mainly operates in Sicilia and Camorra in Campania. Furthermore, the chief members (families and clans) of these organizations use to split the territory such that, as far as credit is concerned, people living in a certain area are forced to borrow from the clan controlling that place and cannot resort to another illegal borrower.

the probability of usury is proportional to the interval of collateral values $[\underline{C}, \overline{C}]$ such that, for C included in this interval: a) borrowers are willing to demand an informal contract; and b) informal lenders are willing to lend at usurious rates. Hence, by looking at how the thresholds defining the interval $[\underline{C}, \overline{C}]$ move in response to policy measures we are able to state whether the latter can increase or reduce the probability of usury⁶.

The output generated by the borrower's project is random: in the good state – which occurs with probability q – one unit of capital produces y units of income, while in the bad state $y = 0$. We assume that the outcome is not verifiable by lenders. For the sake of simplicity, we also assume that the opportunity cost of money is zero for both lenders.

At the beginning of the period, the borrower must choose a lender⁷. After the output realizes, the former must pay back the principal plus interests to the latter. If the output is not enough to pay the sum due at maturity, the collateral is transferred to the lender.

There is crucial difference between a bank and an informal lender. On the one hand, banks need to apply to courts in order to expropriate the collateral when the borrower's income is not enough to fully repay the entire sum due at maturity⁸. On the other hand, the informal lender does not require a judicial procedure, but rather uses other means in order to recover available assets⁹.

The variable representing the efficiency of bankruptcy proceedings is j , where $0 \leq j \leq 1$, and is public information. This means that if courts succeed in recovering one unit of collateral, they transfer only a share j to banks. The remaining share $(1 - j)$ denotes the cost of delay.

According to several countries' usury laws, interest rates are usurious

⁶We relax the hypothesis of the uniform distribution of collateral in the next section by imposing that the latter is lognormally distributed.

⁷As it will be shown further on, information concerning the type of lender is meaningless (i.e. can be common knowledge or not), since the borrower selects between lenders only on the basis of interest rates. Assuming that choosing an informal lender has a cost – which is plausible in case the borrower knew that the latter is an illegal one – would only strengthen our results.

⁸In case of the full repayment of the sum due the relationship with whatever type of lender is extinguished.

⁹Close social ties frequently allow agreements between parties which do not involve any formal recovering procedure. In case of illegal lending, threats against the borrower's relatives – which are typical of mafia's affiliates – are also frequent, and such kind of psychological pressure is rather powerful in order to obtain immediate compliance. Furthermore, illegal lenders may also commit other types of crime, like illegal gambling and money laundering. Hence, they might explicitly need to avoid contacts with courts in order to escape other sanctions.

when they are above a specified threshold (ceiling)¹⁰ which is typically linked to bank rates. We define the usury ceiling as the maximum interest rate required by banks compatible with the borrower's moral hazard condition ($C \geq R_{LL}$, where R_{LL} is the gross bank interest rate)¹¹.

Thus, by imposing that $C = R_{LL}$ in the banks' zero profit condition $E(\Pi_{LL}) = qR_{LL} + (1 - q)jC - 1 = 0$, we are able to retrieve the the usury ceiling:

$$\tilde{R}_{LL} = \frac{1}{q + (1 - q)j} \quad (1)$$

which is also equal to the minimum collateral accepted by banks in order to avoid moral hazard¹².

If the borrower has collateral exactly equal to \tilde{R}_{LL} she/he agrees to the contract when his/her profit, $qy - \tilde{R}_{LL}$, is positive. This occurs for sufficiently high values of the parameter reflecting the efficiency of judicial proceedings, that is:

$$j > \frac{1 - q^2y}{qy - q^2y} = \tilde{j} \quad (2)$$

Hence, we get:

Proposition 1 *In order for bank lending to take place, and for usury ceilings to be determined, bankruptcy proceedings must recover at least a percentage \tilde{j} of collateral.*

If the borrower has a collateral value which is higher than \tilde{R}_{LL} she/he pays an interest rate which is compatible with banks' zero profit condition and accepts the formal contract for values of C such that his/her profit is positive:

$$\begin{aligned} E(\Pi_B) &= qy - qR_{LL} - (1 - q)C \geq 0 \\ s.t. E(\Pi_{LL}) &= 0 \iff R_{LL} = \frac{1 - (1 - q)Cj}{q} \end{aligned} \quad (3)$$

¹⁰Ceilings are sometimes computed by adding a mark-up to average bank rates. Moreover, in many countries they change across regions reflecting different riskiness. In Italy, for example, ceilings typically grow as one moves from the Northern to the Southern and more depressed regions. Furthermore, ceilings are constantly updated in order to follow changes in the cost of capital through time.

¹¹If this condition does not apply the borrower will never repay principal plus interests, but rather chooses to always give up collateral.

¹²As the value of collateral increases with respect to the threshold defined in (1), banks require lower interest rates. Note that when C is exactly equal to \tilde{R}_{LL} the borrower is in the most efficient condition since in this case he/she suffers the lowest loss due to the judicial recovering technology.

that is for:

$$C \leq \frac{qy - 1}{(1 - q)(1 - j)} = C_{LL}^{\max}$$

Thus, banks will lend for intermediate values of collateral, $C \subseteq [\tilde{R}_{LL}, C_{LL}^{\max}]$ ¹³. A borrower having relatively low collateral will be rationed due to moral hazard problems, while judicial inefficiencies will induce a borrower with relatively high collateral to stay out of the market¹⁴. This is explained by the fact that judicial inefficiencies can be seen as a "fee" that has to be paid to courts – banks do not benefit and do not loose due to their presence – which increases with collateral.

Now we look for collateral values that induce the informal lender to become an illegal one (by imposing usurious rates). This can be done either by looking for which values of C the informal interest rate (R_{IL}) is higher than the ceiling¹⁵, or by finding for which values of C the borrower gets some additional rent when facing an interest rate which is equal to the ceiling (i.e. where there is still room for further expropriation).

Using either of these criteria, we find that informal rates are usurious when:

$$C < \frac{qy - q\tilde{R}_{LL}}{1 - q} = \tilde{C}$$

In order to find for which values of collateral usury might occur it is important to check where does \tilde{C} fall with respect to the values of C that delimit bank lending. It is easy to show that:

Proposition 2 *If $j > \tilde{j}$ the maximum collateral inducing usury, \tilde{C} , belongs to the interval $[\tilde{R}_{LL}, C_{LL}^{\max}]$.*

The rationale behind Proposition 2 is straightforward. For high values of collateral, both types of lenders are forced to reduce interest rates in order to fulfil the positive profit condition of the borrower. However, increasing collateral allows the informal lender to reduce interest rates faster than banks are able to do, since the latter suffer judicial inefficiency costs which are transferred to the borrower via higher interest

¹³In order for this interval to be defined it must be that $\frac{1}{q+(1-q)\tilde{j}} < \frac{qy-1}{(1-q)(1-\tilde{j})}$. It is easy to verify that this inequality is satisfied if condition (2) holds.

¹⁴Note that typically credit rationing originates from adverse selection problems (Stiglitz and Weiss, 1981). Here it occurs due to judicial costs that may induce moral hazard.

¹⁵This can be retrieved by the borrower's zero profit condition: $E(\Pi_B) = qy - qR_{IL} - (1 - q)C = 0$

rates. Hence, for high values of C , whenever banks are able to lend at a rate below the ceiling, the informal lender can do better.

Given these considerations we can assess that usury *is possible* for values of collateral that are between zero and \tilde{R}_{LL} ¹⁶. However, the convenience of the informal lender to become illegal depends upon his/her evaluation of the pros and cons of expropriating the borrower versus the punishment he/she incurs when imposing usurious interest rates.

We assume that the punishment p , where p can take every positive value, is borne by the informal lender when usury takes place. Hence, more severe sanctions should unambiguously deter usury crimes since the higher their burden, the lower the informal lender's expected profit.

It can be shown that the expected profit of the informal lender if he/she chooses to be illegal and bear the punishment, $E(\Pi_{IL|us}) = q(R_{IL} - p) + (1 - q)C - 1$ (subject to the borrower's zero profit condition) is higher than when she/he prefers to stuck to an interest rate that is equal to the ceiling, $E(\Pi_{IL|nus}) = q\tilde{R}_{LL} + (1 - q)C - 1$, when¹⁷:

$$C \leq \frac{q}{1 - q} (y - \tilde{R}_{LL} - p) = \tilde{C}_{IL} \quad (4)$$

At this point it is worth to compare \tilde{C}_{IL} with \tilde{R}_{LL} . In fact, the lower bound of collateral values associated to usury, \underline{C} , is always zero, but the upper one, \bar{C} , can be either \tilde{R}_{LL} or \tilde{C}_{IL} . The threshold defining the upper bound of the interval is crucial since if $\tilde{C}_{IL} > \tilde{R}_{LL}$ the probability that usury takes place is proportional to the interval $[0, \tilde{R}_{LL}]$. If this is the case, whenever the efficiency of bankruptcy proceedings increases, the right threshold of the interval shifts to the left and it becomes less likely that usury occurs. Conversely, when the opposite occurs, it is more likely that $\tilde{C}_{IL} < \tilde{R}_{LL}$, so that usury takes place for values of $C \in [0, \tilde{C}_{IL}]$. In this scenario we are in presence of a perverse effect,

¹⁶In fact, the informal lender may be induced to raise interest rates above the ceiling only where he/she does not face bank competition. In order to verify this, one can observe in (3) that, in case of default, the borrower loses C irrespective of the level of j . Thus, she/he will choose a lender basing on the most advantageous interest rate. For this reason, even if the informal lender can steal a bank customer having $C \subseteq [\tilde{R}_{LL}, \tilde{C}]$, she/he will never require an interest rate which is above the ceiling, i.e. will never become illegal.

¹⁷Note that (4) admits either punishment for the illegal recovering technology (as reported in the text) or its absence. In case of absence it must be that $E(\Pi_{IL|us}) = qR_{IL} + (1 - q)C - p - 1$ - subject to the borrower's zero profit condition - is greater than $E(\Pi_{IL|nus}) = q\tilde{R}_{LL} + (1 - q)(C - p) - 1$. This provides the same results reported in (4). Note also that if the informal lender chooses to deviate from the ceiling, she/he is indifferent to the value of C .

that is increasing j boosts usury. From (4) one can easily observe that this perverse situation is more likely to occur whenever the efficiency of bankruptcy proceedings is low relative to the severity of punishments.

It is easy to show that $\tilde{C}_{IL} > \tilde{R}_{LL}$ when:

$$j > \frac{1 - q^2 (y - p)}{q(1 - q)(y - p)} = \tilde{j} \quad (5)$$

Hence:

Proposition 3 *For values of j that are greater than \tilde{j} , an inverse relationship between the efficiency of bankruptcy proceedings and the probability of a usurious credit contract occurs, while if $j < \tilde{j}$ the opposite holds.*

Thus we can sum up our results as follow. If bankruptcy proceedings are very inefficient ($j < \tilde{j}$) usury cannot occur even in presence of very high informal interest rates due to the absence of bank and interest rates ceilings; if bankruptcy proceedings are mildly inefficient ($\tilde{j} > j > \tilde{j}$) increasing j can lead to a higher probability of usurious contracts (perverse effect), while punishments are effective in reducing the phenomenon. However, note that, as p tends to zero, \tilde{j} collapses to \tilde{j} , meaning that strengthening punishments, although reducing usury *per se*, increases the probability of having perverse effects as the efficiency of proceedings improves. Finally, if bankruptcy proceedings are efficient ($j > \tilde{j}$) an improvement in j decreases usury due to the reduction of bank credit rationing, while more severe sanctions are ineffective.

3 Poverty-augmented model

In this section we provide an exercise to assess how the outcomes of our model react when relaxing the hypothesis of a uniform collateral distribution, further accounting for heterogeneity in the borrower collateral endowment. We have previously shown that the probability for usury to take place is confined to credit-constrained individuals: all of them are exposed to usury for highly efficient bankruptcy proceedings, while only a part of them is exposed to usury when bankruptcy proceedings are mildly inefficient. However, credit rationing heavily relies on the efficiency of courts and, in either case, illegal financing demand can vary according to the proportion of potential borrowers possessing insufficient collateral to access bank lending.

Empirical evidence has shown that, across Italian regions, the probability that a given household is credit-constrained decreases with income

or collateral and that low income households are the most damaged by a poor legal enforcement (Fabbri and Padula, 2004). Here we show that our model is consistent with the evidence and also suggests that, when evaluating the impact of wealth/collateral on credit opportunities, further attention should be devoted to separate distributional changes from aggregate effects.

Throughout the following we suppose that collateral is measured by the monetary value of an individual's whole assets, liquid or illiquid. This assumption allows us to quantify changes in poverty on a collateral basis, defining the poverty line as a half of the mean collateral. In order to measure the impact of poverty on the likelihood of usury, we proceed through two steps: we firstly assess the overall effect of poverty on usury, and we secondly account for two separate components which, affecting poverty, may affect usury in turn.

The economic literature on poverty, in fact, carefully distinguishes the impact of two growth-related factors on poverty reduction: changes in average income and in its inequality (Kakwani and Pernia, 2001; Ravallion 2003). The first factor, known as the pure growth effect, refers to the impact of a change in average income when the income distribution among individuals remains unchanged, while the second one, the pure inequality effect, regards the impact of redistribution when the average income does not vary.

We now need to select a parametric form for the distribution of collateral. It is clearly sensible to draw on the group of models which have been proven successful in matching the empirical distribution of income and wealth. Among these the simplest ones are the classical lognormal and Pareto distributions, although there are many other families which have had better performances, such as the five-parameter generalized Beta distribution (Kleiber and Kotz, 2003). We rely on the traditional models since what we are looking for is just enough flexibility to consider the above effects one at a time and two parameters should do the job. The Pareto distribution cannot serve our purposes, since both the mean and the Gini's coefficient are expressed in terms of its shape parameter only, and both are decreasing function of the parameter itself. This implies that introducing a Pareto distribution in the model would not allow to account for separate sources of changes in poverty. The contrary holds for the lognormal distribution, whose parameters, $exp(\mu)$ of scale and σ of shape, have separate effects on the poverty line as defined above. The probability density function of the lognormal distribution is given by

$$LN(\mu, \sigma^2) = \frac{1}{x\sqrt{2\pi\sigma}} \exp \left\{ -\frac{1}{2\sigma^2} (\log(x) - \mu)^2 \right\}, x > 0 \quad (6)$$

The inequality characterizing a lognormal distribution can be conveniently expressed by the Gini coefficient, which equals

$$G = 2\Phi\left(\frac{\sigma}{\sqrt{2}}\right) - 1 \quad (7)$$

Therefore, the degree of inequality only depends on parameter σ . The median of the lognormal distribution is simply equal to $\exp(\mu)$, while its mean is

$$E(X) = \exp\left(\mu + \frac{\sigma^2}{2}\right) \quad (8)$$

Thus, while the median collateral depends only on μ , the mean is an increasing function of both parameters. This allows us to test for the pure inequality effect, produced by changes in σ , for the pure growth effect, produced by changes in μ and for a mixed effect by varying the mean collateral through μ and σ simultaneously.

Figure 1 and Figure 2 represent each three possible lognormal collateral distributions: in Figure 1 Gini's index is fixed (same level of inequality) but the average collateral grows (corresponding to variations in the median only), while in Figure 2 the inequality increases and the average collateral remains unchanged.

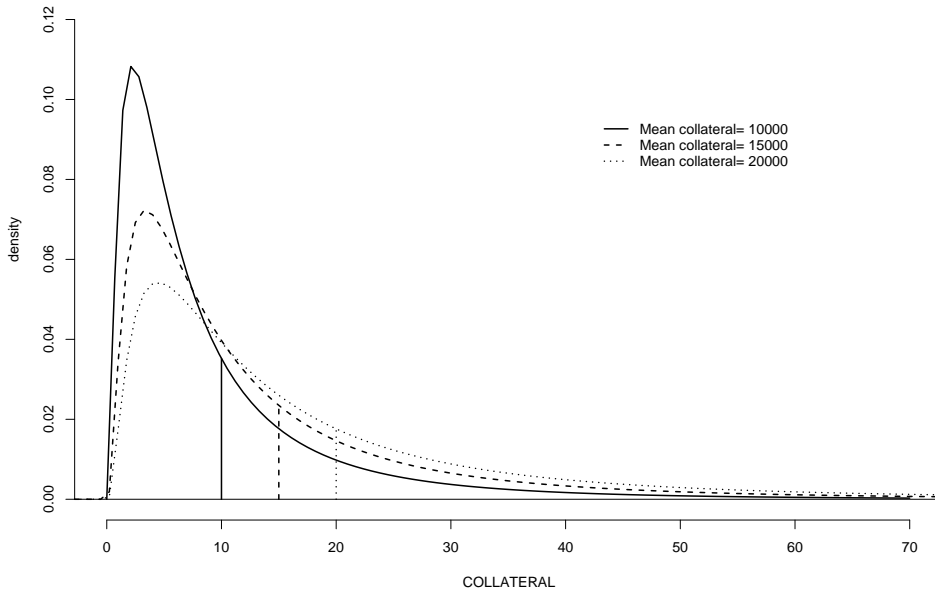


Figure 1: **Lognormal distribution varying according to the mean (vertical lines), holding inequality constant**

The rationale behind this exercise is that probability of usury is measured by the proportion of individuals owning collateral which lies below

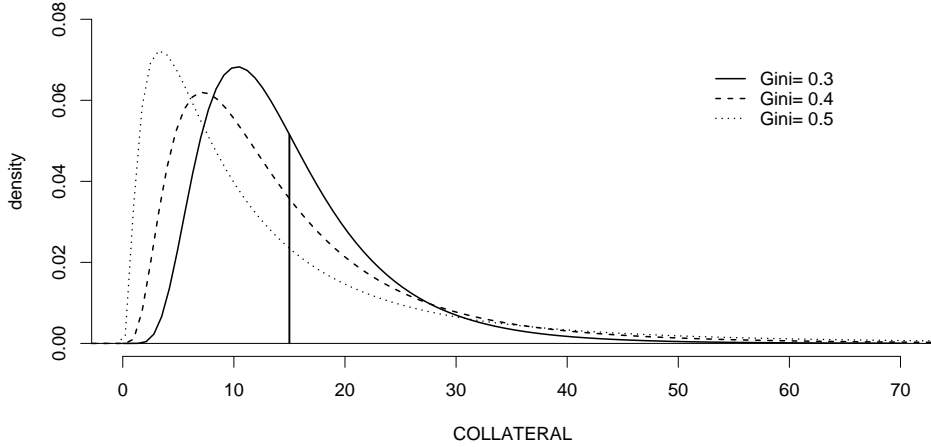


Figure 2: **Lognormal distribution corresponding to different levels of Gini's ratio, holding the average constant (vertical line)**

the usury cut-off value of collateral, i.e. $C_{us} = \tilde{R}_{LL}$ for efficiency values j such that $\tilde{j} < j \leq \tilde{\tilde{j}}$ and $C_{us} = \tilde{C}_{IL}$ for $j > \tilde{\tilde{j}}$. Since we are supposing that C follows a lognormal distribution, proportions of individuals at risk of usury are readily calculated by the lognormal distribution function evaluated in C_{us} :

$$F(C_{us}) = \Phi\left(\frac{\ln(C_{us}) - \mu}{\sigma}\right) \quad (9)$$

where Φ denotes the distribution function of the standard normal distribution. In Figure 1 and Figure 2 the distribution function $F(C)$ appears only indirectly as the area underlying the density curves between 0 and C .

To obtain some comparative statics using the lognormality hypothesis, we also need to assign some values to parameter q and variables y and p which stand for the probability of success, the outcome and the punishment, respectively. We fix the value of q equal to 0.5, while we extract random values of y from an asymmetric distribution¹⁸, with the additional condition, derived from section 2, that $1/q + p < y < 1/q^2$. As about p , it is a random draw from an uniform distribution with $0 < p < (1 - q)/q^2$. Of course, as the model predicts explicitly, the cut-offs of judicial efficiency are highly dependent on both y and p .

The likelihood of usury is explicitly depicted in Figure 3 as an increasing function of the level of the average collateral (or pure growth), while in Figure 4 as a decreasing function of the degree of collateral inequality as measured by the Gini's ratio, in both judicial efficiency intervals.

¹⁸The graphs here presented are obtained drawing y from a Pareto distribution, but we have had similar results by using a lognormal instead

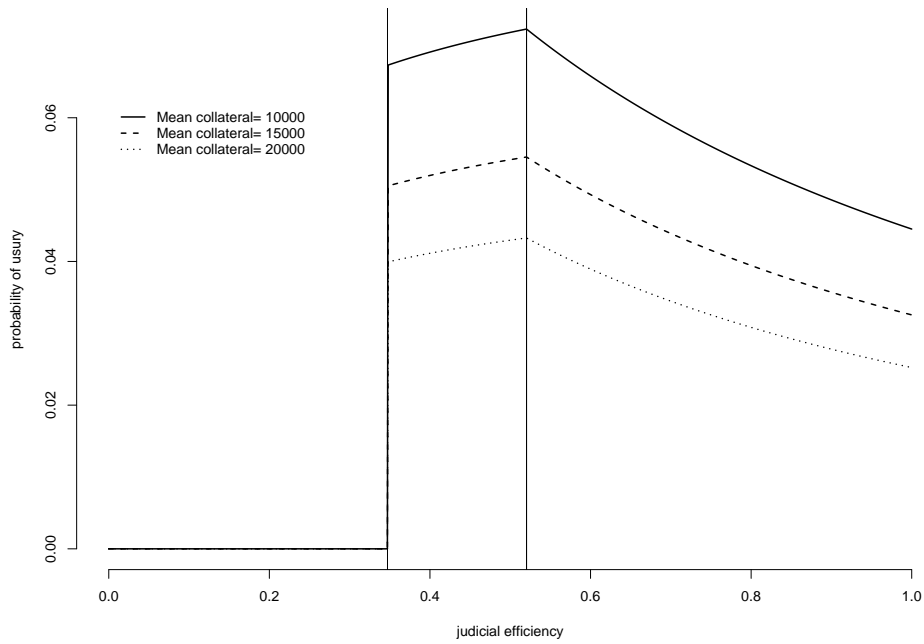


Figure 3: **Effect of increasing average collateral on the likelihood of usury, holding inequality constant**

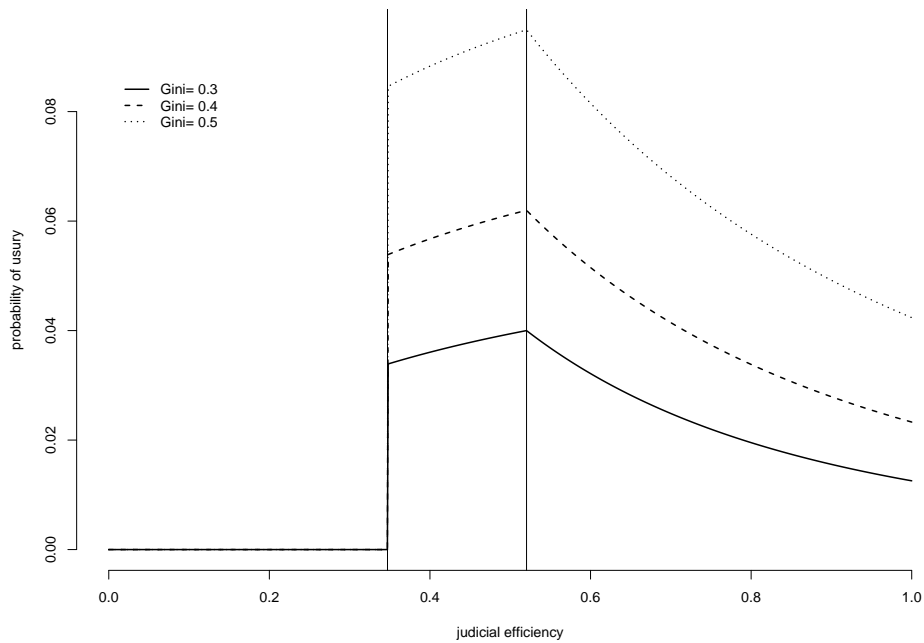


Figure 4: **Effect of increasing the collateral distribution's inequality on the likelihood of usury, holding the average collateral constant**

Figure 5, on the contrary, show that in case of collateral undergoing alterations on both the distributional and the aggregate sides, results are not univocally determined. This suggests the opportunity to investigate

separately the effects of changes in average income and inequality on credit constraints and usury.

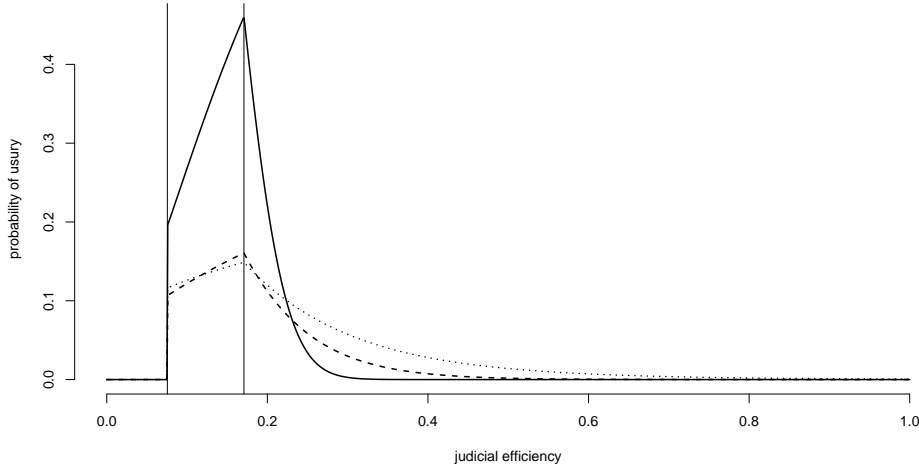


Figure 5: **Effect of increasing both the collateral distribution’s inequality and the average collateral on the likelihood of usury**

Summarizing, in this section we found that shifting to a more realistic distribution of collateral has no impact on the statements of propositions 1-3, concerning the effect of interventions changing the efficiency of bankruptcy proceedings and/or the severity of sanctions. Important implications emerge instead from the point of view of where reforms are mostly required. The analysis suggests that, *ceteris paribus*, lower average collateral and higher concentration induce a larger probability that credit contracts are usurious.

4 Conclusions

We built this work on the idea that improvements in the efficiency of bankruptcy proceedings and in the structure of crime punishments may curb illegal credit transactions, with particular attention to usury crimes.

In the theoretical part of the paper, we find that people are less likely to borrow, and banks are less willing to lend, when bankruptcy proceedings are inefficient. In fact, competitive formal lenders use to transfer all the extra-costs of an inefficient judicial system to the borrower via higher interest rates and credit rationing. Hence, this should provide an argument in favor of improvements of the efficiency of proceedings, which is not new to the literature dealing with illegal finance.

However, there are other judicial factors that may undermine such a straightforward assessment. In particular, in this work we choose to

concentrate on the incentive mechanism that induce some lenders to supply illegal contracts according to the definition of usury adopted by most countries (i.e. requiring interest rates which are higher than a ceiling fixed by the law).

In particular, justice may enter criminals' preferences when they face the decision of either increasing interest rates above a pre-determined ceiling and bear punishments, or stuck to the ceiling and avoid it. On the one hand, inefficiencies of bankruptcy proceedings, and consequent interest rates increases, may induce a higher opportunity cost of being legal. This produces perverse effects of improvements of bankruptcy proceedings on usury. On the other hand, since criminals can be punished according to criminal justice, they will be more willing to supply illegal credit if the punishment they incur is lenient.

By considering together all these features we provide two main conclusions.

First, for a given structure of punishments, highly inefficient judicial proceedings are associated to a complete failure of the banking system, since usury cannot take place due the lack of a benchmark interest rate used to compute the ceiling. When proceedings are highly efficient, improving them allows to further reduce the probability that a contract is usurious due to the reduction of bank credit rationing. However, starting from a setup where proceedings are mildly inefficient we may end up with an increasing probability of usury through the improvement of judicial efficiency.

Second, interesting results emerge when considering the interactions between punishments and courts' behavior. When bankruptcy proceedings are efficient relative to the severity of punishments (good state), an improvement in the former induces a lower probability that usury takes place while strengthening punishment is ineffective, an outcome that does not depart from the partial analysis of demand that has been carried out in previous studies. The opposite occurs when punishments are rather severe as compared to the efficiency of proceedings (bad state)¹⁹. In this case, supply effects prevail on demand ones, and perverse outcomes are likely to occur, that is each improvement of bankruptcy proceedings may imply a higher probability that a credit contract is usurious. Nonetheless, more severe sanctions are now effective. This situation closely resembles the one of several developing countries, which typically impose more severe punishment schemes than developed ones, but often operate in a less efficient judicial setup.

¹⁹Note that "good" and "bad" do not reflect the higher or lower probability of usury, but the variation of this probability as the efficiency of bankruptcy proceedings changes.

Moreover, the model also predicts that, *ceteris paribus*, the probability of usury is larger in contexts where the average collateral is low and its distribution is highly concentrated. Thus, not only we observe more usury in poorer countries, but negative effects of improvements in the judicial systems can also vanish any weak attempts to manage such a vicious cycle.

Finally, from an economic policy standpoint, we find that reforms devoted at improving the judicial sector and the structure of sanctions may not end up with the same impact, since their outcome depends on the judicial setup and the structure of punishment of a country at the time the reform is implemented.

The indication that emerges is the one of polarizing policy interventions, meaning that if courts are rather efficient and punishments not severe, reforms devoted at further improving efficiency are more likely to reduce usury than stronger sanctions. In the opposite scenario –the one associated to less-developed countries– further strengthening sanctions may avoid perverse effects which may instead occur in case of interventions on the efficiency of courts. This suggestion holds for small reforms, which are likely to induce changes that are too marginal to revert the adverse cycle described above. Sufficiently large reforms, although difficult to implement and finance, should instead allow a transition to the "good state".

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