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BUSINESS IN THE
GLOBAL CONTEXT

THE COST OF CASH IN MEXICO

THE INSTITUTE FOR BUSINESS IN THE GLOBAL CONTEXT



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THE COST OF CASH IN THE UNITED STATES *December 2014*

Part three of a series on the cost of cash around the world, including the United States, India, and Egypt.

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THE COST OF CASH IN MEXICO

PART THREE IN A SERIES ON THE COST OF CASH AROUND THE WORLD.

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Because Mexico's economy runs almost entirely on cash payments, Mexicans typically prefer to convert money into cash as soon as possible.



EXECUTIVE SUMMARY

Mexicans are accustomed to paying with cash. Despite the availability of non-cash alternatives such as credit, debit, and prepaid cards, online banking, and most recently mobile banking, an estimated **90% of consumer transactions in Mexico are still performed in cash**. These transactions account for more than 75% of the value of consumer payments. Our survey data confirms that even in payment categories that are relatively easy to make electronically, such as utility bills and tax payments, Mexicans are reluctant to adopt new payment methods. For everyday purchases and for important bills, Mexicans trust cash.

But the preference for cash bears significant costs. **To the extent that our survey is representative of Mexico as a whole, the costs of cash access represent some MXN 2.3 billion and 48 million hours of time annually.** Using conservative

**CONSUMERS SPEND
2.3 BILLION PESOS AND
48 MILLION HOURS TO
OBTAIN CASH EACH YEAR.**

assumptions, the aggregate value of fees and time exceeds MXN 3 billion, and could very easily exceed MXN 6 billion, given what we know about the income distribution of individuals whose time is spent on cash access. These valuations make no effort to capture accidental losses, theft, and petty corruption that result in cash losses to Mexican households. To give a flavor of the discrepancy in size, nar-

codollar (money obtained through illegal drug trafficking) revenues from the United States to Mexico are thought to exceed US\$11 billion annually. Onerous as the costs of cash access are, it is likely that the indirect costs of cash (theft, corruption, security costs, and the opportunity cost of idle savings) eclipse the direct costs of managing cash balances.

Financial access alone does not lower the fees paid to access cash. Bank account users incur higher fees for cash access transactions on a monthly basis, including all (bank and non-bank) cash access transactions. However, **Mexican consumers face higher costs getting to the point of cash access than they do to withdraw cash once they arrive.** Transportation costs account for the lion's share of pecuniary costs. **The average monthly cost of transit for cash access transactions is MXN 16.9 versus MXN 2.4 for transaction fees.** Whereas transaction fees are only necessary for cash access transactions, the transit costs are often multipurpose. Attempts to capture the possible reduction in transit demand in payment choice studies have been largely inconclusive. Arbitrary and unsatisfying conventions such as attributing 50% of the transit cost to the transaction have been used in other studies. We report the total and acknowledge that transit costs may not fall linearly with a hypothetical decline in cash use.

EVERY 1% OF THE INFORMAL ECONOMY THAT IS FORMALIZED REPRESENTS US \$560 MILLION OF NEW REVENUES WITH NO CHANGE TO TAX RATES.

Travel costs are regressive; whereas fees catch the rich more often. In the middle of the income distribution, time and money spent to obtain cash fall linearly as income rises. The rich have a number of confounding factors. They rely more on financial services in general, with greater rates of account ownership and usage and higher transaction counts per month. They are also more likely to own their own businesses. Since business owners often receive cash income directly into the business, the wealthy show higher costs of time and money spent traveling to these transactions.

The type of cash access point plays a very large role in determining the costs of cash access. Cash access costs can vary from zero to several pesos per transaction depending on the type of access point used. Monthly costs of transportation to the point of cash access are also sensitive to the source of the cash being accessed.

Mexico shares with other emerging markets a number of issues that limit uptake of non-cash payments and keep economic agents entrenched firmly in the cash economy. Among these issues are low bank account ownership, a sizeable informal sector, and widespread informal employment. To further complicate matters, the corporate strategy of Mexican banks has not been focused on deploying products that address the payment needs of low-income unbanked populations. Last but not least, poor financial consumer protection and low levels of financial literacy have suppressed growth in demand for non-cash payment alternatives.

The number of card-based payments, electronic funds transfers, and online banking transactions has increased dramatically in the last decade. However, these **electronic payments are limited to the upper tiers of Mexico's wealth and education distributions. Less than one-third of Mexican adults (27%) have a bank account in a regulated financial institution.** Even less have a debit or credit card. Unsurprisingly, account ownership is lowest among rural, less educated, and low-income Mexicans. However, market innovation in the form of niche financial product segments such as prepaid cards, a fast-growing category marketed primarily at the unbanked, have started to close the financial-services divide.

Moreover, even at retail outlets that accept card payments, consumers still prefer to use cash. At major supermarkets, 70% of transactions are in cash, which may reflect low card adoption or a genuine consumer preference for cash, even among cardholders. Low card usage is largely explained by consumers' fears surrounding payment fraud. Issues such as card cloning are top-of-mind concerns for many Mexicans. Consumer protection in financial services, which could help remedy fraud issues, has historically been weak: this has contributed to making cash the preferred payment choice for many.

Payroll accounts for salaried workers are another fast-growing payment channel: 14% of Mexican adults now receive wage deposits in a payroll account. **However, the large size of the informal economy means that most Mexicans receive their income in cash.** Half of the economically active population in Mexico is employed without a formal contract; nearly one third works in an informal business. Electronic salary and wages, where they are available, are not always a stepping stone to full financial inclusion: many workers who receive wages in an account withdraw their full account balance in cash on payday.

Bringing the informal economy out of the shadows promises immediate benefits for the national fiscal position by closing the tax gap. Every 1% of the informal economy that is formalized represents US \$560 million of new revenue with no changes to tax rates. Where financial infrastructure is adequate, electronic payments can save time and money for households and simultaneously reduce the informal share of economic activity.

Innovators have already revealed the investment agenda required to leverage payments for growth. Improved infrastructure and service offerings must go hand in hand to serve the needs of households and small businesses. The infrastructure perspective concerns access to telecommunications and cash conversion points. Service offerings must include remote bill payment services, such as payments to utilities and governments; payment acceptance for small business; and a mobile money or mobile banking product with concrete advantages over existing money transfer services.



Cash is not only the preferred way to make and accept payments, but also to save for most Mexicans.

THE POPULARITY OF CASH IN MEXICO

Cash is entrenched as the payment medium of choice in the Mexican economy through a variety of mechanisms, both on the supply-and-demand-side. On the demand side, deep-seated mistrust of financial institutions, low bank account penetration (27%), a large informal sector (roughly 30% of the formal economy and low levels of financial literacy all conspire to keep consumers in cash. On the supply side, unevenly distributed financial infrastructure, bank products that favor the rich, and an ambivalent regulatory environment have helped to entrench cash. High and nontransparent bank fee structures, significant perceived risk of consumer fraud, and withholding taxes on cash deposits all discourage the use of electronic payment forms in Mexico.

Most retail payments in Mexico, whether at the point of sale or for bill payment, take place in cash. It is not only the preferred way to make and accept payments, but also a store of value for many Mexicans, who save both small and large sums in cash. Officials at the Bank of Mexico, the country's central bank, estimate that 90% of transactions in the economy are performed in cash. Euromonitor corroborates that 89% of consumer transactions are in cash, worth

76% of the value of consumer transactions.¹ Year on year declines in cash are modest, at just 2% of market share.

More precise data are available from industry associations that directly track member companies' transactions. The Mexican Association of Retailers (ANTAD), which represents all major national retailers, reports that 63% of its members' sales are performed in cash. At supermarkets,

this figure is even higher: 70% of transactions are made in cash, with the rest being split between cards (both debit and credit) and vales (employer-issued food vouchers).² ANTAD's estimates of cash usage exclude purchases made at small stores and informal businesses such as *tiendas de abarrotes*—small, family-owned grocery stores—where the prevalence of cash transactions is surely even higher, due to their informal nature. *Tianguis* and *mercados* (traditional markets), almost fully cash-based, make up 60% of shopping centers in Mexico, despite their modest share of aggregate revenue.³

OFFICIALS AT THE BANK OF MEXICO ESTIMATE THAT 90% OF CONSUMER TRANSACTIONS ARE IN CASH.

¹ Euromonitor International, *Passport: Financial Cards and Payments in Mexico*, 2013.

² "Reforma Hacendaria/IDA: Liquidez En Riesgo," *El Semanario Sin Limites*, http://www.elsemanario.com.mx/edition/news_display.php?story_id=5141.

³ Instituto Nacional de Estadística y Geografía (INEGI), *Conjuntos Comerciales Según Los Censos Económicos*, 2009.

COMPETITORS TO CASH: DEBIT AND CREDIT CARDS

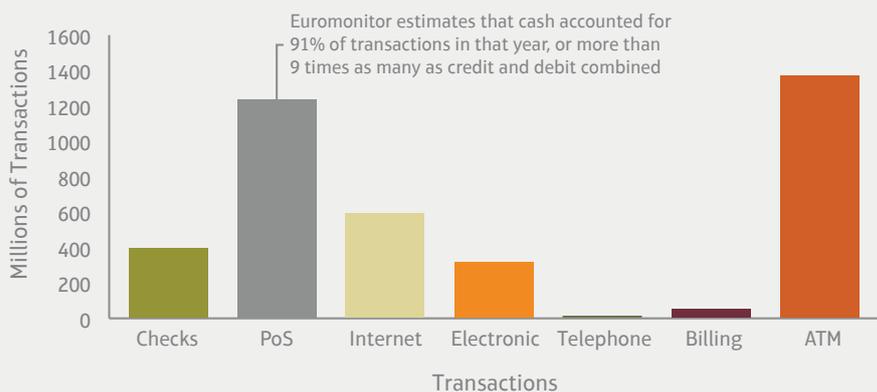
Today, 22% of Mexicans over the age of 15 have a debit card, and 13% have a credit card. This is much lower than global and even regional averages, as the average for Latin American countries is 25% for debit cards and 18% for credit cards.

In the last decade, debit cards and credit cards have made inroads into cash's dominant market position at the point of sale. Likewise, use of other electronic payments such as online banking, electronic funds transfers, and automatic bill pay have all increased in recent years, while the number of paper checks has declined. However, cash continues to be of paramount importance, as evidenced by industry data showing cash payments firmly in first place among payment instruments, even at large retail outlets that accept card payments.

There are over 125 million payment cards issued in Mexico. This figure, however, does not adequately reflect the number of card users, as many cards are idle, and many card users hold more than one card. Debit cards are the most common payment card type in Mexico, but prepaid cards, which represent 14% of all cards, constitute the fastest growing segment. On the consumer credit side, 21% of respondents report having used a credit card. (Seven out of ten, however, have purchased products through plazos, or installment plans. Plazos are used especially by those in the D+ socioeconomic category.)

The average number of monthly transactions performed per debit card in Mexico is low. By mid-2013 there were 98 million debit cards in circulation and 498 million transactions.¹ This translates into an average of fewer than one transaction per month, per card in circulation. For credit cards, the average number of transactions was 1.8 per month. However, these numbers disguise the fact that many cards are no longer in use; transactions figures may very well be skewed upward by frequent users. Additionally, in the last ten years, the value of the average card transaction did not trend toward smaller payments, but actually increased slightly, suggesting that small-value payments continue to be made in cash, even among bank account holders.

FIGURE 1: ELECTRONIC TRANSACTION VOLUME



Source: Banco de México

1 Banco de México, *Retail Payment Systems (Sistemas de Pago de Bajo Valor)*, 2014.

The number of purchases and payments made with credit and debit cards increased by 500% between 2002 and 2011 (see Figure 2). This occurred in an environment where the number of store-based POS terminals increased dramatically (in part due to the massive expansion of both foreign-and-domestic-owned national retail chains during this decade) which provided the network for customers with cards to make payments. Simultaneously, the first decade of the twenty-first century saw a huge consumer credit boom occur in Mexico, not only in bank-financed installment plans for consumer durables, but also in the extension of credit cards to a rising middle class, and of prepaid cards and payroll accounts with linked debit cards to salaried workers.

One of the main reasons that customers prefer to use cash is the limited number of merchants who accept card payments at the point of sale. The number of merchants with a POS terminal has increased dramatically in the last decade (see Figure 3). However, this marked growth has been unequal, favoring urban over rural areas. Indeed, the Bank of Mexico reports that half of POS terminals in Mexico are concentrated in six states, while twelve states have fewer than 10,000 terminals.² Terminals are also most commonly acquired by larger, formal businesses, places where many low-income customers are less likely to shop regularly, making cash a necessity for any purchases at small, informal businesses, such as tianguis (markets) and tiendas de abarrotes (mom and pop shops). Furthermore, many small merchants who have acquired a point of sale (POS) terminal actively and routinely engage in card suppression by levying surcharges on card-based purchases.

The Fund for Electronic Payment Infrastructure (FIMPE), a trust fund created by Mexican banks to support expansion of the POS network, has put considerable effort into the introduction of POS devices to microenterprises, tiendas de abarrotes, gas stations, pharmacies, and taxis. In 2004, a government decree created tax incentives for electronic financial transactions, but this policy expired in 2009. According to FIMPE, the tapering of this tax incentive directly signified slower POS expansion.³ In the opinion of FIMPE management, additional fiscal incentives will be needed in order to expand the network further.⁴

2 Banco de México, *Retail Payment Systems (Sistemas de Pago de Bajo Valor)*, 2014.

3 Consultative Group to Assist the Poor, *Update on Branchless Banking Policy and Regulation in Mexico*, 2010.

4 "Pocas Terminales Para Tarjetas De Crédito: Banxico," *El Universal*, September 23, 2012.

IN A 2008 NATIONWIDE POLL, 80% OF RESPONDENTS SAID THEY PREFER TO MANAGE THEIR MONEY IN CASH.

In the last decade, there have been considerable changes in how Mexicans access and use financial services. Wealthy and middle class Mexicans that have bank accounts are making more and more payments with cards, and are using web-based and mobile platforms to transfer money and pay bills from their online accounts. In the same period, usage of paper checks has declined precipitously, as businesses switch to electronic funds transfers. For the poor and the middle classes, the last ten years have brought an onslaught of consumer lending for homes, autos, and durables—albeit at some of the highest interest rates in the world, which compete with informal moneylending. But savings and transactional products for low-income segments, which are less profitable, have not multiplied on par with lending. A growing number of formally employed Mexicans receive their wages in a payroll account, but the number of Mexicans with a bank account or payment card remains low relative to global averages and even relative to peer Latin American countries.

In a 2008 nationwide poll in Mexico, 80% of respondents said they prefer to manage their money in cash, i.e., not with a bank or a savings institution.⁴ Even among those who do have a bank account, account usage is low in many cases. It is not uncommon for individuals to only make a few withdrawals per month, preferring to save money in cash and to use cash to pay for most transactions. As in many countries where bank account ownership and usage are low, it is common in Mexico to store money at home in cash, or in other liquid assets. When the time comes to pay a bill or make a purchase, most payments must be made in cash—and customers prefer to make them in person. The proportion of currency in circulation to GDP is higher in Mexico than in most OECD countries. As of the end of 2013, there were 780 billion pesos (worth about US\$6 billion) of notes and coins circulating in Mexico, representing about 5% of the country's GDP. Although the amount of cash in circulation has varied according to economic demands and monetary policy objectives, the total value of cash has remained roughly constant. Most of the cash in circulation in Mexico is held outside of banks; of the total cash volume, only about 12% is vaulted in banks.⁵

The evidence on financial inclusion, payments, and informal financial practices suggests a number of reasons that cash remains king despite the introduction of electronic payment mechanisms. For one, roughly one-half of Mexicans are employed without a formal contract, and most Mexicans continue to receive their wages in cash. Next, the geographical reach of banking and payment networks, while greatly increased, remains limited. Additionally, commercial banks' business hours are short, and the organizational culture of banks is not customer-centered. Retail banks are least attuned to the needs of low-income customers, who make up the vast majority of the population. In recent times, this customer segment has been serviced by the so-called "popular finance" sector, consisting of a wide range of regulated and unregulated savings and credit cooperatives, microfinance institutions and other nonbank financial institutions. These niche financial institutions have been very successful in the retail credit space, yet the popular finance boom has not extended to transactional products that could compete with cash.

4 Fundación Banamex and UNAM, *Primera Encuesta Sobre Cultura Financiera En Mexico*, March 2008.

5 Banco de México, *Billetes y Monedas en Circulación*, 2013.

PREPAID CARD USE GROWING RAPIDLY

Pre-paid cards are the fastest-growing type of card in Mexico. According to Euromonitor, payroll cards are set to fully replace payroll checks and vouchers by 2016, but cash will remain important.

Prepaid cards can be issued by banks. They can also be issued by regulated nonbank institutions, such as retail stores, as long as they are only used for purchases in that store. Current regulations limit balances to a maximum of 6,000 pesos (about US\$460), and limit monthly cash flows to about 15,000 pesos (about US\$1,150). As such, experts believe that banks will increasingly market prepaid cards, as well as credit cards with low credit limits, to younger and lower-income customers. Prepaid cards are increasingly used by employers and the government in lieu of checks and benefit vouchers.

Many of the prepaid cards in the market are closed-loop NFC cards for transportation systems in main cities. Other uses of

prepaid cards include government welfare payments, employee payroll, and benefit cards. The government-run conditional cash transfer program *Oportunidades* disburses some benefits on a Visa Electron prepaid card issued by government savings bank Bansefi, while the *Mi Despensa* food stamp program uses a BBVA prepaid card. The government of Mexico City is considering issuing a “city card,” a single payment medium for transport and services such as electricity and water that could also be used as an official identification credential.

Most recently, prepaid cards became big news during Mexico’s national elections in mid-2012, when the Institutional Revolutionary Party (PRI) allegedly used them to bribe voters. This occurrence, along with the anecdotal association of prepaid cards with money laundering, is likely to bring more government scrutiny to this product segment in the future.

Cash possesses a number of features that have proven particularly relevant in Mexico, given the financial history and culture of this nation. For one, the benefits and risks of using cash are well understood by consumers. Electronic systems, on the other hand, pose uncertainties for consumers that create significant barriers to adoption. Stories of card fraud, such as cloning and identity theft, loom large in Mexicans’ minds. These worries are relevant when Mexican consumers make payment choices, as are stories of malfunctioning ATMs, hidden or poorly understood account fees, and a general lack of consumer protection. A past dotted with financial crises, devaluations, and poor financial consumer advocacy has left many Mexicans wary of electronic payments and stores of value, and trusting only payment instruments that they fully understand.

Newly expanded bill-pay networks available at convenience stores, supermarkets, and pharmacies have greatly increased the expediency of bill payments. These networks, however, only accept cash payments. Historically, most bills had to be paid in person by bringing an invoice and cash to the utility company, service provider, or government, often resulting in long queues on payday. Today, the small group of Mexicans who have access to banking and the Internet are performing more and more transactions using online banking (a lesser number of transactions involve automatic bill pay, in which clients authorize payees to debit their accounts on a regular basis). Alternative bill-pay services, in spite of their limitations, have now become the norm for customers without an account and/or without Internet access. Alternative bill pay services carried out by non-banks were projected to increase by 44% between 2009 and the end of 2013, according to a Capgemini-RBS report.⁶

The last five years in Mexico have borne significant developments in prepaid cards, mobile banking, and electronic transfers of wages and government benefits, but these are still in their infancy, and appear not to have eaten away at consumers’ preference for cash.

⁶ Capgemini, RBS, and Efma, *World Payments Report 2012*, October 9, 2012.



Cash entails both costs and risks for consumers, from the moment it is obtained until it is delivered for payment.



CONSUMER COSTS

Consumers' strong preference for cash bears a number of costs and risks in managing cash balances. Our study examines the total life cycle costs of cash for the consumer: including the costs of payment acceptance; the costs of safeguarding cash; the costs of preparing cash balances for spending; and the costs of using cash for purchases and bill payments. The life cycle of cash, therefore, has three phases:

1. payment acceptance;
2. balance management; and
3. payment tender.

**OUR STUDY EXAMINES THE TOTAL
LIFE CYCLE COSTS OF CASH:
ACCEPTANCE, SAFEGUARDING,
AND SPENDING.**

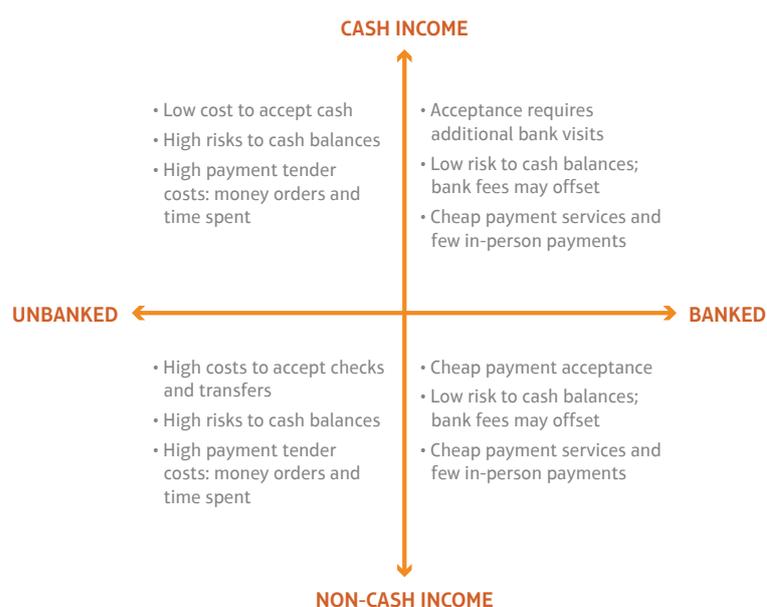
Several crucial choices determine how individuals experience costs at every stage of the consumer cash cycle. Short-term transactional balances need a home. There may be a jar in the home; or a bank account; a credit union or savings institution; or increasingly, choices of mobile money, prepaid cards, and nonbank financial institutions. How will the individual manage short-term transactional balances? Will they choose to maintain a debit account or some rough equivalent? Will most salary payments and transfers wind up in that account, or will most balances be kept in cash in the home? That is the basic decision in financial inclusion. Everything else, such as the issuance of payment credentials and dormancy of accounts, is secondary to the decision to open an account.

The second choice that affects the consumer's costs is how to receive income. Often, that choice may be out of the individual's control. The employer, the state, or family may determine the payment instrument that the individual receives. Then the individual's problem is whether to convert that balance to cash, or put it into a desired account. Does payment acceptance require a trip to obtain the payment instrument? Or does it arrive electronically? Are there surcharges to convert balances to cash? Conversely, for banked individuals that are paid in cash, does cash payment necessitate a trip to a bank branch or ATM to deposit the cash?

The third choice that likely affects cash costs is where, when, and how payments are tendered. Survey evidence from around the world suggests that payment choice is contextual. The place of purchase (home, shop, office, bank), payment interface (cash register, web browser, handshake), payment adoption (people without credit cards can still find way to make online purchases), payment acceptance (some landlords accept personal checks, others do not), and customs (some businessmen enjoy counting money during large transactions) all play a part in determining how consumers will make purchases and settle obligations.

Unbanked individuals that receive cash at their place of business may pay no fees, surcharges, or transit costs in order to receive their cash. They may spend part of the workday in line to receive salary over the counter (or in an envelope), but then face additional risks from holding large cash balances in the home. They may also spend more time traveling to offices to pay utilities and taxes, or spend more on money orders to complete remote payments than would be required of paying with a debit account. Banked individuals, by contrast, may find cash costly to accept in terms of time, because it will necessitate a face-to-face transaction and a subsequent bank visit to deposit the balance. If all transactions were in cash, it would be particularly difficult to identify how the payment instrument itself imposed additional travel or fees to transact. Similarly, if all balances were electronic, there would be no need for bank visits to withdraw and deposit cash; and likely no fees to cash checks or money orders.

FIGURE 2. BANK ADOPTION, PAYMENT INSTRUMENTS, AND CASH COSTS



This section explains a survey fielded in June 2013 to estimate the costs of cash management. The survey carefully evaluates the cost of cash access events, a concept that was developed in the United States where more than 80% of the population has access to a bank account. Since rates of account ownership are so much lower in Mexico, the concept of access to cash is often synonymous with receiving income. For a study of the costs of cash, it is well worth considering the difference. The following examples illustrate the differences in how consumers obtain cash.

Cash Access Case 1: José obtains cash at his place of employment. Twice per month, he waits in the salary line and signs for an envelope of cash. For José, the cost of cash includes time spent traveling to the salary office, time spent waiting in line, and any fees due for cash salary payment.

**PEOPLE WHO PREFER TO CASH OUT ALL THEIR MONEY
VIA ATM CARRY 50% MORE CASH THAN PEOPLE WHO
PREFER TO KEEP MONEY IN THE BANK.**

Cash Access Case 2: Maria receives a paycheck at her place of employment. Twice per month, she waits in the salary line and obtains the paper paycheck. Later, she cashes the check. For Maria, the cost of cash includes the time spent traveling to the place where the paycheck is cashed, time spent waiting in cashing line, and fees for converting the paycheck to cash; but not time spent waiting to obtain the paycheck.

Cash Access Case 3: Francisco receives electronic salary payments credited to a bank account. For Francisco, the cost of cash includes the time spent converting those electronic balances to cash, such as time traveling to an ATM, waiting in the ATM line, and fees paid for ATM use. Any equivalent point of withdrawal, such as a bank teller or money transfer office, could substitute for the ATM, depending where and how Francisco prefers to obtain cash. Largely the same costs would apply for hourly and daily wages paid to any electronic account, such as a payroll account.

Cash Access Case 4: Juana receives cash from several different sources. She works in the home, taking care of the family and running a small business on the side. On rare occasions, she receives money sent home from a cousin working abroad. For Juana, access to cash includes face-to-face transfers from family, receipts from her small business, and visits to a money transfer office where remittances are sent. Her costs of cash include time spent traveling to the places where all these cash payments are received, time spent waiting in line (if any), and fees paid for access to cash at these various points.

Once cash is in the consumer's possession, some very similar risks are borne. The consumers all face similar risks to cash balances stored on their person and in the home. These balances could be lost to theft or accident. Mitigating theft risk entails a huge variety of practices, such as locking the house and ensuring the house is always occupied; dividing balances among various stores in the home; and all manner of locks and safes. At the point of sale, the costs of cash are very difficult to estimate. For many consumers, the majority of time spent traveling to shops, in the store, and even in the checkout line depends very little on the type of payment tendered. Were the individual to choose a different medium of payment, more than likely the time spent in the shop would be very similar. And although studies of payment tender time have been done in a number of countries, the results of those studies can mean very different things for consumer behavior and merchant payment acceptance based on context.

Consider a shopper that spends two hours in a shopping trip visiting four different shops. Travel time, 40 minutes; time spent in line, 20 minutes; time actually spent counting cash and change (tender time), 4 minutes; and the remainder of the time in various shops, 56 minutes. Imagine that an alternative payment instrument changed the time spent in total by a factor of 100% (4 minutes) in either direction. How would the consumer's decision about the shopping trip change? For very fast purchases, tender time (the time required to physically complete the payment) might itself be a deterrent. For shops with long lines, faster tender time might increase the throughput of a checkout counter. But payment contexts vary tremendously in both the share of shoppers' time and the share of staff time devoted to payment tender. So we have not attempted to interview consumers about the full diversity of payments made in a given month or year.

The Institute for Business in the Global Context conducted a study of urban populations in Mexico for this report. *The Consumer Cash Habits in Mexico* study provides quantitative grounding for the *Cost of Cash in Mexico* report. Consumers' transaction costs in managing cash balances form one of the three pillars of the cost of cash in any economy. Specifically, consumers pay transaction costs in obtaining cash, both in terms of time and money.

TABLE 1. TYPOLOGY OF CONSUMER COSTS

Type of Cost	How Consumers Pay
Fees	Consumers often pay fees for access to cash, depending on the point of access and the instrument used to receive cash. For example, ATMs often charge convenience fees to non-members. <i>These costs are measured in the IBGC Consumer Cash Habits survey.</i>
Transit	Consumers spend money and time traveling to the point where cash is accessed, whether that is a bank branch, ATM, money transfer operator, banking correspondent, shop, place of business, or place of employment. Transit costs are often multipurpose, in that a cash access transaction is not the only reason for the trip. <i>These costs are measured in the IBGC Consumer Cash Habits survey.</i>
Queue	Consumers may need to wait in line at their preferred cash access point. Wait times are often longer for check cashing and salary offices. <i>These costs are measured in the IBGC Consumer Cash Habits survey.</i>
Risks	Cash is generally not recoverable when consumers experience accidental loss or theft. Whereas many types of bank accounts provide protection against fraud and insurance against counterparty risk, consumers are largely exposed to the risks of holding cash. <i>These costs are not measured in the IBGC Consumer Cash Habits survey.</i>
Opportunity Costs	Cash held in the home (for example, as prudential self-insurance) cannot be reinvested. Inflation erodes its value, and unlike most bank assets, it bears no interest. Because these funds are neither saved at interest nor invested, the opportunity cost of cash is the risk-adjusted return that consumers could otherwise realize on idle balances. <i>These costs are not measured in the IBGC Consumer Cash Habits survey.</i>

This study does more than simply estimate how much time and money Mexican consumers invest in access to cash. It also asks what groups in society are most likely to pay for access to cash with fees, transit times, and queue times; rich or poor, young or old, Northern or Southern, male or female, and rural or urban. It asks whether financial traits are equally important. Do those with full time jobs pay the same rates as those with part time jobs, pensions, students, and homemakers? Does having a bank account fundamentally change the price paid for financial transactions? What about a credit card? What about informal financial services such as *tandas*, *fiados*, or moneylenders?⁷

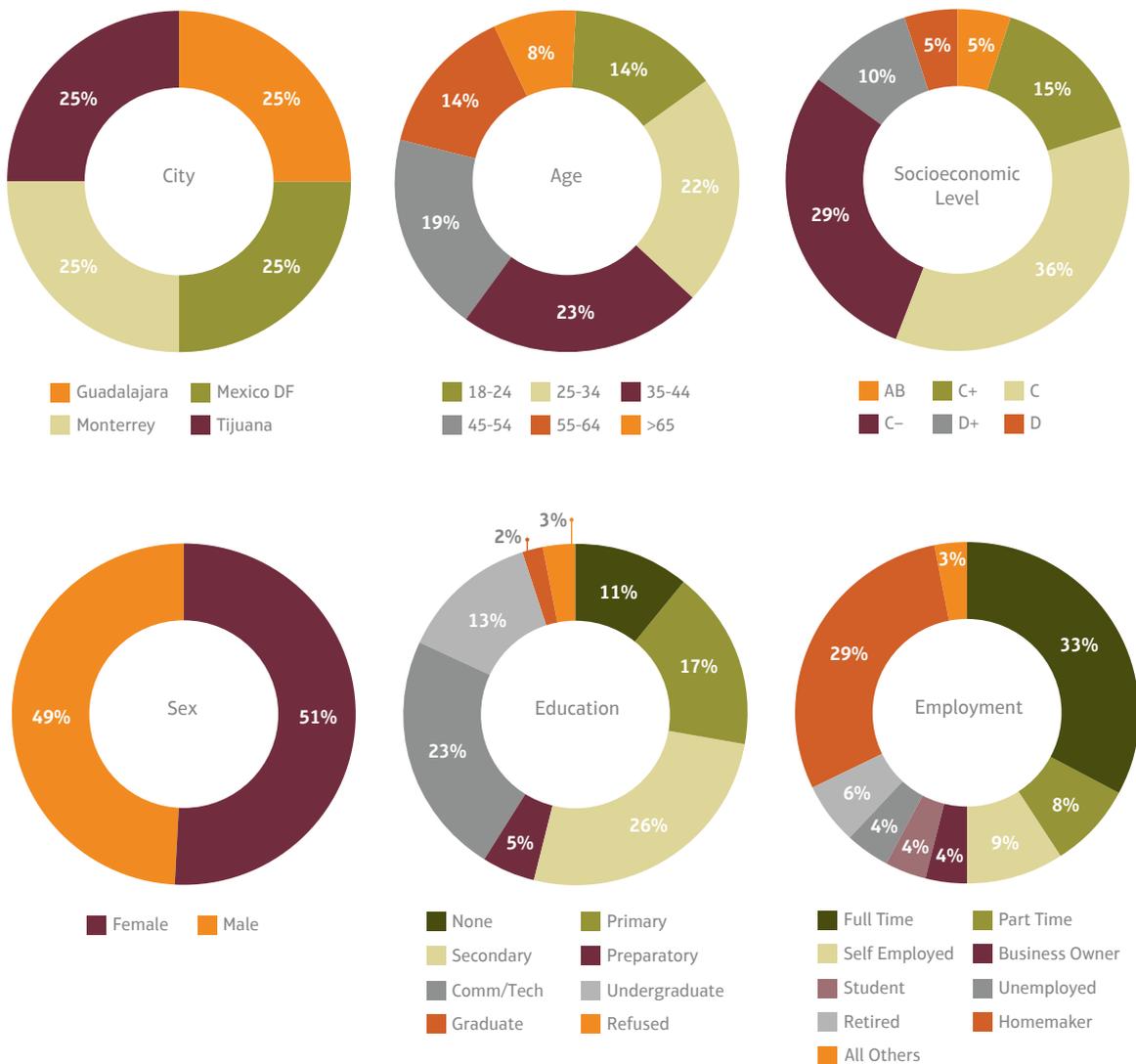
By unpacking the links between financial traits, demographics, and financial behavior, this study illuminates consumers' cash strategy and the burdens of cash costs, which weigh unequally across population categories. This survey instrument also illuminates whether financial traits influence behavior through simple price effects, or whether something else is at work. Finally, this study explores whether traits that are contingent on the choices of others (employers and family members, for example) determine the burden of fees and delays necessary to obtain cash. Does the payment instrument used to receive income—a personal check, an electronic transfer, a prepaid card, or a money transfer—determine if and how much the recipient pays to negotiate that instrument for cash?

⁷ *Tandas* are known to microfinance professionals as rotating savings and credit associations (ROSCAs). *Fiados* are postpaid merchant credit accounts based on personal recognizance, rather than bank-mediated credit analysis.

Survey Sample

Our survey used equal sized strata from four metropolitan urban areas, i.e., Guadalajara, Mexico DF, Monterrey, and Tijuana; and population proportionate to size for the strata of age and sex. Frequency counts of responses are visible in Figure 3. Three hundred interviews were completed in each city. The number of complete interviews for each decennial age bracket (18-24, 25-34, 35-44, 45-54, 55-64, and over 65) was proportional to the national Mexico population; and the same for the male/female split and educational attainment. The sample was not stratified for financial inclusion, education, socioeconomic status, and employment.

FIGURE 3. DEMOGRAPHIC CHARACTERISTICS OF THE STUDY'S SAMPLE

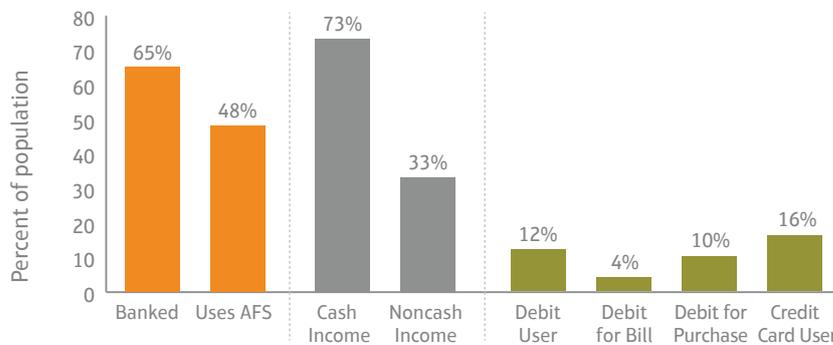


WEALTHY MEXICANS CARRY ROUGHLY TWICE AS MUCH CASH AS THOSE IN MID-INCOME LEVELS, AND MORE THAN FIVE TIMES AS THOSE AT THE LOWEST LEVEL OF INCOME.

Men in the sample make up the overwhelming plurality of those employed full-time, while women make up the lion's share of homemakers. This finding reflects persistence of traditional gender roles within the Mexican workforce, in which males make up 62% of those employed.

Monterrey exhibits a significantly higher proportion of full-time employed individuals than do the other cities included in the study. Monterrey also exhibits a significantly higher proportion of individuals concentrated in the A through C socioeconomic categories. These findings correspond to the average higher wealth and economic dynamism of Monterrey as compare to other Mexican cities.

FIGURE 4. FINANCIAL TRAITS OF THE STUDY'S SAMPLE



Source: IBGC Consumer Cash Habits in Mexico.⁸

Roughly two-thirds of our sample have no bank account. They may use financial services such as money transfers and check cashing, but in principle there is no account where these individuals would receive electronic payments, store savings, or keep transactional balances. While they may receive payments using via electronic transfer, money order, or check, these individuals do not send payments through online banking, credit, or debit cards. Unless some type of account credit system is used, remote transactions are only possible through cash-on-delivery services, bill collectors, and remote counter services. (The corresponding unbanked rate in the United States is 8%, but the comparison is flawed because the American FDIC survey counts all members of a household as "banked" if at least one adult has a bank account, systematically reporting greater financial inclusion than an individual survey such as ours would.)

48% of the individuals in our survey use informal financial services: rotating savings and credit associations, nonbank savings institutions, pawnshops, and entrusting savings to a family member. The numbers are not directly comparable to the United States, which again uses household-level data and a different menu of financial products, but, for reference, some 20% of American households use these services even though they also have savings and/or checking accounts.

8 Figures cited are population proportions among adults aged over 18, in urban Mexico and surrounding periurban areas. "Banked" refers to individuals that have a debit or checking account with a bank. "Uses AFS" refers to individuals that report regular use of moneylenders, pawn shops, rotating savings and credit arrangements, and money transfer services. "Cash Income" refers to individuals that receive some of their income in cash. "Noncash Income" refers to individuals that receive some of their income as a transfer into a bank or onto a card. "Debit User" refers to individuals that report regular debit use for at least one of a menu of common purchases and bill payments. "Credit User" refers to individuals that report regular credit card use for at least one of the same.

For income payments, 73% of the individuals in the survey reported receiving one or more forms of income as cash. Other available payment instruments included checks, bank transfers, cards such as payroll and prepaid, and vouchers. Conversely, 33% of the individuals reported at least one source of noncash income. Only 36 individuals in the survey reported neither cash nor noncash income. Concerning payments, our survey shows that about one in eight Mexicans regularly uses debit in any of the categories surveyed, and about one in six uses credit.

Survey Findings

Individuals' reasoning about cash is grounded in direct experiences of payments, savings, and credit in the marketplace. The cost of adopting different payment instruments is one concern, but not necessarily the most important to Mexican consumers. Mexicans are also wary of payment cards, which are thought to introduce risks of (1) payment fraud, (2) identity theft, and (3) payment repudiation.

Studies of consumer payment choice focus on four features of payment systems in particular: (1) the **cost** of payment instruments, (2) whether **acceptance** is common among the household's preferred merchants, (3) the **convenience** of using a given instrument, and (4) the **security** risks associated with the payment instrument. IBGC's *Cost of Cash in the United States* study adds to these four features two measures of the risks of cash. These measures are the **preferred maximum** and **preferred minimum** balances, and are defined as the thresholds above which holding too much cash is considered risky, and beneath which the absence of cash is considered risky respectively.

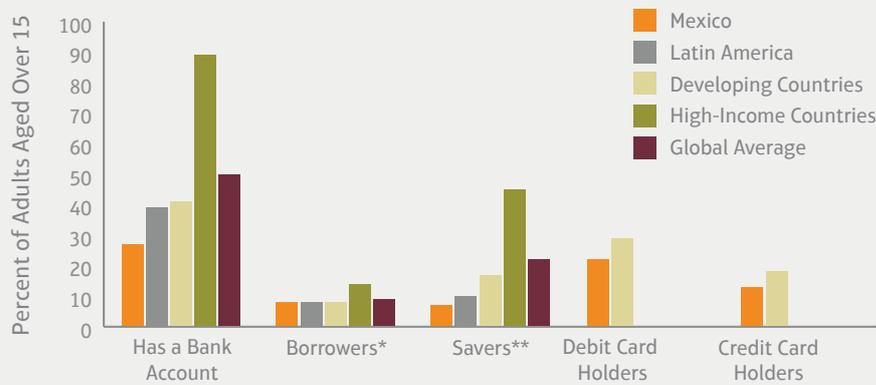
The **preferred maximum** and **preferred minimum** balances are simple heuristics by which individuals can intuitively measure their cash balances, without having to explain either what types of cash loss events concern them, or why their portfolio of noncash payment instruments might be insufficient. In a sense, these measures are also behaviors, in that we consider both when consumer behavior changes and how they respond to these changes. In the US study, the perception of risk due to excessive cash balances was concentrated at low household income, and to a lesser extent with lower educational attainment, female sex, and a low degree of urbanization. These attributes suggest correlation with higher risk of personal theft; which is somewhat surprising since the true distribution of risk has more to do with home invasions than personal crimes.

The theoretical links between demographic variables and cash perceptions and risks are several. First, the availability of banking infrastructure determines the cost of balance conversions to and from cash. Bank infrastructure is more prevalent in urban areas, and among urban areas, in neighborhoods that are convenient to higher-income households and workplaces. Second, there are two links between age and cash behaviors: simple inertia, and also the experience of financial crises and natural disasters that shape perceptions about the risks of cash vs. noncash instruments for both payments and savings. Third, high-income individuals are more likely to have experience with bank accounts for savings. They are also more likely to have assets that could be saved as cash or bank account balances and thus to have considered the trade-offs; and also to have sufficient experience with banks to consider the features of bank accounts (e.g., deposit insurance, insulation from household theft, exposure to fees and payment fraud) that affect the depositor's risk. Fourth, educational attainment appears to be greatly correlated with US consumer's appreciation for the relative risks of cash and noncash balances, whether or not education specifically teaches these risks. And finally, men and women's different perceptions about the costs, benefits and risks

FINANCIAL INCLUSION

Access to banking and payment network infrastructure is but one ingredient in the recipe for reducing cash usage. One of the main drivers of the persistent popularity of cash in Mexico is the low level of bank account ownership in the country. Until the recent advent of prepaid cards and mobile money, paying with anything but cash required having a bank account. The determinants of low account ownership are multiple, yet costs associated with bank accounts may be even more important than access in explaining this.¹

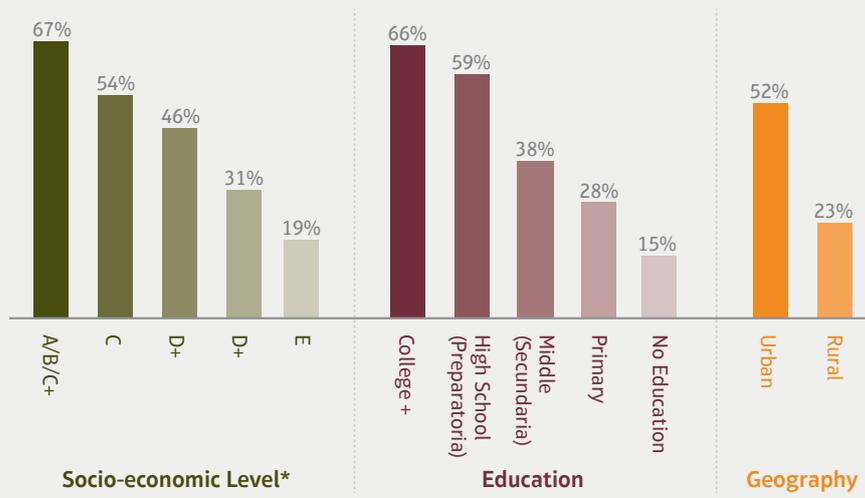
FIGURE 5. FINANCIAL INCLUSION IN MEXICO AND THE WORLD



Source: World Bank Global Findex (2011)

1 Asli Demirguc-Kunt and Leora Klapper, "Measuring Financial Inclusion: the Global Findex Database," Policy Research Working Paper. The World Bank Development Research Group Finance and Private Sector Development Team, April 2012.

FIGURE 6. DEMOGRAPHICS OF FINANCIAL INCLUSION IN MEXICO



Source: Hacienda, Ministry of Finance

Bank account and card ownership in Mexico vary considerably across socio-economic groups. Like in many emerging markets, low income, limited education, and living in rural areas are significantly correlated with lower levels of account ownership.²

Just 27% of Mexicans over age 15 have an account at a regulated financial institution, according to the World Bank’s 2011-2012 Global Findex study. Account ownership in Mexico is lower than the Latin American average (39%) and the average for developing countries (41%). Similarly, debit card and credit card adoption is approximately 25% lower than the regional average.³ This is not just for lack of experience with banks; among those Mexicans who do not have any formal financial product, about one in 10 *previously had* an account but no longer does.⁴

Moreover, very few Mexicans report saving in a financial institution: 7% of Mexicans report saving with formal financial institution in the last year, a proportion much lower than that reported in other regions.

One in five Mexican account holders says they do not make or receive any deposits in their accounts in a typical month, according to Findex data. About 8% neither deposit nor withdraw. Among rural residents, one third of account holders does not make or receive any deposits in a typical month. In fact, a study by the Mexican finance ministry found 43% of bank account holders had not used their accounts at all in the last month.

2 Mexico has undergone considerable urbanization in recent decades, with 80% of inhabitants now residing in urban areas.
 3 Demirguc-Kunt, Asli, Leora Klapper, and Douglas Randall. “The Global Findex Database: Financial Inclusion in Latin America and the Caribbean.” World Bank, August 2012.
 4 Credit cards are the largest category of financial services that individuals have ceased to use (28%), followed by savings accounts (27%), and payroll accounts (18%). See Secretaría de Hacienda y Crédito Público, “Uso De Servicios Financieros (Cultural Financiera): Encuesta Nacional En Viviendas”, April 2009.

INFORMAL FINANCIAL SERVICES

Many Mexicans save, borrow, invest, and insure themselves using informal methods that largely rely on cash. For example, many people store money at home, give money to a *guardadinerero* (a professional money guard) for safekeeping, or participate in rotating savings and credit associations (ROSCAs, known in Mexico as *tandas* and *mutualistas*). A quarter of all respondents in our study report having saved in a ROSCA in the past year. Many people also choose to save not in cash but in kind, by purchasing animals and storing grain — not only in rural areas, but also in peri-urban areas.¹

A study by the Mexican association of pension funds (AMAFORE) reported that 57% of Mexicans are saving money, and that 37% of them save at home in a *guardadito* (also known as “under the mattress”) or in a lock box of some sort. Surveys on financial practices provide widely different estimates of the percentage of the population that participates in a ROSCA, ranging from 5% (Findex survey) and 7% (Finance Ministry), to a high of 17% (AMAFORE study).

1 Lucía Bazán, Linda Hanono, and María O’Keefe, *Ahorro y Crédito En Las Unidades Domésticas Mexicanas: Patrones De Comportamiento e Impactos De Los Servicios Financieros Populares* (Centro de Investigaciones y Estudios Superiores en Antropología Social (CIESAS) and Universidad Iberoamericana (UIA), December 2005.

A 2012 study by CNBV, *Encuesta Nacional de Inclusión Financiera* (ENIF), found markedly different results from the World Bank’s international survey that included Mexico. According to ENIF, basic financial inclusion is above 50% in Mexico. Key discrepancies abound: including the proportions of individuals that borrow from a formal financial institution (7.6% vs 28%), that prefer ATMs for deposit channel (11% vs 38%), and that have formal savings (6.7% vs 36%).² The unit of analysis is one possible source of difference, meaning whether the individual’s personal portfolio alone or the household’s accounts in total. Another is the ability of ENIF to tailor its questionnaire to Mexican financial institutions and service providers; whereas the Global Findex must prioritize the comparability of responses across countries. Reyes and coauthors (2013) note that some indicators could have moved significantly in the year that elapsed between surveys. But nonetheless, given the outstanding statistical capacity of both institutions, more than likely crucial gaps exist in the way that question phrasing treats marginal financial institutions such as microfinance institutions, correspondent banks, and postal accounts.

2 Differences are summarized in this blog post by Juan David Reyes, Fermin Vivanco and Claudia Gutierrez “Measuring Financial Inclusion: Discrepancies in the Results,” *Pro-Savings*, 2013.

of cash vis-à-vis noncash balances might be shaped by their different social roles with regard to household budgets for food and clothing, home and auto purchases and repairs, social obligations, education, retirement savings, and other major household expenditures.

The links between cash behaviors and financial traits are much more straightforward. We might assume that cash access events bear different costs in time, money, and opportunity cost depending on an individual’s employment status, type of employment, portfolio of accounts held, and other sources of income (such as official transfers, pensions, and domestic and international remittances). The consumer’s financial portfolio and income instrument tell us a great deal about the prices facing a consumer in the marketplace. Consumers’ employment status might tell us about several costs of financial services, such as receiving electronic salary payments, converting income payments to cash, and the opportunity costs of visiting bank branches for cash access. The payment instrument used to receive income dictates the price of converting those balances to cash, conditional on the portfolio of accounts adopted.

Some patterns of variation in cash use and cash behavior are evident solely on the basis of wealth, age, education, and residence. These patterns are largely correlations in observational data, and not indicative of a monocausal relationship.

UNBANKED MEXICANS ARE MORE LIKELY TO CASH OUT PAYMENTS RECEIVED, AFTER CONTROLLING FOR AGE, INCOME, GEOGRAPHY, AND EMPLOYMENT.

PREFERENCES REGARDING CASH BALANCES

Wealthy Mexicans (those in the AB socioeconomic class) carry roughly double the amount of cash as those in the next socioeconomic level down, and more than five times as much as those at the bottom of the socioeconomic class distribution. This is unsurprising, but if wealthy Mexicans used noncash payment instruments more often the disparity might be correspondingly lower.

The differences between age groups are much less pronounced. Cash balances in the 35-44 age group are less than double the holdings in the under-25 and over-65 age groups. Education groups exhibit great disparity: with median cash balances three times as high for those with graduate degrees as for those with limited educational attainment. Educational attainment is a primary determinant of socioeconomic level in the AMAI classification, leading to heavy collinearity of wealth and education in our survey data. Employment shows similarly strong differences: with full time employees and self-employed individuals holding median cash balances more than double those of retirees, homemakers, and students.

Largely as a result of these disparities, financially included Mexicans hold more cash than financially excluded Mexicans. Bank users are systematically wealthier and better educated than the unbanked, and so banked Mexicans hold more cash than the unbanked. Users of informal financial services exhibit no such differences from non-users, suggesting that use of informal financial services is uncorrelated with wealth, income, or cash spending behavior. Payment instruments used to receive income also correlate with wallet cash holdings. These findings are again unsurprising because non-recipients may have no regular source of income; and as such may simply hold lower total balances and spend less money in any given month. Those that receive noncash income have double the median cash holdings of non-recipients; and the same is true for cash income recipients vs. non-recipients.

Financial access also correlates with views on cash and financial services. Users of banks are more likely to prefer to retain payments received as electronic balances, after controlling for age, income, city, and employment. Bank use by itself raises the odds of preferring some electronic balances by 48%. In other words, bank users are less likely to want to fully cash out a payment received as a check or electronic transfer, and more likely to report that they prefer electronic balances to cash. Since the decision to open the bank account in the first place is probably driven by the same fundamental preferences about money and payment, we should not assume that the unbanked would magically come to desire electronic balances simply because they open an account. Nevertheless, the findings suggest that bank users are not mechanically driven to leave money in the bank simply because of demographics or the way that salary payments are received.

Cash-out preferences in our survey correlate with wallet cash, wealth, and financial access. People who prefer to cash out all of their money via ATM have median wallet balances more than 50% higher than those that prefer to keep some money in the bank. Cash-out preferences also correlate heavily with income and financial access. Two-thirds of the wealthy prefer to limit their cash withdrawals and maintain electronic balances, versus less than half of consumers in the C+, C, and C- levels. Bank users differ but by a smaller margin, with 51% of bank users preferring to limit cash-out versus 44% for the unbanked.⁹ Taken together, these findings suggest that bank users in the aggregate are more comfortable leaving balances in electronic form. They may seek out financial services because of these views; or they may become habituated to entrusting deposits to financial institutions. Additionally, they may simply have great enough wealth to allow for short or long term savings in the form of electronic balances.

⁹ The survey asked all respondents to describe their preferences for what to do when receiving electronic payments. Unbanked respondents asked what they would do if they received electronic income, such as salary and wages, cash transfers, and remittances.

CONCERN OVER CARD FRAUD KEEPS PEOPLE IN CASH

In interviews with experts on banking and payment systems, one of the most commonly cited reasons for the persistent consumer preference for cash over cards is concern about payment fraud such as card cloning and identity theft.

Popular media in Mexico frequently report stories dealing with card cloning rackets and government efforts to crack down on these offenses. The Mexican Bank Association (ABM), which monitors card fraud at member banks, however, estimated in 2011 that fraud occurred in solely 0.024% of debit cards and 0.030% of credit cards.

To address data security risks, the National Banking and Securities Commission (CNBV) mandated in 2010 that banks convert

all cards to chip technology, with added security features to prevent fraud, by 2013. According to Euromonitor, as of 2011 over one-third of cards are chip-based, compared to just 2.5% when the CNBV issued its mandate.

A major technological divide exists between credit and debit cards, with 60% of credit cards having chip technology compared to just 5% of debit cards. Additionally, about 1.2% of cards in Mexico have near field communication (NFC) technology to enable contactless payment.

CASH MAXIMA AND MINIMA

The heuristics used to bound cash management scale with income and median cash balances. More than 80% of our sample in the C+, C, and C- socioeconomic levels agree that it is better not to hold too much cash; and more than 70% among levels AB and D+. Preferred maxima for the AB class are more than double those for the C+ class, evaluated at the median. Together the C classes prefer cash balance maxima double those held by the D classes.

Cash minima tell the same story, with the wealthy preferring a median cash minimum of 500 pesos, versus only 100 for the least wealthy. This seems a straightforward luxury effect. Having cash on hand for unplanned expenses should result both from higher spending, and from higher asset balances. Since our survey is not comprehensive in its evaluation of consumer financial portfolios, desirable measures such as the share of assets held in cash are not available. Keeping a cash-balance maximum is more likely for residents of Guadalajara and Monterrey, as compared to residents of Mexico City. Youths, as well as the wealthy, report lower minimum balances of cash. They also carry more cash; but not enough to dilute the effects reported.

In various multivariate regressions of wallet cash balances on demographics and financial access, several key findings appear repeatedly. The effects of *employment* and *wealth* on cash balances, preferred maxima, preferred minima, and cash-out preference are durable. Regardless of the model specified, rich Mexicans and salaried Mexicans have higher cash balances and higher use of financial services than the rest of the population. The effects of other covariates such as age, education, and sex yield imprecise estimates in linear regressions. Financial access per se does relatively little to change cash balances, preferred maxima and minima, and other cash behaviors once wealth and employment are in the equation.

Cash maxima decrease with age and increase with socioeconomic category. Men keep, on average, higher cash-on-hand maxima. Cash maxima are *lower* in Mexico City and Monterrey, as compared to the two other cities surveyed. Decrease in cash maxima held with age, and geographical patterns are the only findings robust to the addition of controls, however. Cash maxima are highest for residents of Tijuana.

Minimum cash-on-hand balances, on the other hand, are least popular among the young (U25 and U35), females, and residents of Guadalajara and Tijuana. They are most likely for residents of Monterrey. These patterns, however, are not as clear when all control variables are included. Cash minima are higher for the young, the rich, and for residents of Tijuana.

Both bank users and informal financial services users are less likely to agree that they keep some cash on hand, just to be safe. Bank users' odds of needing to keep some cash on hand are about 39% lower than the unbanked in the same demographic. Informal financial services users have odds ratios about 60% lower. These findings are economically small but statistically significant. For bank users, this may indicate that either their deposit accounts or payment instruments substitute for cash settlement when unplanned expenses arise.

Cities have a surprisingly durable correlation with cash balances, preferred maxima and minima. The effect of cities, on the other hand, is robust to various econometric specifications. In multivariate models with age, sex, employment, and wealth, city of residence consistently shows statistically significant correlations with cash balances in the wallet; with prevalence and levels of preferred minima and maxima; and with cash-out preferences. This could reflect the impact of consumer norms and shared beliefs, in that consumers may find cash trustworthy and hence expect that counter parties will expect cash payment as a rule. The durability of these city effects across a number of regression specifications that include socioeconomic class and financial access tempts us to ascribe the effects to social beliefs. But unfortunately we have no direct evidence from qualitative research about consumer perceptions of noncash payments, such as (1) whether noncash payments are accepted by most counter parties, (2) whether the consumer's costs of noncash payments are competitive with cash, and (3) whether customs or social norms hold cash preferable to noncash payments in the places where consumers spend their money. All of these consumer perceptions about the prevalence of acceptance, the costliness of noncash payments, and appropriate social behaviors around cash could be responsible for variation in payment choice within Mexico.

The difference between cities may also reflect the payments infrastructure of the different cities. Where cash access points and electronic payment acceptance are high, the need for cash is correspondingly lower. But where cash access points and electronic payment acceptance are scarce, prudent consumers will retain higher cash balances. Consequently, they should be more likely to cash out any electronic payments received and less likely to leave transactional balances as bank deposits or on a stored-value card.

PRICES OF CASH ACCESS

One of our motivations for conducting this survey was to ask how the price of cash access transactions affects consumers' decisions to allocate balances between cash and noncash assets. Here, as in the rest of the paper, by *cash* we mean currency in the wallet and the home and not simply assets denominated in pesos. How should cash holdings vary with higher costs of cash access? Fixed costs of cash access should tend to drive up cash balances, and they could take the form of time and money spent traveling to the point of access, time spent waiting in line for the transaction, or flat fees for cash access. All else being equal, consumers should take out more money and less often if these fixed transaction costs are the primary cost of access to cash. Consumers should also be reluctant to leave balances in bank accounts and on cards such as payroll, prepaid, and EBT cards if they anticipate that such future transactions will raise costs.

The cost of access to cash has fallen dramatically in the last decade, given the vast expansion of ATM, remittance, and *corresponsales* infrastructure. This drives down what economists refer to as *shoe leather costs*, meaning the time and expense required just to get to the point where payments are converted to cash, or where cash is deposited and withdrawn. In terms of pecuniary costs, consumers have a better chance to receive payments with no fees for access. The greater the density of cash access points, particularly in rural areas, the lesser is the aggregate time and cost for consumers that use them.

BANKING CORRESPONDENTS

A new banking correspondent regulatory framework introduced in 2008 holds promise for increasing access to financial services, and may eventually decrease cash usage for certain types of transactions. As of now, banking correspondent outlets in Mexico already outnumber bank branches, a testament to the success of this operational model.

Cash access points, particularly in the so-called bank deserts, have rapidly expanded thanks to a new regulatory entity known as *corresponsales* (banking correspondents). In December 2008 the National Banking and Securities Commission (CNBV) authorized certain banks to affiliate retailers and other merchants, following a successful model adopted in Brazil. Affiliated third parties, or correspondents, may perform some key functions of a bank branch, such as opening certain new accounts, processing payment of loans and bills, serving cash withdrawals and deposits, and fielding balance and transaction inquiries. The rationale behind the model is that banking correspondents can serve hard-to-reach rural areas without the brick-and-mortar outlays of a branch.

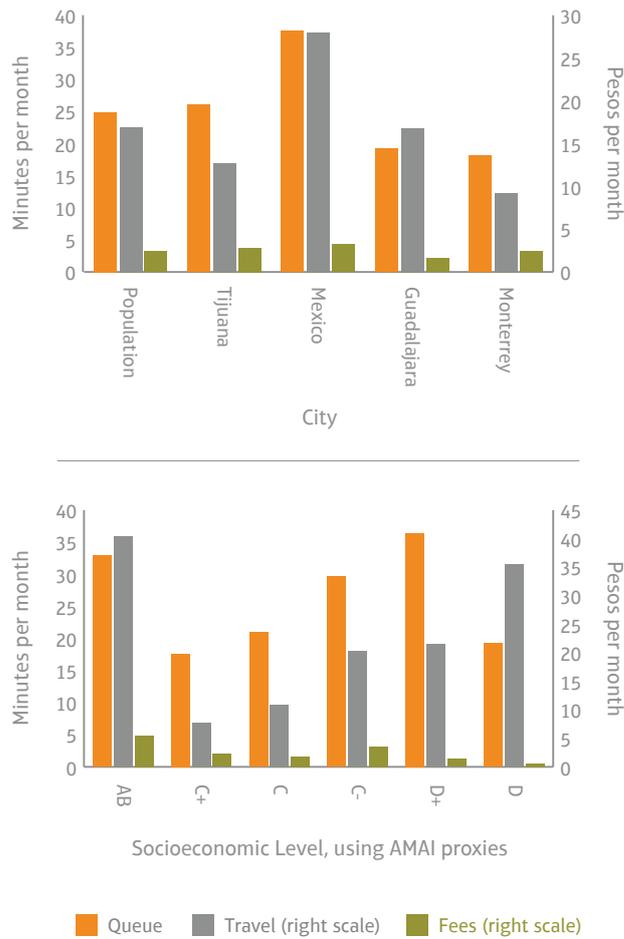
Already, banks are working with supermarkets and convenience stores, which may be much more accessible to customers who live far from a bank branch. Twelve banks have received licenses to affiliate 660 companies as correspondents, representing 16,000 banking correspondent points as of 2011, more than the total number of bank branches in Mexico.¹ In 2009, the number of correspondents stood at just 4,000, and by year-end 2012, the estimated number had grown to approximately 20,000.

Assuming that correspondent networks can manage liquidity well, the cost of banks' brick-and-mortar, personnel, and cash operations could fall considerably. The Mexican Association of Banks (ABM) and the CNBV are also considering the possibility of incorporating large, nationwide consumer-goods distributors (such as Coca-Cola, Pepsi Co., and Bimbo) as correspondents.²

Furthermore, the CNBV has proposed that Mexico's existing networks of state-owned service outlets provide correspondent services. Some of these already participate in the correspondent model, such as the state-owned company *Telecomm-Telégrafos* and the nation-wide chain of food banks *Diconsa*. *Telecomm-Telégrafos* possesses a network of 1,598 points of service while *Diconsa* has 23,226 points of service, many of which are already connected to state-owned savings bank Bansefi through its *L@ Red de la Gente* network.

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- 1 Prior to the December 2008 CNBV ruling, some banks had utilized correspondent models without regulatory oversight. This meant that, from a regulatory perspective, consumers did not have recourse to their banks if a transaction went wrong. Instead, the burden of responsibility was on the correspondents, with limited consumer protection. Now, banks bear legal responsibility for all transactions in their correspondent network, rather than merchants. The new ruling sets the bar quite high to become a correspondent. A business has to prove that it is a permanent establishment, that it has appropriate infrastructure and credit history, that employees can operate electronic payments, and that they can authenticate the identity of banking clients. Correspondents are not allowed to charge their own commissions on top of those agreed to with the bank, nor can they advertise on transaction receipts, sell their own products attached to banking transactions, or sub-contract agents. Only some correspondents (those located in tourist areas, the northern border, and duty-free shops) can perform foreign exchange operations on behalf of the bank they are affiliated with, and the amounts they can exchange are restricted.
 - 2 Euromonitor International, *Passport: Financial Cards and Payments in Mexico*, January 2012.

FIGURE 7. CONSUMER COSTS OF CASH BY DEMOGRAPHIC



For the population as a whole, average fees for cash access are 2.4 pesos per month. Average individual monthly expenses for travel to the point of cash access are 17 pesos, and time spent on cash access transactions is 25 minutes. These numbers vary significantly by region. Mexico DF residents face the highest costs. Their monthly fee totals more than double those of Guadalajara. Time spent per month is nearly 20 minutes per month more than in Guadalajara and Monterrey, and the cost of travel is three times as high as in Monterrey. Transit costs are also regressive by income. Despite AB consumers facing the highest transit costs of all, there is very likely a consumption effect from higher aggregate wealth. Excluding the wealthy, monthly transit costs are heaviest on the poor and fall as socioeconomic class rises. Time spent follows a similar pattern, with socioeconomic classes C+ and C enjoying more convenient access and lower time spent per month.

FIGURE 8. COST OF CASH BY FINANCIAL TRAITS AND POINT OF ACCESS



Unbanked Mexicans face lower fee costs for access to cash in the aggregate, very likely reflecting the prevalence of direct cash payments. Their time spent and transit costs for cash access are approximately equivalent to those with bank accounts. Use of informal financial services has very similar effects, systematically raising fee expenses for access to cash but having very little effect on the time and money required to access the cash.

INFORMAL SECTOR

The intensity of Mexico's cash usage is often attributed to the country's high level of informality in business and employment. Informal businesses usually do not use bank accounts, and pay suppliers and employees in cash. Furthermore, informal merchants accept only cash for purchases or at best extend informal store credit (*fiado*) that is later repaid in cash or kind. According to the World Bank's 2010 Enterprise Survey in Mexico, 38% of all firms in the country do not have a checking or savings account.¹ Even among large businesses, some 30% have no bank account.

About 29% of Mexico's economically active population works in the informal sector, according to Mexico's national statistics agency (INEGI).² Even when formal enterprises are considered,

approximately 54% of Mexican workers are under informal employment, meaning they do not have a formal contract, do not receive social security or other benefits, and—very importantly—are most likely paid in cash. The prevalence of informal employment varies by industry, with manufacturing and services among the highest rates and construction well below the national average: manufacturing, (66%), services, (63%), transport, (50%), trade, (50%), and construction, (29%).

¹ World Bank and IFC, 2010. *Enterprise Surveys: Mexico Country Profile*.

² The informal sector, according to the International Labor Organization, consists of enterprises that are not registered as legal entities and typically lack accounting systems to distinguish between business activities and other flows of household income and capital. See Instituto Nacional de Estadística y Geografía (INEGI), *Encuesta Nacional de Ocupación y Empleo (2013 Q1 data)*.

CASH INCOME AND NONCASH INCOME

Income payments are often received in cash and so are household balances for short-term consumption. Only 14% of Mexicans claim to receive salary and wages deposited into accounts. Paychecks and payroll cards are frequently cashed out, and anecdotal evidence suggests that demand for cash periodically outstrips ATM capacity on paydays. Households must therefore manage relatively large balances for current consumption and prudential savings, placing longer-term savings into valuables and financial assets.

The form of income payments strongly affected preferences for cash versus deposits. Those that receive their income in cash are some 58% more likely than similar individuals with no cash income to report that they immediately cash out all payments received. That finding simultaneously controls for financial services used and for employment; so it is the strongest evidence that policy choices, such as electronic benefits transfer programs, and employer choices, such as electronic payments for salary and wages, can in fact help to shape preferences of the general public. It constitutes weak evidence that receiving income in cash reinforces the perception that cash is more useful than deposits or payment systems.

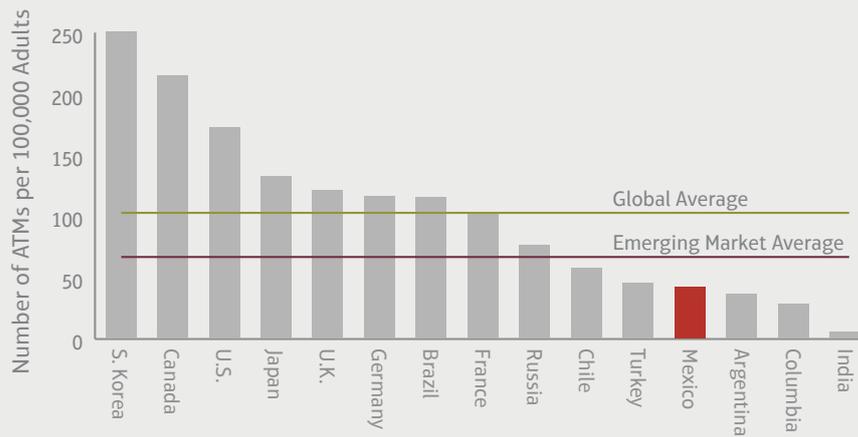
As employers shift payrolls from cash and checks to accounts, most Mexicans still receive income in cash. Until recently, Mexicans had the legal right to receive their wages in cash and relatively few preferred to receive checks. However, in the last five years, the government and employers have started paying more and more employees electronically by depositing their wages into payroll accounts with linked debit cards, or onto prepaid cards. Today, 14% of Mexicans over the age of 15 have an account where they receive wages or other work-related payments, according to the World Bank's Global Findex survey.¹⁰ The Mexican Banking Association (ABM) reports that these payroll accounts caused the number of debit cards issued in

¹⁰ The World Bank, 2011 Global Financial Inclusion (Global Findex) Database. See Asli Demirgüç-Kunt and Leslie Klapper, "Measuring Financial Inclusion: The Global Findex Database," World Bank Policy Research Working Paper WPS 6025, 2012.

BRICK AND MORTAR BANK ACCESS

Despite gradual increases in the number of bank branches and ATMs in Mexico over the last ten years, access to brick-and-mortar banking infrastructure remains lower than global and regional averages and partly explains the prevalence of a cash economy. The 2011 Financial Inclusion Report 3 (RIF) by CNBV shows that commercial banks were then present in only one third of Mexico's *municipios*, and that some 7% of the population lived in towns without any bank branch or correspondent service.¹ Bansefi estimates that one-third of the country's municipalities have no access to financial services such as banks, ATMs, and payment terminals.² The RIF definition of geographic coverage (municipalities with at least one access point) is also not especially stringent, in that *municipios* average 40,000 individuals in size and typically cover many square kilometers. It is no wonder that account ownership and account usage are lower in rural areas than in urban areas with better banking infrastructure. Rural populations are more likely to manage their finances in cash, at best using a combination of popular finance institutions and informal financial services. The fifth RIF indicates greater than 6% annual growth in the number of bank branches, while the number of correspondent bank locations leveled off.³

FIGURE 9. INTERNATIONAL COMPARISON OF CASH INFRASTRUCTURE



1 Comisión Nacional Bancaria y de Valores (CNBV), *Reporte de Inclusión Financiera 3*, 2011.

2 BANSEFI estimate quoted in Euromonitor International, *Passport: Financial Cards and Payments in Mexico*, January 2012.

3 Comisión Nacional Bancaria y de Valores (CNBV), *Reporte de Inclusión Financiera 5*, 2013.

The number of ATMs in Mexico has more than doubled in the last ten years, but remains well below global and emerging market averages in per-capita terms. As of 2011, there were just 46 ATMs per 100,000 adults, compared to a high of 250 in South Korea, and over one-hundred in countries like the U.S., Canada, Japan, and even Brazil. The numbers of bank branches and POS terminals in Mexico are likewise below global and regional averages. These shortcomings interact in ways pernicious to consumers. For instance, due to the modest share of businesses accepting card payments, even banked customers having debit or credit cards need hold cash balances in Mexico. Since ATM infrastructure is sparse, long lines often form outside ATMs on payday as salaried workers wait to withdraw cash. Growth in geographic coverage of ATMs and correspondents was strong in the last three years, increasing by 23%.⁴ At the end of 2012, more than 95% of Mexico's population lived in areas with at least one bank branch or ATM, and more than 97% in areas with banks, ATMs, points of sale, or bank correspondents. The most poorly served areas were Chihuahua, Tlaxcala, Yucatán, Puebla, and Oaxaca.

Moving forward, the outlook for bank infrastructure growth is mixed. On the one hand, recent legislation forbidding banks from charging ATM withdrawal fees to their own customers, diseconomies associated with building out infrastructure in rural, scantily populated, or otherwise currently undeveloped areas and commercial banks' reluctance to work with low-income populations may all contribute to the leveling off of growth in bank branch and ATM infrastructure.

On the other hand, a growing marketplace for third-party ATM operators promises to make cash logistics more cost effective. This may very well be the driving force behind ATM infrastructure growth in the future, as, rather than invest in new ATMs, most banks are today upgrading existing ones.

Sparse infrastructure is not the only relevant driver of consumer cash procurement costs, however. ATM interoperability is limited, as ATMs are networked, but cash withdrawals carried out at third-party bank ATMs are subject to steep commissions, and customers cannot process deposits at third-party ATMs. In addition to ATMs, Mexican consumers may obtain cash through cash-back services offered at a select few large retailers. This medium of cash procurement is still nascent, however. In 2009, there were 16 million cash-back transactions; in comparison, the number of ATM withdrawals that year amounted to nearly 1.3 billion.⁵

4 Comisión Nacional Bancaria y de Valores (CNBV), *Reporte de Inclusión Financiera 5*, 2013.

5 Bank for International Settlements, *Payment, Clearing and Settlement Systems in Mexico*, 2011.

Mexico to more than double between 1997 and 2003.¹¹ Large disparities remain between the rates at which rich and poor receive noncash payments (20% versus 5%), those with and without a secondary education (21% versus 6%), and rural and urban areas (6% versus 19%).

For employers and banks, payroll accounts are a win-win proposition, but not necessarily so for workers. Employers, for their part, save considerable time and money by not having to transport, sort, and distribute cash to each employee. Banks enjoy increased loyalty by cross-selling a new service to their corporate clients with large payrolls. Additionally, banks use data from their new salaried client base to promote lucrative consumer credit products. The Mexican Banking Association (ABM) reports that credit to payroll account holders—albeit a very new product line—is growing at 50% annually.

Workers, on the other hand, are not always happy to have their salary deposited into an account. In Mexico, as a small but critical mass of people began receiving their wages electronically, workers and consumer advocates began complaining that salaries were being chipped away by banks' ATM withdrawal commissions, low-balance charges, and other fees. In response to growing complaints around bank fees and charges, in 2008 the government mandated that commercial banks create zero-fee accounts specifically designed for salary payments. To a large extent, this move was self-serving, as the government was interested in abating administrative costs by depositing public sector employees' salaries into payroll accounts.

However, even as a new cohort of formal salaried workers crosses the threshold into electronic payments, the evidence points to payroll funds not staying inside the banking system for long. Experts point out that many—if not most—payroll account holders withdraw their salary in cash from a bank teller or ATM on payday. Even a casual observer in Mexico would notice long queues at ATMs and bank branches on certain days of the month. With only 8% of Mexicans reporting that they have made some kind of electronic payment in the past 12 months, clearly many holders of accounts are not using these as transactional instruments, but instead solely as precursors of cash. Indeed, it is possible to infer that the expense budget of a low-income worker in Mexico is largely comprised of cash obligations, as alternative bill-pay networks accept only cash payments and other obligations like rent or school fees must either be paid in cash or by depositing cash into a payee's bank account. Even where payments can theoretically be made electronically, such as through online banking or automatic bill-pay, the hurdles are high for a low-income worker lacking Internet access.

As previously mentioned, Mexican labor law grants workers the right to receive wages in cash, at their place of work.¹² The original intent of the law was to differentiate cash wages from in-kind benefits such as food and transport vouchers, to ensure employees adequate cash remuneration. As electronic payments have become more prevalent, however, this legal provision has been disputed. A legislative bill that seeks to establish wage payments as acceptable if paid either in cash or a mutually accepted electronic medium is currently under discussion in the Mexican congress.

Nearly one in every five households in Mexico receives remittances from migrants living abroad, primarily in the United States, according to the Bank of Mexico. Likewise, some 5 million Mexicans, or 4% of the population, have migrated internally and are sending money home regularly. The following section looks at both international and domestic remittances as a source of income for Mexican households. In both

11 The number of debit cards issued increased from 14 million to 33 million from 1997 to 2003. "Relevancia De Los Medios De Pago," *Asociación De Bancos De México*.

12 The Fletcher School and Bankable Frontier Associates, "Is Grandma Ready for This? Mexico Kills Cash-Based Pensions and Welfare by 2012," 2011.

cases, most remittances are immediately converted to cash, rather than deposited into an account. In 2011, Mexican migrants living abroad sent home an estimated US\$23 billion in remittances, representing about 2.5% of the country's GDP, according to the Bank of Mexico. Most international remittances to Mexico are sent through one of 21 remittance service providers (RSPs) operating in the United States and collected in cash at one of 20,000 payment points across Mexico.¹³ Most of these payment points are bank branches and retailers, but foreign exchange bureaus, pharmacies, *Telecomm-Telégrafos* offices, and the offices of many other service companies also provide remittance disbursements.¹⁴

The mean amount of each remittance sent from the United States to Mexico is about US\$400, with the average cost of RSP service hovering at around 6% of the amount sent.¹⁵ Roughly 60% of remittances are made in U.S. dollars, which the recipient picks up in cash and then can choose to convert to pesos. The average remittance amount sent by Mexican migrants is highly sensitive to the dollar / peso exchange rate.

Although most international remittances are still paid out in cash, a growing portion of migrants send remittances for direct deposit into their relatives' bank accounts.¹⁶ An interviewed remittances executive at a bank stated that about 20% of remittances are paid into bank accounts, compared to just 1% ten years ago. According to this executive, the proportion of remittances that are deposited into accounts at this bank has been growing by about 2.5 percentage points each year. This constitutes, however, a unique case—an institution that has actively promoted cash-to-account transfers.

In wider Latin America, only about 5% of all incoming international remittances are deposited into accounts. In principle, remittances deposited into accounts can entail considerable cost savings in terms of cash operations. For example, the bank cited earlier incurs in operational costs at least 9% greater costs when paying out a remittance in cash than it does when paying out into an account (US\$0.75 to pay out in cash vs. less than US \$0.08 for an account deposit).¹⁷

The effort that many international organizations and governments have invested into encouraging a greater proportion of remittances to be paid into accounts “has not been as successful as once hoped,” according to Hugo Cuevas-Mohr, a former money transfer executive who now runs the International Money Transmitters Association's Latin American conferences. Many observers point out that financial inclusion is still an extant issue in Mexico, and that most banks are not interested in providing savings accounts to remittance recipients, typically having relatively low incomes.

Domestic P2P payments in Mexico likewise constitute a substantial flow of financial resources. Manuel Orozco, a senior remittances researcher currently at Georgetown University, estimates that some 5-8 mil-

13 This is considerably lower than a high of 69 RSPs in the U.S.-Mexico remittances marketplace in 2003, which sprang up from just 25 in 2001. Since 2003, there has been considerable consolidation of the sector after a period of intense competition. See Manuel Orozco, Elisabeth Burgess, and Landen Romei, *A Scorecard in the Market for Money Transfers: Trends in Competition in Latin America and the Caribbean*, Inter-American Dialogue, June 18, 2010.

14 There are 862 different institutions licensed to pay out remittances in Mexico, which have a combined total of 20,611 unique payment points in the country, 60% of which are located in urban areas.

15 The cost to send varies considerably depending on the remittance service provider (RSP). To send US\$200, bank transfers, such as Bank of America's SafeSend product, cost as low as 1.6%, as of data collected in 2010. At that time, Wells Fargo charged 3.73%, Viamericas charged 4.86%, and Citibank charged 4.9%, for example. The average cost to send has trended downwards in recent years. For example, in 2002 a remittance from the U.S. to Mexico cost on average 9.3% of the principal amount sent. Costs vary considerably by remittance city of origin.

16 The marketplace for Internet-based remittances has grown considerably in recent years, with growth being driven by players such as Xoom.com. Web-based remittance services allow for payout either in cash or into an account. As of 2010, about 10% of remittances from the United States to Latin American nations were sent through web-based services.

17 This is a marginal cost of payment services that excludes fixed costs of marketing and new customer acquisition.

UNLIKE INTERNATIONAL REMITTANCES, WHICH TODAY ARE LARGELY SENT ELECTRONICALLY, ABOUT 65% OF DOMESTIC MIGRANTS CARRY MONEY HOME IN CASH.

lion domestic migrants send remittances to family elsewhere in Mexico that could total some 70 billion pesos (about US\$5.4 billion) each year. Orozco says that the average amount a domestic migrant sends is about 1200 pesos (US\$90), sent on average 17 times per year.¹⁸

Unlike international remittances, which today are largely sent through formal RSPs, about 65% of domestic migrants transfer monetary resources in an informal manner, such as by sending cash by courier, or carrying cash home during a visit. Despite this high level of informality, the supply of formal domestic remittance products is growing. Senders can deposit cash into a recipient's bank account at a branch or make an inter-bank transfer over the Internet.¹⁹ Some international RSPs like MoneyGram offer domestic money transfers in Mexico. Migrants can also send cash through one of several local companies that have started domestic remittance services in the past five years or so, such as government-owned wire transfer company *Telecomm-Telégrafos*, *Bansefi*, which offers remittances through its *L@ Red de la Gente* network, and branches of banks like *Banco Azteca* and associated retailer *Elektra*. Among formal remittance-transfer providers, *Banco Azteca* has been the most aggressive in promoting domestic P2P payments and has the largest market share in terms of number of transactions. The cost of sending a domestic P2P transfer varies widely by company, from US\$2.30 to US\$10.80 for a 1000-peso (US\$83) transfer.²⁰

PAYMENT BEHAVIOR

The payment choice module of our survey requested that consumer describe their typical payment behavior, without reference to a specific time frame or location. We asked for information about two payment situations: bills and purchases. The bills included water, taxes, gas, electricity, rent, mobile phone, fixed line telephone, television, internet, bundles, credit cards, loans, merchant credit, and tuition. For bill payments, we asked about the payment instrument, the payment frequency, and time spent on travel and waiting in line. The purchases included food and drink, groceries, restaurants, transit fares, gasoline, books, clothes, consumer durables, and health care.

The prevalence of cash in the dataset overwhelms most of the other features of the data. Cash transcends socioeconomic and demographic divides in its primacy as a transactional medium in Mexico. All categories of bill payments are dominated by cash payments. Some patterns of payment preference appear when we only look at demographics and ignore financial access. These are partially driven by wealth effects and regional differences, but they are nowhere near as strong as the effects of financial access. Note that the model blows up with cash use because everybody uses cash. So there's no meaningful way to assess what drives cash use.

These results are quite telling. Financial inclusion has a large effect on how people pay, even controlling for what they pay for and where they pay for it. Income effects are still present, but cash recipients, even when controlling for demographic variables, employment, payment location, and context, have odds only half as high of paying with noncash payment instruments. Any type of bank income payment raises the odds of noncash payment, significantly, by 148%.

¹⁸ Interview with Manuel Orozco.

¹⁹ Small-value person-to-person Internet-based transfers have grown as the cost to send has come down. Today, small-value inter-bank transfers take place on the central bank's SPEI retail payment system.

²⁰ Interview with Manuel Orozco.

MOBILE BANKING AND MOBILE MONEY

Mobile banking networks in Mexico are still in their infancy, with most products aimed toward existing bank customers who use online banking. In May 2012, the Mexican Banking Association reported one million active mobile-money accounts.¹ The World Bank's Global Findex survey, conducted in 2011, found that 4% of Mexicans had used a mobile phone in the past year to pay a bill, while 3% had used one to transfer funds.

Telcel, the dominant cellular network operator, equips all of its new cell phones with a mobile banking application. Using this pre-installed app, smartphone users can log onto the online banking platforms of *Banamex*, *Banco del Bajío*, *Inbursa*, and *Bancomer*. Other commercial banks offer apps that can be downloaded, as well as SMS interfaces to perform certain banking transactions based on an existing bank account.

Two new mobile money systems have recently been launched in Mexico, following a regulatory overhaul allowing telecom companies to become banking agents and open low-value

accounts with limited "know your customer" (KYC) requirements that do not require previous bank account ownership.

- *Transfer* was launched nationally in April 2012 as a partnership between *Telcel*, *Banamex*, and *Banco Inbursa*. *Banamex* is the country's largest bank, and is a business unit of Citigroup. *Telcel* and *Inbursa* have as majority stakeholders the family of Carlos Slim, the famed business mogul. *Transfer* allows clients to sign up for a mobile account by making a phone call to Telcel and providing their name and national voter-ID number. Once registered, clients can use an SMS service to pay bills, and send and receive EFTs.
- *MiFon* is an initiative of *Banorte*, the largest domestically-owned bank, the state-owned network of wire transfer outlets *Telecomm-Telégrafos*, and MasterCard. After a pilot run in the village of Santiago Nuyoo, Oaxaca, the service was officially launched in several states in September 2012.

¹ Banca móvil supera el millón de usuarios, *El Economista*, May 17, 2012.

Credit card usage in bill payments seems to increase with age, if we ignore the financial access perspective. Those in the U45, U55, and U65 age groups exhibit a significantly higher likelihood of paying with credit. Socioeconomic class also seems to be an important factor in determining the likelihood of paying bills with a credit card. Credit card use for purchases also seems to increase with age, until a certain critical age is reached. Likelihood of credit payment increases for each successive age group, but decreases for the 65+ group. Socioeconomic categories C, C+, and A/B exhibit much higher odds of using a credit card in purchases. Some regional differences exist; individuals from Monterrey are more likely to use this mode of payment. Receiving income in any kind of bank payment also makes credit card payments for purchases much more likely, even when controlling for socioeconomic status and demographic variables. Debit card usage for purchases exhibits a pattern very similar to credit card usage. The frequency of reception of non-cash bank income is highly correlated with the variables we expect would characterize those gainfully employed: it peaks in the age groups U35 and U45, and increases with socioeconomic status.

The correlation between modes of financial access is high: individuals with a debit account were found to be much more prone to make payments with a credit or debit card. Reception of non-cash income, which can be thought of as a proxy for financial access, also appears to drive payment behavior. Individuals who receive any sort of non-cash payment pay with debit and credit cards much more frequently. The frequency of credit card and debit card payments is also higher in individuals with a debit account in their name, even when controlling for demographics and socioeconomic category.

Utilization of formal financial services is the most meaningful predictor of payment use after wealth. Who pays anything with debit? Mexicans with bank accounts and bank income are more roughly three-and-a-half times (3.4x and 3.7x) more likely to use debit accounts for payment, net of demographics and income, than the rest. Monterrey and Tijuana demonstrate some evidence of positive network effects, in that rates of debit use are systematically lower in Mexico City and Guadalajara.

Gender is the weakest predictor of debit and credit card usage in the mix. Adding the variable “gender” to a model that already addresses regional, income, age and financial access does little to enhance the performance of the model from a statistical perspective. Though gaps may exist in financial access and labor participation for women, there is no evidence of systematic difference in payments due to gender itself.

Bill type seems to be largely irrelevant for payment location, based on evidenced gathered. For most bill categories, the payment location of choice is the utility or service company office. In the case of products and services without an associated service office (such as rent), the payment location of choice is most often a bank branch. Socioeconomic status, age, educational attainment and employment have no bearing whatsoever on service payment location. Service-office payments constitute the bulk of payments across demographic categories. Bill categories that deviate from the payment behavior described above are the following: gas bills, which are paid almost in equal proportions at the utility company office and bank branches, and pay-as-you-go mobile phone credit, largely paid for at supermarkets. Most payment categories have a monthly frequency. This is the case for TV service, water, tuition, rent, bank loans, post-paid mobile telephone service, Internet service, landline telephone service, bundled communication services, and credit cards.

Unsurprisingly, odds of paying in cash are much lower for payments made over the Internet, and by mobile banking platforms. Payments made at home have significantly higher odds of being made in cash, possibly capturing the effect of cash-on-delivery transactions. Payments made in convenience stores are also disproportionately made in cash. Rent and taxes, a bit more surprisingly, also have significantly higher odds of being paid in cash. The payment categories for which significantly higher odds of not being paid in cash are found are postpaid mobile telephone airtime and bank loans.

Propensity to pay in cash is highly correlated, inversely, with socioeconomic category. Individuals in the lowest two socioeconomic categories, D and D+, are found to have significantly less odds of using non-cash instruments to pay bills and services. Individuals at the top of the socioeconomic pyramid (AMAI categories A/B and C+), in contrast, are found to have significantly higher odds of paying with noncash media. Those self-employed, as well as business owners seem to be more prone to pay their bills in cash. Homemakers also follow in this pattern.

Controlling for demographic factors such as socioeconomic class, employment status, and age group, telecommunications payments such as mobile phones and Internet service are the most common bills to be paid by noncash instruments. Whether an individual receives any kind of payment in non-cash form also seems to matter significantly: cash receivers are cash payers on average, while non-cash receivers are much more prone to make non-cash payments.

Furthermore, controlling for all demographic factors as well as bill type, payment context seems to matter less to determine whether cash is used. However, payments made over the Internet continue to appear as significantly less prone to be made in cash. Payments made in bank offices and at home, however, have higher odds of being in cash.

Controlling for bill type, financial access does not seem to have much relevance in determining payment location. This finding is robust to alternative specifications of the model, and does not change when controlling for demographic variables.

Conclusions and Implications

1. **To the extent that our survey is representative of Mexico as a whole, the costs of cash access represent some MXN 2.3 billion and 48 million hours of time.** By the most conservative possible assumptions, the aggregate value of fees and time exceeds MXN 3 billion, and could very easily exceed MXN 6 billion, given what we know about the income distribution of individuals whose time is spent on cash access. These valuations make no effort to capture accidental losses, theft, and petty corruption that result in cash losses to Mexican households. To give a flavor of the discrepancy in size, narcodollar revenues from the United States to Mexico are thought to exceed US\$11 billion annually. Onerous as the costs of cash access are, it is likely that the indirect costs of cash (theft, corruption, security costs, and the opportunity cost of idle savings) eclipse the direct costs of managing cash balances.
2. **Mexican consumers face higher costs getting to the point of cash access than they do to withdraw cash once they arrive.** Transportation costs account for the lion's share of pecuniary costs. The average monthly cost of transit for cash access transactions is MXN 16.9 versus MXN 2.4 for transaction fees. Whereas transaction fees are only necessary for cash access transactions, the transit costs are often multipurpose. Attempts to capture the possible reduction in transit demand in payment choice studies have been largely inconclusive. Arbitrary and unsatisfying conventions such as attributing 50% of the transit cost to the transaction have been used in other studies. We report the total and acknowledge that transit costs may not fall linearly with a hypothetical decline in cash use.
3. **Formal financial inclusion alone does not lower the fees paid to access cash.** Bank account users incur higher fees for cash access transactions on a monthly basis, including all (bank and non-bank) cash access transactions.
4. **Alternate financial services users also spend more in a typical month on cash access costs.** The difference between users and non-users of alternate financial services is about the same as between the banked and the unbanked.
5. **The type of cash access point plays a very large role in determining the costs of cash access.** Cash access costs can vary from zero to several pesos per transaction depending on the type of access point used. Monthly costs of transportation to the point of cash access are also sensitive to the type of cash access point.
6. **Travel costs are particularly regressive, whereas fees catch the rich more often.** In the middle of the income distribution, time and money spent to obtain cash fall linearly as income rises. The rich have a number of confounding factors. They rely more on financial services in general, with greater rates of account ownership and usage and higher transaction counts per month. They are also more likely to own their own businesses. Since business owners often receive cash income directly into the business, the wealthy show higher costs of time and money spent traveling to these transactions.



Cash contributes both to operational and indirect costs, such as fraud, money laundering, and tax evasion.

BUSINESS AND GOVERNMENT COSTS

Cash creates costs for government and the private sector both directly and indirectly. For government, the cost to print currency is a federal expense. But the size of that expenditure is vastly smaller than the financial consequences of cash's indirect costs, such as tax evasion, money laundering, and seigniorage. Seigniorage refers to the value of currency to the issuer. In ancient times, it was the difference between the face value of a coin and the value of the precious metals that went into the coin. Under modern fiat money, economists often refer to the interest on sovereign debt that backs the currency supply as seigniorage, since the central bank earns interest on its assets (sovereign debt) but pays nothing on its liabilities (currency).

The private sector similarly faces both direct and indirect costs of cash. The direct expenses of cash include security systems such as safes, alarms, vaults, and armored car systems, and also the time required to account and audit cash processes. Where businesses transact in cash and salaries are paid in cash, additional controls are necessary to audit every payment within the enterprise, since the payments are made by hand. Cash also creates indirect

costs to the enterprise, such as opportunities for fraud, theft and embezzlement that are far more difficult with electronic payment systems.

The hardest costs of cash to measure are the drag on growth and productivity induced by an all-cash economy. How much growth is lost because assets are not available to be reinvested? How many small businesses forego remote sales because they lack the payment systems required for noncash sales, or the credit required to fulfill orders by

cash-on-delivery? Costs such as these are profoundly specific to local market structure, business practices, and credit conditions.

In sequence, this chapter will discuss corporate fraud in Mexico, the tax gap, government payments through the unique payment account, money laundering, remittances, and policy implications. Our perspective is to discuss these costs as best as they have been estimated to date, and not to evaluate policy hypotheticals.

THE EXPANSION OF FINANCIAL SERVICES IN THE MEXICAN ECONOMY MAY HAVE INCREASED THE AGGREGATE COST OF CASH LOGISTICS IN MEXICO.

Private Sector Costs

The costs of cash to business are primarily felt through increased costs for cash management, potential for theft, and general loss of efficiency. We analyze the relative size of these costs and their distribution. We touch upon the institutional context in which these costs arise, and attempt to identify the rigidities that allow for their permanence, including vested interests. In this section, we also briefly comment on two mechanisms that further complicate the Mexican payments system: tourism and illegal activity—which introduce large sums of foreign cash into the country—and remittances.

CASH MANAGEMENT

A large proportion of the cost of cash for business is the managing, custody, and transportation of currency and coin. In Mexico, cash transportation and custody services are provided by a number of private firms, running considerably profitable operations. In 2010, the Mexican CIT (cash-in-transit) market was the fifth-largest in the world, with annual revenues of around USD \$900 million.²¹ In spite of the broadening of transactional financial services within the Mexican economy and the strides made in financial inclusion, this industry has grown steadily, even at a rate outpacing broader economic growth. We note cash in transit costs as a cost paid by the private sector to secure cash, a rough and conservative measure of resources invested in cash security. Clearly the cash logistics industry provides valuable services; and yet it is an allocation of resources necessitated by the inherent insecurity of cash. It is a cost of cash acceptance from the firm's perspective, and not a deadweight loss to the economy.

In fact, the expansion of financial services in the Mexican economy may have increased the aggregate cost of cash logistics in Mexico due to the cash-heavy nature of the economy, where financial services innovation typically begins in cash-hybrid services: remote bill payment, cash-on-delivery e-commerce, and cash-out for transfers such as peer-to-peer remittances and electronic benefits transfer. According to one of the market leaders of the CIT segment in Mexico, convenience retail outlets, which constitute the lion's share of banking correspondents, have quickly become the leading clients of cash transportation outfits, outpacing retail banks.²² If this stylized fact is taken together with CIT market trends in Mexico, it is possible to infer that correspondal models have at best transferred cash-logistics costs from individuals to corporations. Thus, the advent of correspondals has possibly concentrated these costs, allowing cash transport and processing companies to internalize a larger part of consumer surplus.

THE CASH-FRAUD NEXUS IN MEXICAN BUSINESSES

Cash is by no means the only way to achieve fraudulent ends, but sometimes it helps. Electronic transactions are more likely to provide itemized receipts with full information as to date, time, and counterparty where the transaction occurred. In principle, auditors and law enforcement can use that information to audit the accuracy of transactions. Cash is the best payment instrument available for fraud, exactly because of its lax accounting. Cash is a source of costs to institutions both public and private inasmuch as it facilitates fraud: in this section, we discuss and analyze this angle of cash costs in the Mexican economy.

National estimates of fraud involve both rigorous data collection and educated guesswork. First, to provide some global context: cash was used in 39% of asset misappropriation cases in the 2011 Global Fraud Survey, the flagship survey of the Association of Certified Fraud Examiners. Depending how many fraudulent disbursement schemes also involve cash, this number could approach 50%. Those numbers indicate that cash is a known, unpatched vulnerability in corporate financial practices.

KPMG published a national corporate fraud survey in 2010, which found an astonishingly high proportion of companies (75%) having been victimized by fraud in the previous twelve months.²³ Fraud had a

21 "Brink's Acquires Mexico's Largest Secure Logistics Company for \$60 Million," *Bloomberg*, November 17, 2010.

22 "Traslado de efectivo, buen negocio: Tecnoval", *El Economista*, May 24, 2012.

23 KPMG México, *Encuesta de fraude en México 2010*.

CASH FRAUD IS REGRESSIVE, AFFECTING SMALL AND MEDIUM ENTERPRISES DISPROPORTIONATELY.

global cost to the Mexican economy, according to this same study, of US \$1.4 billion in 2010. Assuming that the cash share of fraud is the same as the cash share of retail transactions, we could guess a cash-fraud prevalence of around 90% of total fraud. This figure would imply a per annum cost of more than US\$ 1.2 billion for cash fraud.

The flagship study of international fraud risks, published by the ACFE, relies on case work presented by professional fraud examiners.²⁴ Each case submitted is a known fraud from a known company that resulted in disciplinary action (termination, prosecution, or admission of guilt). Although the consensus estimate of fraud examiners is that 5% of global GDP is lost annually to corporate fraud, this figure includes many types of fraud unrelated to cash: including all manner of financial statement fraud and corruption, and non-cash asset misappropriation. Our concern revolves around the exposure of businesses to various forms of cash theft. Depending how the cash enters the business, employee theft may be classified as skimming, larceny, or fraudulent disbursement. Cash may also be a preferred method of completing bribery and other corruption payments.

Cash fraud events tend to be smaller in value than non-cash fraudulent events: median cash-related frauds transactions are about US \$54,000 in value, slightly half as large as the median asset misappropriation.²⁵ One reason that cash frauds are small is because skimming and cash register disbursements lend themselves to persistent thefts of amounts too small to raise suspicion.

Cash fraud is regressive, as it affects small and medium enterprises (SMEs) disproportionately. In the context of an emerging market, such as Mexico, this constitutes yet another barrier to private enterprise, especially for low- and middle-income entrepreneurs who often times already face razor-thin margins. Larger, cash-intensive retail businesses make frequent bank deposits and use smart safes to limit cash stocks in the business. They also use security measures such as video surveillance and accounting controls to limit the risks to existing cash stocks. These larger businesses are also more likely to find the fixed costs of cash security cost effective. The divergence between large and small businesses is reflected in global ACFE fraud data. Small businesses are almost twice as likely to suffer from skimming, with 21% having reported a skimming event in the past twelve months, as opposed to only 12% of large businesses. Cash larceny (17% vs. 14%), and cash on hand (14% vs 11%) also seem to be more prevalent, apart from more costly, for small enterprises.

In addition to the accrued costs of cash fraud, firms spend time and money to mitigate the risk of *unrealized fraud*. Accounting costs, cash in transit, safes, and security personnel are examples of the expenses required to mitigate the risk of cash theft. Although retail security survey data are available in the United States, equivalent data are not available in Mexico to detail such expenditures. Fraud-prevention measures, in addition to being accessible to only a small minority of enterprises, are costly in terms of both direct and indirect costs, taking the form of both fees and forgone output. Only piecemeal evidence in narrow industry segments is available.

The fraud-prevention measure *par excellence*, financial auditing has grown to massive proportions. This market structure, unto itself, entails higher audit costs for Mexican companies, vis-à-vis foreign competitors. It is likely, nonetheless, that the excess cost of auditing brought about by market structure pales in

²⁴ Association of Certified Fraud Examiners, *Corporate Fraud Handbook: Prevention and Detection*. John Wiley and Sons, 2013.

²⁵ Association of Certified Fraud Examiners, *ACFE Report to the Nations 2012*.

comparison to the excess cost implied by the prevalence of cash transactions. The anonymity afforded by cash as a medium of exchange—which comes as a boon to would-be felons—increases the costs of operational monitoring and ex-post-facto forensic accounting analysis. The distributional impact of monitoring and auditing costs is also significant in economies such as Mexico. As before stated, small enterprises may be incapable of establishing and managing the supervisory mechanisms needed to counter and prevent fraudulent activity. Medium-sized firms, who may be obligated to acquire audit services, carry a cost burden which may inhibit their growth. The burden of cash costs falls heaviest on small business.

Costs to the Government

The Mexican government has prioritized financial inclusion and alternative payment mechanisms to displace cash usage. We discuss the Cuenta Única de Tesorería (CUT) payment account introduced by the Mexican federal government, which has been a powerful example of how a centrally designed payments system can create significant savings and reduce opportunities for undue influence. Additionally, less stringent KYC requirements, the new regulatory framework governing *corresponsales*, and regulation of card-service fees should certainly move Mexico forward in terms of payments infrastructure. However, below we discuss how cash still poses significant costs to the government, most pertinently by playing a key role in maintaining the tax gap.

THE TAX GAP

Mexico has, by far, the lowest tax revenue, as a share of GDP, of any OECD nation.²⁶ When compared to its Latin American peers, Mexico still comes out as sub-par, with relative tax revenues trailing those of Argentina, Brazil, Chile, and Ecuador. Undoubtedly, multiple factors are at play in depressing tax revenues for the Mexican state. The prevalence of cash operations within the economy, however, cannot be downplayed, as it is clearly one of the more relevant causes for this state of affairs. Although fiscal reform has been a highly heralded item on the political agenda as of late, little to no attention has been paid to the role of cash eminence in perpetuating this gap, nor the potential for electronic payments to provide a viable remedy.

However, the prevalence of cash operations within the economy as an enabling factor cannot be downplayed.

The volume of the gap in tax revenues directly caused by cash is difficult to estimate, for a variety of theoretical and practical reasons. It is possible, however, to roughly estimate of the size of the tax gap by applying the average effective tax rate on the whole economy to the volume of the informal economy. We estimate the Mexican tax gap to be MXN 701 billion (\$53.4 billion).

26 OECD/ECLAC/CIAT, *Revenue Statistics in Latin America 2012*, OECD Publishing.

THE REVENUE STRUCTURE OF MEXICO'S ECONOMY

Oil revenues are of key importance for the fiscal structure of Mexico, accounting for a third of national income.¹ Mexico's three main sources of non-petroleum tax revenue are the personal income tax, the VAT and the corporate tax. Corporate profits are taxed at 30%. Personal income tax rates are as high as 28% (down from 30% recently), while the VAT rate stands at 16%. When oil revenues are subtracted from the total public sector revenues, Mexico's fiscal position looks even direr. Value added taxes collect only 3.9% of GDP; this figure leaves Mexico second-last as compared to its Latin American peers.

According to the IMF, Mexico's national revenue-to-GDP ratio is 23%. Leaving aside the 33% of national revenue from petroleum, the share of national income ultimately realized as tax income, or *average effective tax rate*, on Mexican (non-petroleum) economic activity is 15.2%. This estimate, however, does not incorporate the tax gap stemming from under- or misreporting of cash activity within the *formal* sector, which may be substantial. Also, much as the figure of interest is the *cash-induced* tax gap, the estimate obtained is biased upward by evasion associated with non-cash transactions *within the informal sector*, as marginal as these may be.

Mexico's informal economy constitutes about 29% of the volume of reported GDP, according to data from INEGI, the national statistical agency of Mexico.² A 2010 World Bank study placed the volume of the informal economy slightly higher, at 31.7%.³ We use an approximate figure of 30%, so as to establish an upper bound for foregone tax revenues. ILO estimates that 34% of the non-agricultural workforce is in the informal sector (i.e., working for businesses with no official charter or tax identity) and a further 20% work without a formal contract for a formal business. Certain sectors with a large share of the labor force, such as construction (9%) and trade (34%) have markedly higher informal employment, at 78% and 66% respectively.

There is a dense web of linkages between national economic policy and the informal economy. Transactions may be intentionally mispriced to slash tax liabilities, though such a ruse can only work to the extent that the whole value chain colludes to defraud the tax man. Illicit trades, unreported barter transactions, and do-it-yourself jobs may also disguise income from tax authorities, so long as they substitute from expenses and do not specifically result in capital-gains liabilities. However, in developing markets, informality is most often not the product of deliberate malfeasance, but rather the offspring of economic hardship and institutional weakness. Low-income entrepreneurs most often do not perceive any benefit from registering into the tax registry.

Although it is by no means obvious that cash is the *sine qua non* for tax cheats, or that tax evasion is limited to the informal sector, we believe that the estimates at which we arrive do provide a proximate figure of reference that can animate thought and debate on the role of cash in facilitating fiscal evasion within the Mexican economy.

1 National Resource Governance Institute, Mexico (Website), 2013.

2 Organización Editorial Mexicana, "Crece el sector de la economía informal en México: INEGI," La Prensa, June 22, 2012.

3 Schneider, Friedrich, Andreas Buehn, and Claudio E Montenegro, "Shadow Economies All over the World New Estimates for 162 Countries from 1999 to 2007," Policy Research Working Paper, 2010.

DESPITE GENEROUS PETROLEUM INCOME, UNCOLLECTED TAX REVENUES ARE A MUCH HIGHER SHARE OF TOTAL GDP IN MEXICO AS COMPARED WITH THE UNITED STATES.

TABLE 2. MEXICO'S TAX GAP IN 2012

Concept	Rate	Value (USD)	Value (MXN)
GDP	unity	1,180 billion	15,500 billion
Informal economy	30.1%	352 billion	4621 billion
Tax gap	15.2%	53.4 billion	701 billion
Tax gap per capita		445	5,850

Despite generous petroleum income, the burden of uncollected taxes hits Mexico much harder than its neighbor, the US. The national tax gap in Mexico is nearly one quarter of the size of the American tax gap—this is not good news for Mexico, as the US economy is more than twelve times as large as the Mexican economy. In per capita terms, the Mexican tax gap is nearly one-third the size of United States tax gap, and yet national output is only one-fifth as large. Additionally, the Mexican informal economy as a share of GDP is some three times higher than the US rate.

Where the informal economy is widespread, the returns to formalizing the underground economy are likely far greater than painful increases to marginal tax rates on innocent businesses and taxpayers. No feasible rises in average effective tax rates in Mexico could generate revenue anywhere near those collectable if government can coax gray markets into the sunlight. Effectively, and because of the size of the informal economy in Mexico, even a policy only 22% effective in steering unsanctioned markets out of the shadows could derive into annual revenue growth equivalent to 1% of GDP. That is an astonishing opportunity for Mexico's fiscal health. With Mexico's GDP at around 16 trillion MXN and an informal sector around 30% as large, every 1% of the informal economy that can be brought into the formal sector corresponds to more than MXN 7 billion of new annual revenues, without raising tax rates.

The Public Policy Dimension

Although it has slowly been liberalized, the Mexican financial sector still bears the imprint of the twin crises of 1982 and 1994, which led to a stern tightening of the regulatory framework. On the demand side, financial volatility has made Mexican savers slow to trust banks, and consumers wary of bank-mediated payment mechanisms. In this context, retail banks are saddled with increased cash distribution costs, and undue pressure is placed on bank reserves.

Fortunately, the Mexican government has demonstrated an understanding of the myriad factors causing low usage of non-cash alternatives and has begun implementing a variety of initiatives to promote electronic payments, both on the demand-and supply-sides. As the leader of G20 in 2012, Mexico brought financial inclusion to the forefront of the agenda, signaling that it was a significant priority for the country. A national council for financial inclusion was created to further underscore the government's commitment to such initiatives. A number of important regulations have been introduced to address consumer concerns of using non-cash payment alternatives, including looser KYC (know your customer) rules, banking correspondent permits, mobile money promotion, and enhanced regulations on fees charged. Additionally, the Mexican government has promoted the increased usage of electronically distributed salaries, either via prepaid cards or payroll accounts linked to debit cards.

The Mexican government has taken a first-hand lead in propelling electronic payments in Mexico. The federal treasury (*Tesofe*) recently mandated universal agency participation in its newly launched national electronic-payments system. As a consequence, national payment accounts for all federal agencies were consolidated into a single account, from which all payments are to be made. All government salaries, procurement disbursements and social transfers of all kinds will be drawn from this comprehensive account. We present a brief history and analysis of this integrated-payables mechanism in the following section.

CUENTA ÚNICA DE TESORERÍA: THE GOVERNMENT TACKLES E-PAYMENTS

In order to reduce cash-management risks within its own financial administration, in 1997 the Mexican government began to establish an electronic-payments system, aimed to fulfill all federal public-administration obligations. It was not until 2003, however, that this system became operational.

In 2007, Cuenta Única de Tesorería (CUT) was fully implemented, allowing *Tesofe* to execute almost all Central Sector payments.²⁷ Another important milestone in the CUT implementation process took place in that same year, as *Tesofe* began making all Central Sector payroll payments. Recently, *Tesofe* has required that government payments be carried out electronically if and when at all possible.

Moving to a single account system presented enormous advantages, in that it simplified administration and reduced duplicate processes across the revenue and budgetary system. Despite the obvious advantages of a centralized system for managing everything from revenue collection to supplier payments and payrolls, achieving the payments system overhaul was a job of titanic proportions. This task required profound legal changes related to the financial structure of the federal government, starting with the introduction of the CUT system in the Federal Law of Budgeting and Fiscal Responsibilities. These reforms were needed to enact specific control mechanisms to achieve transparency, efficiency, and effectiveness. Specific reforms included mandating all expenditure units to execute payments through CUT, as well as requiring the report of all bank accounts held by government offices to *Tesofe* for approval.

As a result of CUT implementation, *Tesofe* does not require transferring large amounts of funds to particular dependencies each month to face obligations with suppliers and employees—instead, most payments are made for them. Although the launch of CUT did not fully eliminate the use of bank accounts by government agencies, it dramatically reduced the amount of liquid funds needed to be held by these.

Thanks to the implementation of the CUT system, *Tesofe* has been able to pay up to 70% of the federal government payroll through electronic transactions. The remaining employees specified that they prefer to receive payment in cash or check: according to Mexican labor law, until very recently, employees could decide the medium by which they received wage payments.

Previously, all public agencies were free to choose the financial institution that managed its funds, account terms, and conditions—including fees charged per transaction—creating high variation and increased overall cost. Guillermo Babatz of Bankable Frontier Associates and Atik Capital, and former CNBV chief, has estimated aggregate savings for the Mexican government at USD \$1.27 billion annually.²⁸

27 The “Central Sector” is composed of all federal government offices, except those designated as decentralized or autonomous, such as IMSS, *Banobras*, *Bancomext*, UNAM, PEMEX, etc.

28 Guillermo Babatz, “Sustained Effort, Saving Billions: Lessons from the Mexican Government’s Shift to Electronic Payments,” *Better than Cash Alliance Mexico Case Study Highlights*. November 2013.

OPORTUNIDADES

Government welfare payments are an important source of income for many Mexicans. Mexico's much-hailed conditional cash transfer program, *Oportunidades*, directly transfers about US\$3.2 billion in cash each year to more than six million families, about 20% of the country's population. In 2008, *Oportunidades* began transferring money to recipients through Bansefi's payment cards and its network of correspondents *L@Red de la Gente*. In urban areas, beneficiaries received debit cards linked to a no-frills savings account known as *Debicuenta*, while in rural areas they received prepaid cards, due to the lack of banking infrastructure.

The primary purpose of turning welfare payments electronic was to reduce transaction costs for beneficiaries, who previously had to travel an average of 4 hours to claim their *Oportunidades* cash transfer.¹ The following timeline of Mexico's key developments in financial inclusion was developed for a joint case study by The Fletcher School and Bankable Frontier Associates.²

- 1997: Mexico's Treasury Ministry begins to centralize payments into a single account.
- 1999: Mexico develops the real-time gross settlement (RTGS) payment system.
- 2008: *Oportunidades* begins electronic disbursement.
- 2010: The Federal budget requires 100% electronic disbursement.
- 2011: *Oportunidades* achieves 34% electronic disbursement.
- 2012: Deadline to achieve full electronic disbursement of government payments to individuals.

As electronic transfers ramped up, however, a number of challenges inhibited the program's success. The program's design reflected deep disagreements among government ministries about the usefulness of electronic payment systems for the poorest of the poor. Broadly speaking, the Finance Ministry favored electronic transfers, due to the considerable cost savings to be had with electronic delivery. The Social Development ministry, the *Oportunidades*' host organization, on the other hand, remained pro-cash, arguing that conditional cash transfers were intended to be spent on consumption needs, rather than saved, and that beneficiaries needed cash to make payments.³

The Finance Ministry forged ahead, and electronic payment distribution began in 2008. By 2010, the Finance Ministry mandated that all G2P payments, representing some 32 different programs, be disbursed electronically by December 2012. In the case of *Oportunidades*, the program required that the full amount of the transfer be transported in cash to distribution points, even for recipients whose money was deposited to a card. Thus, from an operational perspective, there were no cost savings. Indeed, recent analysis by CGAP estimates the average cost for delivering payments electronically to be 22% higher than the highest fee paid for cash distribution.⁴

Additionally, *Oportunidades* required prepaid card recipients (80% of beneficiaries) to withdraw the entire balance of their account within five weeks, or risk losing it.⁵ Beneficiaries could re-deposit some or all of their cash into their account, but many recipients were not even aware that they had an account, and program staff was not well-trained to encourage account usage. One study found that *Oportunidades* recipients preferred the electronic payment scheme because it did not require them to pick up cash on a specific day and could send someone else to pick up the money, allowing them more flexibility. This study also revealed widespread confusion among beneficiaries regarding rules for withdrawal from and deposit into the account.

1 Luis Treviño Garza, "Promoting Micro-Savings Among the Lowest End of the Income Segment: Conditional Cash Transfer Programs in Mexico," in *The Fletcher School Leadership Program for Financial Inclusion: Policy Memoranda*, 2011.

2 The Fletcher School and Bankable Frontier Associates. 2011. "Is Grandma Ready for This? Mexico Kills Cash-Based Pensions and Welfare by 2012."

3 Consultative Group to Assist the Poor (CGAP), G2P Payment Conference Proceedings, Washington, DC, May 2012.

4 CGAP estimates that the weighted average cost per payment is 2.5% of the value of the average payment. For Bansefi, which operates the accounts, the business case for providing savings products to *Oportunidades* beneficiaries is not clear. "Account usage is low, opportunities for revenue are slim, and average balances are not sufficient to generate substantial float income," according to the CGAP report. Additionally, the bank faces high costs in building the distribution network, is not allowed to charge fees on the accounts, and cannot cross-sell higher-return products such as credit due to a government rule restricting Bansefi from engaging in retail lending. Thus, the business case lies mostly in the substantial government fee income to be gained from operating such a massive scheme, as well as the possibility of earning new government contracts.

See Consultative Group to Assist the Poor, *Mexico Country Report*, CGAP G2P Research Project, October 2011.

5 A few pilot programs allowed recipients to store money longer.

THE NATIONAL TAX GAP IN MEXICO IS APPROXIMATELY 700 BILLION PESOS (US \$53 BILLION)

Babatz calculates savings from three expenditure areas: federal salaries, pensions, and other public sector transfers. The costs that the Mexican government is able to curtail through payables consolidation are also threefold: float, transaction fees, and leakage, or unauthorized or incorrect payments.

Tesofe also transfers financial resources to local governments, both at the state and municipality tiers, as well as to government institutions outside the central sector. The benefits of this unique account, however, cannot be transferred to state governments and other non-centralized government institutions; *Tesofe*, however, has offered them to make payments on their behalf. The Mexican Institute of Social Security (IMSS) has exercised this option in making retirement-fund payments. In 2012 alone, this decision may have saved IMSS up to 120 million pesos (approximately USD \$10 million) on bank fees alone. If local governments (both states and municipalities) adopted CUT services, induced savings would be of approximately 239 million pesos (USD \$19 million) per year.

In 2012, *Tesofe's* services through CUT were extended to social subsidies programs such as *Oportunidades*. The objective of the federal government in doing so went beyond simply reducing administrative costs, and was also aimed at promoting take-up of financial services, particularly among a segment of the population unfamiliar with financial institutions.

The efforts of the Mexican government in this regard have been fruitful, and have accomplished the goals established. For *Tesofe* this has meant advancing the savings objectives of the Federal government by leaps and bounds; however, there is widespread awareness that CUT can yet be improved and provide larger savings to the Mexican state.

US Dollars in Mexico

While all Mexican financial and governmental institutions, as well as companies, manage cash in the form of pesos, many also have to manage the inbound flow of US dollars. In some areas of Mexico, it is possible for Mexicans and Americans to conduct business, legally and illegally, with US dollars, although recent restrictions have made it much more difficult to use US currency within Mexican national territory. The use of foreign cash in Mexico further complicates the payments panorama in this nation, as it acts as a competitor to more efficient, non-cash payment alternatives. Foreign cash also complicates financial oversight efforts, and acts as an abettor of the cash-induced tax gap.

This section will focus on three of the leading sources of US dollars in cash for the Mexican economy: tourism dollars, illicit funds (such as those derived from money laundering and other illegal transactions), and remittances, and it will discuss estimates of the total amount of US cash entering Mexico as a result of each of those activities.

TOURISM AND FOREIGN CASH

Tourism is a major industry in Mexico and one of the leading sources of foreign cash in the economy. It is the third largest contributor to Mexican gross domestic product.²⁹ In the year 2010, tourism contributed 8.6% of the total gross domestic product, or around \$77 billion (MXN 1.1 trillion) to the Mexican economy.³⁰ The following year, around 23.4 million individuals of all nationalities visited Mexico, and in 2012 during the period January through June, the Mexican Secretariat of Tourism registered a slight 2.2% increase in the number of American tourists visiting Mexico. During that same time period, the United States topped the list of countries sending tourists to Mexico, with around 3.2 million Americans visiting the country. Popular destinations for foreign tourists include the cities of Mexico City, Tijuana, Guadalajara, Monterrey, and Merida, as well as the beaches of the Riviera Maya, Los Cabos, and Puerto Vallarta. For good measure, Cancun remains the most popular destination abroad for American tourists.³¹ Thus, these areas, along with the numerous cities along the United States–Mexico border, are the locations where American tourists are most likely to transact in dollars.

The amount that tourists spend in Mexico depends on the type of vacation they take and their choice of destination. According to the Mexican Secretariat of Tourism, the average international visitor to Mexico in the first six months of 2012 spent around \$173.60 per trip, representing an increase in spending by about 8.3% over previous years. However, international visitors to the interior of the country (destinations that include major cities like Mexico City and Guadalajara) spent around \$760.90, whereas visitors to border regions only spent around \$59.90. Day-trippers visiting border regions, on the other hand, spent even less at around \$31.50, and those arriving on cruise ships spent around \$93.90, possibly since the prices of goods and services in both port cities and large metropolitan areas are steeper than along Mexico's border region.³²

Furthermore, according to this data source, the average amount that American citizens spent on one trip to Mexico in the year 2010 is \$658.60, but the figure increases when looking at Americans who arrive in Mexico via airplane (\$745.70) and decreases for Americans who crossed into Mexico by land (\$270.40).³³ The average American tourist pays for about 35% of expenditures in Mexico in cash.³⁴ Therefore, if we assume that the average tourist spends around \$658.60 per trip, according to the figures from the Secretariat of Tourism, approximately \$230.51 enters the Mexican banking system in cash per American visitor. Since Americans spend more on average than other international visitors to Mexico, no matter whether they arrive via land or air, they likely also contribute the greatest quantity of foreign currency in cash to the Mexican economy.

The tourism industry contributes significant sums of foreign currency to Mexican banking institutions. During the administration of President Felipe Calderon, foreign currency in Mexico generated by the tourism sector increased by over 23% as compared to the previous presidential administration under President Vicente Fox, representing an increase in foreign currency from \$55.5 billion (MXN 727 billion) to \$68.3 billion (MXN 894 billion).³⁵ Studies performed by the Secretariat of Tourism only provide information

29 Dina Berger and Andrew Grant Wood, eds., *Holiday in Mexico: Critical Reflections on Tourism and Tourist Encounters*, 2010, p. 2.

30 Secretaría de Turismo, *Sexto Informe de Labores*, 2012, p. 18.

31 Douglas Wright, "Where do Americans Go? Top 10 Most Visited Cities Outside the US," *NBC News*, 2012.

32 Secretaría de Turismo, *Sexto Informe de Labores*, p. 19.

33 Secretaría de Turismo, "Atlas Turístico de México: Compendio Estadístico 2012 – Excel file 3-4 in 'Gasto Medio, Gasto Medio Diario, Permanencia Promedio y Pasajes Internacionales del Turismo Internacional Anual,' 2012.

34 "Cash control on US dollars exchange in Mexico," *Doing Business in Mexico*, June 23, 2010.

35 Secretaría de Turismo, *Sexto Informe de Labores*, 19.

regarding the total quantity of foreign currency entering Mexico during these time periods, and do not specify whether foreign currency has entered Mexico via currency exchange, retail sales or other channels.

The increase in foreign currency flows into Mexico reported during this time period occurred despite restrictions in September 2010 to limit foreign cash transactions. The new regulations limit foreign currency deposits and exchanges to USD \$100 per transaction and \$1,500 per month. Furthermore, the Mexican Government has encouraged American tourists to exchange their money before arriving in Mexico in another attempt to limit the amount of US cash entering the country.³⁶ Tourists can continue to make payments of unlimited sums with debit and credit cards, and they are still permitted to exchange dollars for pesos in hotels and at some businesses that also operate as banking correspondents.³⁷

MONEY LAUNDERING AND UNLAWFUL TRANSACTIONS

The supply of US dollars in the Mexican economy derived from money laundering and other illicit transactions such as the sale of narcotics is of much greater concern to the Mexican government. Money laundering, defined by Woodrow Wilson Center expert Celina B. Realuyo as “financial transactions in which criminals seek to disguise the proceeds, sources, or nature of their illicit activities,” is one way in which drug trafficking organizations are able to conceal the source of their illegally obtained funds.³⁸ Drug trafficking generates enormous revenues for cartels; in the year 2011, “illegal drug export revenues from Mexico in 2011 were estimated at approximately US\$ 6.2 billion [MXN 81.1 billion], comprised of the major drugs: cocaine (est. \$2.8 b [MXN 36.7 b]), followed by marijuana (\$1.9 b [MXN 28.9 b]), heroin (\$0.9 b [MXN 11.8 b]), and methamphetamines (\$0.6 b [MXN 7.9 b]).” These figures refer to the value of the drugs themselves as they exit Mexico and transit the border. Once the drugs have been sold in the United States at a marked up price, the proceeds must make their way back to Mexico in order to pay suppliers and in order to launder the funds there. The Woodrow Wilson International Center for Scholars, Mexico Institute, notes that “US authorities estimate that drug trafficking organizations send between \$19 and \$29 billion [MXN 250 to 380 billion] annually to Mexico from the United States. Mexico is currently the primary placement area for US-generated drug dollars.”

The social costs of organized crime in Mexico defy quantification. Mexico has the second-highest count of murders (27,199) in the world, after Brazil.³⁹ The per capita homicide rate nearly tripled between 2007 (8.7 per hundred thousand) and 2011 (23.7 per hundred thousand) in response to cartel violence and the federal government’s crackdown. While a few troubled countries in Central America have higher homicide rates (notably Belize, El Salvador, Guatemala, and Honduras) and Mexico’s rate remains just a third of the worst recent years in Colombia, still the correlation with drug trafficking is impressive. The low-water mark for homicides in Mexico was under 9,000 in 2007, versus more than 27,000 in 2011 (most recent data available). Mexican states do not suffer equally under the scourge of drug violence, in a large country with many beautiful and safe areas. Chihuahua and Sinaloa suffered per capita rates more than

36 Laura Bly, “Mexico currency law makes it tougher to pay in dollars,” *USA Today*, October 28, 2010.

37 Secretaría de Turismo, “Nuevas medidas para el cambio de dólares estadounidenses en México,” December 17, 2010.

38 Celina B. Realuyo, *It’s All About the Money: Advancing Anti-Money Laundering Efforts in Efforts in the U.S. and Mexico to Combat Transnational Organized Crime*, The Woodrow Wilson International Center for Scholars: Mexico Institute, May 2012, p. 4.

39 UNODC, *Homicide Statistics*, 2013.

DRUG TRAFFICKERS SEND BETWEEN \$19 AND \$29 BILLION DOLLARS ANNUALLY FROM THE UNITED STATES TO MEXICO, WHICH IS THE PRIMARY PLACEMENT AREA FOR DRUG REVENUES FROM THE USA.

triple the national average in 2010, and both just as heavy as recent years in El Salvador and Honduras. Although there is no direct causal link between money laundering itself and cartel violence, cash is an essential operational element of organized crime, which could plausibly account for an incremental 22,000 violent deaths per year in Mexico.

The preferred method of moving drug proceeds from the United States to Mexico is via cash, since it leaves no paper trail and generates no suspicious transaction reports at banks. The result of bulk cash shipments to Mexico is US currency that must be repatriated to the United States. The Mexican government estimated that in 2007, some \$10 billion in US currency repatriated to the United States from Mexican banks could not be accounted for with national accounts data on trade and investment.⁴⁰ That corresponds to more than 60% of currency repatriated. Douglas Farah cites a range of academic estimates from US \$6 to \$36 billion, and an estimate of \$25 billion by the accounting firm KPMG.⁴¹

Farah explains further that the observed flows do not include amounts successfully interdicted by law enforcement authorities. From January 2008 to August 2010, bulk cash seizures that occurred on United States territory related with the activities of Mexican drug trafficking organizations totaled \$798 million. Furthermore, “since 2002, Mexico has seized over \$457.5 million [MXN 5.98 billion at today’s exchange rate] in bulk currency shipments. In 2010, bulk cash seizures amounted to US \$32.4 million and 87.3 million Mexican pesos (approximately \$7 million) amounting to some US\$ 39.4 million [MXN 515 million].” Once the cash has crossed into Mexico from the United States, however, drug trafficking organizations deposit it directly in financial institutions or send it to a *casa de cambio*, where dollars are converted to pesos, and then the pesos are deposited in another Mexican or international financial institution. Other forms of money laundering include trade-based money laundering and the transfer of cash illegally through use of prepaid store of value cards or mobile and electronic payments.

Consequently, the Governments of Mexico and the United States have committed to reducing the quantity of US dollars entering Mexico to be laundered in banks and *casas de cambio* and have produced their own studies on U.S. cash in Mexico. An official at the US Drug Enforcement Administration (DEA) on November 27, 2012, estimated that the Mexican Government receives about \$67 million (MXN 877 million) in US cash per year from American banking institutions. However, in the year 2007, Mexico repatriated to the United States over \$15 billion in US cash, around which \$6.7 billion were in bills of \$100 denomination.⁴²

In 2012, the amount of cash being repatriated to the United States from Mexico dropped by around \$10 billion dollars, perhaps due to the recession in the United States, heightened efforts to prevent bulk cash smuggling and money laundering, and a variety of other factors.

40 UNODC, *Estimating Financial Flows Resulting From Drug Trafficking and Other Transnational Crimes*, 2011.

41 Farah, Douglas, 2010. “Money Laundering and Bulk Cash Smuggling: Challenges for the Mérida Initiative,” 2010.

42 Interview.

While DEA and other US Government institutions avoid estimating the total quantity of US dollars in cash circulating in Mexico, due to the sheer difficulty of developing accurate estimates, limited information on cash held by drug trafficking organizations can be obtained from cartel members themselves after their arrests and from large cash seizures conducted by Mexican and American law enforcement authorities. The Woodrow Wilson International Center for Scholars, Mexico Institute, also conducted separate interviews with DEA officials, and reported that “DEA seized \$736.7 million [MXN 9.65 billion] in FY 2010 [from drug trafficking organizations]. Further, DEA [seized] nearly \$3 billion [MXN 39 billion] from drug-trafficking and money laundering organizations ... in FY 2010.”⁴³

Reliable estimates of US cash in the possession of drug trafficking organizations do not exist. Former Gulf Cartel kingpin Osiel Cárdenas Guillén is said to have claimed that banks could not handle the amount of cash they possessed, and certainly not without raising the suspicions of authorities.⁴⁴ Thus, cartels must find other ways to hide and store large sums of cash if they are not going to deposit it into the formal banking system. One way they can do this is to maintain the cash in clandestine storage warehouses or homes, as seen in the case of Chinese-Mexican drug dealer Zhenli Ye Gon, whose house was raided by Mexican authorities in March 2007, resulting in the seizure of \$205.6 million [MXN 2.7 billion] in hundred-dollar bills.⁴⁵ DEA confirmed that only seizure data and suspicious transaction reports are considered reliable indicators of money laundering in the law enforcement community, which is virtually certain to underestimate the scope of the problem.

As a result banks, businesses, and other financial entities are at the forefront of money laundering prevention programs and are some of the most capable institutions in detecting and reporting the occurrence of money laundering. DEA indicated that drug proceeds often enter Mexico through a lengthy process by which they are collected on the US side of the US–Mexico border, broken down into smaller quantities, transported across the border into Mexico, and then either sent to *casas de cambio* (some of which are operated by or associated with cartels) to be laundered before being deposited in bank accounts, or sent directly to Mexican and international banking institutions.⁴⁶ It is therefore the responsibility of banks to detect and report suspicious transactions to law enforcement authorities when they see red flags pop up. Banks on both sides of the border therefore pay attention to red flags such as “numerous incoming wire transfers or personal checks deposited into business accounts with no apparent legitimate purpose,” “large payments to foreign companies that are inconsistent with the amount of product received from these companies,” and “large cash deposits inconsistent with business type,” among others.⁴⁷ One of the largest recent money laundering cases included HSBC’s 2012 settlement with the US Department of Justice. The bank agreed to pay \$1.92 billion in fines to a group of US regulators for a pattern of noncompliance with anti-money laundering laws. Illicit drug proceeds in the court documents are estimated US \$881million, and gross repatriation of US currency between 2004 and 2008 at an annualized pace of about \$3 billion. HSBC has since ceased the so-called currency business, repatriating dollars to the United States from Mexico.

43 Realuyo, 17.

44 Interview.

45 John Paul Rathbone, “Money Laundering: Taken to the Cleaners,” *The Financial Times*, July 20, 2012.

46 Interview.

47 Realuyo, 9.

The United States has passed legislation to ensure that banks that operate in the United States do not consciously conduct business with known drug traffickers. According to Realuyo, money laundering itself dates to the 1970s, when the Bank Secrecy Act of 1970 made businesses responsible for keeping records that could be important in regulatory or tax matters.⁴⁸ The USA PATRIOT Act of 2001 also “amended the Bank Secrecy Act (BSA) to require certain financial institutions to establish proactive AML programs, through regulations issued by the Financial Crimes Enforcement Network (FinCEN).” Furthermore, the Office of Foreign Assets Control (OFAC) at the U.S. Department of the Treasury runs a list of designated international narcotics traffickers who are targeted for sanctions. That is, it is forbidden for American banks and businesses to conduct business with individuals or enterprises named on the list. This program has been successful in making it extremely difficult for narcotics traffickers to continue using traditional financial institutions for their banking and business needs and has even placed some in financial hardship; however, it may also be driving some financial transactions even further underground.

In order to combat money laundering, the United States Government must also work closely with the Mexican Government. Mexico has recently introduced legislation such as the Federal Law for the Prevention and Identification of Operations using Illicitly Obtained Resources (*Ley Federal para la Prevención e Identificación de Operaciones con Recursos de Procedencia Ilícita*), which was passed in October 2012 in order to establish procedures to detect financial transactions conducted with illicit resources and to ensure that Mexico is compliant with international regulations regarding money laundering and terrorist financing.⁴⁹ Banks have already started to implement these regulations, but given that they are so new, their effects on the banking industry and on financial transactions conducted by illicit actors are largely unknown.

IBGC also interviewed officials at Banamex and Televisa, two Mexican firms, to gain some sense of how these corporations manage their cash flows, attempt to prevent money laundering, and are affected by the regulations recently imposed by the Mexican government. Banamex, for example, in an interview in Mexico City on January 8, 2013, informed IBGC that they follow Citigroup policies regarding money laundering, as well as the Mexican Government’s regulations regarding the detection and reporting of suspicious transactions. However, they are unaware at the moment of the cost of these regulations on their ability to do business.⁵⁰

Money laundering regulations pose different challenges for Televisa, the leading largest mass media company in Mexico and Latin America. In interviews conducted with IBGC on January 8 and March 25, 2013, Televisa discussed its management of three thousand points of sale for lottery games in Mexico and the operation of seventeen casinos in seventy Mexican cities. Casinos are largely illegal in Mexico, and in order to operate within the law, Televisa has had to obtain government approval for the ones that they operate.⁵¹ Casinos attract great sums of cash and have been utilized by illicit actors as fronts for money laundering operations. They are frequently targeted by Mexican government actions to prevent money laundering and other illicit activities. Nevertheless, a large number of casinos still continue to operate illegally and pose a challenge in terms of competition for Televisa and other companies operating casinos that abide by Mexican Government anti-money laundering regulations. For example, Televisa requires individuals who gamble in its casinos to provide official identification or other documentation establishing their identity.

48 Ibid, 14.

49 “Estiman en 10 mil mdd al año ‘lavado’ de dinero en México,” *El Universal*, October 21, 2012.

50 Banamex, interview with author, January 8, 2013.

51 Televisa, interview with author, January 8 and March 25, 2013.

MEXICAN REGULATIONS HAVE SUCCEEDED IN REDUCING INTERNATIONAL FLOWS OF US DOLLARS BY CONVINCING LARGE AND INFLUENTIAL COMPANIES NOT TO ACCEPT THEM.

Furthermore, while most individuals gamble with relatively small sums of cash, individuals who want to play games with over 40,000 pesos in cash must enter into an agreement with the establishment in order for Televisa to verify the source of the cash. Thus, Televisa complies with Mexican Government regulations and is able to turn away customers who are unable to provide the required identity documentation or to establish the source of large sums of cash. However, as discussed in our interview with Televisa on March 25, 2013, Televisa faces competition from casinos that do not comply with these regulations or that would prefer to pay the authorities to remain in non-compliance.⁵² Televisa affirmed that it no longer accepts US cash in its casinos due to the federal ban on US cash use in Mexico; which in turn suggests that the legitimate gaming industry should be a poor conduit for illicit cash into the Mexican banking system. Regulations are having some effect on reducing the flow of US dollars in cash to the Mexican financial system, as large, influential companies like Televisa no longer accept them.

FOREIGN CASH FROM REMITTANCES

Another source of foreign cash in Mexico is remittances transferred home from abroad. Remittances to Mexico from other countries, particularly the United States, rose from the mid-1990s until the US economy entered into a recession in 2008.⁵³ Mexico and the United States remain among the biggest remittance corridors in the world, at US\$23 billion in 2011.⁵⁴ Although Mexico receives a large proportion of US remittances (19%), it constitutes a much smaller share of Mexico's economy (less than 2%) than for smaller and poorer neighbors, such as Honduras (15%). Indeed, the biggest change that led to the increase in the flow of remittances to Mexico was the average cost of money transfers, which "fell more than 50 percent between 2000 and 2006," in large part because of technological change. Thus, as costs declined, large numbers of migrants switched from carrying money home to using electronic transfers. The Bank of Mexico estimates that electronic transfers rose from 53 percent of remittances in 1996 to 86 percent in 2003 and reached 93 percent by 2006.

That said, some Mexicans do continue to send remittances in the form of cash to their families and acquaintances in Mexico through informal services. The World Bank reports that these services are "the largest undocumented segment of remittance products," and that they act as "courier services based on personal contacts that are deeply engrained in cultural and ethnic enclaves of society."⁵⁵ The World Bank also notes that it is difficult for financial institutions and Mexican banks to earn the same level of trust in the eyes of Mexican consumers as these informal mechanisms, which may explain why some Mexicans prefer to use them over remittance programs established by banks.

Worker remittances from the United States are a meaningful but declining part of household income in Mexico. By BBVA estimates as many as 5% of Mexico households receive remittances the United States.⁵⁶ The relatively high prevalence may simply reflect integration of the Mexican workforce into the US labor

⁵² Televisa, interview with author, March 25, 2013.

⁵³ Pia M. Orrenius, Madeline Zavodny, Jesús Cañas, and Roberto Coronado, "Remittances as an Economic Development Engine: Regional Evidence from Mexico," in *Migration and Remittances from Mexico: Trade, Impacts, and New Challenges*, ed. Alfredo Cuecuecha and Carla Pederzini, (Lanham, MD: Lexington Books, 2012), 188.

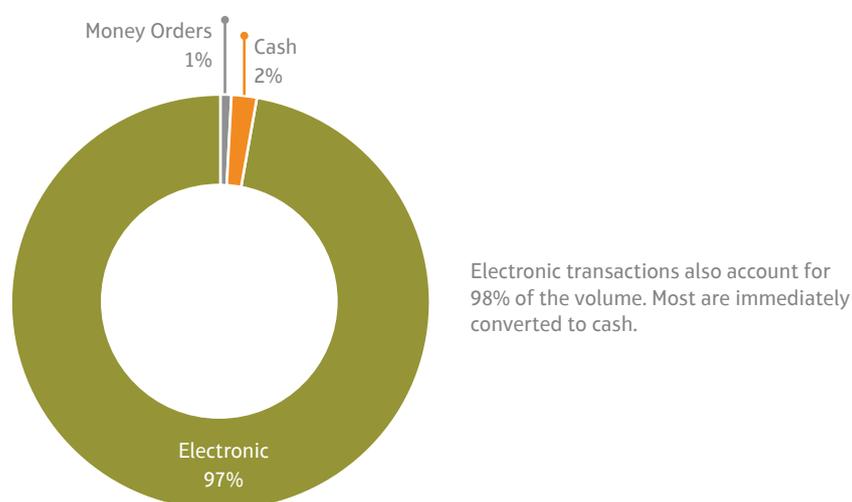
⁵⁴ World Bank. *Bilateral Remittance Matrix* 2012.

⁵⁵ Raúl Hernández-Coss, *The U.S.-Mexico Remittance Corridor: Lessons on Shifting from Informal to Formal Transfer Systems* (Washington: The World Bank, 2005), 14.

⁵⁶ Ordaz Díaz, Juan Luis, 2011. "Migration and Remittances," *Economic Watch Mexico*. BBBVA. Available at <http://goo.gl/gYFGJv>.

market after NAFTA. Yet, Mexico's share of US outbound remittances is impressive. Nearly a fifth of all US outbound remittances are sent to Mexico.⁵⁷ The next closest countries, India, China, and the Philippines, each bring home about a tenth. India and China's vast populations surely account for some of their apparent prowess in exporting labor to the United States. Only three other countries (Nigeria, Vietnam, and Korea) have greater than 5% market share. Korea is notable for its vastly higher GDP per capita than the other remittance recipients; and Nigeria for its large population.

FIGURE 10. REMITTANCES BY PAYMENT INSTRUMENT



Source: Banco de México.

Remittance flows have changed markedly in their format over time. In the late 1990s, checks accounted for an important chunk of Mexican money sent home; but today electronic transfers are the principal means of sending money home.⁵⁸ Despite proactive collaboration by the Bank of Mexico and the US Federal Reserve to enhance electronic funds transfers, banks in the United States prefer to offer international transfers by wire (SWIFT) rather than ACH. Fewer than 10% of America's 6,000 banks participate in the ACH FedGlobal program that permits international giro transfers.⁵⁹ The Fed and Bank of Mexico developed marketing materials for cross-border ACH transfers to encourage uptake by depository institutions in the United States, but participation remains low today. Fees for international wire transfers are typically in the range of \$25 to \$50 for the depositor sending money. Charges for FedGlobal transactions can be less than a dollar. Perhaps banks are reluctant to cannibalize badly needed fee income by offering international ACH payments at median prices of just \$3, less than 25% of the price of a comparable money transfer and roughly 15% of the cost of a comparable wire transfer.⁶⁰ FedGlobal services permit transfers of pesos to Mexico from accounts

57 World Bank. Bilateral Remittance Matrix 2012.

58 Banco de Mexico. CE81 Revenues by Workers' Remittances, 2013.

59 Procuriatura Federal del Consumidor. "Bancos Que Integran el Sistema Directo a México por Ciudad," 2013.

60 Procuriatura Federal del Consumidor, "Instituciones Financieras Que Ofrecen el Servicio de Envios de Cuenta Bancaria a Cuenta Bancaria," 2013.

held either in dollars or pesos in the United States. FedGlobal will also permit funds to be sent either to a Mexican bank account or to any branch of *Telecomm-Telégrafos* (with more than 1,500 locations in Mexico). Recipient fees are typically zero and the foreign exchange rate is beneficial, with a spread of 21 basis points above the wholesale rate. Few private services can compete with such an offering. Despite these evident benefits, *Directo a Mexico* has only a one percent market share in the \$22 billion annual remittance market, with average annual growth of 7% in the last five years.⁶¹

Electronic payments are today the principal means of sending money to Mexico. Many of these transfers reflect cash-out transactions, rather than funds transfers into bank accounts. Circumstantial evidence supports the cash-out view: low bank account penetration, moderate dormancy among bank accounts, and the minuscule market share of cross-border ACH transactions all attest to this inference. Even accounting for an annual bump in cash remittances around Christmas, cash transfers home remain limited to about USD \$30 million per month. The average value of an electronic remittance payment is today where it was ten years ago, at about \$300, down from as high as \$350 in 2007. Average cash remittances (by official estimates) are less than \$500, down from \$800 in 2005. As money orders' average size grows slowly in value over time, we suspect the flat average value and rising market share of electronic remittance transactions reflects growth in the number of small-value transactions that are sent home electronically.

Discussion

Payments permeate the enterprise. Every invoice generated by the supply chain, every individual that contributes effort to the firm's success, and every transaction at the point of sale is compensated by a corresponding payment of one sort or another. Just as information technology fundamentally reorganizes the way suppliers and consumers interact with the enterprise, so too payment innovation can usher in sweeping changes to company operations. Payments can affect whether and how businesses create effective relationships with their customers. Payments can stretch or shrink the cash conversion cycle and enhance or mitigate risks to the firm. Payments can provide seamless integration with supply chain and logistics platforms, or delay and obfuscate input sourcing and merchandise distribution.

Public institutions in no way escape the germaneness of payments. Tax receipts must be collected by governments, salaries and other obligations to suppliers paid. The impact of payment systems cuts across public, private and nonprofit sectors. Payments, however, do not have a uniform structure across all areas of the economy. Rather, payment systems tend to be highly peculiar creatures, capable of clearing and settling particular transactions. Payments systems adapt to specific transactional circumstances, allowing for the transfer of different assets among various parties, as well as the mitigation of diverse idiosyncratic risks.

61 Banco de Mexico. Retail Payment Systems CF311 Directo a México, 2013.

The specific patterns of payment adoption in Mexico are different from those of other middle income countries, and so are the specific motivations of consumer preferences. Mexican businesses and government, moreover, operate in a complex payments ecosystem, burdened by the demands of a profoundly cash-heavy consumer base on the one hand, and those of financial regulations insufficiently flexible on the other.

The scarcity of financial infrastructure in rural areas stems in part from Mexico's unusually high cost of security. Efforts to increase private investment by fiat will fail until the economics of access to cash improve; and there is hope that *corresponsales* will continue to expand their role in that regard. The underlying security risks that factor into security costs are an extremely complex challenge with far-reaching implications for business and the quality of life in general.

Cash, while not single-handedly responsible, facilitates fraud and tax evasion. It separates business payments from the accounting systems used to record them, and greatly decreases the risks of detection for those that would defraud employers and the government. Mexico's incidence of fraud and tax noncompliance are disproportionate to the size of the economy. In a cash-based economy, large transactional balances of currency arouse no suspicion, whereas in a payments-based economy large caches of currency are seen as an invitation to fraud and corruption.

What other factors complicate the payments picture in Mexico? For one, within the Mexican financial system, vast quantities of US cash circulate, the product of international tourism, migration, and illicit activities. While no definitive estimates exist as to the total quantity of US cash in Mexico, it is clear that drug trafficking organizations bring immense sums of US cash from the United States into Mexico to be stored, laundered, and later deposited into the formal banking system.

Recent regulations to prevent money laundering and to track suspicious transactions have been implemented, but it is too soon to determine whether they have made a significant dent into the money laundering business. However, these regulations have made it more difficult for US dollars to be accepted by the tourism industry, which is one of the largest contributors to the Mexican economy, but which likely holds smaller sums of US cash than illicit organizations. Whether these regulations will end up hurting the tourism industry, or whether tourists will simply accept the new regulations and switch to using credit and debit cards, or pesos, also remains to be determined. Nevertheless, it is clear that the use of US cash in Mexico by illicit actors, migrants, tourists, and service employees is changing and becoming progressively more difficult.

The Mexican government has gone to great lengths to promote and set the stage for alternative payment mechanisms to displace cash usage. Less stringent KYC requirements, the introduction of the regulatory framework governing *corresponsales*, and the regulation of card-service fees will undoubtedly do their part in moving Mexico forward in terms of payments infrastructure.

The unique payment account introduced by the Mexican federal government is, furthermore, a striking example of how an efficient administration can cut out layers of duplicity and myriad opportunities for undue influence with a centrally designed payments system. Establishing a unique national payment account is not without risks, inasmuch as it potentially introduces a single point of failure for the whole of government operations. Additionally, such a measure can also create the potential for a bottomless pit of bureaucratic efforts in the consolidation of payment processes from disparate units of government. Apparently, however, Mexico has weathered the second risk and so far no unmanageable consequences have arisen from the first.

However, much remains to be done. Although glimmers of hope abound in the Mexican payments ecosystem, in the form of big business shifting business models in favor of cash alternatives, innovative startups providing the market with grassroots solutions primed for scalability, and government officials preoccupied with providing a regulatory framework suitable for payments evolution, the fact is that the Mexican economy lies in a pernicious equilibrium when it comes to payments. Until the chicken-and-egg issue of coordination is properly addressed by both government and civil society, in the guise of investors, we are bound to observe a Mexico mired in cash.

Key Findings

1. Reduced reliance on cash payments could mitigate fraud risk for Mexican business, thought to exceed US \$1.2 billion annually.
2. Every 1% of the informal economy that is formalized represents US \$560 million of new revenue with no changes to tax rates.
3. Improved infrastructure and service offerings must go hand in hand to serve the needs of households and small businesses. Concerning access to telecommunications and cash conversion points, service offerings should include remote bill payment services, such as payments to utilities and governments; payment acceptance for small business; and a mobile money or mobile banking product with concrete advantages over existing money transfer services.



Until financial institutions provide products and services that offer the security and convenience necessary to entice consumers to abandon cash, demand for non-cash payments will remain depressed.



CONCLUSIONS

Evidence of sustained federal attention to cash and financial inclusion abounds. Why, then, do the people have such a deep attachment to cash? Our research points to three explanations.

Fundamentally, cash's dominance of the retail payment market results from a coordination failure. There is a chicken-and-egg dilemma disconnecting supply-side from demand-side. Until financial institutions provide products and services that provide clients with the security and convenience they require to shift away from cash, demand for non-cash payment alternatives will remain repressed. Yet until a critical demand is reached, financial institutions will have little incentive to provide adequate product and service offerings.

Cash entrenchment is a symptom of inequality in Mexican society. Cash is the payment medium most accessible to poor Mexico households, due to issues of geographical reach, financial illiteracy, and low ownership of goods complementary to electronic-payment tools (smartphones, personal computers, and the like). It is

the natural way to do business for small family-run businesses that do not rely on banks for credit and have little or no experience with modern payment gateways.

Investments in payment networks will take time to bear fruit. Infrastructure must be deployed on a massive scale to escape negative network externalities arising from limited interconnectivity and ingrained expectations of third-party behavior, which can both bias payment choices in favor of cash.

**OUR RESEARCH POINTS
TO THREE EXPLANATIONS:
COORDINATION FAILURES,
ECONOMIC INEQUALITY,
AND INFRASTRUCTURE.**

So far, the incentives facing Mexican households and small businesses have not been sufficient to push consumers and small business away from cash. Despite efforts such as the failed IDE withholding tax, Mexican policy has not resolved these problems. Much remains to be done.

Policy mistakes, such as the mandate that electronic *Oportunidades* disbursements be converted to cash, have done a disservice to the noncash economy. First, requiring immediate and full cash-out of disbursements raises the cost of implementation. Second, it reinforces the perception that people use cash for spending and deposits or cards for saving. The cash-out requirement is understandable as a way to ensure public confidence in the electronic *Oportunidades* transfers; but it is unsuited to the task.

Public confidence in banks and payment cards remains a formidable barrier to the payments market. Memories of nationalization and bank crises still shape consumer behavior. Banks and the government, perhaps unfairly, will be held to account for past sins. Rebuilding public confidence will take time. And during that time, banks must be seen to be unfailing stewards of the public interest.

Mexican consumers are not paranoid for worrying about payment fraud, card cloning and identity theft. Organized crime poses deep challenges to governance in Mexico. Ordinary citizens are caught in the crossfire between criminal enterprise and the law. Just as citizens of some Mexican cities are careful not to venture out alone at night, Mexicans are wise to consider the risks of payment fraud and identity theft. A strong payment system must prevent fraud with strong authentication and encryption. It must also protect innocent bystanders from the risks of thieves and hackers.

Innovators are pushing for the investment agenda necessary to leverage payments for growth. Improved infrastructure and service offerings must go hand in hand to serve the needs of households and small businesses. The infrastructure perspective concerns access to telecommunications and cash conversion points. Service offerings must include remote bill payment services, such as payments to utilities and governments; payment acceptance for small business; and a mobile money or mobile banking product with concrete advantages over existing money transfer services.

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APPENDIX 1: CONSUMER COST OF CASH RESEARCH METHODOLOGY

Sample

IBGC conducted a consumer survey with Data Opinión Pública y Mercados of México, DF. Interviews were conducted in person. Our sample used multistage geographic randomization to select 1,200 individuals from four major metropolitan areas in Mexico: Guadalajara, Monterrey, Tijuana, and Mexico City. The sampling method allocated interviews equally among the four metropolitan regions, and thus the sample included 300 individuals in each of four cities plus surrounding areas. The primary sampling unit within each city was the Basic Geo-Statistical Area (AGEB⁶²). Thirty AGEBS were selected from each city and surrounding peri-urban area, as per the definition given by Mexico's National Institute of Statistics and Geography (INEGI) in the 2010 census. Two starting blocks were selected at random for the secondary sampling unit, and households sampled using every fifth residence from a sequential list of households and the adult member with the most recent birthday. The sample used representative age and sex quotas, but not within geographic clusters and not in two-way strata, such as sex distribution within age brackets.

The methodology underpinning this survey can only elicit a subset of the true costs of cash. The survey is only as precise as respondents' recollection of the details of cash access transactions: such as bank withdrawals, pension disbursements, money transfers, and salary payments. The sampling methodology also limited the opportunity to build rapport with respondents, which introduces some concern about incomplete responses on sensitive financial topics. The survey did not attempt to measure low-probability or low frequency events, such as theft and fraud, which suffer especially badly from recall biases.

The sample focused on four cities and surrounding areas. While it is possible that these four geographic regions are similar to urban Mexico in the aggregate, many basic facts of life are different in rural Mexico. CNBV data shows that many *municipios* in Mexico are still "bank deserts," raising the costs of access to formal financial services for residents of those areas. Lengthy trips may be required for any type of cash access transaction. Hence our survey's per capita estimates for the transaction costs of access to cash are likely to be systematically lower than the true cost for Mexico as a whole.

62 From the Spanish-language acronym.

Interviews

Interviews were conducted face to face, with a median length of 25 minutes. Respondents answered questions that were read aloud to them. Most questions had closed-form responses, such as whole peso amounts, the number of times a given event might occur, yes/no answers, or multiple-choice menus. When respondents' answers did not fit the list, we asked them to explain their response in their own words. Prior to beginning the interview, our enumerators obtained written informed consent in accordance with the oversight of Tufts University's Institutional Review Board. The interview consisted of six topical modules: (1) demographics, (2) financial access, (3) income received, (4) cash behavior, (5) cash access, and (6) payment preferences.

The demographic module recorded the city in which the individual lived, rated the census tracts for degree of urbanization, and asked the respondent to report their own household size, sex, age, and employment. The AMAI⁶³ questionnaire for socioeconomic class (SEC) provided a letter-grade for household consumption level.⁶⁴ These letter grades have been correlated with the income distribution in Mexico; so a rough model of personal consumption expenditure is possible from the numeric SEC score.

The financial access module asked respondents to detail their participation in banks and informal financial institutions. Account adoption variables included: debit accounts, checking accounts, bank loans, credit card accounts, store credit accounts, prepaid cards, payroll cards, and investment accounts. Informal financial services included use of moneylenders, *fiados* (the practice of keeping an account with a shopkeeper), rotating savings and credit groups (ROSCAs, or *tandas*), microsaving institutions, saving and lending with family members, and use of a family member's bank account.

An income interview asked respondents to share with us the types of income payments typically received: salary, bonuses, noncash income, self-employment income, rents, investment and pension income, benefits, agriculture, and remittances from friends and family. For each type of income, we requested the typical frequency, the type of payment, the typical amount and whether pesos were ever received in lieu of dollars.

The cash behavior module asked respondents to disclose their current holdings of cash on their person and elsewhere in the house. Respondents described where and how often they obtained cash (*efectivo*) in the last 30 days. They gave their current wallet and non-wallet balances of cash. They also described the heuristics used to manage cash balances: whether or not cash balances should be limited to some maximum and minimum values, and what those limits are. They told us how often they had reached or exceeded those limits, and the preferred assets used as sinks for excess cash, such as checking and saving accounts, asset purchases, and lending cash to friends and family.

The recall diary of cash provided up to five most recent cash access events, meaning cash received as a gift, withdrawal, payment, or exchange of any type (not change for cash tendered). For each transaction, we asked how many days ago the transaction was, the amount of cash received, time spent traveling and waiting, fees paid for the cash transaction (if any) and for travel to the place where the transaction occurred (if any).

63 AMAI stands for Asociación Mexicana de Agencias de Inteligencia de Mercado y Opinión, A.C., a leading professional association for market research.

64 AMAI provides two questionnaires for socioeconomic level, called the 8x7 (which we used) and the 10x6 questionnaire. The algorithm to convert responses into a single numeric score and a letter grade for socioeconomic class is publicly available. See López Romo, Actualización Regla Amal Nse 8x7, 2011.

The payment preferences interview differs from typical payment choice surveys and diaries. Rather than ask about specific transactions, we asked respondents to describe how they typically pay for a variety of common bills and purchases. Payment behavior is well known to depend on payment context, such as the location in which a payment is made, the counter parties (businesses or individuals), and whether the payment is for a purchase or a bill payment, such as for financial services, taxes, telecommunications, and other accounts requiring regular payments.

Key Variables

- **Age:** years of age. Our regressions typically divide this into decennial age brackets: 18-24, 25-34, 35-44, 45-54, 55-64, and over 65.
- **Socioeconomic Class (SEC):** a proxy score for household consumption developed and calibrated by the Mexican Association of Marketing Research and Public Opinion Agencies (AMAI). AB, C+, C, C-, DE. The score is developed from the respondent's answers to questions about household possessions and the breadwinner's education.
- **Household size:** number of persons.
- **City:** Mexico City, Guadalajara, Tijuana, or Monterrey
- **Employment:** full time, part time, self-employed, business owner, homemaker, unemployed, retired, student, other
- **Education:** none, primary, secondary, technical or commercial, preparatory, undergraduate, graduate or professional
- **Financial portfolio:** dummy variables for use of a checking account, debit account, payroll card, bank loan, credit card, store credit card, prepaid card, informal lending, fiados, pawn shop, moneylender
- **Banked:** a dummy variable equal to one if the financial portfolio contains checking, debit, prepaid, payroll, or investment accounts.
- **Informal:** a dummy variable equal to one if the financial portfolio includes use of informal lending, pawn shops, fiados, and tandas.
- **Income instrument:** typical payment instrument for income; dummy for any noncash income; dummy for any cash income.
- **Income frequency:** number events in a typical month
- **Income interview:** frequency of income, payment instrument, and amount for each type of income. Types include salary, bonuses, benefits, self-employment, commissions, rent, pension, benefits, remittances, agricultural income, and other income.
- **Number of cash access events** in the past 30 days.
- **Typical cash source.**

- **Cash recall diary:** up to five most recent cash access events. For each event, how many days since each event, cash source, transit and queue time, transit costs, and transaction fees.
- **Average costs:** individual's average fees, transit costs and wait time for cash access events.
- **Dollars:** dummy variables for the use of dollars instead of pesos for each income and each payment transactions.
- **Wallet:** current cash balance.
- **Cochinito:** other cash balances kept within the home
- **Risk:** can money ever be too large to hold in cash?
- **Max:** what amount of money would you consider too large to hold in cash?
- **Necessity:** is there a minimum amount of cash you always try to keep on hand?
- **Min:** what is the minimum amount you always try to keep on hand?
- **Sink:** where to store cash above the preferred amount
- **Cash-out:** how much to cash out when receiving noncash income, viz., the entire balance from a teller; the entire balance from an ATM, the maximum allowed by the ATM, only as much as I need for a few days/weeks, or prefer to keep the money in an account.
- **Debit payments:** dummy variable for using debit in any of the payment categories
- **Credit payments:** dummy variable for using credit in any of the payment categories
- **Cash fees:** dummy variable for any cash fees in any cash access transaction



APPENDIX 2: FINANCIAL ACCESS

The relationship between financial access and the cost of financial services is one of the primary research questions that motivated this study. We measured the total cost of cash for consumers, and compared the results for those with and without financial access; and with and without informal financial services. This observational study provides important insight into whether, as of today, the cost of cash is higher on balance for the banked or the unbanked. It provides important baseline data regarding how Mexican consumers experience the cost of cash today. Additionally, it informs how consumers see the risk profile of cash. Our study also has important limitations, in that the data are observational. The study is not designed to measure how introducing new financial services changes the cost of cash or payments for specific populations.

One of the key findings from our report is that noncash inflows shape consumer perceptions about the risk profile and the desirability of cash. Noncash inflows include salary payments, government transfers, and personal transfers. They are an important measure of financial access, in that they indicate regular use of noncash payment systems. It is more common to use account ownership as a measure of financial access, or sometimes non-dormant accounts. The accounts perspective is driven by a focus on saving and credit products, at the expense of payments. Regular noncash payment receipts, such as bank transfers and payroll cards, are important because of their role in the consumer's finances. Rather than seeing account balances as money saved for tomorrow, consumers that receive electronic transfers have the option to use that money for today as well. Depending where the money is received, such as into a bank account or onto a payroll card, they have options for how to use the electronically stored value to send payments. They may use a card, an online account interface, a paper check, or a cash withdrawal.

Our survey data supports the correlation between noncash income and views about the risks, desirability and utility of cash. Those that receive electronic income are more likely to see bank balances and electronically stored value as desirable. They are more sensitive to the risks of cash. And they are more aware of the costs of cash. So traditional distinctions between banked versus unbanked omit a crucial detail of financial access. Individuals that receive at least some income electronically think differently about accounts, cash, and money.

TABLE A1. CASH RISK PERCEPTION AND BEHAVIOR

Cash Balances	Mean	Question Format	
Wallet	253	How much cash is in the wallet right now?	
Maximum	5585	What is the maximum value of cash you would consider safe to hold?	
Minimum	380	What is the minimum amount of cash you would always try to keep on hand?	
Risk Vview	Frequency	Share	Question Format
No	103	19%	Do you believe that there are quantities of money too large to hold in cash?
Yes	443	81%	
Necessity view	Frequency	Share	Question Format
No	250	21%	Is there a minimum quantity of money that you always try to hold in cash?
Yes	933	78%	
Cash Out	Frequency	Share	Question Fformat
All cash via Teller	348	29%	Prefers to convert payments entirely into cash over the counter
All cash via ATM	172	14%	Prefers to convert payments entirely into cash by ATM
ATM max cash allowed	121	10%	Prefers to convert payments into cash by ATM, up to the maximum allowed by the ATM
Several days	369	31%	Prefers only to convert enough cash as needed for a few days into cash
Prefer electronic	169	14%	Prefers to leave electronic balances with a bank or financial institution
Other	15	1%	Unspecified

Table A1. shows how respondents manage cash and its associated risks. Question formats are presented in the right most column. Due to a mistake in question logic, only a subset of respondents were asked whether they believed sometimes money could be too much to hold in cash. *Cash out preferences* were asked of all respondents, regardless of whether they have experienced receiving noncash payments or not. For those that have received such payments, we asked how they *typically* choose to hold balances so received. For those that have not, we asked instead how they *would prefer* to receive such payments.

TABLE A2. CASH SOURCES TYPICALLY USED, CONDITIONAL ON FINANCIAL ACCESS

	Bank Account		Informal Financial Services		Cash Income		Noncash Income	
	No	Yes	No	Yes	No	Yes	No	Yes
Salary	38%	39%	34%	43%	39%	38%	36%	42%
Business	9%	10%	9%	10%	3%	12%	12%	5%
Family	41%	18%	36%	30%	10%	41%	44%	9%
Teller	5%	19%	11%	9%	29%	3%	1%	28%
ATM	1%	6%	2%	3%	7%	1%	<1%	7%
Remittances	<1%	<1%	<1%	<1%	1%	<1%	<1%	1%
POS	1%	<1%	1%	<1%	1%	<1%	<1%	1%
Other	3%	4%	3%	3%	6%	2%	3%	4%
Moneylender	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Pawn shop	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Refused	2%	4%	3%	3%	3%	3%	3%	3%

“Where do you typically obtain cash? (Choose one.)”

Table A2. presents differences in the cash habits of groups based on financial traits. Columns 1-2 compare the typical cash access points of those with (versus without) bank accounts, including debit, credit card and investment accounts. Percentages sum to one by column, subject to rounding error. Columns 3-4 present the differences between users (versus non-users) of informal financial services, such as tandas, moneylenders, pawn shops, and rural financial institutions. Columns 5-6 present the behaviors for those that sometimes receive income directly in cash, versus those that never do. Columns 7-8 present the behaviors for those that sometimes receive noncash income such as checks and electronic disbursements, versus those that never do.

TABLE A3. CASH ACCESS EVENT FREQUENCY, CONDITIONAL ON FINANCIAL ACCESS

	Bank Account		Informal Financial Services		Cash Income		Noncash Income	
	No	Yes	No	Yes	No	Yes	No	Yes
Rarely	1%	1%	1%	1%	3%	<1%	1%	1%
Monthly	8%	20%	12%	12%	22%	8%	9%	19%
Biweekly	21%	26%	23%	22%	30%	20%	20%	28%
Weekly	47%	35%	42%	43%	34%	46%	45%	37%
More often	23%	19%	21%	22%	10%	26%	25%	16%

“How often do you typically get cash? (Choose one.)”

Table A3. conditional on financial access presents the reported frequency of typical cash access among respondents, conditional on the financial traits outlined above: use of banks; use of nonbank financial services; regular receipt of income directly in cash; and regular receipt of noncash income. Those who receive cash income obtain it more frequently, with two thirds reporting at least once per week, versus just half of those who receive noncash income.

TABLE A4. COST OF CASH BY FINANCIAL ACCESS

	Bank Account		Informal Financial Services		Cash Income		Noncash Income	
	No	Yes	No	Yes	No	Yes	No	Yes
Fee prevalence	1%	3%	2%	3%	3%	2%	1%	4%
Time prevalence	26%	47%	31%	35%	65%	23%	20%	61%
Transit prevalence	11%	15%	13%	12%	20%	10%	9%	20%
Average fee (pesos)	1.06	0.85	0.39	1.59	0.93	1.00	0.29	2.46
Time spent (minutes)	4.74	7.95	6.12	5.63	10.78	4.21	3.79	10.29
Transit costs (pesos)	4.30	3.60	3.51	4.61	5.78	3.47	3.30	5.66

We also investigated whether financial access correlates with systematically higher or lower costs of cash access. Table A4. compares how the incidence and average levels of the costs of cash using the same four measures of financial access: account ownership, use of informal financial services, those receiving cash income, and those receiving noncash income. Rows 1-3 present the incidence of these costs, using the average share of an individual's transactions that require fees to be paid or time spent. Rows 4-6 give the average per-transaction fee, again using the unweighted average of individuals' fees paid. Those who receive noncash income are more likely to spend time and money traveling to the point where cash is obtained. Time spent in the queue (at the ATM or in the salary line for cash payments) is not measured.

TABLE A5. CASH MANAGEMENT AND RISK PERCEPTION BY FINANCIAL ACCESS

	Bank Account		Informal Financial Services		Cash Income		Noncash Income	
	No	Yes	No	Yes	No	Yes	No	Yes
Wallet	211	328	249	256	280	243	229	302
Maximum	6,282	4,332	6,443	4,702	4,424	6,003	6,105	4,477
Minimum	334	458	384	376	406	370	368	406
Risk view (prevalence)	78%	86%	79%	83%	84%	80%	80%	84%
Necessity view (prevalence)	77%	82%	77%	80%	81%	78%	78%	82%

Table A5. presents differences in cash risks and heuristics between groups with various financial traits. Columns 1-2 are the familiar users (versus non-users) of bank accounts. Columns 3-4 are users versus non-users of informal financial services. Columns 5-6 compare those that do (versus don't) receive cash

income, and Columns 7-8 the same for noncash income. Respondents who receive cash income are comfortable with higher balances of cash. By about the same margin, those who receive noncash income report lower cash ceilings.

TABLE A6. CASH OUT PREFERENCES BY FINANCIAL ACCESS

Cash out preference	Bank Account		Informal Financial Services		Cash Income		Noncash Income	
	No	Yes	No	Yes	No	Yes	No	Yes
All cash via Teller	32%	24%	33%	25%	20%	32%	33%	22%
All cash via ATM	15%	14%	13%	16%	16%	14%	13%	17%
ATM maximum permitted	5%	11%	7%	13%	9%	10%	10%	10%
Enough for a few days	32%	29%	30%	32%	36%	29%	30%	34%
Prefer to leave in the bank	10%	22%	16%	13%	17%	13%	13%	17%
Other	2%	1%	1%	1%	2%	1%	1%	1%

“When receiving a payment, how much cash do you prefer to withdraw? (Choose one.)”

Table A6. compares the willingness of groups to entrust transactional balances to a bank or nonbank financial institution. Within each column, the table reports the percent of respondents that prefer to cash payments out immediately, or retain electronic balances in lieu of cash. The question asked respondents to choose how they typically choose to receive noncash payments, or if they do not receive such payments, how they would prefer to receive them. A majority of those with cash income and the unbanked prefer to cash out immediately. Respondents with either a bank account or noncash income more likely to leave some money in the account.

TABLE A7. PAYMENT BEHAVIOR BY FINANCIAL ACCESS

	Bank Account		Informal Financial Services		Cash Income		Noncash Income	
	No	Yes	No	Yes	No	Yes	No	Yes
Debit card	5%	27%	14%	12%	29%	7%	6%	28%
Credit card	6%	36%	14%	19%	26%	13%	11%	27%

“For each of the following bills and purchases, what payment method do you typically use? Cash, debit card, credit card, or something else?” Percentages reported are the number of respondents within category that ever report using something other than cash for any of the purchases and bill payments.

Table A7. shows differences in payment behavior by financial access. Percentages reflect sample proportions, individuals reporting typical use of debit or credit (as opposed to cash, money order, internet banking, etc.) in at least one of 25 contexts from a list of common bill payments and purchases. Payment contexts include payments for utilities, taxes, communications, financial obligations; and purchases of food, clothing, and consumer durables.



APPENDIX 3: MEXICAN REGULATORY FRAMEWORK

The regulatory environment in Mexico is a mixed bag regarding cash, providing both incentives and disincentives to switch to non-cash payment methods. On the one hand, the government has promoted financial inclusion and the use of electronic payments by loosening KYC rules for low-value accounts, licensing banks to sub-contract many of their functions to banking correspondent networks, and allowing mobile banking models to launch. On the other hand, a (now-extinct) withholding tax on cash deposits discouraged small business owners from putting cash earnings in a bank account, and the national labor law grants employees the right to receive their wages in cash in their workplace.

As in many developing nations around the world, in Mexico the desire for greater financial inclusion and more widespread electronic payments is offset by concerns over tax evasion and money laundering. Regulators must also strike the right balance between consumer protections (which for many observers involves caps on fees), while creating the right enabling environment for private sector innovation.

On the following pages we list relevant pages and rulings.

Name	Date	Subject Matter	Link
Ley Federal del Trabajo	1970, reformed in September 2012	Grants employees the right to receive wages in cash at their workplace	http://www.diputados.gob.mx/LeyesBiblio/pdf/125.pdf http://gaceta.diputados.gob.mx/Black/Gaceta/Anteriores/61/2011/sep/20110927-VI/Iniciativa-8.html
Impuesto sobre depósitos en efectivo (IDE)	July 2008, repealed November 2013	Withholding tax on cash deposits	http://www.diputados.gob.mx/LeyesBiblio/pdf/LIDE.pdf
Ley de Protección y Defensa al Usuario de Servicios Financieros	1999, reformed in June 2009	Consumer protection guidelines	http://www.diputados.gob.mx/LeyesBiblio/pdf/64.pdf
Ley para la Transparencia y Ordenamiento de los Servicios Financieros	2007, reformed in June 2009	Consumer protection guidelines	http://www.diputados.gob.mx/LeyesBiblio/pdf/LTOSF.pdf
Ley del Banco de México	1993, reformed in December 2000	Law governing Bank of Mexico activity	http://www.diputados.gob.mx/LeyesBiblio/pdf/74.pdf
Ley de la Comisión Nacional Bancaria y de Valores	August 2009	Law governing Banking and Securities Commission	http://www.diputados.gob.mx/LeyesBiblio/pdf/46.pdf
Ley de Sistemas de Pago	December 2002	Law governing payment systems	http://www.diputados.gob.mx/LeyesBiblio/pdf/255.pdf
CIRCULAR 16/2009	June 2009	Mobile banking guidelines	http://goo.gl/kirsyX
Reglas a las que Deberán Sujetarse las Instituciones de Crédito y las Empresas que Presten el Servicio de Transferencias de Fondos de Manera Profesional	October 2002	Remittances guidelines	http://goo.gl/5kdxsF
Penal Code articles 139, 148 Bis, 400 Bis		Defines anti-money laundering and financial terrorism crimes related to AML/FT	
Ley de Protección al Ahorro Bancario	June 2006	Savings insurance guidelines	http://www.diputados.gob.mx/LeyesBiblio/pdf/62.pdf

LEY para regular las Sociedades de Información Crediticia	January 2009	Guidelines governing credit bureaus	http://www.diputados.gob.mx/LeyesBiblio/pdf/237.pdf
Ley de Transparencia y de Fomento a la Competencia en el Crédito Garantizado	June 2007	Financial-services transparency guidelines	http://www.diputados.gob.mx/LeyesBiblio/pdf/256.pdf
Ley de Instituciones de Crédito	1990, reformed in August 2009	Guidelines governing credit-granting institutions	http://www.diputados.gob.mx/LeyesBiblio/pdf/43.pdf
La General de Títulos y Operaciones de Crédito	1932, reformed in August 2008	Guidelines governing credit operations	http://www.diputados.gob.mx/LeyesBiblio/pdf/145.pdf
Ley General de Organizaciones y Actividades Auxiliares del Crédito	1985, reformed in August 2011	Guidelines governing credit-granting institutions, including KYC provisions	http://www.diputados.gob.mx/LeyesBiblio/pdf/139.pdf
Ley General de Instituciones de Fianzas	1950, reformed in April 2013	Guidelines governing credit-granting institutions, including KYC provisions	http://www.diputados.gob.mx/LeyesBiblio/pdf/108.pdf
Ley de Ahorro y Crédito Popular	2001, reformed in August 2009	Popular finance sector, has KYC provisions	http://www.diputados.gob.mx/LeyesBiblio/pdf/17.pdf
Ley de Sociedades de Inversión	June 2007	Investment societies	http://www.diputados.gob.mx/LeyesBiblio/pdf/69.pdf
Ley para Regular las Agrupaciones Financieras	1990, reformed in July 2006		http://www.diputados.gob.mx/LeyesBiblio/pdf/186.pdf
Ley General de Instituciones y Sociedades Mutualistas de Seguros	1935, reformed in June 2008	Insurance	http://www.diputados.gob.mx/LeyesBiblio/pdf/138.pdf
Ley de los Sistemas de Ahorro para el Retiro	January 2009	Pension funds, has KYC provisions	http://www.diputados.gob.mx/LeyesBiblio/pdf/52.pdf
Ley del Mercado de Valores	May 2009	Stock exchange, has KYC provisions	http://www.diputados.gob.mx/LeyesBiblio/pdf/LMV.pdf

THE COST OF CASH RESEARCH SERIES

The Cost of Cash is a multi-year research program that documents the cost of cash to specific economic stakeholders in four very different countries: the United States, India, Mexico, and Egypt. The ends and uses of cash are remarkably different across markets. Partly due to differences in infrastructure for payments and cash operations; and partly due to different social conventions about how and when to use cash, the story of cash is anything but simple.

Cash is unique among payment instruments in that anyone can use it to transact any time, any place, with no third parties. With this freedom comes strong privacy protection: currency neither knows nor cares who holds it, nor when and where. Freedom also creates a parallel economy outside the banking system. That leads to big headaches for businesses, which must safeguard cash from fraudsters and thieves, and for governments, which must unravel money laundering webs and crack down on tax evasion.

Please visit the websites below for discussion papers, in-depth policy analysis, business cases, infographics, and original survey research on the Cost of Cash.



The Cost of Cash in the United States

<http://fletcher.tufts.edu/costofcash/UnitedStates>

After more than 2,000 years as king, cash today faces competition. Private vendors have introduced a host of substitutes they claim are better than paper currency, and new technologies – from mobile payments to electronic payment services – threaten to make cash obsolete. Still, cash continues to play a major role in the United States economy.

The Institute for Business in the Global Context at studied the cost and benefits of cash in the United States. The study yields new insights on its use, the reasons to consider cash versus alternative payment systems, and the impact of cash use on different participants, consumers, merchants and society.



The Cost of Cash in India

<http://fletcher.tufts.edu/costofcash/India>

The payments business in India is on the cusp of a revolution. With rapid growth and modernization of the economy, there is no doubt that a majority of India's 1.2 billion plus citizens will demand and get modern financial services far superior to what their parents' generation enjoyed. It is simply a matter of when the supply side catches up.

This report is the product of a research effort that analyzed the most pertinent policy documents, reports, scholarship, expert interviews, and payments data. We analyze the private costs to households and businesses that arise from their use of cash, beginning when cash is received and ending when it is spent again. We base our estimates on original IBGC surveys, coauthors' surveys and interviews, and a broad mix of academic studies and official statistics.

All expanded reports from our research partners and full case studies are available for download.

ACKNOWLEDGMENTS

The authors and the Institute for Business in the Global Context are grateful for the cooperation of many experts and colleagues that gave their time and insights to this project. We gratefully acknowledge our market research partner, Data Opinión Pública y Mercados. We would particularly like to thank a number of individuals and organizations that shared their expertise with us: Diego Villalobos of Accion International, Alfredo Reyes of ABM, Isabel Cruz of AMUCCS, Daryl Collins and Caitlin Sanford of Bankable Frontier Associates, Carlos Lopez of BBVA, Moises Garcia of Banorte, Luis Treviño Garza of CNBV, Xavier Faz and Sarah Rotman of the Consultative Group to Assist the Poor, Claudette Martinez of Development Alternatives International, Alejandro Garcia of Fitch Ratings, Galia Borja Gomez of Hacienda, Tapen Sinha of Instituto Tecnológico Autónomo de México (ITAM), Hugo Cuveas-Mohr of the International Money Transmitters Association, Manuel Orozco of the Inter-American Dialogue, Natasha Bajuk of the Inter-American Development Bank, Ramon Aracena of Institute of International Finance, Alberto Mendoza of Banco de Mexico, Ed Santos and Flavio Torres of MasterCard, Maria Jaramillo of Microfinance Opportunities, Daniel Ayala of Wells Fargo, Andrew Sallee of the Wilson Center, Christopher Woodruff of the University of Warwick and University of California at San Diego, Alexandre Bertaud at Universal Postal Union, and Adalberto Palma Gomez of UNIFIM. None of the factual claims or opinions expressed in this report reflect in any way on these kind individuals or the institutions where they work, unless specifically attributed in the text or footnotes. Any errors and omissions herein are entirely the fault of the authors and reflect in no way on the individuals acknowledged here.

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