





Modern pillories: Overdue debts of the poor

EDINA BERLINGER^{1,2,*} , ZSOLT BIHARY¹ ,
KATALIN DOBRÁNSZKY-BARTUS¹  and GYÖRGY MOLNÁR³ 

¹ Institute of Finance, Corvinus University of Budapest, Budapest, Fővám tér 8, H-1093 Hungary

² Department of Finance, University of Luxembourg, Luxembourg

³ Institute of Economics of the Centre for Economic and Regional Studies, Eötvös Loránd Research Network, Budapest, Hungary

Received: May 16, 2023 • Revised manuscript received: August 15, 2023 • Accepted: September 7, 2023



© 2023 The Author(s)

ABSTRACT

We model the consequences of the soft budget constraint in the context of retail borrowers. While János Kornai formulated the term of “soft budget constraint” mainly for organizations (firms, banks, municipalities, NGOs, etc.), we show that it can be applied to individual borrowers as well. We derive the feasibility conditions for private and public debt relief programs in a utilitarian framework and find that lenders have no interest in offering payment reductions if non-performing 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, Kornai

JEL CLASSIFICATION INDICES

G51, G53, I38

* Corresponding author. E-mail: edina.berlinger@uni.lu, edina.berlinger@uni-corvinus.hu

1. INTRODUCTION AND MOTIVATION

Overdue debts may create a vicious circle leading 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 several years, even decades, 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 depressed and see it as completely hopeless to repay (Berlinger et al. 2021). A large part of these debts come from the FX-denominated (mostly in Swiss franc) mortgages taken in 2004–2009.

Interviewees with long-standing overdue debts did not feel motivated to have *legal employment* 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 neighbouring cities, they could earn a minimal wage. Deducting taxes and travel costs, they could touch approximately the same amount as 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 most nonperforming debtors, public work or black employment is more attractive, which contributes to the reproduction of their disadvantaged situation. Interviewees with overdue debts reported on not even thinking 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 experiences with formal financial services, they decided to avoid all kinds of connections to formal banking, even if it means total financial exclusion. Living with overdue debts, however, has large personal costs in terms of increased stress and anxiety, having serious consequences for the *physical and mental health* of the whole family (Berlinger et al. 2021).

Following the lines of these interviews, we constructed a detailed, quantitative, and large-sample survey that focuses on the effects of overdue debts in a disadvantaged region of Hungary. The survey results strengthened the insights gained from the interviews. Those who have no debts or can repay their debts without delay also admit knowing many others in their wider neighbourhood who struggle with these issues, contributing to the poverty trap in many ways.

In light of the findings of Berlinger et al. (2021), two interrelated research questions arise. Why are non-performing debtors just left there? What would be the optimal debt relief scheme? In this paper, first we present a theoretical model in a utilitarian framework where, building upon Kornai (1998) and Kornai et al. (2003), we apply the concept of “soft budget constraint” (SBC) for individual borrowers. Second, we calibrate our theoretical model on survey data representative of non-performing borrowers living in small villages in Borsod-Abaúj-Zemplén (BAZ) county, one of the most disadvantaged regions in Hungary (out of 19) with a significant Roma minority.

A special feature of our questionnaire was that, in addition to detailed socio-demographic information, we also asked borrowers (i) how much they are *required* to pay each month and (ii) how much they would be *willing* to pay in order to get rid of their overdue debts. From the answers to these questions, we can calculate the minimal reduction rate borrowers would ask for to repay their debt. It turns out that most of the non-performing borrowers would pay a significant amount to get rid of their obligations.

An interview series with lender institutions and debt collectors in Hungary revealed, however, that renegotiation mechanisms are missing, and they are especially reluctant to give any



reductions. Debt collectors buy non-performing debt portfolios at a very low price of 0–30% of the face value, as the collateral has a typically low market value and there is typically no legal income to be collected. Debt collectors spend a lot of energy on personal pressure (via phone calls or correspondence), but even so, they cannot improve the repayment cash-flow significantly in this segment, whereas they permanently block the economic and financial reintegration of the non-performing borrowers. This creates a vicious cycle where the rigorous collection of debts decreases registered employment and legal incomes, paralyzing the emergence from poverty on the one hand, and increasing labour shortages and slowing economic growth, on the other hand.

After the great financial crisis, alternative forms of financing, such as P2P lending, began to flourish and were expected to promote financial inclusion. However, interest rates and default rates proved to be extremely high in this segment as well (Dömötör et al. 2023; Dömötör – Ölvedi 2021). According to Barr (2004), Stiglitz (2014), and Berlinger – Walter (2015), the income-contingent repayments could solve most of the problems of the non-performing retail borrowers; however, the operation of income contingent schemes would require highly developed institutions, in particular, the active participation of the national tax authority to monitor individual incomes.

In principle, buying the debt and collecting it in a more lenient way could pay off for profit-seeking market players. A debt reduction can therefore be rational from an economic point of view because, in this way, at least a part of the debt could be regained. Krugman (1988), Husain (1993), and Hart – Moore (1998) argue that the voluntary, market-based debt reductions can be Pareto-optimal, hence, beneficial both for the lender and the borrower.

A debt relief program can create value at the social level as well, since it would increase employment, whiten the economy, and improve the physical and psychic health of the debtors. If the state supports debt relief programs by guaranteeing, financing or other means, then participation would be more attractive for the private parties. 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, the performing 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). Therefore, richer people could benefit from this opportunity, those who were able to meet their repayment obligations all along the crisis and were able to refinance their debts (Berlinger – Walter 2015; Kornai 2016). Debt relief programs designed for the poor were either not popular (only 2070 distressed borrowers entered the personal bankruptcy scheme in the last 8 years (portfolio.hu 2023) or too limited (the subsidized house renting program of the National Asset Management Agency was closed after some years of operation, and many eligible applicants were refused (Fellner et al. 2022)).

In this paper, we build a theoretical model inspired by Kornai (1998), Kornai et al. (2003), Akerlof (1978), Tirole (2006), and Mukherjee et al. (2018) to derive the sufficient conditions for the feasibility of the private and public debt relief programs. We show 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 effectively excluded, thus the SBC symptoms can be avoided. These conditions may hold in a macroeconomic crisis, but not in normal circumstances when nonperforming debtors are few, have relatively low debts, and are difficult to contact.



Therefore, in most cases, the small overdue debts of poor debtors are not renegotiated, and they cannot get significant reductions. Instead, these people are used as deterrents. Well-performing borrowers can see what happens if they misbehave. Herbert Gans (1994: 275) listed in 13 points what society can use the so-called “undeserving poor” for, most importantly: “*Norm reinforcement: By violating, or being imagined as violating, a number of mainstream behavioural patterns and values, the undeserving poor helps to reaffirm and reinforce the virtues of these patterns, - and to do so visibly, since the violations by the undeserving are highly publicized*”.

Following Kornai (1998, 2016) and Kornai et al. (2003), we conclude that the state should promote debt relief programs targeting the poor not only for efficiency reasons (for the sake of the business interests of the lender and the positive externalities realized by the society) but also for moral purposes. Pillories are unacceptable in modern societies.¹

In Section 2, we review the literature on the poverty trap and the effects of debt relief programs. In Section 3, we analyse the necessary conditions for private and public debt relief programs. In Section 4, we calibrate our model to survey data, and finally, in Section 5, we derive conclusions and formulate policy recommendations.

2. LITERATURE REVIEW

Poverty trap mechanisms were thoroughly analysed in the literature (Sen 1999; Banerjee – Duflo 2011; Mullainathan – Shafir 2013; Piketty 2014); however, the problem of overdue debts of the poor was less exposed. Most studies focused on the third-world, where the access of poor people to bank loans and utilities (the main sources of indebtedness) is more limited. Hungary is not a third-world country, even if the fate of its poor Roma population is similar to that of the third-world in terms of livelihood, education, healthcare, etc. However, the overdue formal debts further increase the burden on these families. According to the World Bank (2012), for example, one of the greatest obstacles for the Hungarian Roma people to become entrepreneurs is indebtedness, as 54% of the aspiring Roma entrepreneurs had arrears in paying utility bills and 16% in mortgages. Ong et al. (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.

Debt relief programs can be classified according to different characteristics. Depending on the involvement of the state or other sponsor interested in the positive external effects, it can be private or public. The treatment can be a discharge of a part or the whole debt obligation, or it can be only a deferment of the payments. Debtors can be large organizations (corporations or municipalities), small or microenterprises, or individuals. In the latter case, debts can result from mortgage loans, other bank loans, credit card overdrafts, car purchase loans, etc. Borrowers can be well off or poor, well-educated with high financial literacy or poorly educated. Risk management techniques and renegotiation strategies can be very different in different segments.

Several studies examined the effects of debt relief programs empirically. Dobbie and Song (2020) reported on a significant improvement in the situation of borrowers in terms of both financial and

¹Pillory, as an instrument of corporal punishment consisted of a wooden post and frame fixed on a platform raised several feet from the ground. The head and hands of the offender were thrust through holes in the frame (as were the feet in the stocks) so as to be held fast.



labour market outcomes after large debt reductions. In contrast to this, when analysing 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 the SBC symptoms ([Kornai 1998](#); [Kornai et al. 2003](#)). [Mukherjee et al. \(2018\)](#) showed, however, that the same debt relief program in India was highly beneficial for many borrowers whose difficult situation was due to exogenous (weather) shocks. To some extent, poor people struggling with their Swiss franc-originating debts in Hungary can also be considered victims of external shocks (sudden devaluation of the Hungarian forint after a long period of exchange rate stability) and 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 similar to the findings of [Mukherjee et al. \(2018\)](#).

The two main economic arguments against debt relief programs are well-known: they are too costly and soften the budget constraints of both existing and potential borrowers ([Kornai 1998](#); [Kornai et al. 2003](#)), or in other words, a debt relief increases moral hazard ([Fudenberg – Tirole 1990](#); [Tirole 2006](#)). [Sachs \(1990\)](#) mentioned an additional problem: 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 significant than the social optimum would suggest.

[Kornai \(2016\)](#) analysed the effects of breaking promises in general on the economy and society. He specifically discussed the problem of FX denominated loans in Hungary as well. He abandoned the classical utilitarian framework from the beginning and approached the problem from a different angle. He outlined two different life situations and evaluated them from a purely moral point of view:

“The person in the first story is a poor man, with little school education, who is the head of the family; he lived in depressing housing conditions, when he received the opportunity to get a better flat through the help of a loan. The bank practically fobbed the loan off on him, and it did not sufficiently warn him of the risks. The story continues in a sad manner. At the time of taking out the loan, he still had a job, but since that he has lost his employment. Because of the weakening of the forint his instalments grew high. Now he has been unable to pay for some time. Since the apartment where he and his family is living, served as mortgage, perhaps soon he will be evicted. ... In this case, according to my own moral sense ... this man and his family should be saved from the tight situation... The person in the second story is competent, knowledgeable, well paid, with an economic or legal education. Some of them are working as government officials. He lives in a nice flat. He took out a large loan, because home building seemed to be a good investment, since housing prices grew month by month. It turned out that he made a bad decision; he has lost a lot on this business. He still has his job, he still makes good on his instalments. Eviction does not threaten his usual life-style, since the place where he is actually living did not serve as mortgage... In his case I do not see a moral problem. ... If he lost – that should be his own problem.” ([Kornai 2016: 24](#))

Debt relief programs can be justified by the business interests of the private parties, the positive and negative externalities, or moral considerations. In this study, we analyse all the three reasons both theoretically and empirically.

3. MODEL OF DEBT RELIEF

We consider 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 market value of the claim is zero). We assume that loans are structured as annuities, and maturities and interest rates can be different for good and bad borrowers. Hence,

$$D_G = A_G P_G \quad (1a)$$

$$D_B = A_B P_B \quad (1b)$$

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 face value of debt values.

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

$$(1 - \rho)D_B = A_B(1 - \rho)P_B \quad (2)$$

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 results in high personal costs (difficulties of hiding incomes, financial exclusion, bad feelings, social stigma, etc.). We assume that a per cent b of the bad borrowers decides to take advantage of the opportunity, enter the program, and then afterward, 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 reduced face value in (2) is hence equal to the market value of the claim in the case of borrowers who entered the debt relief program.

Bad borrowers in arrear are assumed to decide whether to participate in the debt relief program by comparing their personal costs of being a bad borrower and the reduction they can get. Therefore, the participation rate b depends on the debt reduction ρ , and a larger reduction attracts more bad borrowers to enter the scheme:

$$b = \rho^k \quad (3)$$

where k is the reluctance of bad borrowers to participate as higher k values reduce participation rate b , see [Figure 1](#).

The estimation of exponent k is an empirical question; however, we hypothesize that participation rates are convex in the reduction rate ($k > 1$). This is a realistic assumption as a small reduction is not supposed to trigger mass 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 an intensive marketing campaign (higher participation) or overwhelming administrative requirements (lower participation).

Such a debt relief program may have an important side effect that must be accounted for, too. A per cent 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. This is the manifestation of the SBC: "When BC-organizations anticipate being rescued should they get into trouble, their behaviour is usually distorted" (Kornai et al. 2003). While Kornai formulated the term "soft budget constraint" mainly for organizations (firms, banks, municipalities, NGOs, etc.), it can be



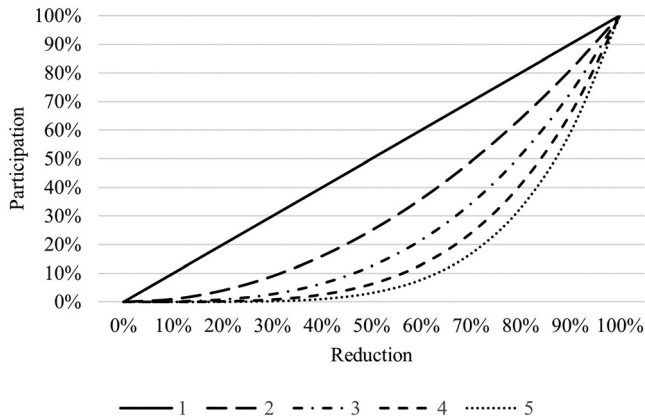


Fig. 1. Participation rate as a function of the reduction

applied to individual borrowers as well. For simplicity, we set aside the time dimension of the development of SBC and assume that it happens immediately.

Of course, becoming a bad borrower is not attractive for everyone. We assume that good borrowers compare the personal costs of becoming a bad borrower to be saved (stigma, administrative burdens, etc.) and the potential payment reduction. The participation rate g of the good borrowers is assumed to depend on the reduction rate:

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

where l is the reluctance of the 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 and only if the lenders gain more from the participation of bad borrowers (right-hand side) than they lose from the degradation of good borrowers (left-hand side):

$$\rho g G D_G \leq (1 - \rho) b B D_B \tag{5}$$

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

$$\frac{\rho}{1 - \rho} \rho^{l-k} \leq \frac{B D_B}{G D_G} \tag{6}$$

It follows from (6) that a larger reduction is possible if the relative size of the population of bad borrowers is large (B/G), for example, in a large recession; if their debts are relatively large (D_B/D_G), 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, a 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 the nonperforming loans but to use the 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:

$$\rho \leq \frac{BD_B}{GD_G + BD_B} = s_B \quad (7)$$

We emphasise that in the above model, only the private parties' (lenders' and borrowers') direct financial interests are considered. Therefore, (7) is the feasibility condition of a *private* debt relief program.

To derive the feasibility condition for a *public* debt relief program, let us suppose that each bad borrower becoming a good borrower (paying the reduced amount of the debt) has positive external effects on the society E_B , for example, in the form of enhanced employment, more financial and social inclusion, and better health conditions. At the same time, the society loses E_G with each good borrower becoming a bad borrower, for example, in the form of deterioration of social norms and political tensions. Naturally, private parties do not calculate the external effects, while the state has strong interests in realizing these externalities. Hence, the external effects can justify state intervention, for example, in the form of public debt relief programs.

We assume that externalities are realized in the state budget in the form of cash and the state subsidizes the debt relief program just to the extent of the net positive externalities. On the one hand, for budgetary reasons, the state cannot spend more on the subsidy than the amount of the net positive externalities realized in the state budget. On the other hand, to improve social welfare, the state is willing to spend the whole amount of the net positive externalities on the debt relief program. For the sake of simplicity, we assume, lenders receive a direct state subsidy S in cash, and it can be used only for the debt reduction:

$$S = bBE_B - gGE_G \quad (8)$$

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

$$\rho gGD_G \leq b(1 - \rho)BD_B + S \quad (9)$$

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

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

Comparing (6) and (10), we can see that the state support can improve the feasibility of the debt relief programs only if $(BE_B - \rho^{l-k}GE_G)$ is positive. Many 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 $l-k$ allows for a greater public support, reducing the soft budget constraint problem significantly. Note, however, that condition (10) depends heavily on the parameters k and l which can be modified by both the lender and the policymaker. Therefore, the eligibility rules and other regulations influencing borrowers' behaviour are key parameters when designing and implementing a debt relief program.

As a debt relief program can have several positive external effects that are important for the society (improving job market participation and growth, financial inclusion, the physical and mental health of people, etc.), the lack of debt renegotiations can result in significant welfare losses.



Our theoretical model can explain several stylized facts, such as (i) poor people with marginal debts are not rescued, (ii) debt reductions are more frequent/larger in a crisis, (iii) rich people with large debts can get larger reductions, (iv) private debt renegotiations are kept secret, (v) eligibility rules are strict in the existing debt relief programs, (vi) personal bankruptcy systems in the real-world practice are overcomplicated, and (vii) NGOs can help a lot in the debt renegotiation.

4. MODEL CALIBRATION

In 2019, we performed a random and representative survey in the villages of Borsod-Abaúj-Zemplén (BAZ) county, one of the most disadvantaged regions of Hungary. We contacted 505 respondents who reported on 1,196 adults (the respondents and their family members of more than 18 years). 179 adults (out of 1,196) had overdue (formal) debts, which is around 15%. About 28% of households (141) had at least one member with overdue debts, and about 30% of people lived in households with overdue debts. Table 1 summarizes the estimated values for the key model parameters.

To calibrate the model in Section 3, 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 can be considered as good borrowers paying regularly while 179 of them can be considered as bad borrowers. Bad borrowers are in a delay of more than 90 days, most of them not paying at all for many years. The average debt of bad borrowers D_B is somewhat larger than that of good borrowers D_G , which can be due to accumulated default interests or measurement error. However, 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 inequality (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 behaviour 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

Table 1. Estimated model parameters in the sample of villagers in BAZ county, 2019

	Good borrowers	Bad borrowers
Number of individuals	$G = 740$	$B = 179$
Average face value of debt	$D_G = 508\,000$ HUF	$D_B = 694\,000$ HUF
Average monthly payment	$P_G = 29\,000$ HUF per month	$P_B = 40\,000$ HUF per month
Value of the portfolio	$GD_G = 375\,920\,000$ HUF	$BD_B = 124\,226\,000$ HUF
Share of portfolio value	$s_G = 0.75$	$s_B = 0.25$

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



debt relief program than bad borrowers, for example $l = 5$ and $k = 1$, then by (6), the reduction can be 65%. Moreover, if $l - k \rightarrow \infty$, then the maximum reduction is approximately 100%.

We asked the bad borrowers what the maximum fixed amount they would pay monthly in order to get rid of all their outstanding debt. Based on their answers, we calculate the minimal personal reduction ρ that would motivate the borrower to enter the scheme. Figure 2 presents the reductions requested by the debtors according to the monthly amount they are required to pay.

156 borrowers out of 179 answered the specific survey question on their 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%). It is difficult to understand why some borrowers require 0% or less reduction. Probably, this can be a measurement error due to misunderstanding. It is also possible; however, that these are correct answers reflecting the administrative difficulties of debt renegotiations.

We can also see in Figure 2 that the borrowers with larger payment obligations (larger debts) would request larger reductions in percentage. On the one hand, the repayment of larger debts places a greater burden on the debtor. On the other hand, lenders might be willing to give larger reductions to large debtors, too, not least because of the 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 by showing their willingness to pay, but at the same time, they might feel being at the beginning of a bargaining process and might try to get 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.

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

Given the accumulated frequencies in Figure 3 (continuous line), we can calibrate the behavioural equation (3) of the bad borrowers; hence, we can estimate exponent k for this specific population living in small villages in a disadvantaged region of Hungary. In our sample,

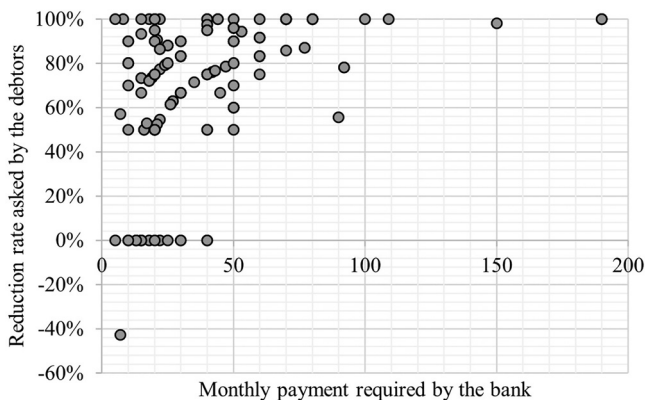


Fig. 2. Reductions requested by bad borrowers



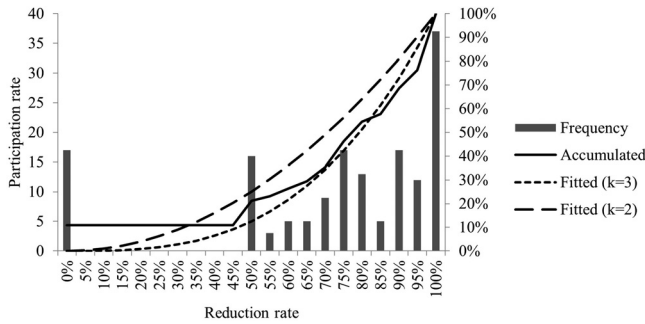


Fig. 3. Willingness of bad borrowers to participate in a debt relief program

k is somewhere between 2 and 3, see the fitted curves (dashed lines). The empirical results thus confirm that the participation function is convex with respect to the reduction ratio.

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 of the bad borrowers to participate in the debt relief program.

Based on our survey data, we can also estimate the average reduction rate ρ required by the bad borrowers (weighted with the face values of 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 the value of k is estimated to be 2, l must be at least 9.64 in a feasible scheme. Figure 4 shows a sharp difference in the behaviour of bad and good borrowers that would be needed to operate a successful debt consolidation program in the investigated sample.

At first sight, it does not seem realistic that the good borrowers do not even start to think about defaulting under a reduction level of 60% in line with $l = 9.64$. Thus, our model and its calibration to real-life data reveal why, in many cases, the 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 the bad borrowers to participate, for example, by minimizing transaction costs

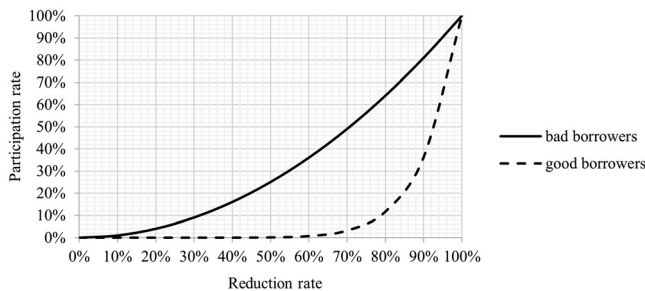


Fig. 4. Required participation rates for bad and good borrowers ($k = 2, l = 9.64$)



and administrative burdens, and launching an effective marketing communication campaign. It is also possible to convince the bad borrowers to accept lower reductions in a dynamic negotiation process. At the same time, the 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 a close end; reductions can be kept 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 $\rho bBD_B = \rho \rho^2 BD_B = \rho^3 BD_B = 0.75^3 \cdot 124226000 = 52.4$ million HUF. Clearly, this is a fictive reduction, as they pay nothing at the moment. Due to debt consolidation, the bad borrowers would pay $(1 - \rho)bBD_B = (1 - \rho)\rho^2 BD_B = 0.25 \cdot 0.75^2 \cdot 124226000 = 17.5$ 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 a proper mechanism design.

The feasibility of a public debt relief program depends on the assumptions about the external effects of bad (good) borrowers becoming good (bad) borrowers E_B (E_G). According to our utilitarian model, the greater the net positive externality at the portfolio level ($BE_B - \rho^{1-k}GE_G$), the greater the debt forgiveness can be.

5. CONCLUSIONS

The medieval practice of putting wrongdoers (including debtors) in the stocks and throwing rotten food at them was widespread in many places. When put into pillories, these people were unable to work, were socially excluded, and suffered both physically and mentally. The same is true for poor people with overdue debts today in Hungary. With the help of a representative survey in a disadvantaged region in Hungary, we investigated a sample of 1,196 people in active age (from 18 to 65 years), from whom 179 were non-performing borrowers.

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 increases significantly, it is more rational to keep these borrowers as deterrents, demonstrating to the other borrowers what happens if they do not pay. The model helps to understand why lenders are willing (or unwilling) to renegotiate debts, why they try to keep debt reductions 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, thus making the program feasible, it can improve social welfare. However, a state intervention in favour 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 behaviour of the large majority, civilized societies do not use them anymore. For the same reasons, financial pillories should also be given up. János Kornai (2016) recognized the limitations of the utilitarian approach and focused on the moral aspects of the problem from the beginning. His insight and humanity serve as a clear guidance for future researchers of the topic.



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 (National Asset Management Agency), 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 in line with the current recession, which calls for even more innovations in the debt management practices.

ACKNOWLEDGEMENT

This research was supported by the Higher Education Institutional Excellence Program 2020 of the Hungarian Ministry of Innovation and Technology in the framework of the ‘Financial and Public Services’ research project (TKP2020-IKA-02) at Corvinus University of Budapest. This research was funded also by the National Office for Research, Development and Innovation (NKFIH, K-138826).

REFERENCES

- Akerlof, G. A. (1978): The Market for “Lemons”: Quality Uncertainty and the Market Mechanism. In: Diamond, P. – Rotschild, M. (eds): *Uncertainty in Economics*. Cambridge (MA): Academic Press, pp. 235–251.
- Banerjee, A. – Duflo, E. (2011): *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty*. Public Affairs, Perseus Books Group, USA.
- Barr, N. (2004): *The Economics of the Welfare State*. Oxford University Press.
- Berlinger, E. – Walter, G. (2015): Income-Contingent Repayment Scheme for Non-Performing Mortgage Loans in Hungary. *Acta Oeconomica*, 65(S1): 123–147. <https://doi.org/10.1556/032.65.2015.S1.8>.
- Berlinger, E. – Dobránszky-Bartus, K. – Molnár, G. (2021): Overdue Debts and Financial Exclusion. *Risks*, 9(158): 1–20. <https://doi.org/10.3390/Risks9090158>.
- Dobbie, W. – Song, J. (2020): Targeted Debt Relief and the Origins of Financial Distress: Experimental Evidence from Distressed Credit Card Borrowers. *American Economic Review*, 110(4): 984–1018. <https://doi.org/10.1257/Aer.20171541>.
- Dömötör, B. – Illés, F. – Ölvedi, T. (2023): Peer-To-Peer Lending: Legal Loan Sharking or Altruistic Investment? Analyzing Platform Investments from a Credit Risk Perspective. *Journal of International Financial Markets, Institutions and Money*, 86: 101801. <https://doi.org/10.1016/J.Intfin.2023.101801>.
- Dömötör, B. – Ölvedi, T. (2021): The Financial Intermediary Role of Peer-to-Peer Lenders. In: Walker, T. – McGaughey, J. – Goubbran, S. – Wagdy, N. (eds): *Innovations in Social Finance: Transitioning Beyond Economic Value*. Springer, pp. 391–413.
- Fellner, Z. – Marosi, A. – Szabó, B. (2022): The Role of the Hungarian National Asset Management Agency Ltd. in the Preservation of Non-Performing Debtors’ Housing. *Közgazdasági Szemle*, 69(2): 199–229. (in Hungarian).
- Fudenberg, D. – Tirole, J. (1990): Moral Hazard and Renegotiation in Agency Contracts. *Econometrica*, 58(6): 1279–1319. <https://doi.org/10.2307/2938317>.



- Gans, H. J. (1994): Positive Functions of the Undeserving Poor: Uses of the Underclass in America. *Politics & Society*, 22(3): 269–283.
- Hart, O. – Moore, J. (1998): Default and Renegotiation: A Dynamic Model of Debt. *Quarterly Journal of Economics*, 113(1): 1–41. <https://doi.org/10.1162/003355398555496>.
- Husain, A. M. (1993): Debt Relief Schemes and Welfare. *Journal of International Money and Finance*, 12(6): 632–643. [https://doi.org/10.1016/0261-5606\(93\)90029-B](https://doi.org/10.1016/0261-5606(93)90029-B).
- Kanz, M. (2016): What Does Debt Relief Do for Development? Evidence from India's Bailout for Rural Households. *American Economic Journal: Applied Economics*, 8(4): 66–99. <https://doi.org/10.1257/App.20130399>.
- Kornai, J. (1998): The Place of the Soft Budget Constraint Syndrome in Economic Theory. *Journal of Comparative Economics*, 26(1): 11–17. <https://doi.org/10.1006/Jcec.1997.1505>.
- Kornai, J. (2016): *Breaking Promises. A Hungarian Experience*. Corvinus Economics Working Paper, No. 8. http://Unipub.Lib.Uni-Corvinus.Hu/1638/7/Cewp_201608.Pdf.
- Kornai, J. – Maskin, E. – Roland, G. (2003): Understanding the Soft Budget Constraint. *Journal of Economic Literature*, 41(4): 1095–1136. <https://doi.org/10.1257/002205103771799999>.
- Krugman, P. R. (1988): *Market-Based Debt-Reduction Schemes*. IMF E-Library. <https://www.Elibrary.Imf.Org/Display/Book/9781557750419/Ch13.Xml>.
- Mukherjee, S. – Subramanian, K. – Tantri, P. (2018): Borrowers' Distress and Debt Relief: Evidence from a Natural Experiment. *The Journal of Law and Economics*, 61(4): 607–635.
- Mullainathan, S. – Shafir, E. (2013): *Scarcity: Why Having too Little Means so Much*. New York: Henry Holt Times Books.
- Ong, Q. – Theseira, W. – Ng, I. Y. (2019): Reducing Debt Improves Psychological Functioning and Changes Decision-Making in the Poor. *Proceedings of the National Academy of Sciences*, 116(15): 7244–7249. <https://doi.org/10.1073/Pnas.1810901116>.
- Piketty, T. (2014): *Capital in the Twenty-First Century*. Harvard University Press.
- Portfolio.hu (2023): It Turned Out How Many Individuals Are in the Personal Bankruptcy System.
- Sachs, J. D. (1990): A Strategy for Efficient Debt Reduction. *Journal of Economic Perspectives*, 4(1): 19–29. <https://doi.org/10.1257/Jep.4.1.19>.
- Sen, A. (1999): *Development as Freedom*. New York: Oxford University Press.
- Stiglitz, J. E. (2014): Remarks on Income Contingent Loans: How Effective Can They Be at Mitigating Risk? In: Chapman, B. – Higgins, T. – Stiglitz, J. E. (eds): *Income Contingent Loans, Theory, Practice and Prospects*. London: Palgrave Macmillan, pp. 31–38.
- Tirole, J. (2006): *The Theory of Corporate Finance*. Princeton, New Jersey: Princeton University Press.
- World Bank (2012): *Reducing Vulnerability and Promoting the Self-Employment of Roma in Eastern Europe through Financial Inclusion*. Washington, D.C. <https://doi.org/10.1596/26852>.

Open Access statement. This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited, a link to the CC License is provided, and changes – if any – are indicated. (SID_1)

