Impact of Increased Banking Services on Household Welfare

The Case of Banco Azteca in Mexico

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Abstract

I use the rollout of a Mexican bank in 2002, Banco Azteca, which lends small loans to low-income households, to explore whether the recent reports of negative impacts of microloans on borrower welfare is due to the shift in focus of microfinance institutions (MFIs) from small business development and group lending (first generation) toward profitability and general-purpose, individual-liability loans (second generation, such as those offered by Banco Azteca). I use household data from the Mexican Family Life Survey (2002, 2005) and bank branch location data from the National Banking and Securities Commission (2002-2005), and find suggestive evidence that consumption expenditures and asset holdings decrease in municipalities that receive a Banco Azteca branch after three years. This complements results from recent studies that generally show less favorable impacts of MFIs on welfare among second-generation lenders, and suggests that MFIs cannot be thought of as a homogenous group of poverty-alleviating organizations and that second generation MFIs should be evaluated separately from the first generation.

1 Introduction

Providing microfinance to the very poor has been one of the most celebrated innovations in poverty alleviation in the past 30 years beginning with Grameen Bank in Bangladesh.[1] Microfinance has been credited with alleviating poverty (Burgess and Pande 2005), providing funding for capital for new or growing entrepreneurs, and helping households smooth consumption in the face of income and health shocks (Banerjee et al. 2010 and Karlan and Zinman 2010b). In addition, microfinance institutions (MFIs) have targeted women as a way to increase economic efficiency in labor market outcomes (Pitt and Khandker 1998; de Mel, McKenzie, and Woodruff 2008, 2009), as an avenue toward empowerment for female borrowers, and as a more effective way to provide wider social benefits by giving women higher shares of household income (Thomas 1990; Blumberg 1988; Lundberg, Pollak, and Wales 1997; Banerjee et al. 2010). However, evidence suggests that microcredit does not always achieve these goals. Recent news outlets have catalogued stories of borrowers in India committing suicide to escape growing debt and entrepreneurs who have had to return products for which they had paid for in full because of their inability to cover the interest payments (New York Times 2011, Business Week 2007). A recent study of a microfinance institution that lends to women finds no effect on female power in decision-making or consumption expenditures (Banerjee et al. 2013). And Robinson (2001) documents cases in Bolivia where borrowers took out additional loans to keep up with the payment schedule of current loans.

In line with the conflicting evidence, theory also provides a framework within which one could expect that microfinance has both positive and negative impacts on household welfare. Economic theory suggests that access to a new source of credit loosens credit constraints for

[1] Microfinance is the provision of financial services, including both micro-savings and micro-credit, to poor or marginalized populations. In this paper, I am referring primarily to microcredit, though I will interchangeably use microcredit and microfinance.

households that did not previously have access to credit. However, the impacts of loosening credit constraints on household consumption and wealth in both the short and the longer run are ambiguous a priori. On the positive side, access to microfinance eases credit constraints in the long run, allowing for consumption to increase in the short run (Banerjee et al. 2010). Additionally, if the new source of credit offers loans at lower interest rates than households currently have access to, then as households replace their old loans with these new, lower interest loans, the positive income effect may result in higher consumption expenditures in the short run. Looking to more dynamic impacts, households may use the loans to invest in new and existing businesses, which could result in a short term decrease in non-durable consumption while the household invests in assets, but in the longer term these investments could increase household incomes leading to higher consumption expenditures (de Mel et al. 2008, Banerjee et al. 2010).

On the other hand, Stango and Zinman (2007) find that households underestimate or do not understand the true cost of the interest rates, causing them to systematically over-borrow in the short run; this would result in a short term increase in consumption but a decrease in consumption in the long run. Under the assumption of buffer-stock consumers, even if a household does not actually borrow from the new credit source but expects to be able to borrow in the future, they may reduce their holdings of savings or assets in the present period or reduce investment in keeping other lines of credit open (e.g. from friends, family, or work) (Deaton1991; Fulford 2009; Rosenzweig and Wolpin 1993). This would result in a short term increase in consumption, but consumption expenditures may decrease over the longer term because households are not saving or earning returns on as many valuable assets.

As lending to the poor has become more popular, microfinance institutions and banks have been expanding, offering a variety of different microloan contracts to low income

populations, which allows us to gain a better understanding the mechanisms that lead to positive and negative welfare impacts of credit availability Recently, private, for-profit organizations have entered the market, or former non-profit organizations have privatized and begun to offer individual liability loans that look very different from the products offered by the early movers, such as Grameen Bank or BRAC in Bangladesh. Earlier microfinance organizations required loans to be used for business purposes and encouraged transformation in the household. In addition, loans were offered only to peer groups in which members of the same group guaranteed payment of everyone else's loan. This incentivized borrowers to moderate their borrowing behavior and make their regularly scheduled payments (Armendariz and Morduch 2005). Finally, the early non-profit microfinance organizations were often subsidized by donations so that interest rates remained low. However, the second generation of privatized microfinance does not impose limits on loan use, are not as involved in the social and economic development of borrowers, and interest rates tend to be higher than their predecessors (Cull et al. 2007).

Because the second generation of microfinance institutions has turned focus away from productive loans and more commonly offer individual liability loans, it may be more likely that households use the loans in ways that result in worse long term outcomes. Generally, randomized evaluations in which researchers work with microfinance institutions that focus on supporting small business or particular borrowers, such as women, tend to find more positive effects of microfinance (e.g. Angelucci et al. 2013; Crepon et al. 2011). On the other hand, studies which work with organizations that have no such focus tend to find generally more negative impacts on household welfare (Banerjee et al. 2013). One randomized controlled trial that focused on differences in welfare impacts of individual versus group liability loans in Mongolia finds that group lending tends to have more favorable welfare impacts on households

(Attansio et al. 2011). Therefore, the broader availability of loans for the poor that do not focus solely on business development and the increased availability of individual liability loans could be a source of the recently critical reviews of microfinance.

To explore this further, this paper uses the rollout of a Mexican bank in 2002, Banco Azteca, along with household data from the first two waves of the Mexican Family Life Survey (MxFLS), collected in 2002 and 2005, the Mexican National Survey of Household Income and Expenditures (ENIGH) [2] from 1992-2004, and branch location data from the National Banking and Securities Commission[3] (CNBV in Spanish) from 2002-2005 to estimate the impact of a new credit source on consumption expenditures and asset holdings. Grupo Elektra, a popular retail chain, simultaneously opened 815 branches of Banco Azteca in their stores overnight, breaking a world record for most bank branches opened at once and representing 15 percent of the supply of bank branches in Mexico (Bruhn and Love 2011; Ruiz 2011). Two other papers by Love and Bruhn (2011) and Ruiz (2011) also use the introduction of Banco Azteca to estimate impacts on labor supply and consumption smoothing behavior by informal households, respectively. This paper differs from those by focusing on impacts on household expenditure and welfare in the general population.

Banco Azteca is a commercial bank that targets low- and middle- income households with microcredit that individuals can access without proof of income and with low collateral requirements. Though loans from Banco Azteca can be for any purpose in principle, because the branches are located within retail chain stores the loans are most likely to be consumer—"unproductive"—loans. Families mostly used the loans to purchase household luxury items such as a surround sound speaker system, a bicycle, a television, or bedroom furniture (Epstein 2007).

[2] Encuesta Nacional de Ingresos y Gastos de los Hogares in Spanish.
[3] Comisión Nacional Bancaria y de Valores (National Commission of Banking and Securities).

Some families also use the loans to start small businesses, but this is less common. Therefore, focusing on Banco Azteca provides an example of an extreme case in which a bank exclusively offers consumption loans, whereas other studies have focused on banks or MFIs that primarily offer productive loans or a more balanced combination of both consumption and productive loans.

I employ a differences-in-differences framework, controlling for municipality fixed effects to estimate reduced form impacts of the introduction of Banco Azteca on consumption expenditures and asset holdings for those living in affected areas over a relatively long time period. Due to the data available from the MxFLS, I have a measurement of household characteristics, expenditures, and borrowing behavior in mid-2002 and in late-2005/early-2006, 3 years later.

To preview my findings, the introduction of Banco Azteca increased knowledge of banks and other third party sources from which individuals and households can borrow and borrowing also increased. The fact that overall borrowing increased in areas where Banco Azteca entered suggests that borrowers are not substituting away from other forms of borrowing (such as from friends, relatives, or moneylenders) toward bank borrowing, but that new borrowers are entering the credit market. There is suggestive evidence that there were negative impacts on expenditures on non-durable consumption, measured by cereals and on temptation or luxury goods, such as eating meals outside of the home. In addition, there is evidence of decreased expenditures and holdings of assets, measured by furniture and large appliances. While the signs of the estimated impacts are consistently negative across consumption and asset outcomes and specifications, standard errors are large, making many of the estimates statistically insignificant. A general decrease in consumption expenditures is consistent with the theoretical predictions of

a buffer stock economy model, which predicts that, over the long term, consumption and wealth may decrease after credit is initially introduced to a market (Fulford 2009).[4]

The paper proceeds as follows. Section 2 provides background on Grupo Elektra and the rollout of Banco Azteca. Section 3 describes the data sources and discusses sample characteristics of municipalities and households. Section 4 describes the empirical strategy. Section 5 discusses the impacts of the rollout of Banco Azteca on borrowing knowledge and behavior, Section6 discusses the estimated impacts of the entrance of Banco Azteca on consumption and asset holdings, Section 7 exploits variation in the time municipalities were exposed to Banco Azteca to explore dynamic impacts of credit exposure, and Section 8 concludes.

2 Context

In August 2001, Grupo Elektra, one of Mexico's largest retailers for electronics and household goods, requested a bank license from the Ministry of Finance and Public Credit (SHCP in Spanish).[5] On May 23, 2002, Banco Azteca was approved as a Multiple Banking Institution, and on October 26, 2002, its doors were opened to the public. Grupo Elektra simultaneously opened 815 branches of this new bank in all pre-existing Grupo Elektra stores.[6] By December of 2002 there were a total of 824 branches open across Mexico. The locations of the bank branches were selected based on the locations of pre-existing stores, and the branches were opened in all currently open stores. Though the locations for the new branches were not systematically chosen based on areas best suited for making profitable loans, the areas that receive Grupo Elektra stores may differ systematically from those that do not. Therefore, I will

[4] See also Schechtman and Escudero 1977, Clarida 1987, Deaton 1991, and Rabault 2002.
[5] Secretaría de Hacienda y Crédito Público (Ministry of Finance and Public Credit).
[6] In discussions with a Director at Banco Azteca, pinpointing the exact locations and lengths of tenure of the Grupo Elektra Stores is difficult, as the stores often change location within a community as different rental spaces become available and stores change ownership.

adjust for these differences in my preferred estimation specifications by controlling for municipality fixed effects.

The introduction of Banco Azteca had a non-trivial impact on the availability of credit to low income populations. The opening of Banco Azteca branches represented a 15 percent increase in the number of bank branches in Mexico (Ruiz 2011). In addition, Banco Azteca's loan portfolio was large relative to credit disbursed by other comparable microcredit institutions in Mexico at the time. Banco Azteca's loan portfolio also grew quickly, increasing from around USD$196 million when it opened in 2002 to about USD$889 million in the last quarter of 2004. In comparison, the combined portfolio for the largest microfinance institutions in Mexico—ADMIC, Compartamos, FINCOMUN, and Pro Mujer—was USD$444.5 million in the fourth quarter of 2004 (Bruhn and Love 2010). Initially, the loans were only available for store merchandise, but Banco Azteca began offering USD$500 consumer loans that were not tied to the purchase of merchandise in 2003.

The primary interest of this paper is to examine the impact of the Banco Azteca expansion on household welfare in order to learn more about the welfare effects of microfinance expansion. However, Banco Azteca is a for-profit bank, not an MFI, which are typically run by non-governmental Organizations (NGOs). Therefore, it is prudent to discuss why Banco Azteca can be viewed through the same lens one would view an MFI. From the beginning, Banco Azteca catered to low- and middle-income households that are not traditionally serviced by banks.[7] Households in the target population are characterized by individuals that have monthly

[7] The focus on lower income households is a continuation of a tradition from the founding of Salinas and Rocha to provide consumer credit to low income clients to growth the customer base. A formal credit program was established with the founding of Grupo Elektra in 1950 (Grupo Salinas – www.mixmarket.org/sites/default/files/medialibrary/20501.2624/Banco_Azteca_Microfinance.pdf)

incomes below USD$200 and who have a maximum of secondary education level.[8] These individuals comprised 65 percent of the Mexican population in 2003. In order to cater to lower income populations, Banco Azteca does not require proof of income and has low collateral requirements. The basic process to acquire a loan requires the client fill out form, sign a contract, provide official identification, provide a recent payroll statement or income tax form, and provide proof of property ownership (such as a tax form). Banco Azteca does not generally approve the loan if the weekly payments exceed 5 percent of the gross weekly income or 20 percent of the gross monthly income (Grupo Elektra 2003). However, if the individual does not have any proof of employment or land ownership, this does not disqualify him or her from loan approval. According to MicroCaptial.org, almost half of Banco Azteca's clients cannot produce proof of income. Indeed, Ruiz (2011) found that the introduction of Banco Azteca increased bank borrowing among informal households, defined as households in which no core member receives social security benefits, demonstrating that Banco Azteca reached a segment of the population that is generally restricted to borrowing from MFIs or informal money lenders or not at all.

If the potential borrower doesn't have proof of employment or land ownership, Banco Azteca requires an endorsing individual or collateral. An employee of Banco Azteca personally visits the client in his or her home to take an inventory of belongings and assets to determine if the individual is credit worthy. Loan officers have hand held tablets into which they enter the relevant information about the client during the home visit and a program assesses the information and determine whether the individual gets the loan.[9]

[8] Note that the bank does not exclude individuals that have higher incomes or education levels.
[9] Based on conversations with the Director of Investor Relations.

Similar to microcredit institutions, Banco Azteca services small loans with high interest rates, charging an average annual interest rate of around 55% with an effective APR of 110 percent.[10] These rates are high, but prior to Banco Azteca, many of the households serviced by Banco Azteca were restricted to borrowing from pawn shops and moneylenders, which charged interest rates upwards of 220 percent over the same period (Ruiz 2011). Therefore, even at such high rates, there could still be a welfare gain for Banco Azteca clients.[11] Additionally, the rates charged by Banco Azteca are comparable to other Microfinance institutions in Mexico. A recent study, "Microfinance in Mexico" (2011), reports that the average annual interest rate charged to customers in Mexico by microfinance institutions is 80 percent, and the interest rates reported by Banco Azteca are the same as those reported by Compartamos (Angelucci 2013).[12] As of 2004, the maximum loan amount Banco Azteca would service was around USD$900. Repayments are made weekly with three terms to choose from: 13 weeks (chosen by 1 percent of clients), 26 weeks (chosen by 8.29 percent of clients), or 39 weeks (chosen by 90.7 percent of clients) (Grupo Elektra 2003). This is also similar to the repayment plans of traditional MFIs, which find that regular repayment helps clients avoid default.

Overall, Banco Azteca exhibits many attributes that typically characterize an MFI. As an MFI, Banco Azteca would be most appropriately placed among the second generation MFIs that offer individual liability loans that can be used for both productive and non-productive activities. As mentioned, given the branch locations in department stores, it is most likely the case that the loans are used for consumption purchases, as in-store credit lines for expensive items. However,

[10] The interest rate mentioned is based on conversations with officials at Banco Azteca. This is also the estimate commonly used in newspaper articles about the bank.
[11] Karlan and Zinman (2010a) find that an expansion of a credit institution that offered primarily consumer loans at 200 percent APR in South Africa resulted in net benefits to the affected population.
[12] These interest rates are high in comparison with the worldwide average annual interest rates of 28 percent and median annual interest rates of 26 percent for MFIs in 2006.

Grupo Elektra stores sell electronics (such as televisions, radios, and telephones), large appliances (such as washing machines, refrigerators, and ovens/stoves), furniture for the home and office, and other products, which could be used as capital in a small business. Therefore, it is possible that purchases made with the loans in the Grupo Elektra stores are used for business purposes as well as personal consumption.

3 Data

To evaluate that impact of banking services on Mexican households, this paper uses the first two waves of the MxFLS (2002 and 2005), a longitudinal individual and household survey, along with data on branch locations from the CNBV from the fourth quarter of 2002 until the fourth quarter of 2005. I perform some supplementary analysis using the ENIGH surveys from 1992-2004, which is a nationally representative biannual survey of consumption and income in Mexico households.

MxFLS collects information on household assets, consumption expenditures, labor decisions, family business and agriculture activities, individual time use, borrowing history, and household decision-making, among other topics. In addition to data collected on households and individuals, there are community surveys that contain information on community infrastructure, health facilities, local schools, credit institutions, etc. The first wave of the MxFLS (MxFLS-1) was conducted in the first half of 2002 and covers 8,441 households and 35,000 individuals across 150 Mexican communities; the second wave (MxFLS-2) was conducted in late 2005 to early 2006. Therefore, the MxFLS-1 was collected a minimum of two months prior to the opening of Banco Azteca, and MxFLS-2 collects follow-up data about three years later.

The span of time between surveys means that I will be primarily estimating long term estimates of the impact of increased credit access on household welfare. Looking at long term

impacts allows time for the banks to become established in the communities and for any potential benefits from loans to manifest themselves. For example, it is likely that it takes one to two years to fully realize the returns to a small business investment (Banerjee et al. 2013). At the same time, there are likely dynamic effects on consumption. When the bank first enters, there may be an increase in consumption in the short term, but if this consumption increase is unsustainable borrowing against future income, then in the long term overall consumption could decrease (Banerjee et al. 2013). Because of the longer time span between the opening of the banks and the follow-up questionnaire, if this pattern of consumption is the case, we will likely only see the decrease in consumption. Even for households that do not take out loans, the longer presence of the bank at follow-up could give households time become aware of the bank and the services it provides and to incorporate the increased loan availability into household expenditure decisions.

I constructed a household level dataset from the MxFLS for analysis of the impact of Banco Azteca on borrowing behavior and consumption outcomes. The sample is restricted to households that have location identifiers associated with their record and that have a head of household that is present in the first wave of the MxFLS, that is between the ages of 18 and 65, and that has marital status and educational attainment information in the data. In addition, I restrict to households that have at least one member that responded to questions about borrowing behavior. As the questions about borrowing behavior are targeted to individuals, I combine the borrowing behavior and reported knowledge of individuals in the same household to create two indicators for the household as a whole. At the end of the sample restrictions, the analysis includes 12,448 households—4,616 households from non-Banco Azteca Municipalities over the two years, 7,832 from Banco Azteca Municipalities. The distribution of households and

individuals across the municipalities in the MxFLS correctly reflects the higher average populations in the Banco Azteca municipalities previously discussed.

Table 3 shows sample characteristics of household sample. All means are weighted using MxFLS household sampling weights, and the means are presented separately for non-Banco Azteca and Azteca municipalities over the two years to show how demographics differ across municipalities and over the two years. Household heads in Banco Azteca Municipalities are about 1 percentage point more likely to be female, one year younger on average, and a 6 percentage points less likely to be married. However, household heads are also about 8 percentage points more likely to both hold a high school degree or college degree. The high education levels of household heads in the sample reiterate the higher school attendance and literacy rates in Banco Azteca municipalities shown in Table 2(B).

I use data from the CNBV to identify the municipalities sampled in the MxFLS in which Banco Azteca opened a branch. The data is available quarterly at the level of the locality, which is similar in concept to a township in the United States; however, the MxFLS scrambles the locality identifiers so that they cannot be accurately matched to outside data sources. Therefore, I aggregate the CNBV data to the municipality level to report the number of branches in each municipality in Mexico.[13] The MxFLS sample of municipalities used in this analysis includes 16 states and 136 municipalities.

Table 1 shows the number of municipalities that receive at least one Banco Azteca branch along with some summary statistics regarding the number of branches based on the data from the

[13] A municipality in Mexico is akin to a county in the United States. There are 32 states and, as of December 2005, there were 2,454 municipalities in Mexico. The average number of municipalities in a state is 76. The state with the most municipalities is Oaxaca with 570 municipalities and the state with the least municipalities is Baja California Sur with 5. The average population of a municipality was 45,758. The most populous municipality has a population of 1,815,786 and the least populous municipality has a population of 93. Therefore, there is wide variation in the size of municipalities

CNBV. Of the 136 municipalities in my sample, 63 municipalities received a Banco Azteca Branch in 2002, and by 2005 this number had increased to 67. As will be discussed in more detail later, 69 municipalities received Banco Azteca Branches between 2002 and 2005 overall, with branches opening and closing over the time period. The average number of branches per municipality in the fourth quarter of 2002 was 6.4; by the fourth quarter of 2005, this number had increased to 7.5, suggesting that the treatment of receiving a bank branch may have intensified over time in some municipalities.

Along with interviewing households, MxFLS also does surveys of community infrastructure. While these surveys are given at the level of locality, I again aggregate the data to the municipality level to match it to the CNBV branch location data. Table 2(A) utilizes these data to look at the availability of banking services across Banco Azteca and Non-Banco Azteca municipalities. 'Bank Access' is a variable that is equal to one if at least one locality within the municipality has access to a bank. Likewise, 'Bank in community' is a variable that is equal to one if at least one locality in the municipality has a bank located within its boundaries. Therefore, for Non-Banco Azteca municipalities in 2002, 25 percent of the municipalities have at least one locality that has access to a bank. The value given for the number of banks in rows 5, 6, and 7 is equal to the average number of banks per municipality for non-Azteca and Azteca municipalities.

Table 2(A) clearly shows that municipalities that received Banco Azteca branches already had better access to banks. However, Banco Azteca municipalities also had a much greater increase in access from 2002 to 2005. Column 7 shows a simple DD estimate of the means in columns 1 through 4. Although there was greater bank access in Banco Azteca municipalities in 2002, there was also a statistically significant increase of 20 percentage points

in access within communities in Azteca municipalities. This represents a 46 percent increase in the probability that an Azteca municipality has at least one community with access to a bank from the baseline mean of 43.48 percent. The fact that the increases in access to banking services in Azteca municipalities is significantly larger than the increases in non-Azteca municipalities alleviates some of the concern that these municipalities had better access in 2002.

4 Empirical Strategy

The main specification will employ a difference-in-difference (DD) strategy, given by

$$y_{imt} = \alpha + \delta(Azteca_m \times T2005_t) + \theta T2005_t + Z'_{mt}\beta + X'_{it}\gamma + \varepsilon_{imt} \qquad (1)$$

where y_{imt} is the outcome of interest for individual i in municipality m at time t. The variable $Azteca_m$ is an indicator for having adopted Banco Azteca by 2005 and is time invariant for municipalities in the MxFLS, $T2005_t$ is equal to one in 2005, and $(Azteca_m \times T2005_t)$ is an indicator equal to one for municipalities that received at least one Banco Azteca branch by 2005. Z_{mt} is a vector of municipality characteristics and X_{it} is a vector of household characteristics. In the specifications estimated, Z_{mt} contains full set of municipality fixed effects or a full set of municipality fixed effects and a vector containing municipality population, per capita income, infant mortality rate, the literacy rate, the rate of school attendance. The municipality fixed effects control for any time invariant differences between municipalities that maybe correlated with Banco Azteca branch location.[14] The additional municipality controls are included because of the disparities in development and bank access between Azteca and non-Azteca Municipalities seen in Tables 2(A)-2(B). X_{it} is a vector containing data on the gender, age, marital status and education of the household head. For all specifications, I cluster the standard errors at the

[14] Or, more correctly, location of Grupo Elektra stores, which determined the locations of the bank branches.

municipality level, which is the level of treatment (Bertrand, Duflo, and Mullainathan 2004). I use household weights constructed for MxFLS-1 in all specifications.

I classify a municipality as a "Banco Azteca" municipality if a branch entered the municipality at any time between 2002 and 2005; however, it is possible that this could count municipalities as having a Banco Azteca branch for which the branch closed in the middle. Over the whole sample period, there are 69 (out of 136) municipalities in the sample that have a positive number of Banco Azteca branches in at least one quarter between December 2002 and December 2005. Looking at Table 1, there are 63 municipalities with Azteca branches in 2002 and 67 with branches in 2005, implying that some municipalities receive and lose branches over the period. MxFLS survey participants are only asked about borrowing in the last 12 months, so if any Municipalities received a Banco Azteca Branch in 2002 or later that closed more than 12 months before MxFLS-2, this measure of Banco Azteca presence would count the individual as treated, even though they could not have borrowed from the bank in the time frame asked in the survey. This is the case for two municipalities. Nevertheless, the fact that the municipality had a Banco Azteca branch at one point may have impacted borrowing behavior and subsequent consumption outcomes, so I count those municipalities as treated in my estimation.[15] This means that the estimated impact of the bank entrance will be combining effects in municipalities that received full and partial treatment, which may cause downward bias in the treatment effect, making the estimated effect a lower bound. Later, I exploit the fact that some municipalities received Banco Azteca Branches later than others to provide some evidence of the dynamic impacts of increased credit.

[15] Of the 69 municipalities that received at least one Banco Azteca Branch in the sample, 63 municipalities had at least one branch for the entire time period from December 2002 to December 2005. Two municipalities received Azteca branches in 2002 but they had closed by 2005, and four municipalities received Azteca branches after 2002 and had branches in 2005.

There are two key assumptions for DD estimates to provide causal estimates of a treatment effect: (1) no difference in trends of outcomes of interest across the control and treatment groups; (2) no compositional change in the treatment and control groups. The first key identifying assumption for DD to provide a causal estimate of the treatment effect—in this case the impact of Banco Azteca on household and individual borrowing behavior—is that borrowing trends in treated (Azteca) and untreated (non-Azteca) municipalities prior to the treatment are identical. Unfortunately, the MxFLS only provides data from 2002 and 2005 so that it is impossible to use this data to look at trends in borrowing prior to 2002. Therefore, I supplement this analysis with data from the Human Development Index of Mexican Municipalities (HDIMM) and the National Survey of Income and Expenditures (ENIGH). While the HDIMM still only has two years of data (2000 and 2005) and cannot help examine pre-trends, I use this data to check that nothing is changing across the treatment and control municipalities that we would not expect to change as a result of Banco Azteca. If something unexpected does change, then we might worry that this change could be responsible for any impact on consumption patterns we find in the later analysis. The ENIGH contains information on household expenditures and income starting in 1992 on a biennial basis, with more detailed expenditure information collected beginning in 2000, so I am able to do a more traditional check of trends prior to the rollout of Banco Azteca using this data—though the data remains limited.

To start, I use data from the HDIMM from 2000 and 2005 to compare characteristics in Azteca and non-Azteca municipalities before and after Banco Azteca enters. Table 2(B) shows that although the Banco Azteca municipalities are better off than those that do not in 2000—higher literacy, lower infant mortality, higher educational attainment, higher per capita income—there is no differential trend in these variables between 2000 and 2005, as is shown by the simple

difference-in-difference estimator of the raw means presented in column 7 of Table 2(B). In this context the standard difference in difference estimator would be given by

$$DD = \left(\bar{Y}_{2005}^{Azteca} - \bar{Y}_{2000}^{Azteca}\right) - \left(\bar{Y}_{2005}^{No\ Azteca} - \bar{Y}_{2000}^{No\ Azteca}\right)$$

where $\bar{Y}_t^m$ is the sample mean of the variable of interest in year t and municipality type m. However, in order to emphasize that the difference between the Banco Azteca and non-Banco Azteca municipalities in 2002 and 2005 do not change differentially over that period, I have rearranged the terms, as shown in columns (5) and (6), to instead be

$$DD = \left(\bar{Y}_{2005}^{Azteca} - \bar{Y}_{2005}^{No\ Azteca}\right) - \left(\bar{Y}_{2000}^{Azteca} - \bar{Y}_{2000}^{No\ Azteca}\right).$$

Female per capita income is the only dimension along which there appears to be a change, though only at the 10 percent significance level; however, this could be a reflection of increased access to credit for females as a result of Banco Azteca. Overall, Table 2(B) shows that the entrance of Banco Azteca does not seem to have affected outcomes that we would not have expected it to have affected.

As an additional check on comparability between Banco Azteca and non-Banco Azteca municipalities, I use the Mexico ENIGH data to explore pre-trends in household income and expenditures. There are a couple caveats to keep in mind regarding the comparability of the ENIGH data to the MxFLS data. The first is that the ENIGH data is a random sample of households to create a nationally representative sample; therefore, while there is some overlap in the municipalities included in the ENIGH data and the MxFLS data, the overlap is not perfect.[16] In addition, since the ENIGH survey is a repeated cross section, the number of overlapping municipalities varies from year to year.

[16] The ENIGH is sample to be representative at the National level and for Rural and Urban areas. This means that the sample may not remain representative when splitting the sample along other characteristics, such as the one made here between Banco Azteca and Non-Banco Aztea municipalities.

Figures 1(a) and 1(b) present trends of per capita household expenditures and per capita household income in 2005 Mexican Pesos. Figure 1 again shows that Banco Azteca municipalities are richer on average. The trends post-1996 are relatively similar, though the Banco Azteca Municipalities reached a higher peak. Figure 1(c) shows similar chart for household food expenditures. Again, the post-1996 trends are relatively similar, though Banco Azteca Municipalities remain better off over the whole period. Unfortunately, information on these more specific expenditure categories (e.g. cereals, tobacco, food eaten outside the household, transportation, and furniture or large appliances) did not begin to be collected until 2000 so I am only able to compare the change in expenditures from 2000 to 2002 across Banco Azteca and non-Banco Azteca Municipalities. In general, the sign of the trend-line slope from 2000 to 2002 is the same for these more specific food categories.[17] Combining evidence from these figures with the analysis of the HDIMM data, I will proceed with the analysis.

The second assumption ensures that individuals are not moving from the control to the treatment group to take advantage of the treatment (or vice versa). Movement of households to benefit from Banco Azteca credit availability is unlikely as the presence of Banco Azteca will be most visible to households that already shop at the Grupo Elektra stores in which the banks are located and to households that are located near to store branches and receive advertising. While it is difficult to test this assumption using the ENIGH data due to the changing sample from year to year, I explore the possibility of composition change in the MxFLS data. Of the 7,571 households that are present in both waves of the MxFLS, only about 28 households move to new municipalities, and among these there is no systematic pattern of moving to or from Banco Azteca Municipalities.

[17] Figures available upon request.

5 Impact of Banco Azteca on Borrowing

To expect there to be impacts of Banco Azteca on consumption expenditures and asset ownership, it must be the case that the entrance of Banco Azteca had an impact on borrowing behavior. I explore the first stage impacts of Banco Azteca on borrowing in this section. The impact of the entrance of Banco Azteca on borrowing has also been documented in Ruiz (2011).

6 Sample Borrowing Characteristics

Table 4 presents information on borrowing behavior in Banco Azteca and non-Banco Azteca municipalities at the household level. A lender encompasses all potential sources of borrowing, such as banks, cooperatives, moneylenders, friends, relatives, work, pawn shops, credit programs, government programs, and other sources. In the analysis, I look at both knowledge of lenders and actual borrowing. I do this because of evidence that there is underreporting of borrowing behavior. Karlan and Zinman (2007) find that there is a stigma associated with borrowing from high interest lenders and that as a result nearly 50% of borrowers do not report their borrowing behavior in comparisons of administrative and survey data from a for-profit credit institution in South Africa. Based on my conversations with a microfinance practitioner in Mexico, there is a similar stigma against borrowing from private institutions in Mexico as well. As a result, there could be substantial underreporting of borrowing behavior, particularly borrowing from banks.

Even if there is not underreporting of borrowing from banks in the past 12 months, as of the second MxFLS survey Banco Azteca branches had been in some municipalities for up to three years. In these cases, individuals that know they can borrow from a bank but do not report borrowing may have borrowed and settled the loan prior to the previous 12 months. Looking at changes in knowledge, which is less likely to be underreported and can also reflect previous

borrowing behavior, gives us another view of how the entrance of Banco Azteca impacted borrowing.

Columns (1) and (3) of Table 4 show baseline knowledge and borrowing behavior of households in 2002. Overall knowledge of lenders is almost the same in non-Azteca and Azteca municipalities, with 56 percent and 55 percent of households having at least one member that knows of a place from which to borrow, respectively. Borrowing rates from all sources are actually slightly higher in non-Azteca municipalities in 2002, with 23 percent of households reporting at least one member borrowed versus 19 percent of Azteca households.

Rows 3 and 4 look specifically at bank borrowing. Households in Banco Azteca municipalities are more knowledgeable of banks than households in non-Azteca municipalities. In 2002, households in Azteca municipalities were about 4 percentage points more likely to know of a bank than households in non-Azteca municipalities. Likewise, households in Azteca municipalities are three times more likely to borrow from a bank in 2002 than households in non-Azteca municipalities. Notably, Although rates of borrowing from all sources actually decreases between 2002 and 2005 (see row 2), row 4 shows that rates of bank borrowing actually increase—from 0.62 percent to 2.1 percent of the population in Banco Azteca municipalities and from 0.2 percent to 0.73 percent of the population in non-Banco Azteca municipalities. Comparing the borrowing rates in non-Azteca and Azteca municipalities in Table 4 suggests that the opening of Banco Azteca caused an increase in the probability that a household borrows by about one percentage point. While this is a small impact, it represents a 160 percent increase in borrowing from the baseline mean of 0.6 percent, which is nontrivial.[18]

[18] One striking feature of the data is that less than one percent of the sample borrows from banks in contrast to borrowing rates of about 20 percent overall (see Table 4). While it is not surprising that not everyone is borrowing from banks, the size of the disparity is large. Panels 1 and 2 of Table A.1 show the breakdown of borrowing activity across different potential sources of loans for the subsample of borrowers in the MxFLS sample. Panel 2 shows that,

It is common to have low treatment take-up in studies looking at the impact of credit expansion on borrowing behavior—with the exception of papers that focus on randomized loan approval from a pool of applicants (see Karlan and Zinman, 2010a). In a setting more similar to the current one, Pitt and Khandker (1998) examine the impact of pre-existing MFIs on consumption outcomes. Due to low rates of borrowing in the population, Pitt and Khandker oversample households that were eligible for loans from the MFIs to ensure they would have enough borrowers in the sample to consistently estimate impacts of borrowing.

7 DD estimates of the impact of Banco Azteca on borrowing

Table 5 presents linear probability model regression estimates, using equation (1), of the impact of the entrance of Banco Azteca on knowledge of lenders, knowledge of banks, and on actual borrowing from banks and other sources. Each column of the table represents a different outcome, and each panel shows the regressions using a different specification, for which I am gradually adding additional controls. The first panel includes only municipality fixed effects, the second panel adds the household head controls (age, gender, marital status, and education level), and the final panel adds additional municipality controls (population, infant mortality rate, literacy rate, school attendance rate, and per capita income). The additional municipality controls are included because there could be concern about trends in municipality characteristics that impact household welfare but would not be due to the entrance of Banco Azteca, which would cause bias in the causal estimate. However, I am also concerned that one or more of the controls may be impacted by the entrance of Banco Azteca in the second period. For example

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by far, the most common sources of loans are relatives, with 30 percent of borrowers citing relatives as their lender in both Azteca and Non-Azteca municipalities in 2002, and friends, with 35 percent of borrowing in non-Azteca municipalities and 20 percent of borrowing in Azteca municipalities in 2002 being attributed to friends. Therefore, it seems that a substantial share of borrowing in Mexico occurs within families. Moneylenders and cooperatives are also more common sources for loans, with between 5 and 15 percent of borrowers reporting loans from these sources depending on loan type and whether the borrower is from a Banco Azteca municipality.

average per capita income in the municipality may have increased from 2000 to 2005 because of the new bank. If this is the case, then my causal estimate would again suffer from bias (Rosenbaum 1984). The main reason I would want to control for these characteristic's post-treatment levels is if one of the characteristics changed significantly from its pre-treatment level; however, as discussed previously there does not appear to be substantial changes of the HDIMM measures during the time period. Therefore, my preferred specifications are those in the second panel, in which municipality fixed effects and household controls are included, but I will show both estimates throughout my analysis.

The entrance of Banco Azteca increases the knowledge of a bank by about 10 percentage points across specifications. This represents an increase of knowledge of about 68 percent based on the baseline knowledge in 2002 in Banco Azteca municipalities, shown in Table 4. Therefore, there is a significant increase in knowledge of a formal banking institution in Banco Azteca municipalities, even with the full set of household and municipality controls. This impact is similar in magnitude to the impact on overall borrowing knowledge, which is estimated to be a 14 percentage point increase across specifications, until the last specification with the full set of household and municipality controls.

The third column of Table 5 shows that Banco Azteca municipalities had a differential increase of about 6.5 percentage points in the probability of taking out a loan from any source. In the first two panels, this estimate is statistically significant at the 5 percent level; however the last specification with the full set of household and municipality controls, the point estimate falls to 4.25 percent and loses statistical significance. Although the point estimate for bank borrowing in column 4 is smaller than for borrowing overall, the estimates are more precise. In particular, bank borrowing increased by about 1 percentage point due to the entrance of Banco Azteca, with

estimates ranging from 0.96 to 1.26 percentage points. The largest estimate comes from the specification with the full set of household and municipality controls. I also ran these specifications using a probit model to check robustness of the Marginal effects. The results from this are qualitatively similar to the results from the linear probability models shown in Table 5, excepting the estimated impacts on borrowing from a bank for which the estimates were not statistically significant and close to zero.[19]

8 Results

Tables 6 and 7 show sample means expenditures across several consumption and asset categories, respectively. Table 6 shows average expenditures on cereals in the past 7 days (pasta, rice, crackers, legumes, flour, corn flour, etc.), tobacco products in the past 7 days, meals eaten outside the home in the past 7 days, transportation/festivals in the past year (expenditures on funerals, vacations, parties, insurance, and moving or other transportation services), and expenditures on small electronics (TV, radios, cameras, etc.) in the past year. These consumption items can be grouped into two over-arching categories based on the predicted expenditure impacts in the previous section: non-durable consumption (cereals) and temptation goods (tobacco, meals outside home, festivals, and electronics). Across all expenditure categories, households in Banco Azteca municipalities have higher baseline expenditures on average than households in non-Azteca municipalities in 2002.

Table 7 presents summary statistics for household assets expressed two different ways. The MxFLS asks both about expenditures on durable goods/ assets in the past year and about the value of current asset holdings. I treat expenditures on assets in the past twelve months and

[19] I also ran a linear probability specification with household fixed effects. The point estimates remain stable, though they become insignificant for the estimates of the impact of Banco Azteca on borrowing from any lender and borrowing from a bank. Tables available upon request.

current asset holdings separately in my analysis. While the latter tells us what has happened to assets on average over the whole time period, the former gives us insight into the timing of increases or decreases in asset holdings. Panel 1 provides information on asset expenditures in the past year, while panel 2 provides information about actual asset holdings. Note that while electronics are considered temptation goods here, expenditures on electronics could also naturally be considered expenditures on assets, so the value of electronic holdings are listed under assets. Similar to consumption expenditures, in 2002, households in Banco Azteca municipalities are more likely to have positive expenditures on electric domestic appliances and furniture on the extensive margin and to have spent more on these goods in the past year than households in non-Azteca municipalities.[20] Likewise, households in Azteca municipalities are more likely to own these durable goods at baseline and for the goods that they own to be of higher value than households in non-Azteca municipalities.

9 Non-durable Consumption

I use expenditures on cereals, a common staple good in Mexican households, to provide evidence of changing expenditures on non-durable consumption goods. Theory predicts ambiguous impacts on non-durable consumption. Table 8 is organized in the same way as Table 5. The first column of Table 8, panel (A) there is no change along the extensive margin of expenditures on cereals, which is what we would expect given that cereals comprise such an important part of the Mexican diet. However, panel (B) shows that there is evidence of a negative impact on actual expenditures. Although the treatment effect is negative across all specifications, the estimate is not always statistically significant. Looking at the estimate in the specification with a full set of municipality fixed effects and household controls, I estimate that

[20] Large appliances include washing machine, stove, refrigerators, etc. Electrodomestic appliances include blenders, irons, toasters, etc. Extensive margin means are available upon request.

there is about a 1.23 MXN[21] decrease in expenditures on cereals. This represents a 10 percent decrease from average expenditures in Banco Azteca municipalities in 2002. Therefore, there seems to be a decrease in non-durable consumption expenditures.

9.1 Temptation Goods

Column 2 of Table 8 shows the impact of Banco Azteca on expenditures on temptation goods. Because many microfinance institutions require weekly repayments, they can act as a commitment device to help households avoid temptation goods (i.e. tobacco, alcohol, eating out, or festivals) (Banerjee et al. 2010). If households derive more utility from long term investments but instead use money on the small temptation expenditures due to time inconsistent preferences, then consumption may become more efficient once credit becomes available since households may make better savings and investment decisions today. Therefore, we may expect expenditures on temptation goods decrease as a result of increased access to credit.

Panel (A) presents evidence that Banco Azteca decreased the probability of having positive expenditures on all four temptation categories, this this impact is only statistically significant for festivals and tobacco expenditures. The probability of spending a positive amount on tobacco or festivals decreased by about 2.6 and 5 percentage points, respectively, representing a 12 percent decrease and a 22 percent decrease from baseline. Panel (B) of Table 8 shows impacts on actual expenditure levels. There is suggestive evidence that there is a decrease in expenditures on tobacco, eating outside of the home, and festivals, but the estimates are not statistically significant. For example, the estimated impact of Banco Azteca on expenditures on festivals ranges between a 35 to a 37 MXN decrease; however, standard errors are large so I cannot rule out zero or even positive impacts.

[21] Mexican pesos

As Banco Azteca branches are linked with a retail chain that primarily sells electronics, we might think that expenditures on these items would increase, as they have become effectively less expensive, and that the decreases in other consumption expenditures simply reflect substitution toward the newly less expensive electronic goods. However, the estimates of the impact of Banco Azteca on electronic expenditures are negative in the first two specifications. Though it becomes positive in the third specification, it remains statistically insignificant. Therefore, there is not compelling evidence that expenditures have increased on these items.

Overall, the direction of estimated impacts on expenditures on temptation goods are negative, consistent with the story that borrowing may induce better discipline and help households to avoid frivolous expenditures. However, large standard errors prevent making concrete conclusions.

9.2 Assets

Table 9 presents impacts of Banco Azteca on durable goods expenditures in the past 12 months (columns 1 and 2) and asset holdings (columns 3, 4, and 5). There were no statistically significant extensive margin impacts on asset expenditures or holdings, though all estimates are negative except for electronics holdings.[22] Table 9 shows evidence that household expenditures on furniture in the 12 months prior to the survey decreased in Banco Azteca Municipalities, though the effect loses statistical significance and shrinks to half the magnitude when the full set of household and municipality controls are used. With the exception of the final specification, the estimated impact on furniture expenditures ranges from a decrease of 65 to 37 MXN, with estimates statistically significant at the 1 percent level. Actual furniture holdings (Panel B, column 4) in the household also appear to be decreasing, though the impacts are not statistically

[22] Results available upon request.

significant. One aspect of the data that could be covering a decrease in furniture asset holdings is that, while the expenditure on durable goods separates furniture from large appliances and groups large appliances (e.g. stoves, refrigerators) with smaller electrodomestic appliances, the asset holdings questions groups furniture with large appliances, leaving electrodomestic appliances to cover only small appliances.[23] Therefore, since there appears to be positive impacts on electrodomestic appliances, grouping them with furniture in the asset holdings measure may be masking the decrease in furniture holdings. The decline in furniture expenditures may present evidence in favor of the story of households shedding assets due to knowledge of increase borrowing opportunities, but to have full confidence in this story, I would have also liked to see decreases in actual furniture holdings.

While the estimates are not statistically significant, column 5 shows an increase in the value of electronic holdings. One explanation that could reconcile this with the finding of generally negative impacts on electronics expenditures in the past year is that households in the Banco Azteca Municipalities may have made electronics purchases using loans when the stores first opened, thereby increasing current holdings. There are also positive impacts on electro-domestic appliances, which could also reflect that households use the loans to purchases goods from the Grupo Elektra Stores. However, due to high interest rates they paid back loans and interest and households had less disposable income, expenditures on these items, along with other expenditures decreased.

10 Exploring dynamic impacts of Banco Azteca

Overall, the introduction of Banco Azteca had a positive impact on knowledge of sources of credit and on borrowing. The fact that borrowing increased not only from banks but from all

[23] A decrease in past year expenditure does not necessarily imply a decrease in actual asset holdings, though the two could be associated.

sources suggests that the increase in borrowing was due to new borrowers and not previous borrowers changing borrowing sources due to the entrance of Banco Azteca. Most of the estimated impacts of Banco Azteca on consumption expenditures and assets are negative; though most estimates are not statistically significant, the signs are generally stable across specifications. In interpreting these results, it is important to keep in mind that we are measuring consumption outcomes as many as 3 years after the bank branch opened in the municipality. Therefore, it is possible that consumption expenditures may have increased in the short run. Indeed, one potential explanation for the decrease in consumption expenditures hinges on this point.

Given the context of this credit roll out and the measures along which I am looking, I will focus on two potential explanations for a long term decrease in consumption expenditures. The first explanation is that borrowers may have borrowed unsustainably against future income, perhaps because they did not understand the term of the loan or overestimated the return on an investment (Banerjee et al. 2010). In this case, borrowers may be dedicating a large share of their income toward the loan and interest payments or may have fallen behind on payments so that there are extra fees. Either way, this results in less disposable income in the 2005 period to spend on other consumption goods, decreasing expenditures. Evidence that this may have been occurring is shown in tables 8 and 9. Table 8 provides evidence that expenditures on electronics (column 5) have decreased in the past twelve months. However, Table 9 shows that the total value of electronics (column 5) has increased in Banco Azteca municipalities. This could support the idea that borrowers took out loans to purchase stereos, TVs, or other such electronics when the banks first opened—items that are primarily available in the Grupo Elektra stores—and now have less disposable income to spend on those items and other consumption expenditures.

Second, the entrance of Banco Azteca significantly increased knowledge of banks, presumably Banco Azteca, from which households could borrow. Even if not all of these households borrow from the bank, under a buffer-stock model, knowing that a line of credit is available to them can result in households selling off assets to free up income in the present period (Deaton 1991, Rosenzweig and Wolpin 1993). Specifically, Fulford (2009) shows that for a community of buffer-stock consumers, loosening liquidity constraints initially causes an immediate increase in consumption as households sell off assets they were initially holding in case of negative income shocks, allowing credit access to replace the assets as their buffer. However, in the long term, because households do not need to hold as much wealth as a buffer, overall incomes and consumption in the community decrease. Table 9 provides some suggestive evidence for this story as well. Furniture holdings (washer and dryer, stove, furniture) are items that hold value in the household, and are therefore a measure of the assets that a household may be induced to sell when they become aware of a new source of credit. Table 9 shows that there has been a decrease in expenditures on furniture (column 2, includes chairs, sofas, beds) in the past 12 months and that there is also an overall decrease in furniture holdings (column 4, washer and dryer, stove, furniture, etc.). The second result, the decrease in furniture holdings, indicates that households may have sold off those assets in the household as is predicted by the model of buffer-stock consumers. The first result, the decrease in expenditures, could be evidence that households are not investing as much in these items as mechanisms to store wealth, due to the presence of the bank.

While the estimates in tables 8 and 9 provide suggestive evidence of the above explanations, to know whether consumption is following the patterns suggested by the above explanations, I also need look at short run impacts on consumption and labor market

participation. There are two problems with the data that make this difficult: (1) the MxFLS panel only has data for 2002 and 2005; and (2) most of the Banco Azteca branches opened in the first year. Sixty-three municipalities in the sample received a Banco Azteca branch in October of 2002; meanwhile three municipalities received branches in 2003 and three municipalities received branches in 2005. In spite of these limitations, I attempt to exploit this variation in two ways. First, I create a measure that is equal to the number of quarters that a Banco Azteca branch was present in a municipality. Among treated municipalities, 91 percent had a Banco Azteca branch for the entire period (3.25 years). Second, I interact the DD estimator with receiving a Banco Azteca branch late, where receiving a branch late is defined as receiving a branch during 2005.

Table 10 shows the results of this exercise. The top sections of Panels A and B show the impact of the number of quarters the household had access to Banco Azteca on consumption and Assets. Across consumption outcomes, the estimate is negative, suggesting that the longer the bank is in a municipality the lower consumption expenditures are in 2005. For assets, on the other hand, only the treatment estimates for furniture expenditures and holdings are negative. This supports the hypothesis consumption seems to be decreasing as the branch is in the municipality longer. On the other hand, there is a positive impact on domestic appliance and electronics holdings, which could also support the story that households initially took out loans to purchase these items when the bank entered.

The bottom section of Panels A and B, show the DD estimates when an interaction with receiving a branch late is included in the specification. Looking at Panel A, one striking pattern is that the interaction term for receiving a branch late is positive for tobacco, meals eaten outside the home, and transportation/festivals, and is negative but close to zero for cereal expenditures.

For meals eaten outside the home and transportation/festivals, the interaction estimates are positive and large enough so that the overall impact of Banco Azteca on these consumption items are actually positive, while the estimated impact on Banco Azteca municipalities is negative overall. This means that households in municipalities where Banco Azteca has been present a relatively short period of time are actually experiencing increases in consumption from 2002 levels. In addition, column 4 shows that there is a larger decrease in furniture holdings for municipalities that received Banco Azteca Branches late. That is, households for which the measurement of 2005 expenditures and assets consumption is within a year of the entrance of Banco Azteca to their municipality are experiencing larger decreases in asset holdings and increases in consumption relative to households in municipalities that have had Banco Azteca since 2002. Thus, Table 10 provides suggestive evidence that households may be selling off their assets soon after the bank branch enters the municipality, which allows them to increase consumption in the short run; however, this behavior results in lower consumption in the long run due to the loss of returns on assets and savings from the future household income.

Estimates from this exercise do not support the story that households are using the loans to purchase electronics in the short run, as column 5 actually shows larger negative impacts in municipalities that do not receive branches until 2005. However, this is not enough evidence to contradict the hypothesis either. Note that we are comparing 2002 expenditures to 2005 expenditures. The fact that electronic expenditures are lower in 2005 than in 2002 does not mean that they are lower than they were in 2004, just prior to Banco Azteca's entrance in these municipalities. In addition, the estimates are based on a much smaller population. Overall, Table 10 does not provide conclusive evidence in favor or against either hypothesis, but does

allow us to getting a better understanding the dynamics of the impact on consumption expenditures.

11 Conclusion

The estimates of the impact of microfinance found in this paper are largely consistent with the findings from recent randomized controlled trials that have introduced Microfinance into new markets. Since Banerjee et al. (2013) implemented an RCT in India with the expansion of Spandana Microfinance, there has been explosion of microfinance RCTs adding to the literature, and complementing earlier quasi-experimental studies, such as this one. In general, these studies have found that access to microcredit does not have significant impacts on long term consumption, but impacts tend to be more negative when the microfinance institution under study does not have significant focus on small business development, such as Banco Azteca. Additionally, there is some evidence that group lending may result in more favorable welfare effects than individual liability loans.

In India, Banerjee et al. (2013) also implemented a randomized evaluation of microcredit, opening new branches of an MFI that lends group loans to women for both productive (e.g. starting a new business, upgrading capital in current business) and non-productive (e.g. buying household goods for consumption) purposes. They find negative (though often statistically insignificant) impacts on consumption (non-durable, temptation, festivals) and dimensions of health, education, but no impacts on female empowerment after 3 to 4 years.[24] Alternatively, Angelucci, Karlan, and Zinman (2013) partnered with Compartamos Banco, which offers group loans to women primarily for productive purposes, and find positive impacts on business expansion, household bargaining, borrower happiness and trust, school and medical expenses

[24] Note that in discussing positive or negative impacts, I am referring to the sign of the causal estimate, and do not mean to imply that these estimates are always statistically significant.

and they find that households are less likely to go hungry or sell an asset for extra income.[25] Crepon et al. (2011) also works with an MFI that offers group loans and emphasizes small business investment and finds positive impacts on business expansion, income, health, and some food expenditures. While Angelucci et al. and Crepon et al. also find some negative impacts on overall consumption expenditures similar to Banerjee et al., they also find more positive impacts on health and education expenditures, happiness levels, and household bargaining, resulting in a more positive overall interpretation of the welfare impacts of microfinance.

There is also evidence that individual liability loans may have less favorable impacts on household welfare than group loans. Attansio et al. (2011) conducted a randomized controlled trial comparing group and individual liability loans in Mongolia. These loans were primarily targeted toward female borrowers and loan officers emphasized business investment. They find that the group liability loans had much more positive impacts on business creation and across consumption expenditure categories. Additional evidence that individual liability loans may be less beneficial comes from Augsburg et al. (2012). Augsburg et al. (2012) work with an MFI in Bosnia that focuses on small business development and asset investment but offers individual liability loans. Impacts on household welfare in this study are much closer to the generally negative impacts of Banco Azteca or Spandana (Banerjee et al.) than those from the other studies that look at MFIs that focus on small business development. Therefore, the peer dynamics at play with group loans may promote borrowing behavior that lead to more favorable outcomes than individual liability loans.

The impacts of Banco Azteca on household welfare in Mexico can serve as a cautionary example that demonstrates that providing credit to the poor does not automatically make them

[25] Angelucci et al. (2013) note that while all borrowers are women, only about 51 percent of borrowers are microentrepreneurs.

better off. The package within which the loan is offered is equally important. While loans targeted for small business development or for investment in assets loosens liquidity constraints in the short term so that households can spend money on things they may not have been able to otherwise, they also provide future revenue streams through business profits or returns on the assets. On the other hand, loans that are targeted primarily for consumption or that are not paired with an emphasis on productive investment can actually be harmful to households in the long run. Households using loans for consumption or fiscal discipline (e.g. shift expenditures from temptation goods), therefore, may be better served by savings accounts. Finally, qualities associated with group lending contracts may encourage more responsible borrowing that generally results in more positive welfare impacts for households.

More generally, this suggests we should be cautious in judging this second generation of microfinance organizations, which are more likely to offer individual liability loans without restriction on loan use, in the same light as the first generation of microfinance, as modifications in these fundamental features could be changing the qualities of microfinance that made it attractive in the first place.

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Tables

Table 1. Presence of Banco Azteca in Sample Municipalities

	Total	Mean	Standard Deviation	Minimum	Maximum
			Panel A. December 2002		
# of Branches	471	6.4	6.5	1	32
# of Savings Accounts		8,406	10,417	59	46,646
# of Municipalities	63				
			Panel B. December 2005		
# of Branches	541	7.5	8.9	1	42
# of Savings Accounts		68,156	80,170	2,656	364,072
# of Municipalities	67				

Notes: Means are calculated excluding the municipalities in the Distrito Federal because branch information was not available by municipality. For the Distrito Federal as a whole, there were 95 branches with 149,443 savings accounts in December 2002; in December 2005 there were 72 branches and 539,803 savings accounts.

Table 2(A). Municipality Characteristics: Bank Presence in Municipalities

	Non-Banco Azteca		Banco Azteca		Differences		
	2002	2005	2002	2005	(3)-(1)	(4)-(2)	(6)-(5)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Bank Access	0.2537	0.4179	0.5507	0.8261	0.2970***	0.4082***	0.1112
	(0.0536)	(0.0607)	(0.0603)	(0.0459)	(0.0807)	(0.0761)	(0.1019)
Bank in Community	0.0746	0.1194	0.4348	0.6812	0.3602***	0.5618***	0.2016**
	(0.0323)	(0.0399)	(0.0601)	(0.0565)	(0.0683)	(0.0692)	(0.0777)
Bank in Community: Offers Loans	0.0597	0.0746	0.2464	0.6087	0.1867***	0.5341***	0.3474***
	(0.0292)	(0.0323)	(0.0523)	(0.0592)	(0.0598)	(0.0675)	(0.0819)
Bank in Community: Offers Savings	0.0299	0.0896	0.3478	0.6232	0.3180***	0.5336***	0.2157***
	(0.0209)	(0.0351)	(0.0578)	(0.0588)	(0.0614)	(0.0685)	(0.0746)
N	67		69		136	136	272

Notes: * p<0.10, ** p<0.05, *** p<0.01. Data from the MxFLS Community Characteristics Survey.

Table 2(B). Municipality Characteristics: Human Development Indicators

	Non Azteca Municipalities		Azteca Municipalities		Differences		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	2000	2005	2000	2005	(3)-(1)	(4)-(2)	(6)-(5)
Literacy Rate (%)	84.49	85.82	92.19	93.11	7.69***	7.29***	-0.400
	(1.20)	(1.116)	(0.6184)	(0.5429)	(1.36)	(1.25)	(1.84)
Literacy Rate: Male (%)	87.05	87.722	93.76	94.28	6.71***	6.56***	-0.155
	(0.8719)	(0.8515)	(0.47809)	(0.4350)	(0.998)	(0.959)	(1.39)
Literacy Rate: Female (%)	82.19	84.17	90.8	92.09	8.61***	7.92***	-0.686
	(1.566)	(1.392)	(0.7679)	(0.6574)	(1.75)	(1.54)	(2.33)
Infant Mortality	28.68	22.66	22.73	14.86	-5.95***	-7.79***	-1.85
	(0.6823)	(0.8125)	(0.4061)	(0.6918)	(0.797)	(1.07)	(1.34)
Infant Mortality: Male	31.91	25.13	25.29	16.49	-6.62***	-8.65***	-2.03
	(0.7592)	(0.9013)	(0.4518)	(0.7674)	(0.887)	(1.18)	(1.48)
Infant Mortality: Female	25.29	20.06	20.04	13.16	-5.24***	-6.9***	-1.66
	(0.6016)	(0.7195)	(0.3580)	(0.6126)	(0.703)	(0.948)	(1.18)
School Attendance Rate (%)	59.88	64.35	63.55	67.32	3.69***	2.97***	-0.695
	(0.5458)	(0.5488)	(0.5352)	(0.4932)	(0.676)	(0.741)	(1.07)
School Attendance: Male (%)	61.40	65.49	64.88	68.31	3.48***	2.82***	-0.655
	(0.5899)	(0.5828)	(0.5494)	(0.4885)	(0.809)	(0.763)	(1.11)
School Attendance: Female (%)	58.42	63.29	62.27	66.37	3.85***	3.08***	-0.773
	(0.5878)	(0.5748)	(0.5525)	(0.5144)	(0.809)	(0.774)	(1.12)
Per Capita Income	5,241.31	6,560.78	8,873.31	10,717.19	3,632.99***	4,156.42***	524.42
	(285.18)	(317.64)	(387.63)	(433.61)	(438.02)	(539.50)	(724.13)
Per Capita Income: Male	8,328.10	9,984.39	13,217.67	14,971.88	4889.57***	4987.49***	97.92
	(429.49)	(450.15)	(522.37)	(540.37)	(678.78)	(705.92)	(979.32)
Per Capita Income: Female	2,226.37	3,258.84	4,733.05	6,677.78	2506.66***	3418.94***	912.28*
	(153.10)	(195.56)	(274.55)	(353.16)	(315.52)	(405.19)	(513.55)
Gini Coefficient		0.4099		0.4288		0.018*	
		(0.0072)		(0.0086)		(0.011)	
# of Municipalities	67		69				

Notes: * p<0.10, ** p<0.05, *** p<0.01. Data is from the Human Development Index for Mexican Municipalities in 2000 and 2005 based on the 2000 Census. Per capita income is given in 2005 PPP dollars. Robust Standard errors are in parentheses.

Table 3. Household Head Characteristics

	Non-Banco Azteca		Banco Azteca	
	2002	2005	2002	2005
	(1)	(2)	(3)	(4)
Female	0.1800	0.1918	0.1900	0.1997
	(0.0099)	(0.0107)	(0.0088)	(0.0103)
Age	43.3182	45.8772	41.9692	44.8496
	(0.2876)	(0.2933)	(0.2560)	(0.2673)
Married	0.7305	0.7264	0.6697	0.6824
	(0.0112)	(0.0120)	(0.0106)	(0.0118)
Less than Primary	0.1659	0.1791	0.0651	0.0773
	(0.0095)	(0.0106)	(0.0049)	(0.0066)
Primary School	0.5266	0.5212	0.3928	0.4069
	(0.0128)	(0.0136)	(0.0108)	(0.0122)
Secondary School	0.1776	0.1782	0.2486	0.2437
	(0.0097)	(0.0103)	(0.0098)	(0.0109)
High School	0.0528	0.0446	0.1209	0.1117
	(0.0056)	(0.0055)	(0.0074)	(0.0074)
Normal Basic/College	0.0756	0.0738	0.1576	0.1500
	(0.0071)	(0.0074)	(0.0083)	(0.0094)
Graduate +	0.0016	0.0032	0.0150	0.0103
	(0.0008)	(0.0016)	(0.0031)	(0.0029)
N	2449	2167	4391	3541

Table 4. Household Knowledge and Borrowing

	Non-Banco Azteca		Banco Azteca	
	2002	2005	2002	2005
	(1)	(2)	(3)	(4)
Knowledge of Lender	0.5696	0.5119	0.5514	0.6359
	(0.0126)	(0.0137)	(0.0112)	(0.0121)
Borrowed from Lender	0.2312	0.1591	0.1901	0.1824
	(0.0113)	(0.0100)	(0.0081)	(0.0099)
Knowledge of Bank	0.1020	0.1515	0.1477	0.2968
	(0.0078)	(0.0095)	(0.0078)	(0.0115)
Borrowed from Bank	0.0020	0.0073	0.0062	0.0210
	(0.0006)	(0.0022)	(0.0015)	(0.0035)
N	2449	2167	4391	3541

Notes: Data is from the MxFLS waves one and two. Means are calculated using sampling weights constructed for MxFLS-1.

Table 5. Impact of Banco Azteca on Household Borrowing

	Know of Place from which to Borrow	Know of Bank from which to Borrow	Borrowed from any Source	Borrowed from Bank
	(1)	(2)	(3)	(4)
	1. Municipality Fixed Effects			
(Azteca*t2005)	0.1453***	0.1016***	0.0649**	0.0096***
	(0.0365)	(0.0332)	(0.0305)	(0.0035)
t2005	-0.0607*	0.0493**	-0.0725***	0.0054**
	(0.0308)	(0.0200)	(0.0222)	(0.0022)
R-Squared	0.0454	0.0867	0.0253	0.00941
	2. Municipality Fixed Effects and Household Controls			
(Azteca*t2005)	0.1442***	0.1012***	0.0645**	0.0097***
	(0.0363)	(0.0336)	(0.0309)	(0.0035)
t2005	-0.0646**	0.0423**	-0.0715***	0.0051**
	(0.0306)	(0.0203)	(0.0224)	(0.0022)
R-Squared	0.0588	0.113	0.0325	0.0124
	3. Municipality Fixed Effects, Household Controls, and additional Municipality controls			
(Azteca*t2005)	0.1118***	0.0985***	0.0425	0.0126**
	(0.0408)	(0.0325)	(0.0335)	(0.0050)
t2005	-0.0172	-0.0257	-0.0063	-0.0068
	(0.0628)	(0.0465)	(0.0455)	(0.0050)
R-Squared	0.0599	0.113	0.034	0.0124
N	12548	12548	12548	12548
Means in 2002:	0.5514	0.1477	0.1901	0.0210
Banco Azteca	(0.0121)	(0.0115)	(0.0081)	(0.0035)

Notes: * p<0.10, ** p<0.05, *** p<0.01. Standard errors are clustered at the municipality level, shown in parentheses. The household controls include gender, age, marital status and education level of the household head. The municipality controls include population size, infant mortality rate, literacy rate, school attendance rate, and per capita income. The sample is restricted to households whose head is aged 18 to 65. The R-Squared reported is the adjusted R-Squared. Sampling weights constructed from the MxFLS-1 are used to correct for oversampling of rural areas in all regressions.

Table 6. Consumption Expenditures

	Non-Banco Azteca		Banco Azteca	
	2002	2005	2002	2005
	(1)	(2)	(3)	(4)
Cereals	9.3413	8.8842	11.4954	9.6795
	(0.2517)	(0.2509)	(0.2519)	(0.2550)
N	2374	2135	4193	3457
Tobacco	1.5689	1.4914	3.0376	2.4255
	(0.1509)	(0.1661)	(0.1899)	(0.2043)
N	2353	2128	4155	3423
Eat Out	5.2968	5.7198	14.1813	11.6382
	(0.4093)	(0.5186)	(0.7916)	(0.9448)
N	2358	2122	4137	3420
Transportation/Festivals	99.7275	66.5115	220.9746	147.8354
	(12.3360)	(9.5178)	(16.0504)	(19.9321)
N	2372	2131	4165	3429
Electronic Appliances	121.7364	91.6027	213.5150	160.3056
	(10.2724)	(8.1388)	(11.7006)	(11.7929)
N	2371	2130	4174	3429

Notes: See notes for Table 3. All consumption expenditures are normalized to be per capita in the household. Tobacco and personal items are in terms of expenditures per adult in the household. Cereals include pasta, rice, legumes, wheat, flower, corn, crackers, etc. Transportation/Festivals includes funerals, vacations, parties, insurances, moving and other transportation services. Electronic appliances include TV sets, radios, cameras, stereos, etc.

Table 7. Assets

	Non-Banco Azteca		Banco Azteca	
	2002	2005	2002	2005
	(5)	(6)	(7)	(8)
	1. Asset Expenditures			
Electro-Domestic Appliances	65.2475	52.8396	86.2548	84.5321
	(7.2440)	(6.2819)	(5.6813)	(8.7377)
N	2363	2137	4170	3437
Furniture	73.6467	54.1933	159.4531	74.8981
	(7.3961)	(7.8742)	(12.7907)	(8.6601)
N	2359	2132	4163	3433
	2. Asset Values			
Electronic Appliances	1134.5978	946.7100	2023.8723	1834.6938
	(45.5356)	(43.3770)	(63.7900)	(75.1750)
N	2304	2056	3972	3170
Electro-Domestic Appliances	212.5441	210.5918	402.0520	409.4895
	(10.3444)	(10.2759)	(14.7860)	(19.7943)
N	2321	2055	3980	3208
Furniture/Large Appliance	1319.0659	1189.8552	2433.0464	2094.7111
	(59.3021)	(63.1758)	(82.5498)	(76.7961)
N	2308	2050	3940	3187

Notes: See notes for Table 3. All values for asset expenditures and holdings are expressed in per capita terms. Electro-domestic appliance expenditures include blenders, irons, washing machines, dryers, refrigerators, etc. Furniture expenditures includes chairs, sofas, and other furniture, and dwelling repairs or extensions. Electronics holdings include radio, TV, VCR, stereos, etc. Electro-domestic appliance holdings includes blender, iron, microwave, toaster, etc. Furniture/Large Appliance holdings includes chairs, sofas, beds, washing machine and dryer, stove, refrigerators.

Table 8. Consumption Outcomes

	Cereals	Tobacco	Meals outside home	Transportation / Festivals	Electronics
	(1)	(2)	(3)	(4)	(5)
	A. Extensive Margin				
	1. Municipality Fixed Effects				
(Azteca*t2005)	-0.0113	-0.0171	-0.0363	-0.0501*	-0.0325
	(0.0182)	(0.017)	(0.0257)	(0.0263)	(0.0245)
R-Squared	0.0115	0.0486	0.0723	0.056	0.0369
	2. Municipality Fixed Effects and Household Controls				
(Azteca*t2005)	-0.012	-0.0172	-0.0333	-0.0480*	-0.0305
	(0.018)	(0.0171)	(0.0257)	(0.0262)	(0.0243)
R-Squared	0.0211	0.056	0.11	0.0885	0.0547
	3. Municipality Fixed Effects, Household Controls, and additional Municipality controls				
(Azteca*t2005)	-0.0113	-0.0263**	-0.0245	-0.043	-0.0147
	(0.0187)	(0.0133)	(0.0268)	(0.0262)	(0.0301)
R-Squared	0.0212	0.056	0.111	0.0884	0.0546
N	12,340	12,340	12,340	12,208	12,229
Means in 2002:	0.9193	0.2103	0.3217	0.2253	0.2253
Banco Azteca	(0.0062)	(0.0093)	(0.0107)	(0.0100)	(0.0100)
	B. Expenditures				
	1. Municipality Fixed Effects				
(Azteca*t2005)	-1.3029*	-0.4722	-2.5226	-35.7886	-19.4994
	(0.6588)	(0.3157)	-1.6286	(41.9265)	(26.2729)
R-Squared	0.058	0.0383	0.0888	0.0335	0.0297
	2. Municipality Fixed Effects and Household Controls				
(Azteca*t2005)	-1.2340*	-0.467	-2.3977	-34.6311	-17.3193
	(0.6431)	(0.3212)	(1.6097)	(42.3637)	(26.3499)
R-Squared	0.0886	0.0464	0.139	0.0651	0.0443
	3. Municipality Fixed Effects, Household Controls, and additional Municipality controls				
(Azteca*t2005)	-0.9168	-0.3115	-0.9697	-37.0499	21.5713
	(0.5695)	(0.2744)	(1.4069)	(39.6164)	(28.7875)
R-Squared	0.0914	0.0462	0.139	0.0652	0.0453
N	12,159	12,059	12,037	12,212	12,104
Means in 2002:	0.2253	3.0376	14.1813	220.9746	213.5150
Banco Azteca	(0.0100)	(0.1899)	(0.7916)	(16.0504)	(11.7006)

Notes: * p<0.10, ** p<0.05, *** p<0.01. See notes for Tables 5 and 6. This table presents DD estimates from the specification in equation (1).

Table 9. Durable Consumption and Asset Holdings

	Domestic Appliance Expenditures	Furniture Expenditures	Domestic Appliance Holdings	Furniture Holdings	Electonics Holdings
	(1)	(2)	(3)	(4)	(5)
	1. Municipality Fixed Effects				
(Azteca*t2005)	9.8703	-65.0898***	17.8165	-178.4096	59.2954
	(18.788)	(19.537)	(30.443)	(142.3573)	(103.3587)
R-Squared	0.0134	0.0197	0.122	0.146	0.137
	2. Municipality Fixed Effects and Household Controls				
(Azteca*t2005)	10.2794	-64.3176***	15.8205	-171.1873	56.0247
	(18.7687)	(19.3652)	(32.4964)	(145.5136)	(99.3447)
R-Squared	0.0158	0.031	0.176	0.198	0.22
	3. Municipality Fixed Effects, Household Controls, and additional Municipality controls				
(Azteca*t2005)	20.9133	-37.6579	-20.4374	-206.9592	45.5679
	(25.3553)	(23.6722)	(28.3532)	(145.6654)	(98.9912)
R-Squared	0.0175	0.0318	0.177	0.198	0.22
N	12,107	12,087	11,564	11,485	11,502
Means in 2002:	86.2548	86.2548	402.0520	2433.0464	2023.8723
Banco Azteca	(5.6813)	(5.6813)	(14.7860)	(82.5498)	(63.7900)

Notes: * p<0.10, ** p<0.05, *** p<0.01. See notes for Tables 5 and 7. This table presents DD estimates from the specification in equation (1).

Table 10. Impact of Banco Azteca on Consumption Outcomes, exploiting variation in Bank timing

	Cereals	Tobacco	Meals outside home	Transportation /Festivals	Electronics
	(1)	(2)	(3)	(4)	(5)
Panel A. Consumption					
1. Treatment measured as Cumulative Quarters					
Cumulative Qtrs	-0.3372	-0.1444	-0.7816	-10.8549	-5.6097
	(0.2085)	(0.10131)	(0.5252)	(13.8174)	(8.2638)
R-Squared	0.0884	0.0464	0.139	0.0651	0.0443
2. Interacting DD with receiving a Banco Azteca Branch Late					
(Azteca*T2005)	-1.2192*	-0.4790	-2.5158	-37.7617	-11.5030
	(0.6596)	(0.3303)	(1.6603)	(43.5760)	(26.4512)
(Azteca*T2005*Late)	-0.3853	0.3078	3.0187*	78.3847	-146.81*
	(1.1150)	(0.3143)	(1.7507)	(49.0448)	(78.2049)
R-Squared	0.0885	0.0463	0.139	0.0651	0.0449
N	12159	12059	12037	12097	12104
Panel B. Assets					
	Domestic Appliance Expenditures	Furniture Expenditures	Domestic Appliance Holdings	Furniture Holdings	Electonics Holdings
	(1)	(2)	(3)	(4)	(5)
1. Treatment measured as Cumulative Quarters					
Cumulative Qtrs	4.0393	-20.6086***	6.0228	-55.6505	11.9492
	(5.7450)	(6.2341)	(10.6472)	(45.5945)	(31.5309)
R-Squared	0.0158	0.0311	0.176	0.198	0.220
2. Interacting DD with receiving a Banco Azteca Branch Late					
(Azteca*T2005)	10.4411	-66.2824***	23.5696	-159.6342	64.2316
	(18.8698)	(19.8870)	(33.0380)	(148.0202)	(101.3331)
(Azteca*T2005*Late)	-4.1239	50.1034**	-208.4219***	-293.6394	-210.8278
	(55.8552)	(23.7455)	(44.2136)	(185.8744)	(259.4585)
R-Squared	0.0157	0.0310	0.176	0.198	0.220
N	12,107	12,087	11,564	11,485	11,502

Notes: * p<0.10, ** p<0.05, *** p<0.01. See notes for Tables 5, 6, and 7. This table presents the estimates of δ from

(1) $y_{imt} = \alpha + \delta(CumulativeQtrs_{mt}) + \theta T2005_t + Z'_m\beta + X'_{it}\gamma + \varepsilon_{imt}$ in Panels A.1 and B.1 and the estimates of δ_1 and δ_2 from

(2) $y_{imt} = \alpha + \delta_1(Azteca_m \times T2005_t) + \delta_2(Azteca_m \times T2005_t \times Late_m) + \theta T2005_t + Z'_m\beta + X'_{it}\gamma + \varepsilon_{imt}$ in panels A.2 and B.2. In both specifications, $Z'_m\beta$ includes only a full set of municipality fixed effects.

Figures

Figure 1(a). Per Capita Household Income

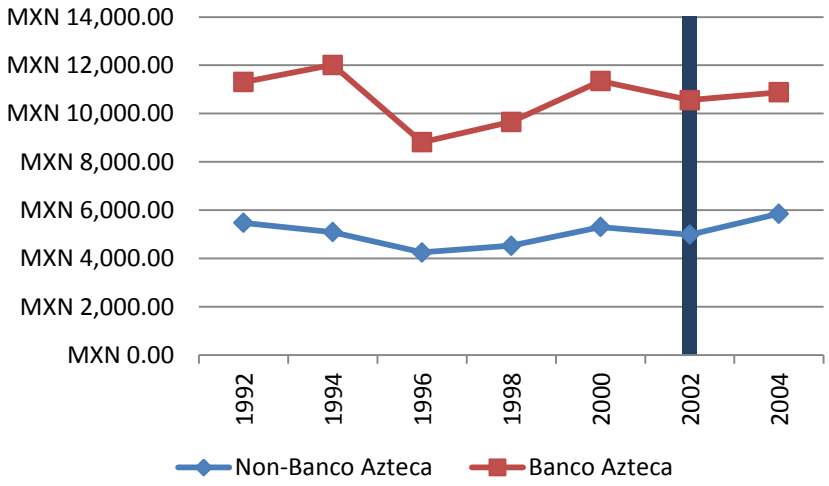


Figure 1(b). Per Capita Household Expenditures

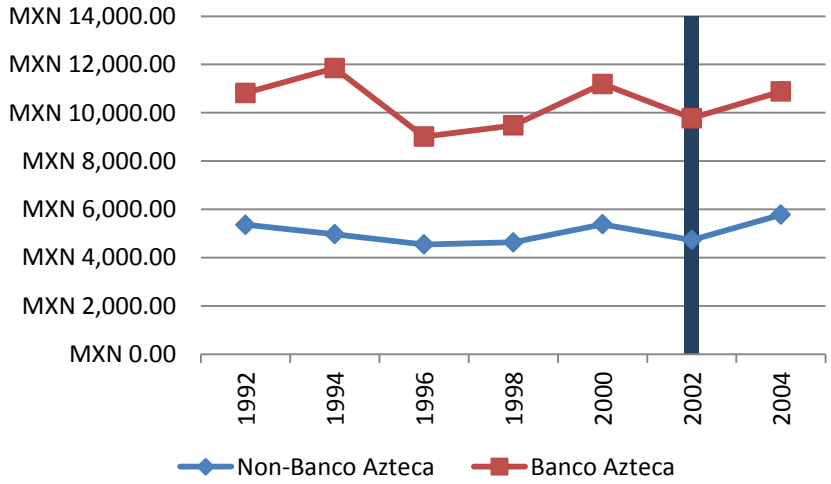
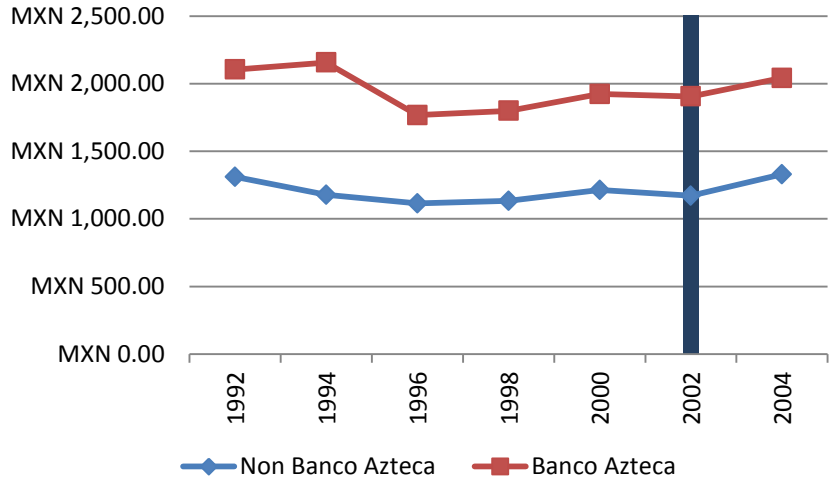


Figure 1(c). Household Food Expenditures



Notes: Data from the Mexican National Survey of Income and Expenditures. Values are calculated using household weights. All money values are in 2005 Mexican Pesos (MXN). All expenditures are presented as per capita within the household.

Appendix Tables

Table A.1. Sample Borrowing Behavior

	Non-Banco Azteca		Banco Azteca		Non-Banco Azteca		Banco Azteca	
	2002	2005	2002	2005	2002	2005	2002	2005
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1. Know of a […] from which to Borrow				2. Borrowed from a […]			
Bank	0.0501	0.1211	0.0946	0.2366	0.0113	0.0455	0.0351	0.1059
	(0.0096)	(0.0201)	(0.0112)	(0.0240)	(0.0033)	(0.0126)	(0.0076)	(0.0166)
Cooperative	0.1115	0.2336	0.1837	0.2623	0.0943	0.1877	0.1655	0.1540
	(0.0155)	(0.0275)	(0.0161)	(0.0239)	(0.0146)	(0.0252)	(0.0158)	(0.0175)
Money Lender	0.1646	0.1897	0.0942	0.1360	0.1391	0.1152	0.0515	0.0862
	(0.0188)	(0.0253)	(0.0114)	(0.0179)	(0.0185)	(0.0200)	(0.0077)	(0.0151)
Relative	0.3000	0.2601	0.3290	0.2808	0.2936	0.2122	0.3093	0.2290
	(0.0227)	(0.0261)	(0.0200)	(0.0257)	(0.0225)	(0.0245)	(0.0200)	(0.0241)
Friend	0.4302	0.2925	0.2816	0.2514	0.3585	0.2452	0.2086	0.1800
	(0.0246)	(0.0283)	(0.0178)	(0.0231)	(0.0237)	(0.0268)	(0.0156)	(0.0203)
Work	0.0835	0.0876	0.1602	0.0896	0.0725	0.0911	0.1500	0.0669
	(0.0132)	(0.0181)	(0.0137)	(0.0139)	(0.0125)	(0.0188)	(0.0136)	(0.0116)
Pawn Shop	0.0436	0.0647	0.1228	0.1406	0.0274	0.0342	0.0643	0.0632
	(0.0094)	(0.0147)	(0.0134)	(0.0197)	(0.0082)	(0.0114)	(0.0096)	(0.0124)
Credit Program	0.0061	0.0060	0.0143	0.0265	0.0038	0.0000	0.0078	0.0211
	(0.0032)	(0.0036)	(0.0063)	(0.0100)	(0.0029)	(0.0000)	(0.0047)	(0.0095)
Gov't Loan Program	0.0111	0.0163	0.0304	0.0178	0.0116	0.0267	0.0354	0.0198
	(0.0041)	(0.0074)	(0.0076)	(0.0079)	(0.0041)	(0.0105)	(0.0080)	(0.0077)
Other	0.0078	0.0587	0.0135	0.1122	0.0196	0.0722	0.0155	0.1432
	(0.0037)	(0.0166)	(0.0048)	(0.0203)	(0.0069)	(0.0186)	(0.0048)	(0.0228)
	3. Number of Loans				4. Percent Female Borrowers if Borrowed			
All Loans	1.4480	1.2462	1.4281	1.3198	0.5197	0.5089	0.4938	0.4693
	(0.0408)	(0.0360)	(0.0357)	(0.0450)	(0.0248)	(0.0316)	(0.0206)	(0.0275)
Bank Loans	0.0125	0.0478	0.0352	0.1223	0.2154	0.5809	0.3573	0.3196
	(0.0034)	(0.0129)	(0.0076)	(0.0228)	(0.1232)	(0.1311)	(0.1147)	(0811)
N: Bank Loans					20	22	39	75
N	659	387	1207	676	659	387	1207	676
	5. Share of Female Borrowers that Borrow from a Bank				6. Share of Borrowers that are Female and Borrow from a Bank			
	0.0046	0.0519	0.0254	0.0721	0.0024	0.0264	0.0126	0.0338
	(0.0030)	(0.0216)	(0.0108)	(0.2199)	(0.0016)	(0.0112)	(0.0054)	(0.0106)
N	317	193	590	338	659	387	1207	676

Notes: Data is from the MxFLS surveys. All means are weighted using sample weights calculated for MxFLS-1. The Sample is restricted to individuals that indicated that they borrowed in the respective year.

Table A.2. Borrower Sample Characteristics

	Borrowed from Any Source					Borrowed from a Bank				
	Non-Banco Azteca		Banco Azteca		Difference	Non-Banco Azteca		Banco Azteca		Difference
	2002	2005	2002	2005	[(4)-(3)]-[(2)-(1)]	2002	2005	2002	2005	[(9)-(8)]-[(7)-(6)]
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Female	0.5197	0.5089	0.4938	0.4693	-0.0137	0.2154	0.5809	0.3573	0.3196	-0.4031*
	(0.0248)	(0.0316)	(0.0206)	(0.0275)	(0.0375)	(0.1249)	(0.1326)	(0.1157)	(0.0813)	(0.2238)
N	659	387	1207	676	2929	20	22	39	75	156
Age	37.2331	41.0595	34.8389	38.4663	-0.1989	44.5938	40.3685	39.2984	41.3601	6.2871
	(0.6423)	(0.7776)	(0.4901)	(0.7148)	(1.3148)	(3.7060)	(3.2550)	(2.8387)	(2.0361)	(6.5030)
N	659	384	1207	670	2920	20	22	39	74	155
Worked	0.6120	0.6867	0.7269	0.6797	-0.1219**	0.8889	0.9186	0.8494	0.8003	-0.0788
	(0.0244)	(0.0288)	(0.0177)	(0.0262)	(0.0512)	(0.0606)	(0.0642)	(0.1076)	(0.0605)	(0.1702)
N	659	387	1207	673	2926	20	22	39	74	155
Married	0.6629	0.6606	0.6036	0.6235	0.0221	0.5468	0.4347	0.6281	0.5612	0.0453
	(0.0229)	(0.0301)	(0.0199)	(0.0271)	(0.0612)	(0.1503)	(0.1361)	(0.1159)	(0.0856)	(0.2235)
N	659	387	1207	676	2929	20	22	39	75	156
Less than Primary	0.1185	0.1156	0.0273	0.0394	0.0150	0.1185	0.0000	0.0805	0.0084	0.0464
	(0.0161)	(0.0204)	(0.0061)	(0.0106)	(0.0311)	(0.0769)	(0.0000)	(0.0540)	(0.0085)	(0.0920)
Primary School	0.4895	0.4243	0.2710	0.2994	0.0936*	0.4410	0.4950	0.0718	0.1833	0.0576
	(0.0249)	(0.0311)	(0.0176)	(0.0243)	(0.0574)	(0.1400)	(0.1447)	(0.0455)	(0.0547)	(0.2327)
Secondary School	0.2226	0.2418	0.3312	0.2881	-0.0623	0.1970	0.2504	0.3248	0.3651	-0.0132
	(0.0191)	(0.0269)	(0.0191)	(0.0249)	(0.0487)	(0.1303)	(0.1243)	(0.1174)	(0.0802)	(0.2089)
High School	0.0864	0.0795	0.1906	0.1932	0.0095	0.0000	0.0981	0.1472	0.1482	-0.0971
	(0.0135)	(0.0161)	(0.0181)	(0.0230)	(0.0405)	(0.0000)	(0.0710)	(0.0614)	(0.0502)	(0.0965)
Normal Basic/College	0.0809	0.1328	0.1701	0.1715	-0.0505	0.2435	0.1566	0.3003	0.2683	0.0550
	(0.0139)	(0.0233)	(0.0151)	(0.0221)	(0.0331)	(0.1542)	(0.0841)	(0.0953)	(0.0848)	(0.2170)
Graduate +	0.0000	0.0000	0.0072	0.0034	-0.0038	0.0000	0.0000	0.0754	0.0140	-0.0614
	(0.0000)	(0.0000)	(0.0033)	(0.0018)	(0.0036)	(0.0000)	(0.0000)	(0.0724)	(0.0111)	(0.0686)
N	659	387	1207	673	2926	20	22	39	75	156

Notes: * p<0.10, ** p<0.05, *** p<0.01. See notes from Table 3. Sample is restricted to individuals that indicated they had borrowed in the past 12 month.