This study has produced the following three findings through the analysis described above. First, because the lending market has significant asymmetry of information about the borrowers and presents a high risk of bad debts, the lenders operate their businesses that reflect such a background. The higher the interest rate, the more the lenders tend to reduce lending. When the information is substantially asymmetric, first, an increase in the loan interest rate reduces lending opportunities. In other words, the loan supply curve is sloping downward and the lending market is in the Walras-unstable state.

Consequently, the reduction of the ceiling interest rate enforced in June 2000 is apparently not influential on the lending market. When the supply curve is sloping downward and the demand is excessive, however, the interest rate ceiling is lowered and the social surplus increases as the ceiling approaches the market equilibrium interest rate. Reduction of the interest rate ceiling as a policy can therefore be considered socially desirable.

Moreover, by analyzing the lending market, which includes not only consumer finance companies that are subject to the reduction of the ceiling interest rate, but also other lenders that are not, this study has revealed what effects the tighter regulation of the loan interest rate by the government have on the entire consumer finance market and how the effects penetrate into the market.
lending. These results suggest that, in a situation in which the lending market has a downward supply curve and excess demand, the ceiling on the interest rate is necessary and that further reduction of the interest rate is desirable in view of social welfare. The next section will develop theoretical models of the lender and borrower.

From the perspective of economics and law, however, nonbanks lending at high interest rates cannot be regarded collectively as vicious money-lending in violation of the Moneylenders’ Act and disturbing the economic order. When the lending market is examined in economic terms, however, the argument is often developed without considering the details or characteristics of specific loan rate regulations.

Particularly, lending businesses subject to the regulations tend to be analyzed while being viewed identically to the general market for trading goods. Accordingly, reconsideration of the potential viewpoints if the necessity of such regulation is to be justified and whether the current loan market conforms to the demand-supply model generally used, while considering the characteristics of the regulation rules (the interest rate levels and types of money lending practices that are subject to regulation) might be useful. Furthermore, a proper empirical analysis of the reality of the lending market in economics to identify the impact of the outcomes of the loan interest reduction policy on the lending market is necessary.

|概要|

This article assumes that the borrower prioritizes the current consumption by adopting hyperbolic discounting, resulting in the problem of multiple debts of the borrower. Results show that the interest rate ceiling might not be effective when credit rationing does not exist. When credit rationing exists, it might be effective when the percentage of people with high-rate hyperbolic discounting is high. The empirical analysis did not produce results showing that the lenders were oligopolistic. The study also indicated that asymmetric information existed between the borrowers and lenders. In any event, this constituted an analysis of a particular case in which the borrowers had hyperbolic discounting. There is room for additional examination of the borrowers’ model, and the conclusion can not be accepted universally as a general model of borrowers.

Now that the market demand curve of the borrower and the market supply curve of the lender are known, we will consider the loan market equilibrium. The loan market is presumably as shown in the following diagrams. $D$ represents the market demand curve of the loan market and $S$ expresses the market supply curve.

The possibility exists that the market equilibrium form of two types in this case. When the market equilibrium with a high interest rate is $A$ and that with a low interest rate is $B$, Market Equilibrium $A$ is in the state of Walrasian instability. Therefore, the neighborhood of $A$ will not be adjusted towards $A$ because of interest rate fluctuations, but rather, diverge from $A$, going away from the equilibrium interest rate. Assuming that the demand curve and supply curve of the loan market form such shapes, the situation varies depending on the level of interest rate ceiling ($R$) established by the government. (1) If the level of interest rate ceiling ($R$) exceeds the interest rate level of Equilibrium $A$, then the interest
rate level realized in the market is consistent with the interest rate ceiling, resulting in excess demand with the amount demanded greater than the amount supplied. The supply curve is in the state of a decreasing function of the interest rate. A reduced interest rate ceiling increases social surplus. (2) If the interest rate ceiling level \( R \) is in between the interest rate level of Equilibrium \( A \) and that of Equilibrium \( B \), Equilibrium \( B \) is achieved through Walrasian adjustment, which converges to market equilibrium, which equalizes the amount demanded and amount supplied and invalidates the significance of the interest rate ceiling. (3) If the level of the interest rate ceiling \( R \) falls below the interest rate level of Equilibrium \( B \), then the interest rate level realized in the market is consistent with the interest rate ceiling, resulting in excess demand with the amount demanded greater than the amount supplied. The supply curve is in a state of an increasing function of the interest rate. A lower interest rate ceiling reduces the social surplus.

As noted earlier, in the current lending market, the contractual loan interest rates of consumer lenders remain at the interest rate ceiling level and the contractual loan interest rates show a declining trend, the amounts of loans have not been reduced, and excess demand is likely to occur in such conditions. The current situation realized in the loan market is not in equilibrium, in which supply increases because of lower interest rates (i.e., the supply curve is a decreasing function) and the interest rates remain at the level of the interest rate ceiling. This situation is conceivably best described by case (1), among the cases described earlier, in which the interest rate ceiling exceeds the interest rate of Equilibrium \( A \). In this case, if the current interest rate is at the ceiling level, then the Walras-adjustment mechanism in the market does not function, and the interest rate will stay at the ceiling level. Because the supply curve in this condition slopes downward, any reduction of contractual loan interest rates in alternative nonbank industries such as credit card businesses in which interest rate ceiling is not imposed would increase the amount of lending in the entire nonbank industry. Excess demand also occurs when the interest rate ceiling is enforced.

As suggested in Figure 1, when the supply curve is sloping downward and the demand is excessive, the interest rate ceiling is lowered and the social surplus increases as the ceiling approaches the equilibrium interest rate. To verify this, we assume that the interest rate ceiling is lowered from \( R_1 \) to \( R_2 \)(\( R_1 > R_2 \)).

Meanwhile, lowering the level of the interest rate ceiling increases the consumer’s surplus, as shown with the shaded area in Figure 2. This increase includes the area of \( R_1PQR_2 \) expressed as an addition of \( \int_{R_2}^{R_1} L \cdot (R_x - R) \) for the number of companies. The increase in the consumers’ surplus therefore exceeds the decrease in the lend-
ers’ surplus, resulting in an increase in the social surplus.

Based on the explanation above, the conclusion is drawn that a policy to lower the interest rate ceiling would be desirable when the ceiling exceeds the equilibrium interest rate. Such a model above helps to explain the loan market of lenders adequately by providing uncollateralized loans that have not been explained clearly in the past. The following hypotheses can be presented based on the theoretical model presented above.

We verify that the actual loan supply function of lenders slopes upward when the contractual loan interest rate is at a low level and subsequently reverses to slope downward when the contractual loan interest rate is at a high level, thereby forming a backward-bending curve, using data (in 2006) from questionnaires completed by people who have used the services of lenders, as obtained through the cooperation of lawyers in Kumamoto and Oita Prefectures. The number of valid responses collected were 73 in Kumamoto Prefecture and 47 in Oita Prefecture. The result of the questionnaire conducted in Kumamoto indicated that the variance (σ²) of the income of the borrowers was 106.7 and the mean (μ) was 26.9 (in 10,000 yen). In Oita, the variance (σ²) of the income of the borrowers was 121.2 and the mean (μ) was 26.7 (in 10,000 yen). Therefore, we assume that lenders in Kumamoto estimate a normal distribution with the variance of borrowers’ income of 106.7 and the mean of 26.9, and lenders in Oita estimate a normal distribution with the variance of borrowers’ income of 121.2 and the mean of 26.7. We also assume that the borrowers’ minimum consumption c is 80,000 yen. The interest rate on borrowing (r) and the marginal cost of lending C’(L) are sufficiently small in comparison to the loan amount and contractual loan interest rate, which are assumed to be (1 + r) + C’(L) = 1.01 + \frac{L}{10000} (assuming C(L) = \frac{1}{2}\left(\frac{L}{100}\right)^2). When the horizontal axis represents the contractual loan interest rate (percentage) and the horizontal axis the loan amount (in 10,000 yen), then the supply curve as a result of simulation is as shown below.

For example, Figure 3-2 reveals that lenders
in Kumamoto and Oita tend to increase the loan amounts until the contractual loan interest rate is at the level of 14.5% and 18.5% respectively. When the interest rate is above this level, they gradually reduce the loan amounts in fear of the risk of bad debts. In other words, the conventional assumption of a supply curve that slopes upward only (reflecting higher loan interest rates causing increased loan amounts) does not apply to the actual loan market. The theoretical model described earlier demonstrated that the supply curve was backward-bending, which is evidently supported also by the actual data in the result presented above.

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