Modern pillories: Overdue debts of the poor

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Abstract

We develop a moral-hazard model and derive a feasibility condition for private and public debt relief programs. We find that lenders have no interest to offer payment reductions if nonperforming borrowers are few, have small debts, and are difficult to reach – precisely the characteristics of the poor. In this situation, poor debtors serve better as deterrents, similarly if we put them into a pillory. We calibrate the model parameters to survey data on poor households struggling with overdue debts in small villages in a disadvantaged rural region in Hungary. We find that in normal economic circumstances, private debt relief programs are not feasible. State intervention can be justified by positive externalities and moral considerations.

Keywords: overdue debts, debt relief, debt renegotiation, soft budget constraint

1. Introduction and motivation

Overdue debts can create a vicious circle that leads to poverty traps and financial exclusion. Through personal interviews conducted in one of the most disadvantaged regions of Hungary, we find that many people have large overdue debts, they are unable to repay for many years, notifications of debt collectors are thrown away without reading, interests are accumulating, they do not even know the exact size of their debt, but they feel enormously depressed and see completely hopeless to repay. A large amount of these debts come from FX-denominated

(mostly in Swiss franc) mortgages taken in 2004-2009. During the deep social and economic crisis in 2009-2011, the Hungarian government initiated large-scale debt consolidation programs targeting the well-off. In particular, borrowers not in arrears were allowed to repay their FX-loans in a lump sum at the initial exchange rate, which meant about 30% of debt reduction (financed by the lender banks). Clearly, richer people could profit from this opportunity, those who were able to meet the repayment obligations all along the crisis and were able to refinance their debts (Berlinger, Walter, 2015). Debt relief programs designed for the poor were either not popular (around 1% of distressed borrowers entered the personal bankruptcy scheme) or too limited (the cheap house renting scheme was closed after some years of operation and many eligible applicants were refused).

Interviewees with long-standing overdue debts did not feel motivated to take a legal job because in this case, 33% (or even 50%) of their income would immediately be taken away for debt repayment. For example, by taking a job in neighboring cities, they could earn a minimal wage. Deducting taxes and travel costs, they could touch approximately the same amount than with public work in their village. Moreover, with public work, they can participate in seasonal agricultural work paid in cash (without deductions), and they can have more time for their family and household. Therefore, for nonperforming debtors, public work or black employment is more attractive, which contributes to the reproduction of their disadvantaged situation.

Interviewees with overdue debts told us that they do not even think about opening a bank account because banks would be allowed to deduct a significant part of their income. Feeling shame, anger, or regret originated in their bad experiments with formal financial services, they are decided to avoid all kinds of connection to formal banking, even if it means total financial exclusion.

Following the lines of these interviews, we compiled a detailed, quantitative, and large-sample survey that focuses on the effects of overdue debts in a disadvantaged region of Hungary. We conducted a random and representative survey in the villages of BAZ county, one of the most disadvantaged regions of Hungary, contacting 505 respondents who reported on 1196 adults (the respondents and their family members of more than 18 years). 179 adults (out of 1196) have overdue (formal) debts, which is around 15%. About 28% of households (141) have at least one member with overdue debts, and about 30% of people live in households with overdue debts.

The survey results strengthened the insights gained from the interviews. Many poor people suffer from overdue debts, and most of them would even pay a significant amount to get rid of their obligations. Those who have no debts or can pay without delay also admit knowing many others in their wider neighborhood who struggle with these issues contributing to the poverty trap in many ways (Berlinger et al. 2021).

Poverty trap mechanisms were excessively analyzed by Sen (1999), Banerjee and Duflo (2011), Mullainathan and Shafir (2013), and Piketty (2014); however, the problem of overdue debts of the poor was less exposed mainly because these studies focused on the third world where poor people typically do not have access to utilities and bank loans as easily as in Hungary, which are the main sources of indebtedness. According to the World Bank (2012), one of the greatest obstacles to becoming an entrepreneur is indebtedness among Roma in Hungary, as 54% of the aspiring Roma entrepreneurs had arrears in paying utility bills and 16% in mortgages. Ong, Theseira, and Ng (2019) demonstrated that chronic debt negatively affects psychological functioning and decision making, and higher debt reductions lead to greater improvements in cognitive skills and higher decreases in anxiety and present bias. Dobbie and Song (2017)

reported on a significant improvement in the situation of borrowers in terms of both financial and labor market outcomes after large debt reductions. In contrast to these, when analyzing the effects of a large-scale debt waiver program in India, Kanz (2016) found that the debt relief program led to more informal credits, fewer investments, and lower agricultural productivity, which he explained by moral hazard. Mukherjee, Subramanian and Tantri (2018) showed, however, that the same debt relief program in India was highly beneficial for many borrowers who were in a difficult situation due to exogenous (weather) shocks.

Poor people struggling with their Swiss franc-originating debts in Hungary can also be considered as victims of external shocks (devaluation of the Hungarian forint) and also of the irresponsible and aggressive lending practices of the banks (lending without proper risk assessment). Therefore, in their cases, a debt relief program might also have positive and long-lasting effects, as Mukherjee, Subramanian, and Tantri (2018) demonstrated.

In the case of debtors in a desperate situation, debt collectors buy debts at a very low price of 0 to 30% of the nominal value (without accrued interests), as the collateral (houses in these villages) has low value and there is no income to be collected. This implies that buying the debts and collecting them on in more patient structures can also pay off for profit-seeking market players. In practice, debt collectors spend a lot of energy on personal pressure (via phone calls or correspondence), but even so they can achieve some repayment only from a small minority while they torment all debtors permanently blocking their economic and financial integration. This creates a vicious cycle where rigorous collection of debts just hinders income opportunities, thus paralyzing the emergence from poverty, increasing labor shortage, and slowing economic growth.

Therefore, a debt reduction would be a rational decision from an economic point of view because in this way at least a part of the debt could be regained. Krugman (1988), Husain (1993), Diman and Spiegel (1994), and Moore (1998) argue that voluntary, market-based debt reductions can be Pareto-optimal, and Hence, beneficial both for the lender and the borrower. It would also create value at the social level, since it would increase employment, whiten the economy, and improve the physical and psychic health of debtors. If the state helped debt relief programs by guaranteeing, financing, or other means, then participation would also be more attractive for private investors.

The two main economic arguments against a debt relief program are: it is too costly and increases moral hazard (Tirole, 2006; Fudenberg, Tirole, 1990), or, in other words, softens the budget constraint of all existing and potential borrowers (Kornai, 1998; Kornai, Maskin, and Roland, 2003). Sachs (1990) also mentioned an additional problem, the free-riding banks profiting from other banks' voluntary debt reductions. This may also be a reason why, in a competitive environment, debt reductions are less than the social optimum would suggest.

According to Barr (2004), Stiglitz (2014), and Berlinger and Walter (2015), income-contingent repayments could solve most of these problems, but it would require the involvement of the national tax authority to monitor individual incomes.

We build a theoretical model inspired by Akerlof (1978), Tirole (2006), and Mukherjee, Subramanian, and Tanti (2018) to analyze the sufficient condition for market-based debt relief programs to succeed. It turns out that lenders can offer more reductions if there are more nonperforming borrowers with relatively large debts, if they are more willing to participate, and most importantly, if well-performing borrowers can be excluded effectively, thus if moral

hazard can be avoided. These conditions may hold in a general crisis, but not in normal circumstances when nonperforming debtors are few, have relatively low debts, and are difficult to contact. Therefore, in most cases, small overdue debts of poor debtors are not renegotiated. Instead, these people are used as deterrents; well-performing borrowers can see what happens to those who misbehave. We argue that the state should promote debt relief programs targeting the poor not only for efficiency reasons (for the sake of positive externalities), but also for moral purposes (pillories are inacceptable in modern societies).

In Section 2, we analyze the necessary conditions of debt relief programs. In Section 3, we calibrate our model to survey data, and finally, in Section 4, we derive conclusions and formulate policy recommendations.

2. Model of debt relief

We assume a population of borrowers who can be good (repaying) or bad (non-repaying). The number of good borrowers is G, the number of bad borrowers is B. Good borrowers are uniform, they pay 100% of their obligations P_G and the face value (capital plus accumulated interests) of each debt is D_G. Bad borrowers are also uniform, pay 0% of their obligations P_B, and the face value of each debt is D_B (while the fair price is zero). We assume that loans are structured as annuities, whilst maturities and interest rates can be different for good and bad borrowers. Hence,

$$D_G = A_G P_G \tag{1a}$$

$$D_B = A_B P_B \tag{1b}$$

where A_G and A_B are annuity factors that can be different for good and bad borrowers. Note that in this model there is a linear relationship between payments and the nominal value of debt values.

Lenders announce a debt consolidation program that provides the opportunity for a fresh start for bad borrowers. The key element of this program is that a part $0 \leq \rho \leq 1$ of payment obligations is forgiven for all applicants. According to (1b) the reduction of payments ρ equals the reduction in the present value of the debts at the same time.

$$(1 - \rho)D_B = A_B(1 - \rho)P_B \tag{2}$$

Bad borrowers may benefit from entering the program even if they pay more, $(1 - \rho)P_B$ instead of 0, because being a bad borrower causes high personal costs (difficulties of hiding incomes, financial exclusion, bad feelings, social stigma, etc.). Thus, we assume that a percent b of the bad borrowers decide to take the opportunity and enter the program and then they pay the reduced monthly payment regularly without any delay. They are motivated to do so as otherwise they lose the reduction and get back to the initial situation, and they will be required to pay the total P_B. The participation rate b depends on the debt reduction ρ as a larger reduction attracts more bad borrowers to enter the scheme:

$$b = \rho^k \tag{3}$$

where k is the reluctance of bad borrowers to participate as higher k values reduce participation b, see Figure 1.

Figure 1: Participation rate as a function of the reduction
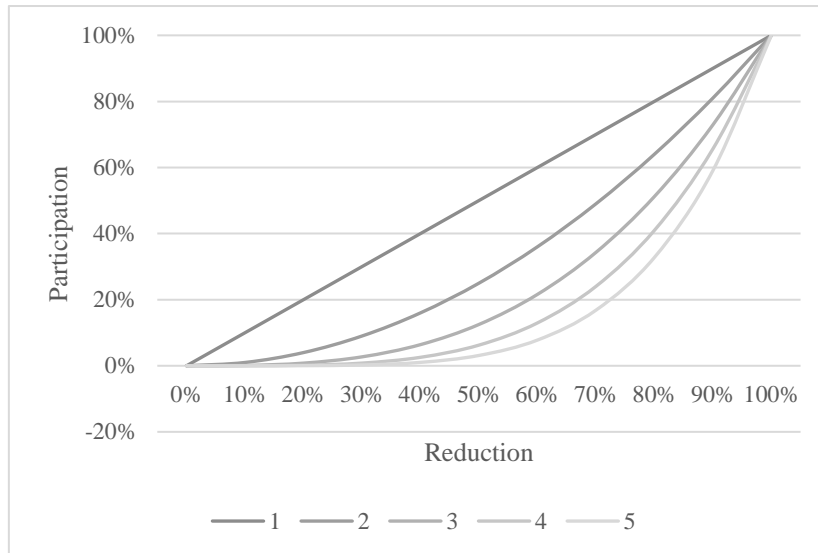
Participation rates that are convex in the reduction (hence $k > 1$) are more realistic, because a small reduction does not trigger large participation. The exponent k may depend on several factors ranging from macroeconomic conditions to local culture and personal attitudes. Policy makers can influence it, for example, by decreasing it with an effective marketing campaign (high participation) or increasing it with too many administrative burdens (low participation).

Such a debt relief program may have an important side effect that must be accounted for, too. A percent g of good borrowers may find it attractive to stop repaying, become a bad borrower, and enter the debt relief program, hence pay less than before. For simplicity, we set aside the time dimension of this process and assume that it happens immediately. This is the manifestation of moral hazard. Of course, becoming a bad borrower is not attractive for everyone. The degradation rate g is assumed to depend on the debt reduction:

$$g = \rho^l \tag{4}$$

where l is the reluctance of good borrowers to default. Like the exponent k, l depends mainly on the personal costs of being a bad borrower. Note, however, that here we take the perspective of good borrowers, so l is typically different from k.

A debt relief program is feasible if lenders gain more on the participation of bad borrowers (right-hand side) than lose on the degradation of good borrowers (left-hand side):

$$\rho g GD_G \leq (1 - \rho) b BD_B \tag{5}$$

Substituting (3) and (4) into (5) and rearranging the formula, we get

$$\frac{\rho}{1 - \rho} \rho^{l-k} \leq \frac{BD_B}{GD_G} \tag{6}$$

It follows from (6) that a larger reduction is possible if the relative size of the population of bad borrowers is large $\left(\frac{B}{G}\right)$, for example, in a large recession; if their debts are relatively large $\left(\frac{D_B}{D_G}\right)$; the reluctance of bad borrowers to participate (k) is small; and the reluctance of good borrowers to default (l) is large (since $\rho < 1$).

In practice, under normal economic conditions, the relative weight of bad borrowers is usually small, and their economic power is low; therefore, debt relief tends to be marginal in terms of both the number of borrowers and the loan amounts. In this case, it is rational for the lenders not to renegotiate nonperforming loans, but to use bad borrowers as deterrent examples.

We can see from (6) that in the special case $k = l$, the reduction cannot be larger than the share of the bad borrowers' debt s_B within the total debt:

$$\rho \leq \frac{BD_B}{GD_G + BD_B} = s_B \tag{7}$$

It is important to emphasize that in the above model, only the private parties' (lenders' and borrowers') direct financial interests were considered. Therefore, we derived the feasibility condition of a private debt relief program.

Now, let us suppose that each bad borrower becoming a good borrower (paying the reduced amount of the debt) has a positive external effect on the society E_B, for example, in the form of enhanced employment, more financial inclusion, and better health conditions. At the same time, the society loses E_G on each good borrower becoming a bad borrower. Naturally, private parties do not calculate with external effects, but the state has interest in realizing these externalities, for example, by subsidizing a public debt relief program. We can assume that the state subsidizes debt relief programs to the extent of the positive externalities, and lenders receive a direct state subsidy S in cash that can be used only for debt reduction:

$$S = bBE_B - gGE_G \tag{8}$$

Thus, the feasibility condition (5) becomes the following:

$$\rho g G D_G \leq b(1-\rho)BD_B + S \tag{9}$$

Using (8), (9) can be rearranged as

$$\bar{\rho} \leq \frac{BD_B + (BE_B - \rho^{l-k}GE_G)}{GD_G\rho^{l-k} + BD_B} \tag{10}$$

Comparing (6) and (10), we can see that state support can improve the feasibility of debt relief programs only if $(BE_B - \rho^{l-k}GE_G)$ positive. A large number of bad borrowers relative to good

borrowers *BG,* a large positive difference in the externalities $E_B - E_G$, and a large positive difference in the stickiness of good and bad borrowers *lk reduce* the moral hazard problem, Hence, allows for a greater public support.

This condition (10) can be met by a lucky coincidence of the parameters. If not, it is up to the policy maker to successfully manipulate them, otherwise, debt relief is not possible.

A debt relief program may have several positive external effects that are important for the society (improving job market participation and growth, financial inclusion, physical and mental health of people, etc.); therefore, the lack of debt renegotiations results in welfare losses.

3. Model calibration

Table 1 summarizes the key parameters calculated for the representative sample of the random survey of small villages in a disadvantaged region of Hungary.

Table 1: Model calibration

| Good borrowers	Bad borrowers
$G = 740$	$B = 179$
$D_G = 508$ thousand HUF*	$D_B = 694$ thousand HUF
$P_G = 29$ thousand HUF per month	$P_B = 40$ thousand HUF per month
$GD_G = 375\,920$ thousand HUF	$BD_B = 124\,226$ thousand HUF
$s_G = 0.75$	$s_B = 0.25$

*We do not *have information on the debt size of good borrowers; therefore, their average debt is estimated from D_B, P_B, and P_G relying on (1a) and (1b) and assuming that annuity factors A_B and A_G are the same.*

To calibrate the above model, we consider the total population of borrowers composed of those adults in the sample who have formal loans (interpersonal and usury loans are excluded). 740 of them are good borrowers paying regularly and 179 are bad borrowers, in a delay of more than 90 days, most of them not paying at all for many years. The average debts of bad borrowers are somewhat larger, which can be due to accumulated default interests, although the total debt portfolio of good borrowers is three times larger than that of bad borrowers (weights are 0.75 versus 0.25), Hence, the right-hand side of (6) is $\frac{BD_B}{GD_G} = \frac{0.25}{0.75} = \frac{1}{3}$.

It is more difficult to calibrate k and l describing the potential behavior of bad and good borrowers, respectively. We have seen that if the exponents k and l are equal, then the maximum level of reduction is $s_B = 25\%$. If good borrowers are much more reluctant to participate in the debt relief program than bad borrowers, for example $l = 5$ and $k = 1$, then the reduction can be 65%. Moreover, if $l - k \to \infty$, then the maximum reduction is approximately 100%.

We asked bad borrowers how much they would pay monthly to get rid of all their outstanding debts. Based on their answers, we calculate the average reduction ρ that would be attractive enough to enter the scheme. Figure 2 presents the reductions requested by the debtors according to the monthly amount they should pay.

Figure 2: Reductions requested by bad borrowers
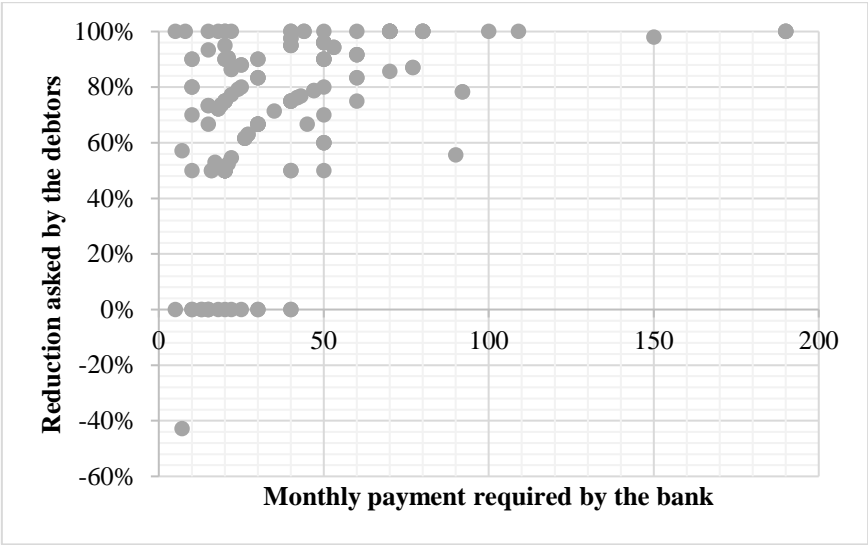
156 borrowers out of 179 answered the specific survey question on the willingness to accept a payment reduction, 37 of them would require a reduction of 100%, while 16 borrowers are willing to pay the total amount without any reduction (reduction=0%). One borrower would even pay more than required (reduction=-46%), probably, she/he did not understand the question. We can also see in Figure 2 that borrowers with larger payment obligations (larger debts) would request larger reductions. Lenders might be willing to give larger reductions to large debtors, too, not least because of transaction costs (bargaining is costly for both parties). Note that the survey answers might be biased in both directions. First, people with overdue debts might wish to impress the interviewer showing their willingness to pay, but at the same time, they might feel being at the beginning of a bargaining process and might try getting better

terms. These effects can cause an upward or downward bias in the reductions, depending on which one is dominating. We assume that the two effects compensate for each other, and, practically, answers are not biased, Hence, we consider them reliable.

Figure 3 shows the histogram of bad borrowers according to the reduction they request.

Figure 3: Willingness to participate of bad borrowers in a debt relief program
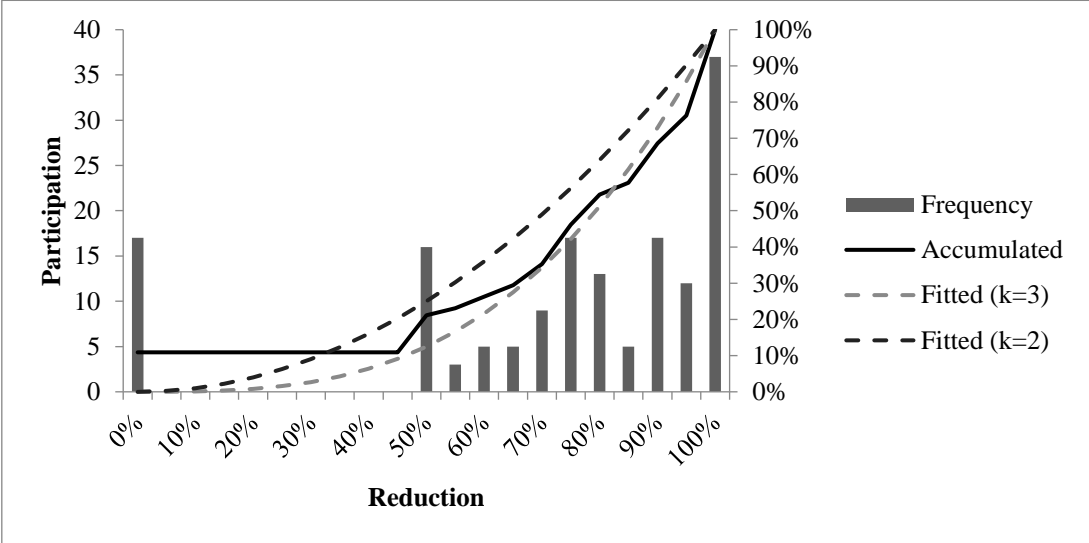

Given the accumulated frequencies in Figure 3 (continuous line), we can calibrate (3), Hence, we can estimate exponent k for this population. In our sample, k is somewhere between 2 and 3, see the fitted curves (dashed lines). The exact estimation of the parameter k depends on whether we take all answers seriously (k is closer to 2) or only those that are above 0% (k is closer to 3). Let us take the most optimistic view and estimate k to be equal to 2 which reflects a higher willingness to participate in the bad borrowers.

Based on our survey data, we can also estimate the average reduction rate ρ required by the bad borrowers (weighted with their overdue debts). We get $\rho = 0.75$. According to (6), such a large

reduction is possible only if $l - k \geq 7.64$. Given that k is estimated at 2, l must be at least 9.64. Figure 4 shows the sharp difference in the behavior of bad and good borrowers that would be needed to operate a successful debt consolidation program in the investigated sample.

Figure 4: Required participation rates for bad and good borrowers (k=2, l=9.64)
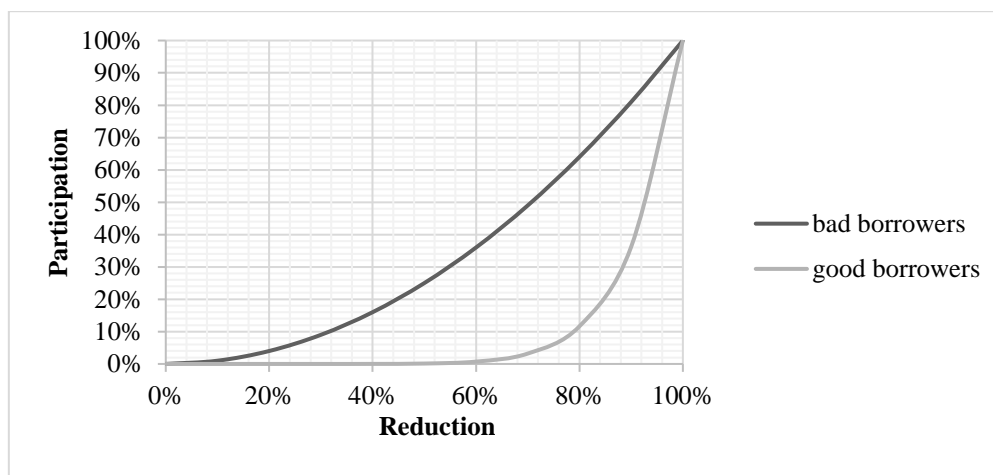
At first sight, it does not seem realistic that good borrowers do not even start to think about defaulting under a reduction level of 60%. Thus, our model and its calibration to real-life data reveal why, in many cases, debt relief programs are not feasible on a market basis.

However, the model also gives some hints on how to improve the feasibility of such programs. For example, with an effective campaign involving NGOs, the exponent k can be reduced by motivating bad borrowers to participate, for example, by minimizing transaction costs and administrative burdens, and by launching an effective marketing communication campaign. It is also possible to convince bad borrowers to accept lower reductions in a dynamic negotiation process. At the same time, good borrowers should be excluded from the debt relief program as much as possible, for example, by using strict eligibility criteria (applicants must be in a really

disadvantaged situation, being in long arrears) or by applying a 'saved once in a life' provision; the scheme can be close-end; reductions can be kept in secret; a bad borrowers' list can be set up with serious consequences (stigma).

If $l \geq 9.64$ is ensured, the debt consolidation program can be feasible. The direct benefits of bad borrowers (present value of total reduction) would be $\rho b B D_B = \rho \rho^2 B D_B = \rho^3 B D_B = 0.75^3 124226000 = 52.4$ million HUF. Clearly, this is a fictive reduction as presently they pay nothing. Due to debt consolidation, bad borrowers would pay $(1 - \rho) b B D_B = (1 - \rho) \rho^2 B D_B = 0.25 \cdot 0.75^2 124226000 = 17.5$ million HUF instead of not paying at all. This is around 14% of the face value of the debt portfolio, while the market value of the portfolio is practically zero without debt consolidation. This would be the profit of debt collectors, but only if they were able to exclude the degradation of good borrowers with proper mechanism design.

4. Conclusions

Criminals smuggled into pillories in the Middle Ages were unable to work, were socially excluded, and suffered both physically and mentally. The same is true for poor people with overdue debts today. With the help of a representative survey in a disadvantaged region in Hungary, we investigate a sample of 1,966 people in active age (from 18 to 65 years) from which 740 are good borrowers (paying 100% of their obligation without delay) and 179 are bad borrowers (mostly not paying at all).

We explain in a theoretical model why profit-seeking lenders or debt collectors are not motivated to offer large debt reductions to bad borrowers who are poor and have relatively small debts. Even if the repayment cash flow would increase significantly, it is more rational to

keep these borrowers as deterrent examples presenting to the other borrowers what happens if somebody does not pay. The model helps to understand why and when lenders are willing (or unwilling) to renegotiate debts; why they try to keep debt reductions in secret; and why eligibility criteria and marketing communication are crucial in the design and operation of large-scale debt relief programs.

It also follows from our theoretical model that if the state intervenes for the sake of positive external effects and subsidizes the scheme, then making the program feasible, it can create a large social value. However, a state intervention in favor of poor debtors can be justified not only from the point of view of efficiency but also from a human ethical perspective. Even if physical pillories were a cost-effective tool to influence the behavior of the large majority, civilized societies do not use them anymore. For the same reasons, financial pyramids should also be given.

Based on our findings, we recommend a wide range of policy measures such as improving the effectiveness of the private renegotiation process (online bargaining platform, randomized and controlled experiment to find the best practice of debt collection, etc.), reopening the subsidized house renting program, and most importantly reforming the personal bankruptcy system in the spirit of promoting the 'fresh start' of debtors. A new wave of defaults is expected to be in line with the current Covid crisis, which calls for even more innovations in debt management practices.

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