

Hyperbolic Discounting and an Induced Informal Credit Institution
by a New Technology:
A Case of Debit Card Pawning in the Philippines.

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Abstract

This paper focuses on a recent example of institutional innovation in informal finance in the Philippines: the emerging credit arrangement called ‘ATM *sangla* (pawning).’ We report on the analysis of a small survey of 320 factory workers in an industrial estate near the Metro Manila area. ATM *sangla* is informal loan arrangement where the borrower’s ATM card is used as the collateral and where the lender uses the ATM card (or debit card) to withhold the repayment (principal and interest) from salary payment on every pay day until the entire amount is repaid. Slightly less than half of our respondents (42%) actually utilized ATM *sangla* at least once, and the average amount of the loan (principal) is 15,000 pesos, which correspond to 1.3 times the average monthly salary. We find that roughly one third of our respondents are hyperbolic discounters, who tend to hold higher loan balances with ATM *sangla* transactions than the time-consistent discounters. We find evidence that those hyperbolic discounters are naïve, rather than sophisticated, suggesting that the emergence of ATM *sangla* may have encouraged them to overborrow.

Key words: credit market; informal institution; hyperbolic discounting; behavioral economics; Philippines

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Introduction

Induced institutional innovation is among the most important aspects of economic development (Hayami and Kikuchi 1982, Ruttan and Hayami 1984, Hayami and Godo 2005). Within developing economies, formal financial institutions are relatively underdeveloped, and, as a result, informal lending serves as an important vehicle for access to credit. This study builds on the recent insights from the literature on behavioral economics and takes a close look at the emerging credit arrangement called “ATM *Sangla*” or debit card pawning in the Philippines, a recent example of institutional innovation in informal finance that has emerged in response the technological developments in the commercial banking industry (i.e., increasing availability of ATM machines and of direct salary deposits into bank accounts accompanied with the issuance of debit cards for withdrawal).

Informal lending is one of the more common sources of household financing in the Philippines.¹ Recently, observers have even witnessed a broadening reach of the informal money lenders in terms of both the increasing client base and the product innovation that includes the use of debit cards as collaterals. “ATM *sangla* (*sangla* is a Tagalog word for pawning)”, as it is commonly called in the Philippines, is an informal loan arrangement where the borrower’s ATM card or debit card (together with the personal identification number) is used as the collateral and where the lender uses the

¹ The result of the first Consumer Finance Survey in the Philippines, for example, reveals that informal money lenders held a significant role in various financing decisions of households in 2008 (Table 1). Despite the fact that these informal financing institutions have been widely accepted and integrated into the society, studies on the topic remain very limited (see for example Agabin et al (1989), Agabin (1993), Nagarajan et al (1991), and Floro and Ray (1997)).

ATM card to withhold the repayment (principal and interest) from salary payment on every pay day (typically twice a month) until the entire amount is repaid.

The popularity of the debit card pawning in the Philippines has reached a broad range of borrowers – from conditional cash transfer recipients, private company employees, to even government and police personnel (PTV News, 2015; Sunstar Bacolod, 2014; Felipe, 2014). Concerned with the potential abuses and dangers on the side of the borrowers involved in this informal lending practice, financial regulators and related agencies have been discouraging depositors from pawning their debit card (PDIC, 2013; Agcaoli, 2011). The magnitude of debit card pawning have triggered bold moves of government agencies to propose integrating ID cards and payroll ATM Cards into one, so that it will be more difficult for employees to pawn their debit cards to money lenders (Felipe, 2014).

The actual impacts of debit card pawning on borrowers (possibly of different types) and their potential implications for policy have so far been poorly understood, however. On the one hand, debit card pawning allows borrowers to collateralize future income flows, mitigating asymmetric information problems and potentially leading to increased efficiency in financial intermediation. On the other hand, the recent behavioral literature suggests that debit card pawning may have a range of possible implications for borrowers whose behavior is not time-consistent. In particular, as we discuss in the next section, potential (welfare?) impacts of this institutional innovation may differ depending on whether such time-inconsistent borrowers are “naïve” or “sophisticated.” This paper focuses on this latter aspect.²

² Exploration of the first aspect is seriously hindered due to the absence of an appropriate control group in our sample.

The rest of this paper is organized as follows. In the next section, we briefly discuss the relevant literature to contextualize the ATM *sangla* phenomenon in the Philippines and underline the potential significance of the phenomenon. Section III describes our dataset and summarizes the main characteristics of the ATM *sangla* transactions as observed in our data. Section VI reports the results from our econometric analysis of the demand for ATM *sangla* loans, with a special emphasis on the relationship between the loan demand and the borrowers' time preference patterns and on its potential consequences on the consumption behavior toward luxury goods. The final section concludes.

II. Credit Market Imperfections, Hyperbolic Discounting and ATM *Sangla*: a literature review

This section discusses how the ATM *sangla* phenomenon relates to the existing literature, and, especially, how it falls into the context of the recent insights found in the behavioral literature on time preference and hyperbolic discounting.

The Related Literature

The classic work on rural credit markets by Hoff and Stiglitz (1993) points out that there are several perverse features of rural credit markets that the 'neoclassical' view cannot explain, such as: interest rates do not clear market, generating borrowing constraints; and in the informal sector, interlinkages between credit and other transactions are common. As an alternative (to the traditional neoclassical) view of rural credit markets which is better able to help us understand the workings of rural credit markets, Hoff and Stiglitz (1993) pointed three factors. First, borrowers differ in the likelihood that they will default, and it is costly to determine the extent of that risk

for each borrower. This is conventionally known as the screening problem, which leads to adverse selection. Second, it is costly to ensure that borrowers take those actions which make repayment most likely. This is incentive problem such as the standard moral hazard problem. Third, it is difficult to compel repayment. This is enforcement problem. This view holds that it is the markets' responses to these three problems, singly or in combination, that explain many of the observed features and puzzles of rural credit markets, and that they must therefore inform the policy perspective for designing specific interventions.

Since the success of Grameen bank initiated by Professor Muhamad Yunus in Bangladesh, "micro-finance," which is defined as a program of providing financial services to poor households (without assets) who have been excluded from the formal banking sector, has received a good deal of attentions. Yet, overall trend of transformation of microfinance institutions (MFIs) as NGOs into for-profit institutions since IPO of a Mexican MFI, Compartamos, in 2007 coincide with repeated over-borrowing crises of MFI clients in Andhra Pradesh state of India. Professor Yunus described this situation of MFIs, "new usurers."

In contrast with the above literature where rational or time-consistent behavior is a maintained assumption, the more recent literature has increasingly incorporated behavioral assumptions, such as time-inconsistent behavior, in its attempts to better understand micro-foundation of such a big picture. Recent data show that as many as one third of the population are present-biased or hyperbolic discounters (e. g., Ashraf, Karlan, and Yin 2006 in the Philippines, Bauer, Chytilová, and Morduch 2012 in India, Meier and Sprenger 2010 in the US), and studies in this literature attributes undesirable behaviors (including not only over-borrowing and debt overhang but also

obesity, over-eating, gambling, smoking, drinking, and other procrastination behaviors) to naïve hyperbolic discounting (Banerjee and Mullainathan 2010). Using a unique field experimental data from a commitment savings product in the Philippines, for example, Ashraf, Karlan, and Yin (2006) find that women who exhibit a hyperbolic discounting and hence potentially have a preference for commitment, are indeed significantly more likely to open the commitment savings account.

Bauer, Chytilová, and Morduch (2012) further point out with microcredit that a loan transaction involving continuous borrowing with a relatively large amount of cash intake (borrowing) followed by a regular stream of repayment can be considered as a means of self-discipline in financial behavior for those present-biased discounters who are “sophisticated;” “sophisticated, present-biased discounters” are those who value future (rather than immediate) consumption but find it difficult to resist short-term temptations and who are aware of their weakness. Microcredit transactions can allow the borrowers to pre-commit their future incomes to loan repayments as commitment savings do, and allow them to control their tendency to give in to immediate temptation. Consistent with this interpretation of microcredit transactions, Bauer, Chytilová, and Morduch (2012) find, based on a carefully designed field experiment in India, a robust positive correlation between having present-biased preferences and selecting microcredit as the vehicle for borrowing among female MFI clients.

In contrast, however, present-biased borrowers who are not “sophisticated” about their self-control problems (i.e., “naïve”) may over-borrow relative to the benchmark of unbiased forecasting of their behavior (Heidhes and Koszegi 2010, Zinman 2014). Adopting incentivized choice experimental data, Meier and Sprenger (2010) find that present-biased individuals are more likely to have credit card debt, and

to have significantly higher amounts of credit card debt, although their study does not (explicitly) distinguish among the present-biased between sophisticated and naive. In our attempt to extend this literature, our empirical analysis from the Philippines investigates whether ATM *sangla* transactions induce present-biased borrowers to borrow more, and, furthermore, whether those present-biased are “naïve” or “sophisticated.”

Potential Significance of ATM Sangla Transactions

ATM *Sangla* transactions in the Philippines can be considered as an institutional innovation in response to the emergence of new technology and market demand in a developing country. On the one hand, the increasing availability of ATMs (automatic teller machines) has allowed firms to pay the salary of their employees through direct bank deposits as an alternative, safer and lower cost means of payment to cash delivery. Combined with potential demand for credit among those employees paid with salary deposit, there have emerged informal arrangements now called ATM *Sangla* over the past several years in the Philippines.

Loans extended to those regular company (or government) employees with their ATM cards as collateral would seem to provide an effective mechanism to mitigate traditional problems arising from information asymmetry in credit markets (*a la* Stiglitz and Wise 1982; Armendariz and Morduch 2010). By allowing the lenders access to future streams of regular deposit of salary incomes, this lending scheme can virtually eliminate the possibility of strategic default. Furthermore, borrowers’ stable employment status and the relatively small likelihood of major income/salary fluctuations would greatly mitigate *ex ante* moral hazard. As a result, the emergence of

ATM *sangla* is likely to enhance access to credit by those workers to the extent that they are “rational” (in the sense of being time-consistent discounters), thereby relaxing their credit constraints and, potentially, raising the level of their welfare.

The (possible) expansion of credit access through the emergence of ATM *Sangla* transactions, however, may not necessarily be welfare enhancing if those borrowers are not fully “rational,” as has been pointed out by the recent literature on “overborrowing,” including credit card debt in developed countries and microcredit in India. The recent literature based on behavioral economics suggests two alternative possibilities for this institutional innovation. On the one hand, as Bauer, Chytilová and Morduch (2012) point out with microcredit in India, a loan transaction involving regular repayment may provide a means of self-discipline in financial behavior for those present-biased discounters who are “sophisticated.” By allowing borrowers to similarly commit their future income streams (by transferring their ATM cards to the lender, loan repayment becomes automatic with little prospect of succumbing to immediate temptation), one could potentially argue, ATM *sangla* may provide sophisticated present-biased discounters with a similar commitment mechanism. On the other hand, however, if those present-biased borrowers are “naïve,” then ATM *sangla* transactions could provide additional means to give in to immediate temptation for consumption and potentially to “overborrow” in a similar manner as present-biased borrowers accumulate credit card debt in the US (e.g., Meier and Sprenger 2010). In our empirical analysis, using the empirical framework developed by Bauer, Chytilová and Morduch (2012), we test with our data which possibility is true with respect to those present-biased borrowers with ATM *sangla* transactions.

III. The ATM *sangla* Survey Data

This section will present the nature of the dataset, the survey design, and relevant descriptive statistics.

Respondent Profile

Our empirical analysis is based on a survey of factory workers conducted at three medium-scale factories manufacturing automobile parts, located in an industrial estate in the province of Laguna, an adjacent province to the south of Metro Manila. With the cooperation of the factory management, personal interviews were conducted at the factory premises with all the employees at work at the time of our survey participating. A total of 320 workers, consisting of 195 (60%) men and 125 women, were interviewed (107, 78 and 135 from firm A, B and C, respectively). Our respondents are of 30 years of age with 7 years of work experience, on average, 53% of them are married, and 49 % have children. A great majority (72%) are regular employees while 23% are contractual workers and 5% are on probation. One third of our respondents are college graduates, while 45% of them have either vocational or some college education. Only 21% of the respondents are high school graduate or below. (Table 2)

With a minor exception (those who have been employed only recently, 4%), salary payment for those workers is made through direct bank deposits. In all the three companies, workers are paid twice a month with an average monthly salary of 15,000 pesos (US\$344 with the US\$/peso exchange rate of 0.023). For most of the workers, their salary accounts (the bank accounts where their salaries are deposited) are the only bank account they hold, and only 20% of them have an additional bank account (but mostly ordinary deposit accounts). (Table 3)

We elicited time discount rates of our respondents by following the approach taken by Ashraf, Karlan and Yin (2006), where ‘current’ discount rate was obtained from trade-offs between today and 1 month later and ‘future’ discount rate from trade-offs between 6 months and 7 months from today.³ Table 4 shows the distribution of our respondents in terms of their time discounting behavior by distinguishing the following three types: Hyperbolic discounters (present-biased), Time-Consistent discounters, and Patient discounters (future-biased). Roughly one third of our respondents are found to be hyperbolic discounters while 44% are found to be time-consistent discounters. The share of the hyperbolic discounters in our sample appears to be roughly comparable to the findings from existing studies. The share of hyperbolic discounters found by Ashraf, Karlan and Yin in the Philippines, by Bauer, Chytilová and Morduch (2012) in India and by Meier and Sprenger (2010) in the US are 28%, 33% and 36%, respectively.

Table 5 summarizes some personal characteristics and (crude measures of) consumption pattern. Somewhat smaller proportions of both the hyperbolic discounters and the future-biased discounters have finished higher education, and those time inconsistent discounters tend to earn lower salaries than do time-consistent discounters. The few measures of our ‘luxury consumption’ (smart phone ownership, use of *Facebook* account and eating at *Jollibee* hamburger restaurants) do not seem to differ significantly by time discount behavior.

³ As was the case with Ashraf, Karlan and Yin (2006), but unlike Bauer et al (2012), our artefactual experiment was hypothetical and not incentivized by monetary payment.

ATM Sangla Transactions

As shown in Table 6, while almost all (93%) of our respondents are aware of *ATM sangla*, it is slightly less than half of our respondents (134 out of 320; 42%) who have actually utilized *ATM sangla* at least once. Of those 134 respondent, 37% of them had borrowed from *ATM sangla* within the past six months, while for almost half of them (46%) the last *ATM sangla* transaction took place more than one year earlier. At the time of our interviews, 42 respondents (31% of those who had ever borrowed from *ATM sangla*) had outstanding balances of *ATM sangla* loans with the average loan amount (principal) of 15,000 pesos (equivalent of 1.3 times the average monthly salary). This suggests that borrowing from *ATM sangla* is not necessarily a regular or continuous transaction, unlike microfinance loans.

Among those who ever borrowed from *ATM sangla* (134 respondents), the average loan amount (principal) is 15,220 pesos with the average duration of 5.2 months. During the repayment phase, 34% of their salaries (or 2,702 pesos), on average, was deducted by their *ATM sangla* lenders from their salary accounts. The interest rate ranges between zero to 20 percent per month, with 3 percent per month on average (equivalent of annual compounded rate of 40%). The main uses of loan proceeds include medical expenses (21%), daily consumption (19%), education of children (16%), house repair/renovation (9%), and religious and social events (8%). In terms of the amount of expenses that *ATM* loans are applied to, medical expenses are also the largest on average, with roughly 20,000 pesos, followed by religious and social (18,000 pesos), education (16,500 pesos) and house repair/renovation (15,000 pesos).

Among our respondents, private money lenders are the most common (54%) provider of *ATM sangla* loans, followed by colleagues (21%), friends (16%), neighbors

(6%) and relatives (4%). The majority of ATM *sangla* loans are informal transactions with professional money lenders (who are mostly individuals, rather than firms).

Borrowing Behaviors by Hyperbolic vs. Time-consistent Discounters

Tables 7 and 8 summarize the pattern of utilization of ATM *sangla* (as well as other) loans by the three categories of our respondents, Time-consistent, Hyperbolic (present biased) and Future-biased discounters. While the point estimates vary in many aspects, our discussion focuses on the differences that are statistically significant. In terms of the purposes (or uses) of ATM *sangla* loan proceeds, hyperbolic discounters are significantly more likely to spend the proceeds on medical expenses and daily consumption while the purposes/uses of ATM *langla* loans are relatively more evenly distributed in the cases of time-consistent discounters. Furthermore, among those who utilized ATM *sangla* loan at least once, hyperbolic discounters appear to borrow more frequently than do the other types of discounters; a significantly higher proportion of hyperbolic discounters had the most recent incidence of ATM *sangla* loan relatively more recently (within the last 6 months), and a lower proportion in more relatively distant past (more than one year ago). The sources of ATM *sangla* loans are similarly distributed among the three categories, however. Among those who have not utilized ATM *sangla* at the time of our survey, roughly similar shares of 30 to 40% of them expressed potential interest in using ATM *sangla* among all of the three categories, but the potential sources of such potential loan transactions are somewhat different; significantly smaller shares of hyperbolic discounters expected to borrow from private money lenders and a larger share from friends, compared to time-consistent discounters. On the other hand, the pattern of ATM *sangla* utilization by future-biased discounters do not seem to differ significantly from that of time-consistent discounters, although

point estimates show similar pattern to the hyperbolic discounters' (e.g., purposes of the loans) on some aspects.

Table 8 shows the utilization of ATM *sangla* borrowing in comparison with borrowing from other sources, by different categories of time preferences. Significantly larger shares of both the hyperbolic and future-biased discounters tended to hold current loan balances with ATM *sangla* at the time of our survey. Also a larger share of hyperbolic discounters had loan balance from their friends and relatives than did other types of discounters. The average amount of loan outstanding tend to vary among the three types of discounters in some cases but most of the differences are not statistically significant (mainly due to relatively small number of observations), but the outstanding loan amount from relatives and friends at the time of survey was relatively lower among both the hyperbolic and future-biased discounters than among time-consistent discounters.

Representativeness of ATM Sangla Survey from the Philippine Consumer Finance Survey

Before turning to the results of our empirical analysis, we put our (admittedly small) sample of respondents into perspective by comparing the profile and borrowing characteristics of our ATM *sangla* survey respondents with a comparable group from the 2009 Consumer Finance Survey (CFS) conducted by the *Bangko Sentral ng Pilipinas* (BSP: Central Bank of the Philippines).

Among the 9402 responding households in the CFS, 1141 respondents residing in Metro Manila with regular employment form a relatively comparable subgroup with our 320 ATM *sangla* respondents. These households availed

multipurpose cash loans in 2008 and are employment income dependent (i.e. at least one of the respondent and the spouse are fully employed and wage income receiver). In terms of the demographic characteristics (Table 9), the average age of the CFS respondents is 42 years old, which is higher than our ATM *sangla* respondent. The level of educational attainment is also significantly lower for CFS respondents where 71 percent have at most high school education (compared to 21 percent in our sample) while the remaining 29 percent have at least started college. Among the respondents in the CFS who are fully employed, 50 percent are regular employees (compared to 72 percent in our survey), 12 percent are contractual (versus 23 percent), while the remaining have other or no formal contract. Meanwhile, the average level of monthly salary is almost comparable between the two surveys. The mean salary of the subgroup in the CFS is 14,000 pesos (roughly US\$ 322) after adjusting for inflation compared to 15,000 pesos on our survey.

Comparing the multipurpose cash loan borrowing characteristic of the CFS and our ATM *sangla* respondents, it can be noticed from Table 11 that the average amount borrowed by the former is more than twice than that of the latter (37,500 pesos, adjusted for inflation). This may be caused by the fact that the loan uses for the CFS subsample include business startup and expansion, and purchase of high value assets (i.e. properties and automobiles). However, on the aggregate, we can see that the loan uses of the surveys are similar. Majority of the multipurpose cash loans from CFS were used for living expenses and consumption (29%), debt repayment (11%), medical expenses and other emergencies (11%), and educational expenses (11%). Further, similar to the observation from our ATM *sangla* data, majority of the multipurpose loan of households in the CFS were sourced from individual money lenders (42%).

IV Econometric Analysis and Empirical Results

Empirical Specifications

In our empirical analysis, we follow the approach developed by Bauer, Chytilová, and Morduch (2012) and examine the interaction between ATM *sangla* and its borrowers, as differentiated by their behavioral patterns in terms of time consistency. Financial decisions (by those with time-consistent preferences), such as borrowing or saving, can be considered as a function of the agent's discount rate and other observable characteristics:

$$Y_i = \beta_0 + \beta_1 \delta_i^0 + \beta_2 \mathbf{X}_i + \varepsilon_i, \quad (1)$$

where Y_i is an outcome variable measuring financial transactions (such as the outstanding loan balance from a particular source) of agent i , δ_i^0 is the discount rate of agent i , \mathbf{X}_i is a vector of other observable characteristics, and ε_i is a zero-mean error term. In the empirical specification, \mathbf{X}_i include the following: respondent's age, age squared, sex (dummy: female = 1), marital status (dummy: married = 1), number of children, whether living with parents (dummy: 1 if living with parent(s)), whether regular employee (dummy: 1 if regular employee, with the reference being contractual employee), amount of (bimonthly) salary, education dummies (vocational level, college level), past experience of loan rejection (dummy: 1 if rejected a loan before), hometown (dummy: 1 if current residence is the same as the respondent's home province), and company dummies (company C as the reference).

The recent empirical literature has demonstrated, however, that a significant proportion of the population is often found not to behave consistently overtime. Bauer, Chytilová, and Morduch (2012) and Ashraf et al (2006), for example, find among their

Indian and Philippine samples, respectively, that one third of their respondents exhibit a behavioral pattern called present biased or hyperbolic discounting. Present-biased discounting behavior arises when people are relatively more impatient with regard to current trade-offs than with regard to future trade-offs. In other words, while hyperbolic discounters, intellectually, value future consumption, they still tend to give in to temptation of immediate consumption. As we saw earlier in Table 4, we similarly find that roughly one third of our respondents are hyperbolic discounters (or present-biased), as found in previous studies.

Bauer, Chytilová, and Morduch (2012) propose a method to test whether present-biased agents (or, hyperbolic discounters) are either ‘sophisticated’ or ‘naïve.’ If present-biased discounters are sophisticated, *and* they can avail of commitment mechanisms that allow them to pre-commit their future income flows (such as commitment saving schemes or microcredit loans), then their financial behavior would be no different from that of consistently low discounters. Alternatively, however, if present-biased discounters are naïve (or, if they are sophisticated but there is no commitment device to allow them to commit their future income flows), then they would end up behaving as if they are consistently high discounters.

If information is available on both current and future discount rates of the borrowers, then it becomes possible to test whether present-biased discounters are naïve or sophisticated. It is done by comparing the following two equations:

$$Y_i = \beta_0 + \beta_1 \delta_i^0 + \beta_2 P_i + \beta_3 F_i + \beta_4 X_i + \varepsilon_i \quad (2)$$

$$Y_i = \beta_0 + \beta_1 \delta_i^1 + \beta_2 P_i + \beta_3 F_i + \beta_4 X_i + \varepsilon_i \quad (3)$$

where P_i is a dummy variable taking value one if agent i is a hyperbolic discounter (time-inconsistent present-biased discounter), F_i is a dummy variable taking value one if

agent i is a (time-inconsistent) future-biased discounter, and δ_i^0 and δ_i^1 are current and future discount rates, respectively. When the current discount rate (δ_i^0) is controlled for in the regression (i.e., equation (2) is estimated), then the coefficient (β_2) on the present-biased indicator estimates the difference in financial behavior between present-biased agents (those for whom $\delta_i^0 > \delta_i^1$) and those with high current discount rates (but also with time-consistently high discount rates for the future as well, $\delta_i^0 = \delta_i^1$). We would expect that a present-biased discounter who is naïve give in to immediate temptation and thus behave no differently than those with high current discount rate in their financial behavior, and thus: $\beta_2 = 0$. In addition, we would also expect $\beta_2 = 0$ if those present-biased discounters are potentially sophisticated but do not have available any means of controlling their own temptation (such as commitment savings).

Alternatively, when the future discount rate (δ_i^1) is controlled for in the regression (i.e., equation (3) is estimated), then the coefficient (β_2) on the present-biased indicator estimates the difference in financial behavior between present-biased discounters ($\delta_i^0 > \delta_i^1$) and those with low current discount rates (but also with time-consistently low discount rates for the future as well, $\delta_i^0 = \delta_i^1$). We would expect that the behavior of a present-biased discounter who is “sophisticated” (i.e., they are aware of the fact $\delta_i^0 > \delta_i^1$) and has means to control their temptation and to adjust their financial behavior to the extent possible, and that their behavior be similar to that of an agent with low future (as well as current) discount rate in their financial behavior, and thus: $\beta_2 = 0$ in equation (3). In contrast, if a present-biased agent is naïve (or she has no means of controlling for her temptation), then their financial behavior would be

systematically different from those of the time-consistently low discounters, and we thus expect $\beta_2 \neq 0$ (e.g., under-save or over-borrow).

Empirical Results: Hyperbolic discounting and borrowing behavior

Table 12 summarizes the results of our reduced form correlates of ATM *sangla* and other borrowing behavior, as measured by (1) the dummy variables indicating the presence of outstanding loan balance at the time of the interview and (2) by the outstanding amount of borrowing from different loan sources.⁴ Focusing on the behavioral consequences of being present-biased (hyperbolic discounting), we find that those present-biased discounters are significantly (at 10 % level) more likely to have outstanding balance with ATM *sangla* at the time of our interview and to have higher outstanding balance of ATM *sangla* loan than those who are not present-biased. Those future-biased discounters are similarly more likely to hold outstanding balance with ATM *sangla* but their outstanding balance is not significantly different at the 10% level from that held by time-consistent discounters.

Other than ATM *sangla* loans, being present-biased is significantly positively correlated with the likelihood of having loan outstanding from government sources and from friends and relatives. In terms of the amount of outstanding loan balances, however, ATM *sangla* is the only loan source leading to higher outstanding balances for the present-biased. It appears, therefore, that those present-biased are likely to borrow from a larger number of sources and hold a larger amount of outstanding loans compared to time-consistent discounters.

⁴ All the regression results reported are based on OLS. We also estimated Tobit version for the loan amounts outstanding. The main qualitative results are very similar between OLS and Tobit.

In addition, those who have been rejected for a loan in the past and are regular employees (compared to contractual employees) are more likely to hold loan balance with ATM *sangla*, and those living with their parents are less likely to hold loan balance with ATM *sangla*, after controlling for other observable characteristics. We also find that the level of salary income is significantly negatively associated with the likelihood of having an outstanding balance with ATM *sangla*, as well as with government loan sources. We find no evidence of any systematic gender difference in terms of loan utilization by sources (Table 12), but women, and those present-biased women in particular, appear less likely to use ATM *sangla* loan proceeds to argument consumption (Table 15, column (1) and (8)). This implies the possibility that women, but not men, may have access to some type of commitment device that allows them to reduce the possibility of resorting to ATM *sangla* loan for consumption purposes.

As discussed earlier, ATM *sangla* transactions are likely to mitigate potential information problems that often plague both informal and formal credit markets with agency problems. This is likely to increase the availability of credit to those borrowers and thus to relax their credit constraints. At the same time, however, it may also provide additional access to easy money for those present-biased discounters who are naïve with a potential of leading them to overborrowing. Alternatively, the recent literature on behavioral economics suggests that ATM *sangla* could potentially function as a commitment (saving) device that would allow those sophisticated present-biased discounters to discipline themselves, as far as they are sophisticated. We now examine such possibilities with our data.

While we have found that those present-biased discounters tend to hold higher loan balances with ATM *sangla* than do the others, those present-biased may be

either “sophisticated” or “naïve”; are the present-biased discounters in our sample “naïve” or “sophisticated”? Tables 13 and 14 summarize the results of estimating equations (2) and (3), where additional dummy variables indicating higher *current* discount rates (Table 13) and higher *future* discount rates (Table 14), respectively, are controlled for⁵. We find that the magnitude of the β_2 coefficient on the present-biased dummy is affected relatively little and still remains statistically (marginally) significant when dummy variables for *future* discount rates are added (Table 14, column (1)). In contrast, the same coefficient becomes substantially smaller and statistically insignificant when dummy variables for *current* discount rates are added (Table 13, column (1)). The results thus suggest that those present-biased are just as likely to borrow from ATM *sangla* as those who are high discounters and time-consistent, and are significantly more likely to borrow from ATM *sangla* than those who are low-discounters and time consistent. The present-biased in our sample, despite being low discounter in the long-run, tend to be vulnerable to short-term temptation in consumption with borrowing from ATM *sangla*, to the same extent as time-consistently high discounters. The results based on the amount of outstanding loan balances (Table 13 and 14, column (6)) are weaker but show a similar pattern. Our results suggest that the present-biased borrowers in our sample are likely to be naïve rather than sophisticated. Or, alternatively, to the extent that they are aware of their weakness, they do not have access to a device/mechanism that allows them to self-commit and thus to prevent them from giving into temptation in their consumption and borrowing. This

⁵ In our regression results, the coefficients on those dummy variables representing discount rates, rather surprisingly, are not statistically significant. While this is in contrast with Bauer, Chytilova and Morduch (2012) who find the similar coefficients to be statistically significant, our results are consistent with Meier and Sprenger (2010) finding similarly insignificant coefficients on individual discount factors.

finding is in sharp contrast with the findings among microfinance clients in India as found by Bauer, Chytilová, and Morduch (2012).

The contrast in the findings between Bauer, Chytilová, and Morduch (2012) and ours could suggest a few alternative possibilities. One possibility is that ATM *sangla* loans cannot be seen as a substitute for commitment savings that can be utilized by the sophisticated present-biased, unlike the case of microfinance loans in India. While ATM *sangla* loan involves similarly frequent (twice-monthly, which is less frequent than weekly repayment often typical of microfinance, though) repayment schedule that could discipline the spending behavior of the borrowers by reducing the amount of cash at hand, ATM *sangla* transactions do not come with some other features of microfinance that similarly function as commitment device, such as regular group meetings and continuous borrowing (ATM *sangla* loans appear to be used less frequently and not continuously). In addition, unlike the case of microfinance loans as shown in Bauer, Chytilová, and Morduch (2012), loan proceeds from ATM *sangla* are mostly used for consumption purposes rather than for investment.

In addition (or alternatively), it may also be that those factory workers who are present-biased discounters in Metro Manila are naïve about their own behavior arising from their pattern of time preferences that is time inconsistent. In this sense, our sample could be somewhat similar to those present-biased discounters in Boston (US) who tend to accumulate larger amount of credit card debt (than the amount accumulated by time-consistent discounters) as shown in Meier and Sprenger (2010).

How to Interpret the Results on the Future-Biased?

While time-inconsistent behavior has drawn increasing attention in both theoretical and empirical literature, most of the studies (including all the works cited in this paper thus far), it appears, focus on the present-biased (or hyperbolic discounters), rather than the opposite side of the time-inconsistent behavior, i.e., the future-biased.⁶ At the same time, however, recent empirical studies based on artefactual experiments tend to identify non-negligible proportions of their samples exhibiting future-biased time preferences; Ashraf, Karlan and Yin (2006), Bauer, Chytilová, and Morduch (2012) and Meier and Sprenger (2010) find, respectively, 20%, 10% and 9% to be future-biased discounters. Nevertheless, those empirical studies seem to pay little attention to those 10 to 20% of their samples, probably because their empirical results show that the behavior of the future-biased tend not to be significantly different from the behavior of the time-consistent discounters (e. g., the regression coefficients on the future-biased dummies are typically statistically insignificant).

We find 22% of our sample of factory workers in Metro Manila to be future-biased, consistent with the finding by Ashraf, Karlan and Yin (2006). A major new finding from our empirical analysis in contrast with the existing empirical studies, however, is that there appears to be suggestive evidence that those future-biased behave significantly differently than do time-consistent discounters. We find, for example, that the estimated regression coefficients are similar between the present-biased and future-biased dummies in the regressions explaining ATM *sangla* borrowing; larger proportions of both types of time-inconsistent discounters have outstanding loan

⁶ Some exceptions include Bleichrodt, Rohde and Wakker (2009), Loewenstein (1987) among theoretical works, and Sayman and Onchuler (2009), Takeuchi (2011) among empirical studies. Frederick, Loewenstein and O'Donoghue (2002) provide a wider review of the literature including that on future-biased behaviors.

balances with ATM *sangla* (Table 12 column (1), as well as the descriptive Table 8), and similar results are obtained regarding the outstanding loan balances from ATM *sangla* (Table 12 column (6)).

Our results seem to suggest that we may need to take the behavior of those future-biased (20% of our sample) relatively more seriously than they have been treated in the existing literature. In fact, there have been some theories that are consistent with future-bias. A classic example is Loewenstein (1987) who develops the idea of “anticipal pleasure or pain” initially proposed by Jevons. If people derive (instantaneous) pleasure (or utility) not only from current consumption but also from ‘anticipating’ future consumption, then it is possible for them to exhibit ‘reverse time inconsistency,’ where they repeatedly plan to consume a good after some delay that permits pleasurable anticipation, but then to delay again for the same reason when the planned moment of consumption arrives (Frederik, Loewenstein and O’Donoghue 2002; 371).⁷ This suggests that future-biased discounters (who are naïve, at least) could keep delaying consumption, potentially leading to over-saving or to under-borrowing relative to time-consistent discounters.

In contrast, however, our results suggest that future-biased tend to borrow more from ATM *sangla* than do time-consistent discounters with otherwise same preferences. O’Donoghue and Rabin (1999) develop theoretical arguments on how *sophistication effect* interacts with time-inconsistent preferences. While “a naïve person believes she will behave herself in the future,” “a sophisticated person is correctly pessimistic about her future behavior” and thus does the activity (e.g., consumption)

⁷ Loewenstein (1987) presents some experimental evidence of (short-term) negative discount rate based on (hypothetical) question about consumption of “a kiss from the movie star of your choice”.

sooner than does a naïve person with the same preferences. O’Donoghue and Rabin (1999) further argue that sophistication effect can even outweigh the effect of time-inconsistent preferences (such as present-bias). Such “preemptive overcontrol” could lead to the situation where a sophisticated, present-biased person can save more than time-consistent discounters; i.e., they can behave exactly opposite from what a present bias would suggest (O’Donoghue and Rabin 1999; p.118). While the arguments by O’Donoghue and Rabin (1999) solely focus on the case of present-biased preferences, the same type of argument can be applied to the case of sophisticated future-biased discounters where sophistication effect can outweigh the future-bias effect, and where they can over-consume or over-borrow relative to time-consistent discounters. Our results could arguably be consistent with such a possibility.⁸

Hyperbolic Discounting and Consumption Behavior:

In order to shed further light on the differential patterns of behavior among the time consistent and the time inconsistent in our sample, we examine the correlates of demand for ‘luxury goods’ (that is, in the context of our survey communities, such as: smart phone ownership, frequency of accessing *Facebook* account and frequency of eating at the *Jolibee* hamburger restaurant—by-far-the popular alternative to McDonald’s in the country). We find that, as can be expected, the demand for luxury goods is positively associated with higher salary, being a regular employee, and living

⁸ In this case, we would expect in the context of our empirical framework that the observed behavior of those sophisticated future-biased discounters would be similar to that of time-consistent and high discounters: i.e., $\beta_3 > 0$ (the patient preference dummy having positive effects) in equation (3) and $\beta_3 = 0$ (patient preference dummy having no effects) in equation (4). While the point estimates show a slight decline in the β_3 coefficient between column (1) of Table 13 and Table 14 (but not in column (6)), our empirical results do not seem to provide evidence strong enough to support the hypothesis.

with parents, while negatively associated with having a larger number of children.

Women tend to eat at *Jolibee* more frequently than men, although such a contrast along gender is not observed in the demand for other goods.

One intriguing finding is that there appears to be a sharp contrast among the present-biased between women and men, even though no such difference along the gender line was observed in term of borrowing behavior. Our analysis including the interaction term between the dummy for hyperbolic discounter and female dummy suggests that being present-biased is significantly positively associated with eating at *Jolibee* among men, while significantly negatively associated among women. While women, more than men on average, generally prefer to eat at *Jolibee*, present-biased women tend to eat less frequently at *Jolibee* (Table 15, column (14)). This appears to suggest that while present-biased men tend to be more easily tempted to eat at *Jolibee* compared to those men who are consistent-discounters, those women who are present-biased appear to have some mechanism that allows them to resist/overcome such temptation, even compared to those women who are time-consistent discounters.

Table 16 reports the regression results of the correlates of luxury good consumption with additionally controlling for current loan portfolio. As expected, the existence of outstanding loans with some sources tends to be negatively correlated with demand for luxury goods. The need for repayment of the existing loans is likely to exert negative income effects and thus to dampen consumption in general. In particular, existing loan balance with ATM *sangla* is significantly negatively associated with the demand for eating at *Jolibee*. Such a negative income effect of ATM *sangla* loan is observed only for the demand for *Jolibee* but not for other luxury goods (i.e., smart phone or *Facebook*). Apart from ATM *sangla* loan, loan balance with friends, relatives

and company is significantly negatively associated with the demand for smart phones and the frequency of *Facebook* access.

We find from Tables 12 and 15 that those who are present-biased (women and men) are both more likely (than time-consistent discounters) to borrow from ATM *sangla* and more likely to eat at *Jolibee*. To the extent that outstanding loan balance from ATM *sangla* places negative income effect on the demand for eating at *Jolibee*, ATM *sangla* loan could be seen as unintended (since our present-biased appear to be mostly naïve, not sophisticated) commitment device to control their behavior, at least in the near future. In addition, our results are consistent with the possibility that those present-biased women, but not men, in our sample may have access to some sort of commitment device and thus may be “sophisticated” to some extent.

V. Concluding Remarks

This study has focused on the emerging credit arrangement called “ATM *Sangla*,” a recent example of institutional innovation in informal finance in the Philippines. Several important findings emerge from our empirical analyses. While we do not have any direct evidence (due to the lack of an appropriate comparison group in our data), it appears likely that the emergence of STM *sangla* has expanded access to credit, at least for some. Its implications are far from clear, however. We find that roughly one third of our respondents are present-biased discounters, and that those present-biased tend to borrow significantly more from ATM *sangla* than do time-consistent discounters. Our results based on the analytical framework developed by Bauer, Chytilová, and Morduch (2012) further suggest that the present-biased borrowers in our sample are naïve rather than sophisticated. Or, (even if they are sophisticated) ATM *sangla* seems to be an unlikely candidate for a substitute for commitment savings,

in contrast with the case of microfinance in India as found by Bauer, Chytilová, and Morduch (2012). Our results thus imply the potential possibility that the expanding credit access through ATM *sangla* in the Philippines may not necessarily be desirable, especially for hyperbolic discounters who are largely naïve. We also find suggestive evidence that a portion (roughly 20%) of our sample are future-biased discounters, who may be sophisticated and thus use ATM *sangla* borrowing as a commitment device to the extent of “preemptive overcontrol” so that they borrow even more than time-consistent discounters do.

We also find from the analyses of demand for luxury goods (smart phone, frequency of accessing *Facebook* account and frequency of eating at *Jolibee*) that while women (more than men) generally prefer to eat at *Jolibee*, present-biased women tend to eat less frequently at *Jolibee*. This appears to imply the possibility that Filipino women, but not men, may have some commitment device to control their behavior in eating at *Jolibee*.

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Table 1: Rank of Informal Money Lender as a Source of Financing

Type of Loan	Rank	All Regions (% Share)	Metro Manila (% Share)	Areas Outside Metro Manila (% Share)
Housing Loan	4th out of 16	9.6	6.8	15.8
Other Real Property Loan (Aside from Residence)	1st out of 12	36.5	28.3	47.2
Vehicle Loan	5th out of 10	4	4.8	3.4
Appliances/Equipment Loan	4th out of 9	8	14	5.3

Source: 2009 Consumer Finance Survey, Bangko Sentral ng Pilipinas

Table 2. ATM Sangla Survey: Characteristics of the respondents/factory workers

Total number of respondents	320 (company A: 107; Comp. B: 78; Comp. C:135)
Sex of respondents	male : 195 (61%) , female : 125 (39%)
Average age	30.0
Proportion of respondents who are married	168 out of 320 (53%)
Those with children	157 out of 320 (49%) (ave. number of children:1.96)
Living with parent(s)	81 (25%)
Type of employment	Regular: 229 (72%) Probational: 16 (5%) Contractual: 75 (23%)
Ave. number of years employed	6.9 years
Level of schooling	High school grad or lower : 67 (21%) Vocational schooling (undergrad or grad) : 97 (30%) College undergrad : 49 (15%) College graduate or higher : 107 (33%)

Table 3. ATM Sangla Survey: Mode of salary payment, access to bank accounts, etc.

Mode of salary payment	Bank deposit : 316 (99%) ;cash : 4 (1%)
Frequency of salary payment	Twice a month : 320 (100%)
Average salary level (per half month)	PHP 7543 (per half month) (317 responses; no answer = 3)
Amount withdrawn on or the day after Pay day	Average amount withdrawn: PHP 5583 Average share of the above amount in total salary : 65% of total
Average amount of own allowance	PHP 3061 Average share of the above amount in total salary : 48%
Own bank account other than salary account?	Salary account (no interest) only : 234 (73%) Own savings account : 82 (26%) Own term-deposit account : 1 (0.4%) Own trust account : 1 (0.4%) Own current(checking) account ; 2 (0.6%)
Average amount left in salary account	PHP 52,821 (84 responses)

Table 4: Distribution of Respondents by Preference Type

	Hyperbolic/ present biased	Patient/ future-biased	Time consistent	Total
Count	110	71	139	320
Share (in %)	34.4	22.2	43.4	100.0

Source: Author's computation

Table 5. Time Preferences and Personal Characteristics

	time consistent	hyperbolic	patient
proportion with higher education	56.8%	41.8%^{**}	43.7%[*]
married	57.6%	42.7%	57.7%
average salary	P 17864	P 13046^{**}	P 12794[*]
proportion smart phone ownership	44.6%	44.5%	38.0%
proportion facebook account	79.9%	79.1%	80.3%
frequency of facebook access	2.44	2.58	2.00
frequency of Jollibee visits	2.13	2.09	2.13

^{***}:significantly different from the time consistent at 1%

^{**}:significantly different from the time consistent at 5%

^{*}:significantly different from the time consistent at 10%

Source: Author's computation

Table 6. Utilization of ATM Sangla

Do you know <i>ATM Sangla</i>	Respondents who answered yes : 297 (93%)
Have you borrowed with <i>ATM Sangla</i> ?	Respondents who answered yes : : 134 (42%) (male: 41 (33% of total male) ; female: 93 (48% of total female))
When did you last borrow with <i>ATM Sangla</i> ?	Within the last 6months : 50 (37%) Between 6months and 1year ago : 23 (17%) More than a year ago : 61 (46%)
Outstanding <i>ATM Sangla</i> debt balance (as of the interview date)	Respondents with outstanding balance : 42 Average balance = PHP14,578.88 (42 responses; range = PHP 1500~PHP 47600)
Sources of <i>ATM Sangla</i> borrowing	Individual money lender : 72 (54%) colleagues : 28 (21%) friends : 21 (16%) neighbors : 8 (6%) relatives : 5 (4%)
Average amount borrowed with <i>ATM Sangla</i>	PHP 15,220 (134 respondents : range= PHP1,000 ~ PHP100,000) = equivalent to 1.3month average salary (133 responses : range = 0.07 ~5.00 months)
average term of <i>ATM Sangla</i> borrowing	5.2 months (134 respondents : range =1week ~ 2 years)
Average monthly repayment amount on payday	PHP 2,702.0 (133 respondents : range PHP 350~ PHP20,000)
Average share of repayment in total salary	34.4% (124 respondents : range = 0.05%~100.0%)
Usage/purpose of most recent <i>ATM Sangla</i> borrowing	Medical expenditure : 28 (21%) Living expenses/consumption : 26(19%)

	<p>Educational expenses : 21 (16%)</p> <p>House repair : 12 (9%)</p> <p>Social, religious expences : 11 (8%)</p> <p>Motor cycle purchase : 5 (4%)</p> <p>Debt repayment : 4 (3%)</p> <p>Other purposes : appliances, personal emergencies, leisure, etc. (total responses : 134)</p>
Average amount borrowed by usage/purpose	<p>Medical : PHP 19,393 (responses : 28)</p> <p>Living expenses : PHP 9,038 (responses : 26)</p> <p>education : PHP 16,476 (responses : 21)</p> <p>house repair : PHP 15,250 (responses : 12)</p> <p>social, religious : PHP 17,727 (responses : 11)</p>
average interest rate	3.02% per month (responses : 134)
(Only for those who have never borrowed from <i>ATM Sangla</i>) Why have you not borrowed with <i>ATM Sangla</i> ?	<p>No need: 141 (76%)</p> <p>Don't want to be in debt: 23 (12%)</p> <p>High interest rate: 16 (9%)</p> <p>Can borrow from relatives with no interest : 4 (2%)</p> <p>others : likely to be denied of loan, don't know a lender, etc. (total responses: 186)</p>
(Only for those who have never borrowed from <i>ATM Sangla</i>) Do you have any intention to borrow from <i>ATM Sangla</i> in the future?	Yes : 65 (35%) ; No : 121 (65%)
How much is the maximum amount that you think you can borrow?	Average = PHP 32,954 (responses: 316 : range = PHP 500~ PHP 100,000)

Table 7. Time Preferences and ATM Sangla Utilization

	time consistent	hyperbolic	patient
purpose of ATM sangla loan			
medical	5.8%	12.7%**	11.3%
education	7.2%	5.5%	7.0%
consumption	7.2%	16.4%**	12.7%
social	5.0%	1.8%	2.8%
Most recent ATM loan borrowing			
within 6 mo	27.1%	47.1%**	37.1%
more than 1 year ago	58.3%	29.4%***	51.4%
source of ATM loan			
private money lender	50.0%	52.9%	60.0%
co-workers	18.8%	21.6%	22.9%
friends	16.7%	17.7%	11.4%
Among those who have NOT used ATM sangla: potential source and intention of borrowing			
proportion intending to borrow	30.8%	40.7%	36.1%
private money lender	42.9%	12.5%**	30.8%
co-workers	17.9%	25.0%	23.1%
friends	10.7%	41.7%***	23.1%

***:significantly different from the time consistent at 1%; ** at 5%; *:10%

Source: Author's computation

Table 8. Time Preferences and Borrowing behavior

	time consistent	hyperbolic	patient
Has outstanding balance			
ATM sangla	8.6%	16.4%*	16.9%*
bank, coops., NGOs, MFIs	5.0%	4.2%	4.2%
gov't Fis (Soc. Sec. Sys./Pag-ibig)	46.0%	43.7%	43.7%
pawnshop/private money lender	4.3%	1.8%	9.9%
relatives/friends/others	13.6%	21.8%*	15.5%
Outstanding balance (peso) [average across all obs.]			
ATM sangla	1,200	2,400	2,550
bank, coops., NGOs, MFIs	7,080	280	870
gov't Fis (Soc. Sec. Sys./Pag-ibig)	29,960	30,750	13,180
pawnshop/private money lender	530	330	1,780*
relatives/friends/others	2,320	1,930	1,130
Outstanding balance (peso) [average across non-zero obs. only]			
ATM sangla	13,950	14,650	15,100
bank, coops., NGOs, MFIs	140,540	15,200	20,670
gov't Fis (Soc. Sec. Sys./Pag-ibig)	67,170	61,490	30,200
pawnshop/private money lender	12,200	17,900	18,100
relatives/friends/others	16,940	8,850*	7,270*

***:significantly different from the time consistent at 1%; ** at 5%; *:10%

Source: Author's computation

Table 9. 2009 Consumer Finance Survey: Characteristics of Households with multipurpose cash loans

	All Regions	Metro Manila
Total number of households	1141 households	329 households
Sex of respondent	Male: 453 (40%), Female: 688 (60%)	Male:116 (35%), Female: 213 (65%)
Average age of respondent	42.35 years old	41.89 years old
Proportion of respondent who are married	969 out of 1141 (85%)	256 out of 329 (78%)
Average household size	5.30 people	5.14 people
Employment Type of Respondent	Employed : 612 (54%) Self Employed : 176 (15%) Homemaker : 218 (19%) Unemployed : 116 (10%) Others : 19 (2%)	Employed : 176 (54%) Self Employed : 47 (14%) Homemaker : 66 (20%) Unemployed : 33 (10%) Others : 7 (2%)
Contract Type of Employed Respondent (if employed)	Permanent : 305 (50%) Temporary/Fixed Term : 73 (12%) No Formal Contract : 196 (32%) Other Employment : 38 (6%)	Permanent : 100 (57%) Temporary/Fixed Term : 28 (16%) No Formal Contract : 41 (23%) Other Employment : 7 (4%)
Level of School of Respondent	No Formal Education : 7 (1%) At most elementary : 449 (39%) At most high school : 352 (31%) At least college : 333 (29%)	No Formal Education : 1 (1%) At most elementary : 89 (27%) At most high school : 112 (34%) At least college : 127 (38%)

*Based on households in the 2009 Consumer Finance Survey with existing multipurpose cash loan and dependent on employment income

Source: Bangko Sentral ng Pilipinas

Table 10. 2009 Consumer Finance Survey: Access to Bank Account

	All Regions	Metro Manila
Owns at least one Financial Asset	Yes: 313 (27%); No: 828 (73%)	Yes: 119 (36%); No: 210 (64%)
Owns a Deposit Account (if with Financial Asset)	Yes: 311 (99%), No: 2 (1%)	Yes: 119 (100%)
Average salary level (per half month of both respondent and spouse)	Php 5,732.21 (2008) (Adj. to 2013 level: Php 6,895.12 ⁺)	Php 8,200.95 (2008) (Adj. to 2013 level: Php 9,501.38 ⁺⁺)

*Based on households in the 2009 Consumer Finance Survey with existing multipurpose cash loan and dependent on employment income

⁺Adjusted using CPI deflator for whole Philippines, ⁺⁺ Adjusted using CPI deflator for Metro Manila

Source: Bangko Sentral ng Pilipinas

Table 11. 2009 Consumer Finance Survey: Sources and Uses of Multipurpose Cash Loan

	All Regions	Metro Manila
Average cash amount borrowed	Php 31,160.51 (2008) (Adj. to 2013 level ⁺ : Php 37,482.12)	Php 38,772.36 (2008) (Adj. to 2013 level ⁺⁺ : Php 44,920.50)
Sources of multipurpose cash loan	Individual money lender : 474 (42%) Gov't financial agencies : 227 (20%) Cooperative : 146 (13%) Non-Bank financial inst. : 139 (12%) Banks : 106 (9%) Friends, relatives, etc. : 49 (4%)	Individual money lender : 120 (36%) Gov't financial agencies : 97 (29%) Non-Bank financial inst. : 36 (11%) Cooperative : 35 (11%) Friends, relatives, etc. : 27 (8%) Banks : 14 (4%)
Uses of multipurpose cash loans	Living exp./consumption : 328 (29%) Debt repayment : 126 (11%) Med. Exp. /emergency: 126 (11%) Educational expenses : 122 (11%) Business startup : 114 (10%) House improvement : 114 (10%) Business expansion : 100 (9%) Purchase home appliances : 32 (3%) Purchase car : 27 (2%) Leisure / vacation / celeb. : 19 (2%) Purchase property : 18 (2%) Foreign job application : 15 (1%)	Living exp./consumption : 101 (31%) Med. Exp. /emergency: 40 (12%) House improvement : 32 (10%) Debt repayment : 30 (9%) Educational expenses : 29 (9%) Business expansion : 27 (8%) Business startup : 25 (8%) Purchase home appliances : 16 (5%) Leisure / vacation / celeb. : 10 (3%) Purchase property : 7 (2%) Purchase car : 6 (2%) Foreign job application : 6 (2%)

*Based on households in the 2009 Consumer Finance Survey with existing multipurpose cash loan and dependent on employment income

⁺Adjusted using CPI deflator for whole Philippines, ⁺⁺ Adjusted using CPI deflator for Metro Manila

Source: Bangko Sentral ng Pilipinas

Table 12. Reduced Form Equation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Do you have any outstanding loans with:					Outstanding Loan Balance with:				
	Banks,					Banks,				
	ATM Sangla	Cooperatives, NGOs, and MFI	Government FIs (SSS/Pag-ibig)	Pawnshop/ Private Money Lender	Relatives/ Friends/ Company/ Others	ATM Sangla	Cooperatives, NGOs, and MFI	Government FIs (SSS/Pag-ibig)	Pawnshop/ Private Money Lender	Relatives/ Friends/ Company/ Others
Hyperbolic Preference	0.0749* (0.0451)	-0.0207 (0.0240)	0.0920* (0.0520)	-0.0126 (0.0293)	0.116** (0.0503)	1.591* (0.950)	-0.627 (1.691)	10.43 (22.11)	0.0744 (0.577)	0.502 (0.997)
Patient Preference	0.0884* (0.0509)	0.00701 (0.0271)	-0.0272 (0.0586)	0.0562* (0.0330)	-0.0153 (0.0567)	1.691 (1.071)	0.130 (1.908)	-21.96 (24.94)	1.697*** (0.651)	-1.568 (1.125)
Age	0.00367 (0.0373)	0.00201 (0.0198)	0.0544 (0.0429)	0.0169 (0.0242)	0.105** (0.0416)	0.0247 (0.785)	-0.573 (1.398)	-39.63** (18.27)	-0.239 (0.477)	0.880 (0.824)
Age-squared	-0.000125 (0.000507)	-0.0000314 (0.000269)	-0.000699 (0.000583)	-0.000272 (0.000329)	-0.00157*** (0.000565)	-0.00281 (0.0107)	0.00997 (0.0190)	0.712*** (0.248)	0.00173 (0.00648)	-0.0153 (0.0112)
Female	-0.00385 (0.0457)	-0.0305 (0.0243)	0.0301 (0.0526)	0.0242 (0.0296)	-0.0560 (0.0509)	0.114 (0.961)	-1.541 (1.711)	-18.24 (22.38)	0.256 (0.584)	-0.596 (1.009)
Married	-0.0747 (0.0550)	-0.0275 (0.0293)	0.0654 (0.0634)	0.0710** (0.0357)	0.0598 (0.0613)	-0.0101 (1.158)	-0.428 (2.063)	40.91 (26.97)	0.446 (0.704)	1.999 (1.216)
Number of Kids	0.00247 (0.0227)	-0.0000291 (0.0121)	0.0317 (0.0261)	-0.0106 (0.0147)	0.0496* (0.0253)	-0.249 (0.477)	-0.546 (0.850)	-33.44*** (11.11)	-0.162 (0.290)	0.412 (0.501)
Living with Parents	-0.0778* (0.0467)	-0.0367 (0.0249)	-0.0507 (0.0538)	-0.0535* (0.0303)	0.0190 (0.0521)	-1.592 (0.984)	-1.521 (1.752)	-22.54 (22.91)	-1.215** (0.597)	0.00767 (1.033)
Regular Employee	0.132** (0.0627)	0.0168 (0.0333)	0.133* (0.0722)	0.0115 (0.0407)	-0.0372 (0.0698)	1.874 (1.319)	-0.355 (2.348)	19.09 (30.70)	1.003 (0.801)	-0.118 (1.384)
Bimonthly Salary	-0.0138** (0.00662)	0.000211 (0.00352)	-0.0183** (0.00762)	-0.00364 (0.00429)	-0.00994 (0.00737)	-0.157 (0.139)	-0.173 (0.248)	5.901* (3.242)	-0.0153 (0.0846)	0.0154 (0.146)
Vocational Education	0.0101 (0.0577)	-0.0235 (0.0307)	-0.0668 (0.0665)	0.0471 (0.0375)	-0.0576 (0.0644)	-0.188 (1.215)	-0.0853 (2.164)	-10.82 (28.30)	0.328 (0.738)	-1.198 (1.276)
At least 1st year College degree	0.00515 (0.0562)	-0.0359 (0.0299)	0.00532 (0.0647)	0.0434 (0.0365)	-0.0604 (0.0626)	0.377 (1.183)	1.911 (2.106)	7.009 (27.54)	0.306 (0.718)	-0.000132 (1.242)
Ever been rejected for a loan	0.237** (0.0965)	0.0263 (0.0513)	0.150 (0.111)	0.116* (0.0626)	0.225** (0.107)	2.864 (2.030)	0.929 (3.615)	14.28 (47.27)	-0.583 (1.233)	5.454** (2.131)
Hometown prov. same as Curr.Res. prov.	0.00436 (0.0476)	0.0125 (0.0253)	-0.0177 (0.0549)	0.0158 (0.0309)	0.0194 (0.0531)	0.166 (1.003)	3.054* (1.785)	4.165 (23.35)	0.567 (0.609)	0.267 (1.053)
Firm A	0.0798 (0.0511)	0.00930 (0.0272)	0.0755 (0.0588)	0.0380 (0.0331)	0.205*** (0.0569)	3.341*** (1.075)	-1.814 (1.914)	1.009 (25.02)	1.283* (0.653)	3.266*** (1.128)
Firm B	0.0814 (0.0567)	0.0445 (0.0301)	0.115* (0.0653)	0.0332 (0.0368)	-0.0295 (0.0632)	0.683 (1.193)	-0.163 (2.124)	7.596 (27.78)	0.382 (0.725)	-0.263 (1.253)
Constant	-0.0645 (0.570)	0.0969 (0.303)	-0.868 (0.656)	-0.292 (0.370)	-1.343** (0.635)	-0.423 (11.99)	8.478 (21.35)	492.7* (279.2)	3.475 (7.283)	-11.32 (12.59)
Observations	317	317	317	317	317	317	317	317	317	317
Adjusted R-squared	0.122	0.148	0.463	0.057	0.100	0.049	0.860	0.122	0.006	0.057

Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.01

Dummy variables for the number of years employed with the company are also included by not reported in this table

Note: 46 percent and 40 percent of respondents with hyperbolic and non-hyperbolic preference, respectively, have used ATM Sangla.

Source: Author's computation

Table 13. Reduced Form Equation (with Current Discount Rate Dummies)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Do you have any outstanding loans with:					Outstanding Loan Balance with:				
	Banks,					Banks,				
	ATM Sangla	Cooperatives, NGOs, and MFI	Government FIs (SSS/Pag-ibig)	Pawnshop/ Private Money Lender	Relatives/ Friends/ Company/ Others	ATM Sangla	Cooperatives, NGOs, and MFI	Government FIs (SSS/Pag-ibig)	Pawnshop/ Private Money Lender	Relatives/ Friends/ Company/ Others
Hyperbolic Preference	0.0477 (0.0510)	-0.0263 (0.0272)	0.0854 (0.0589)	-0.0406 (0.0329)	0.132** (0.0569)	1.180 (1.072)	-2.214 (1.904)	-4.240 (24.96)	-0.337 (0.649)	0.261 (1.124)
Patient Preference	0.0844 (0.0511)	0.00618 (0.0273)	-0.0282 (0.0590)	0.0525 (0.0330)	-0.0117 (0.0571)	1.653 (1.075)	-0.143 (1.910)	-24.83 (25.04)	1.653** (0.651)	-1.560 (1.127)
Current Discount Rate, High Discounter	0.0608 (0.0515)	0.0124 (0.0275)	0.0147 (0.0595)	0.0634* (0.0333)	-0.0323 (0.0575)	0.972 (1.084)	3.458* (1.925)	31.16 (25.24)	0.958 (0.656)	0.642 (1.136)
Current Discount Rate, Medium Discounter	0.0238 (0.0572)	0.00481 (0.0305)	0.00567 (0.0661)	0.0113 (0.0369)	-0.0517 (0.0639)	-0.364 (1.204)	2.483 (2.139)	33.41 (28.04)	-0.158 (0.728)	-1.136 (1.262)
Age	0.000920 (0.0374)	0.00145 (0.0199)	0.0538 (0.0432)	0.0142 (0.0241)	0.107** (0.0418)	-0.0107 (0.787)	-0.742 (1.398)	-41.28** (18.32)	-0.276 (0.476)	0.867 (0.825)
Age-squared	-0.0000806 (0.000509)	-0.0000223 (0.000271)	-0.000688 (0.000588)	-0.000229 (0.000328)	-0.00161*** (0.000568)	-0.00229 (0.0107)	0.0128 (0.0190)	0.740*** (0.249)	0.00230 (0.00648)	-0.0152 (0.0112)
Female	-0.00707 (0.0462)	-0.0312 (0.0246)	0.0293 (0.0534)	0.0224 (0.0298)	-0.0498 (0.0516)	0.149 (0.972)	-1.854 (1.727)	-22.34 (22.63)	-0.470 (0.588)	-0.470 (1.019)
Married	-0.0819 (0.0555)	-0.0290 (0.0296)	0.0637 (0.0640)	0.0622* (0.0358)	0.0600 (0.0619)	-0.195 (1.167)	-0.732 (2.072)	39.21 (27.16)	0.283 (0.706)	1.793 (1.223)
Number of Kids	0.00345 (0.0228)	0.000173 (0.0122)	0.0319 (0.0263)	-0.00894 (0.0147)	0.0508** (0.0254)	-0.199 (0.479)	-0.542 (0.852)	-33.91*** (11.16)	-0.122 (0.290)	0.486 (0.503)
Living with Parents	-0.0765 (0.0473)	-0.0364 (0.0252)	-0.0504 (0.0546)	-0.0540* (0.0305)	0.0131 (0.0528)	-1.673* (0.994)	-1.299 (1.766)	-19.06 (23.15)	-1.267** (0.602)	-0.165 (1.042)
Regular Employee	0.133** (0.0628)	0.0171 (0.0335)	0.133* (0.0725)	0.0138 (0.0405)	-0.0359 (0.0700)	1.937 (1.320)	-0.332 (2.345)	18.71 (30.74)	1.055 (0.799)	-0.0289 (1.384)
Bimonthly Salary	-0.0142** (0.00663)	0.000143 (0.00353)	-0.0184** (0.00766)	-0.00406 (0.00428)	-0.00998 (0.00740)	-0.167 (0.139)	-0.185 (0.248)	5.848* (3.247)	-0.0235 (0.0844)	0.00416 (0.146)
Vocational Education	0.00877 (0.0578)	-0.0238 (0.0308)	-0.0671 (0.0668)	0.0460 (0.0373)	-0.0559 (0.0645)	-0.191 (1.216)	-0.191 (2.160)	-12.06 (28.32)	0.320 (0.736)	-1.177 (1.275)
At least 1st year College degree	0.00988 (0.0566)	-0.0350 (0.0302)	0.00646 (0.0653)	0.0474 (0.0365)	-0.0656 (0.0631)	0.403 (1.190)	2.256 (2.113)	10.87 (27.70)	0.345 (0.720)	-0.0437 (1.247)
Ever been rejected for a loan	0.240** (0.0967)	0.0269 (0.0515)	0.150 (0.112)	0.121* (0.0624)	0.228** (0.108)	2.998 (2.034)	0.952 (3.613)	13.16 (47.36)	-0.474 (1.231)	5.651*** (2.132)
Hometown prov. same as Curr.Res. prov.	-0.00270 (0.0480)	0.0111 (0.0256)	-0.0194 (0.0555)	0.00821 (0.0310)	0.0225 (0.0536)	0.0418 (1.010)	2.669 (1.795)	0.856 (23.53)	0.448 (0.611)	0.172 (1.059)
Firm A	0.0704 (0.0521)	0.00739 (0.0278)	0.0733 (0.0602)	0.0295 (0.0336)	0.214*** (0.0582)	3.260*** (1.096)	-2.453 (1.947)	-5.767 (25.52)	1.185* (0.663)	3.296*** (1.149)
Firm B	0.0782 (0.0568)	0.0438 (0.0303)	0.114* (0.0656)	0.0302 (0.0367)	-0.0267 (0.0634)	0.654 (1.196)	-0.378 (2.123)	5.327 (27.84)	0.347 (0.723)	-0.256 (1.253)
Constant	-0.0471 (0.570)	0.100 (0.304)	-0.863 (0.659)	-0.273 (0.368)	-1.350** (0.637)	-0.100 (12.00)	9.396 (21.31)	500.3* (279.4)	3.781 (7.259)	-11.05 (12.58)
Observations	317	317	317	317	317	317	317	317	317	317
Adjusted R-squared	0.121	0.143	0.460	0.067	0.096	0.048	0.861	0.121	0.013	0.060

Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.01

Dummy variables for the number of years employed with the company are also included by not reported in this table

Note: 46 percent and 40 percent of respondents with hyperbolic and non-hyperbolic preference, respectively, have used ATM Sangla.

Source: Author's computation

Table 14. Reduced Form Equation (with Future Discount Rate Dummies)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Do you have any outstanding loans with:					Outstanding Loan Balance with:				
	Banks,					Banks,				
	ATM Sangla	Cooperatives, NGOs, and MFI	Government FIs (SSS/Pag-ibig)	Pawnshop/ Private Money Lender	Relatives/ Friends/ Company/ Others	ATM Sangla	Cooperatives, NGOs, and MFI	Government FIs (SSS/Pag-ibig)	Pawnshop/ Private Money Lender	Relatives/ Friends/ Company/ Others
Hyperbolic Preference	0.0801* (0.0484)	-0.0151 (0.0258)	0.0896 (0.0558)	0.00347 (0.0313)	0.101* (0.0539)	1.603 (1.022)	0.642 (1.808)	21.01 (23.74)	0.283 (0.618)	0.593 (1.068)
Patient Preference	0.0759 (0.0566)	-0.00104 (0.0302)	-0.0287 (0.0652)	0.0303 (0.0366)	0.0122 (0.0629)	1.644 (1.194)	-1.641 (2.112)	-36.11 (27.73)	1.334* (0.722)	-1.539 (1.247)
Future Discount Rate, High Discounter	0.0232 (0.0578)	0.0188 (0.0308)	-0.00236 (0.0666)	0.0570 (0.0373)	-0.0570 (0.0642)	0.0746 (1.219)	4.184* (2.156)	34.17 (28.31)	0.770 (0.737)	0.124 (1.273)
Future Discount Rate, Medium Discounter	0.0668 (0.0513)	0.00906 (0.0273)	0.0523 (0.0592)	0.0590* (0.0332)	-0.0924 (0.0571)	0.352 (1.083)	1.497 (1.915)	5.367 (25.15)	1.073 (0.654)	-1.671 (1.131)
Age	0.00562 (0.0375)	0.00120 (0.0200)	0.0574 (0.0432)	0.0161 (0.0242)	0.104** (0.0417)	0.0383 (1.791)	-0.782 (1.400)	-41.70** (18.38)	-0.235 (0.478)	0.783 (0.827)
Age-squared	-0.000150 (0.000510)	-0.0000188 (0.000272)	-0.000740 (0.000588)	-0.000257 (0.000330)	-0.00156*** (0.000567)	-0.00299 (0.0108)	0.0132 (0.0190)	0.743*** (0.250)	0.00174 (0.00650)	-0.0139 (0.0112)
Female	-0.00706 (0.0458)	-0.0314 (0.0244)	0.0281 (0.0528)	0.0203 (0.0296)	-0.0509 (0.0509)	0.0987 (0.967)	-1.712 (1.710)	-19.38 (22.44)	0.194 (0.584)	-0.535 (1.010)
Married	-0.0774 (0.0551)	-0.0284 (0.0294)	0.0640 (0.0636)	0.0674* (0.0356)	0.0643 (0.0613)	-0.0224 (1.164)	-0.610 (2.059)	39.62 (27.03)	0.391 (0.703)	2.042* (1.216)
Number of Kids	0.00330 (0.0227)	0.000308 (0.0121)	0.0320 (0.0262)	-0.00932 (0.0147)	0.0481* (0.0253)	-0.246 (0.479)	-0.475 (0.848)	-32.91*** (11.13)	-0.143 (0.290)	0.401 (0.501)
Living with Parents	-0.0672 (0.0475)	-0.0355 (0.0253)	-0.0421 (0.0547)	-0.0448 (0.0307)	0.00481 (0.0528)	-1.536 (1.002)	-1.347 (1.772)	-22.25 (23.26)	-1.052* (0.605)	-0.269 (1.046)
Regular Employee	0.138** (0.0629)	0.0182 (0.0335)	0.137* (0.0725)	0.0182 (0.0407)	-0.0464 (0.0700)	1.903 (1.328)	-0.0794 (2.349)	20.82 (30.84)	1.114 (0.802)	-0.241 (1.387)
Bimonthly Salary	-0.0138** (0.00662)	0.000144 (0.00353)	-0.0182** (0.00764)	-0.00377 (0.00428)	-0.00988 (0.00737)	-0.157 (0.140)	-0.189 (0.247)	5.755* (3.246)	-0.0165 (0.0845)	0.0112 (0.146)
Vocational Education	0.00705 (0.0579)	-0.0246 (0.0309)	-0.0683 (0.0668)	0.0427 (0.0374)	-0.0522 (0.0644)	-0.202 (1.222)	-0.319 (2.161)	-12.52 (28.38)	0.261 (0.738)	-1.153 (1.276)
At least 1st year College degree	0.00568 (0.0563)	-0.0348 (0.0300)	0.00440 (0.0650)	0.0462 (0.0364)	-0.0628 (0.0627)	0.377 (1.189)	2.161 (2.104)	9.152 (27.62)	0.340 (0.719)	0.0322 (1.242)
Ever been rejected for a loan	0.226** (0.0972)	0.0272 (0.0518)	0.137 (0.112)	0.112* (0.0628)	0.237** (0.108)	2.795 (2.051)	1.242 (3.627)	18.41 (47.62)	-0.708 (1.239)	5.856*** (2.142)
Hometown prov. same as Curr.Res. prov.	0.00363 (0.0479)	0.0110 (0.0256)	-0.0164 (0.0553)	0.0117 (0.0310)	0.0227 (0.0533)	0.166 (1.012)	2.697 (1.789)	1.097 (23.49)	0.518 (0.611)	0.220 (1.057)
Firm A	0.0798 (0.0517)	0.00696 (0.0276)	0.0786 (0.0596)	0.0325 (0.0334)	0.209*** (0.0575)	3.348*** (1.091)	-2.364 (1.930)	-3.836 (25.33)	1.223* (0.659)	3.161*** (1.140)
Firm B	0.0745 (0.0570)	0.0437 (0.0304)	0.109* (0.0657)	0.0274 (0.0368)	-0.0202 (0.0634)	0.646 (1.202)	-0.282 (2.127)	7.356 (27.92)	0.275 (0.727)	-0.0823 (1.256)
Constant	-0.121 (0.572)	0.1000 (0.305)	-0.926 (0.660)	-0.316 (0.370)	-1.282** (0.637)	-0.753 (12.08)	9.730 (21.37)	510.3* (280.6)	2.842 (7.303)	-9.428 (12.62)
Observations	317	317	317	317	317	317	317	317	317	317
Adjusted R-squared	0.121	0.143	0.462	0.064	0.102	0.042	0.861	0.120	0.009	0.060

Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.01

Dummy variables for the number of years employed with the company are also included by not reported in this table

[Note: 46 percent and 40 percent of respondents with hyperbolic and non-hyperbolic preference, respectively, have used ATM Sangla.

Source: Author's computation

Table 15. Reduced Form Equation and interaction of Female with Hyperbolic Preferences

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	<i>without gender-preference interaction term</i>							<i>with gender-preference interaction term</i>						
	Used ATM Sangla proceeds to augment consumption	Have lent money to co-workers	Have positive Bank Account balance	Luxury Consumption Index	Owns a Smartphone	Frequency of Accessing Facebook Account	Times in a month to go to Jollibee	Used ATM Sangla proceeds to augment consumption	Have lent money to co-workers	Have positive Bank Account balance	Luxury Consumption Index	Owns a Smartphone	Frequency of Accessing Facebook Account	Times in a month to go to Jollibee
Hyperbolic Preference	0.0594 (0.0383)	0.0657 (0.0636)	-0.0285 (0.0441)	0.163 (0.154)	0.0680 (0.0679)	0.323 (0.356)	0.0465 (0.253)	0.121** (0.0495)	0.0743 (0.0828)	0.0103 (0.0572)	0.247 (0.200)	0.0428 (0.0883)	0.134 (0.463)	0.611* (0.325)
Patient Preference	0.00738 (0.0432)	0.119* (0.0718)	-0.0258 (0.0497)	-0.0420 (0.173)	-0.0388 (0.0766)	-0.184 (0.402)	0.158 (0.286)	0.00739 (0.0430)	0.119* (0.0719)	-0.0258 (0.0497)	-0.0420 (0.173)	-0.0388 (0.0767)	-0.184 (0.402)	0.158 (0.282)
Female	-0.0854** (0.0388)	-0.0512 (0.0644)	-0.0396 (0.0446)	0.132 (0.155)	-0.0428 (0.0687)	0.156 (0.361)	0.499* (0.256)	-0.0421 (0.0446)	-0.0451 (0.0745)	-0.0122 (0.0515)	0.191 (0.180)	-0.0606 (0.0795)	0.0223 (0.417)	0.898*** (0.293)
Female with Hyperbolic Preference	- (0.0715)	- (0.120)	- (0.0826)	- (0.288)	- (0.128)	- (0.669)	- (0.469)	-0.139* (0.0715)	-0.0195 (0.120)	-0.0878 (0.0826)	-0.190 (0.288)	0.0571 (0.128)	0.427 (0.669)	-1.278*** (0.469)
Age	0.0166 (0.0317)	-0.0276 (0.0526)	0.0269 (0.0364)	0.0883 (0.127)	0.106* (0.0561)	0.236 (0.294)	-0.289 (0.209)	0.0174 (0.0315)	-0.0275 (0.0527)	0.0274 (0.0364)	0.0893 (0.127)	0.106* (0.0562)	0.234 (0.295)	-0.281 (0.207)
Age-squared	-0.000345 (0.000430)	0.000421 (0.000714)	-0.000346 (0.000495)	-0.00136 (0.00172)	-0.00147* (0.000762)	-0.00372 (0.00400)	0.00391 (0.00284)	-0.000366 (0.000428)	0.000418 (0.000716)	-0.000360 (0.000495)	-0.00139 (0.00173)	-0.00146* (0.000764)	-0.00365 (0.00401)	0.00371 (0.00281)
Married	-0.0129 (0.0468)	-0.0123 (0.0776)	0.0187 (0.0538)	-0.00348 (0.187)	-0.0342 (0.0828)	-0.269 (0.435)	0.355 (0.309)	-0.0137 (0.0465)	-0.0124 (0.0778)	0.0182 (0.0537)	-0.00453 (0.188)	-0.0338 (0.0829)	-0.266 (0.435)	0.347 (0.305)
Number of Kids	0.0144 (0.0193)	-0.0587* (0.0320)	0.00103 (0.0221)	-0.157** (0.0772)	-0.0760** (0.0341)	-0.295 (0.179)	-0.0194 (0.127)	0.0145 (0.0192)	-0.0587* (0.0320)	0.00104 (0.0221)	-0.157** (0.0773)	-0.0760** (0.0342)	-0.295 (0.179)	-0.0194 (0.126)
Living with Parents	-0.000230 (0.0397)	0.0407 (0.0659)	-0.0343 (0.0456)	0.611*** (0.159)	0.0557 (0.0703)	1.444*** (0.369)	0.711*** (0.262)	-0.000812 (0.0395)	0.0406 (0.0660)	-0.0347 (0.0456)	0.0560 (0.159)	0.0560 (0.0704)	1.446*** (0.369)	0.705*** (0.259)
Regular Employee	0.0403 (0.0532)	0.0315 (0.0884)	-0.0657 (0.0612)	0.558*** (0.213)	0.192** (0.0943)	1.285*** (0.495)	0.150 (0.352)	0.0391 (0.0530)	0.0313 (0.0885)	-0.0664 (0.0612)	0.556*** (0.214)	0.192** (0.0944)	1.289*** (0.495)	0.139 (0.347)
Bimonthly Salary	-0.00780 (0.00562)	0.00536 (0.00933)	-0.00848 (0.00646)	0.0904*** (0.0225)	0.0146 (0.00995)	0.106** (0.0522)	0.177*** (0.0371)	-0.00757 (0.00559)	0.00539 (0.00935)	-0.00833 (0.00646)	0.0907*** (0.0226)	0.0145 (0.00997)	0.105** (0.0523)	0.179*** (0.0367)
Vocational Education	-0.0475 (0.0491)	0.0859 (0.0814)	-0.0261 (0.0564)	0.0834 (0.197)	-0.0139 (0.0869)	0.329 (0.456)	0.0603 (0.324)	-0.0553 (0.0490)	0.0848 (0.0819)	-0.0310 (0.0566)	0.0727 (0.197)	-0.0107 (0.0873)	0.352 (0.458)	-0.0112 (0.321)
At least 1st year College degree	-0.0348 (0.0478)	0.124 (0.0793)	-0.102* (0.0549)	0.254 (0.191)	0.0261 (0.0846)	0.816* (0.444)	0.0918 (0.315)	-0.0330 (0.0475)	0.124 (0.0794)	-0.101* (0.0549)	0.256 (0.192)	0.0254 (0.0847)	0.810* (0.444)	0.109 (0.312)
Ever been rejected for a loan	0.0438 (0.0819)	-0.0352 (0.136)	-0.0829 (0.0942)	-0.148 (0.328)	-0.174 (0.145)	0.0140 (0.761)	0.0140 (0.541)	0.0479 (0.0816)	-0.0346 (0.136)	-0.0803 (0.0942)	-0.142 (0.329)	-0.175 (0.145)	0.102 (0.763)	0.0515 (0.535)
Hometown prov. same as Curr.Res. prov.	-0.0220 (0.0405)	-0.0517 (0.0672)	-0.0430 (0.0465)	0.128 (0.162)	-0.0616 (0.0717)	0.0384 (0.376)	0.659** (0.267)	-0.0154 (0.0404)	-0.0508 (0.0675)	-0.0389 (0.0467)	0.137 (0.163)	-0.0643 (0.0720)	0.0180 (0.378)	0.719*** (0.265)
Firm A	-0.0612 (0.0434)	0.00578 (0.0720)	0.00522 (0.0499)	-0.379** (0.174)	-0.284*** (0.0768)	-0.482 (0.403)	0.128 (0.286)	-0.0649 (0.0432)	0.00525 (0.0722)	0.00288 (0.0499)	-0.384** (0.174)	-0.283*** (0.0770)	-0.471 (0.404)	0.0939 (0.283)
Firm B	-0.00944 (0.0482)	0.0870 (0.0799)	0.0193 (0.0554)	0.0558 (0.193)	-0.0402 (0.0853)	0.516 (0.448)	-0.107 (0.318)	0.00335 (0.0484)	0.0888 (0.0808)	0.0274 (0.0559)	0.0733 (0.195)	-0.0455 (0.0862)	0.476 (0.452)	0.0107 (0.317)
Constant	-0.0886 (0.484)	0.253 (0.804)	-0.129 (0.556)	-2.101 (1.940)	-1.045 (0.857)	-2.265 (4.498)	4.209 (3.197)	-0.113 (0.482)	0.249 (0.805)	-0.144 (0.557)	-2.135 (1.943)	-1.034 (0.859)	-2.188 (4.505)	3.980 (3.161)
Observations	317	317	317	317	317	317	317	317	317	317	317	317	317	317
Adjusted R-squared	-0.003	-0.046	-0.032	0.163	0.068	0.169	0.111	0.008	-0.050	-0.031	0.162	0.065	0.167	0.132

Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01

Dummy variables for the number of years employed with the company are also included by not reported in this table

[Note: 46 percent and 40 percent of respondents with hyperbolic and non-hyperbolic preference, respectively, have used ATM Sangla.

Source: Author's computation

Table 16: Reduced Form Equation with additional control of outstanding loan

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Used ATM Sangla proceeds to augment consumption	Have lent money to co-workers	Have positive balance on Bank Account	Luxury Consumption Index	Owns a Smartphone	Frequency of Accessing Facebook Account	Times in a month to go to Jollibee
Hyperbolic Preference	0.116** (0.0505)	0.0767 (0.0845)	0.00723 (0.0587)	0.305 (0.201)	0.0600 (0.0889)	0.163 (0.468)	0.730** (0.331)
Patient Preference	0.00554 (0.0434)	0.112 (0.0727)	-0.0264 (0.0505)	-0.0215 (0.173)	-0.0353 (0.0765)	-0.137 (0.403)	0.176 (0.285)
Female	-0.0311 (0.0449)	-0.0372 (0.0752)	-0.00996 (0.0522)	0.134 (0.179)	-0.0886 (0.0791)	-0.0827 (0.417)	0.890*** (0.294)
Female with Hyperbolic Preference	-0.145** (0.0720)	-0.0279 (0.121)	-0.0896 (0.0837)	-0.155 (0.286)	0.0681 (0.127)	0.535 (0.668)	-1.290*** (0.471)
Has outstanding loans with ATM Sangla	0.0408 (0.0564)	0.150 (0.0945)	-0.0205 (0.0656)	-0.344 (0.224)	-0.162 (0.0994)	0.00189 (0.524)	-0.638* (0.370)
Has outstanding loans with Rels/Friends/Company/Others	0.0709 (0.0468)	-0.0627 (0.0783)	0.0559 (0.0544)	-0.489*** (0.186)	-0.160* (0.0824)	-0.975** (0.434)	-0.294 (0.306)
Has outs. loans with Banks, Cooperatives, NGOs, and MFI	0.119 (0.0969)	0.135 (0.162)	-0.00750 (0.113)	-0.489 (0.385)	-0.260 (0.171)	-1.350 (0.900)	0.416 (0.635)
Has outstanding loans with Government FIs (SSS/Pag-ibig)	-0.0187 (0.0450)	-0.0181 (0.0754)	-0.00614 (0.0524)	0.00255 (0.179)	0.0640 (0.0793)	-0.0392 (0.418)	-0.196 (0.295)
Has outstanding loans with Pawnshop/Private Money Lender	-0.0359 (0.0855)	-0.148 (0.143)	0.0559 (0.0994)	0.107 (0.340)	0.211 (0.151)	-0.963 (0.793)	0.450 (0.560)
Ever been rejected for a loan	0.0263 (0.0833)	-0.0395 (0.139)	-0.0933 (0.0968)	0.0480 (0.331)	-0.128 (0.147)	0.471 (0.773)	0.235 (0.546)
Age	0.0112 (0.0320)	-0.0182 (0.0537)	0.0210 (0.0373)	0.141 (0.127)	0.116** (0.0564)	0.357 (0.297)	-0.246 (0.210)
Age-squared	-0.000270 (0.000436)	0.000288 (0.000731)	-0.000264 (0.000508)	-0.00218 (0.00174)	-0.00164** (0.000769)	-0.00550 (0.00405)	0.00317 (0.00286)
Married	-0.00788 (0.0476)	0.0179 (0.0797)	0.00951 (0.0553)	-0.0220 (0.189)	-0.0626 (0.0838)	-0.174 (0.442)	0.310 (0.312)
Number of Kids	0.0111 (0.0194)	-0.0569* (0.0325)	-0.000896 (0.0225)	-0.131* (0.0771)	-0.0674** (0.0341)	-0.255 (0.180)	0.00775 (0.127)
Living with Parents	0.00249 (0.0401)	0.0496 (0.0671)	-0.0349 (0.0466)	0.581*** (0.159)	0.0515 (0.0705)	1.362*** (0.372)	0.691*** (0.262)
Regular Employee	0.0372 (0.0538)	0.0110 (0.0900)	-0.0614 (0.0625)	0.590*** (0.214)	0.201** (0.0947)	1.292** (0.499)	0.226 (0.352)
Hometown prov. same as Curr.Res. prov.	-0.0179 (0.0405)	-0.0495 (0.0678)	-0.0407 (0.0471)	0.151 (0.161)	-0.0599 (0.0713)	0.0632 (0.376)	0.713*** (0.265)
Vocational Education	-0.0487 (0.0494)	0.0882 (0.0827)	-0.0309 (0.0574)	0.0337 (0.196)	-0.0295 (0.0870)	0.313 (0.459)	-0.0469 (0.324)
At least 1st year College degree	-0.0229 (0.0479)	0.131 (0.0801)	-0.100* (0.0556)	0.206 (0.190)	-0.00245 (0.0843)	0.743* (0.444)	0.0907 (0.314)
Bimonthly Salary	-0.00679 (0.00570)	0.00596 (0.00954)	-0.00796 (0.00663)	0.0816*** (0.0227)	0.0126 (0.0100)	0.0915* (0.0529)	0.165*** (0.0373)
Firm A	-0.0812* (0.0445)	0.0117 (0.0745)	-0.00862 (0.0517)	-0.255 (0.177)	-0.247*** (0.0784)	-0.215 (0.413)	0.199 (0.291)
Firm B	0.000717 (0.0490)	0.0765 (0.0820)	0.0301 (0.0569)	0.102 (0.195)	-0.0408 (0.0863)	0.534 (0.455)	0.0441 (0.321)
Constant	-0.0549 (0.488)	0.101 (0.818)	-0.0592 (0.568)	-2.727 (1.941)	-1.116 (0.860)	-3.662 (4.532)	3.463 (3.199)
Observations	317	317	317	317	317	317	317
Adjusted R-squared	0.007	-0.054	-0.045	0.184	0.087	0.179	0.134

Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.01

Dummy variables for the number of years employed with the company are also included by not reported in this table

Note: 46 percent and 40 percent of respondents with hyperbolic and non-hyperbolic preference, respectively, have used ATM Sangla.

Source: Author's computation