

ABSTRACT

Title of Dissertation: FROM CASH TO ELECTRONIC PAYMENTS:
MICROECONOMIC, MACROECONOMIC,
AND POLICY ASPECTS OF RETAIL
PAYMENT SYSTEMS

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This dissertation explores three aspects of the economics and policy issues surrounding retail payments (low-value frequent payments): the microeconomic aspect, by measuring costs associated with retail payment instruments; the macroeconomic aspect, by quantifying the impact of the use of electronic rather than paper-based payment instruments on consumption and GDP; and the policy aspect, by identifying barriers that keep countries stuck with outdated payment systems, and recommending policy interventions to move forward with payments modernization. Payment system modernization has become a prominent part of the financial sector reform agenda in many advanced and developing countries. Greater use of electronic payments rather than cash and other paper-based instruments would have important economic and social benefits, including lower costs and thereby increased economic efficiency and higher incomes, while broadening access to the financial system, notably for people with moderate and low incomes.

The dissertation starts with a general introduction on retail payments. Chapter 1 develops a theoretical model for measuring payments costs, and applies the model to Guyana—an emerging market in the midst of the transition from paper to electronic payments. Using primary survey data from Guyanese consumers, the results of the analysis indicate that annual costs related to the use of cash by consumers reach 2.5 percent of the country’s GDP. Switching to electronic payment instruments would provide savings amounting to 1 percent of GDP per year. Chapter 2 broadens the analysis to calculate the macroeconomic impacts of a move to electronic payments. Using a unique panel dataset of 76 countries across the 17-year span from 1998 to 2014 and a pooled OLS country fixed effects model, Chapter 2 finds that on average, use of debit and credit cards contribute USD 16.2 billion to annual global consumption, and USD 160 billion to overall annual global GDP. Chapter 3 provides an in-depth assessment of the Albanian payment cards and remittances market and recommends a set of incentives and regulations (both carrots and sticks) that would allow the country to modernize its payment system. Finally, the conclusion summarizes the lessons of the dissertation’s research and brings forward issues to be explored by future research in the retail payments area.

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by

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Preface

“Climb High,
Climb Far,
Your Goal the Sky,
Your Aim the Star.”

Unknown Author/Inscription at Williams College

Dedication

To my parents, Artan and Eriketa.

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INTRODUCTION

The experience in retail payment systems around the world shows that there is little awareness regarding the benefits of electronic payment instruments versus cash, both at the micro and macro level. A retail payment is a transaction involving a non-critical, domestic payment of relatively low value.¹ Buying clothing or a car, paying for a meal at a restaurant, or a utility bill all involve making retail payments. More specifically, according to the World Bank, a retail payment is defined as a payment that meets at least one of the following conditions: *“the payment is not directly related to a financial market transaction; the settlement is not time-critical; the payer, the payee or both are individuals or non-financial organizations (merchant or government agency); either the payer, the payee or both are not direct participants in the payment system that is processing the payment”*. A retail payment system is defined as a system comprising the *“technical infrastructure, participants, instruments, arrangements for clearing and settlement, business relationship arrangements that, put together, provide the overall environment within which retail payments are posted, authorized, processed, cleared and settled”*.²

There are two major categories of payment instruments: paper-based (e.g. cash, check) and electronic (e.g. debit and credit cards). Due to their nature, the introduction and use of electronic payment instruments has significant potential to reduce costs and bring about macroeconomic gains to economies. The literature suggests that customers change their choice

¹ A retail payment is often defined indirectly as anything that is not large-value payment. Large-value payments are defined as payment typically of a relatively high value and between banks and/or participants in a financial market.

² Detailed definitions can be found at: “Developing a Comprehensive National Retail Payments Strategy”, World Bank (2012).

of payment instruments as a response to, inter alia, the price and convenience of payment instruments and services provided.³ An objective foundation and fact-basis needs to be developed to move the modernization process of payment systems forward—to facilitate the process by which consumers and businesses shift from paper-based payments to electronic transactions. Documenting the cost efficiency of electronic payment instruments, as well as empirically examining the macroeconomic benefits of electronic payments, constitute critical tools in helping policymakers design and promote efficient payment systems. For governments and central banks, strengthening the security and reliability of national payment systems and promoting efficient usage of payment instruments are both critical public policy goals. Payments reform is also a fiscal issue since these services generate on average, about USD 900 billion in revenue each year.

The following key points provide further motivation for the work in this dissertation:

- The existing cost literature shows that there is limited knowledge and information available for making comparisons of the costs of retail payments within and across countries. Measuring the resource costs associated with payments is far from straightforward. There are multiple cost concepts, and payment participants face significant challenges in identifying costs. The various studies carried out so far have not offered a clear, comparable and comprehensive picture of the costs associated with different retail payment instruments. There is a significant disagreement in the theoretical underpinnings of the studies, as well as inconsistent cost estimates.

³ Bolt, Yonker, and van Renselaar (2010). “Incentives at the counter: An empirical analysis of surcharging card payments and payment behavior in the Netherlands”.

- Payment systems in developing countries are characterized by heavy use of paper-based payment instruments, notably cash, imposing inefficiencies and risk control problems.
- The cost of payment services is generally viewed by central banks as being higher in developing countries. Several country authorities have attempted to cap fees charged to customers by commercial banks, but the lack of understanding regarding the cost of different payment instruments and the absence of explicit-cost based pricing models makes it difficult to understand the impact of such policies.
- Low interoperability in payment card markets in developing countries continues to be a key problem, resulting in inefficient use and high costs of the current payment infrastructure.
- Both demand and supply side barriers stand in the way of a faster transition to electronic payment instruments.
- There are coordination and cooperation failures that preclude the achievement of the necessary economies of scale and scope to allow for a broader coverage and development of electronic payments.
- Electronic payment instruments reduce friction in the economy by providing consumers convenient and secure access to their funds, thus, contributing to higher consumption and stronger economies. However, limited empirical work has been conducted to assess the magnitude of the benefits.
- Efficient payment systems and broader financial inclusion are inherently interlinked and mutually reinforcing. The level of access of a given country's population to financial services and modern payment instruments is a key element in determining the efficiency

of the retail payment system as a whole. On the one hand, the demand for electronic payment instruments is often restricted by limited financial inclusion. For instance, only 16 percent of low-income consumers globally have access to formal financial accounts.⁴ Access for women and rural consumers is even lower. On the other hand, without greater efficiencies along the transaction value chain in terms of lower costs and broader interoperability, the marketplace fails to serve the poor. This suggests a role for policy, and implies that efforts to increase usage of electronic payments could be especially beneficial for the socially disadvantaged. Experience has also shown that expanding financial inclusion has led to the creation of new payment mechanisms. Electronic payments can also help make the system more inclusive.⁵ While low fees alone do not create broader inclusion, lower system costs can fundamentally boost the reach to lower income customers. To achieve this goal, there is a need to foster market coordination to build the infrastructure, create scalable solutions and drive efficiencies across the value chain.

Taking into account the aforementioned points, this dissertation aims to meet the following objectives:

- Better understand the costs of retail payment instruments in developing countries, by establishing a theoretical framework and then using Guyana as a case study for applying the framework in the context of consumers.

⁴ “Fighting poverty through payments: Transforming the economics of payments to build inclusive financial systems that serve the poor”, Bill & Melinda Gates Foundation (2013).

⁵ Broadening the reach of digital payment system seems to be promising. Until the infrastructure and customer base is well-established, mobile money services that are accessible via cell-phones and brick-and-mortar stores can play an important catalytic role towards inclusive systems (conversion of money into digital money). The Gates Foundation believes that one of the most promising ways to deliver financial services to the poor – profitable and at scale – is to connect them to digital payment platforms.

- Contribute to the empirical literature by assessing the impact of debit and credit cards on consumption and GDP levels using a rich dataset of 76 countries (developed and developing) spanning 17 years.
- Facilitate authorities' efforts to shift to electronic payments by identifying structural barriers and sticking points while also prescribing policies to drive changes in the context of the Albanian retail payments market.

CHAPTER 1: EXPLORING THE COSTS OF RETAIL PAYMENT INSTRUMENTS FROM A THEORETICAL PERSPECTIVE – A CASE STUDY OF GUYANA

1.1. Motivation and Objectives

Chapter 1 presents a theoretical model for measuring costs associated with the use of retail payment instruments, both paper-based and electronic, and then “tests” the model by applying it to Guyana as a country case study. The model measures the costs incurred by consumers in the process of using different payment instruments. A variety of cost studies has already been implemented in different countries, and as such, it is not the goal here to re-invent the wheel, but rather to use the lessons learned and put all the relevant parameters together to provide a uniform cost model that can be used on a comparative basis across countries. Payments are complex in that they depend on a series of factors, and as such, even when the goal is to just measure costs linked to payment instruments, the cost model has to look at elements that go beyond the instruments themselves. Moreover, the model presented here is particularly tailored toward developing countries, since they are mostly the ones in need of such studies in order to assess their national payments market, and unfortunately, the existing literature has contributed little to measuring payment costs in developing countries. Guyana is thus an apt choice for the case study.

Guyana is a lower middle income country located in South America, with a national payment system characterized by heavy usage of cash. However, the central bank (Bank of Guyana) and the government have lately been engaged in efforts to modernize the payment system and move toward electronic payments. Assessing the status quo of payments and

measuring costs associated with payment instruments can help the Guyanese authorities develop more effective policies. Using primary data based on consumer surveys conducted by the World Bank and Bank of Guyana, this work measures and analyzes costs incurred by consumers in Guyana in the process of using cash, checks, paper vouchers, paper-based credit transfers, debit cards, credit cards, electronic credit transfers, and mobile money. Per transaction costs as well as overall annual costs associated with the aforementioned payment instruments are derived, and secondly, savings are also derived, associated with substituting the least cost-efficient payment instruments with the more cost efficient payment instruments. The hypothesis is that electronic payment instruments are more cost efficient and that savings can be achieved in shifting from paper-based to electronic payment instruments in Guyana. This is the first study in the literature to attempt an in-depth cost analysis of payment instruments for consumers in a developing country, taking into account all relevant factors including time-based opportunity costs. Even though the theoretical model has a larger scope in terms of the actors examined (i.e. businesses, government agencies, payment service providers), the case study in Guyana looks only at consumers due to limited resources for the study. It is the hope and goal of the author to further examine costs of payments borne by other actors in the Guyanese economy—business and government—as part of future research work. The application to Guyana is a proof of concept, demonstrating that the model can be implemented in any country, regardless of their economic status or retail payments status.

The lack of the required infrastructure for electronic payments should not be seen as an insurmountable obstacle for countries like Guyana, given that the cost of setting up an infrastructure is mainly a one-time fixed cost. Even without a complete transition, the literature indicates that the lack of an advanced electronic infrastructure in the short term can be

compensated by the use of semi-electronic payment instruments, such as mobile money, which require only basic telecommunication network and also promote financial inclusion by virtue of its ease of penetration and use.⁶ Indeed, cost efficiency in the context of payments is also linked to access to financial services for the poor, who cannot afford the current high costs. More than 60 countries have initiated reforms aimed at financial inclusion in recent years, seeking to create an enabling environment that increases access and lowers costs of financial services. A comprehensive approach with a sequenced package of reforms has been put forward by the World Bank in the context of the G-20 discussions on Financial Inclusion Strategies.⁷ Commitments made by 35 developing countries regarding financial inclusion and financial education under the Maya Declaration also illustrate the growing priority placed in this area.⁸

It is also worth emphasizing that this work focuses on comparing the cost of different payment instruments. There has been significant disagreement on whether both costs and benefits should be included to assess the net cost efficiency of different payment instruments. One strand of the literature has assumed that the monetary characteristics of payment instruments are their only relevant features. This research sees significant difficulties in undertaking welfare calculations and concludes that for a nation's retail payment to be efficient, the payment instruments used must impose the lowest cost on society. Therefore, this research suggests focusing on cost comparativeness, assuming an equal level of benefits among payment instruments. Another strand of research views benefits as different across payments types, making benefits an important area to be considered in any estimation and rank ordering. This research points out that consumer surveys and revealed preferences have shown that consumers

⁶ "E-Payments in India: Setting the Stage for Financial Inclusion", McKinsey (2011)

⁷ World Bank on financial inclusion (2012): www.worldbank.org/financialinclusion

⁸ "The Maya Declaration", Alliance for Financial Inclusion (2012).

care about a variety of other characteristics beyond merely costs, such as privacy, convenience and widespread acceptance. The social surplus associated with these characteristics might be significant, altering cost estimates and rankings of policy measures. Yet, even if agreement is reached that benefits should be included, there is no consensus in the literature as to what those benefits are. The difficulties in estimating consumer surplus are well-known, as demand curves for instruments need to be derived. The subjective nature of benefits or utility would not allow for making meaningful inferences.

Finally, this work is also motivated by the lack of primary data in the existing literature on payment cost measurement. Cost surveys are of the essence as a key source for empirical analysis. Many studies have relied on secondary data. Yet, secondary data plays only a complementary role. As the data gathered has been imprecise and the coverage and quality of surveys limited, obtaining cost estimates in practice has required combining multiple imprecise secondary data sets. Many studies have ended up trying to “stitch” together unlike elements into only partly-comparable wholes, resulting in cost estimates that are incorrect, imprecise, or biased. The bottom line is that cost surveys are needed to measure the relative cost of payment instruments – secondary data will not suffice. The use in this work of primary data from a consumer survey especially designed to measure payment costs can be viewed as an important contribution to the literature.

1.2. Context and Background

A safe and efficient retail payment system is a key requirement for a well-functioning economy. From a policy perspective, information on the costs of retail payment instruments is critical to central banks concerned with the efficiency of their national payment systems. The

literature has broadly concluded that a slow but inevitable shift toward a “less-cash” society is beneficial from a societal perspective, providing improved social welfare and cost savings along the transaction value chain. At the same time, the reality is that paper-based payment instruments are still widely used in both advanced and developing countries.

Several public and private entities of various countries have conducted comprehensive studies on the costs of retail payment instruments. There has been some consensus across the studies regarding the relative costs of payment instruments; however, this is only half of the story. Much in terms of the conclusions has depended on the methodology applied. In a nutshell, there have been significant disagreements in the methodological approaches of those studies. As such, different studies have ended up comparing different elements of payments, making it difficult to draw any sound conclusions. Indeed, three elements seem to play a key role in explaining inconsistent cost estimates: i) disagreement in the theoretical underpinnings of the cost studies; ii) omission of time-based cost elements; iii) lack of uniform treatment among payment instruments, actors, and costs.

These shortcomings have proven to be a key obstacle to developing a clear understanding of the costs of different payment instruments. Moreover, the overwhelming focus has been on advanced economies, with only a limited number of studies focused on measuring retail payment costs in developing countries such as Brazil, India, and Mexico. Even studies conducted in the context of developing countries have looked primarily at the cost of cash, rather than assessing the savings that could be achieved in shifting to electronic payments. Indeed, developing countries are the ones that need such studies the most, given that their economies are characterized by the predominant use of cash. Theoretical evidence on the cost efficiency of electronic payment instruments in their national context could at least provide some initial

motivation and a business case for potential policy reforms that would enable payment modernization in practice.

Tables 1.9 – 1.10 in Appendix 1 summarize prominent cost studies, including both methodological components and findings. It is remarkable that even studies that have examined the same country have reached very different conclusions regarding which payment instrument is more costly. Still, some general points can be made regarding the existing cost literature.

First, the payment instruments analyzed differ among the different studies. In addition, different cost surveys have been used as a method to collect data in those studies. Cost estimates vary significantly depending on the assumptions used (i.e. allocation keys), which are not always clearly listed in each study. As shown in Table 1.9 (Appendix 1), the scope of the existing studies differs rather substantially, making an overall comparison difficult. The ratio between the highest to lowest cost payment instruments shows a striking variance. A low ratio would indicate that there is little difference in payment instrument costs. The ratios, however, vary from 1.3 to 976. Furthermore, even the rank ordering of payment instrument costs is not consistent across studies. Six studies concluded that cash is the least costly; eleven found the PIN debit card to be the least costly instrument; while one study found credit card to be the least costly. Overall, given the heterogeneity in the scope, data collection and methods of the studies, the divergence in the results should not come as a surprise.

Second, the disagreement on the theoretical methodology and costing approaches give rise to inconsistent cost estimates. Some studies have looked at marginal costs, which measure the cost of making an extra payment through the existing infrastructure, while others have focused on average costs. Certain studies have also tried to capture the long-run cost of each payment instrument (total costs), which target the additional resource costs incurred if a

substantial number of extra payments are made, and therefore include the cost of additional infrastructure needed to make that possible. In addition, how to quantify fixed costs (equipment) or allocate shared costs among different payment instruments have been subject to controversies. Some overhead costs are difficult to assign to products and customers, let alone to payment services for which product bundling complicates the process. Interestingly, only the most recent literature has looked at the issue of cost-efficiency in aggregate terms, with the goal to derive potential cost savings linked to a transition to electronic payment instruments and retail payment system modernization. Indeed, more needs to be done to determine efficiency gains through comparative cost studies – particularly in developing countries. Central banks and other stakeholders need to know how much of society's resources are absorbed by each retail payment instrument in current use and take that as a basis to work from.

Third, the findings from the existing literature suggest that the costs to society from providing retail payment services are substantial. On average, it is estimated that the costs related to retail payments vary from 0.5 percent to 3 percent of a country's annual GDP. The cost literature suggests that using an electronic payment instrument costs from one-half to one-third as much as paper-based alternatives. Even with considerable variance across studies, the results underline the fact that the usage of electronic payment is, in general, less costly than paper-based instruments. If these differences could be operationalized as cost savings, the calculations suggest that a country could reduce costs by 1 percent or more of its GDP annually by switching from all paper to all electronic payments. This is only a hypothetical scenario because it is commonly recognized that a cashless society is not feasible. Still, striving for less-cash economies is still good enough to provide significant cost savings. Indeed, cash is still preferred in certain situations due to its widespread acceptance, usability, safety and anonymity.

Fourth, in terms of the distribution of total social costs along the retail payment transaction chain, consumers, merchants and government agencies incur a lot of time-based indirect costs, while central banks and other payment service providers incur both direct and indirect costs associated with the different payment instruments. Retailers seem to incur the most costs in accepting and using cash, both in terms of their “front office” and “back office” components.⁹ Among card payments, credit cards seem to be more expensive than debit cards for retailers, largely reflecting higher back office costs, such as labor costs, fraud prevention costs and fixed periodic card subscription charges imposed by banks or card acquirers. Central banks’ costs from the provision of cash are mainly driven by the printing of banknotes, minting of coins, and then distribution. On average, these costs account for three-quarters of total production costs, while issuance, processing and transportation account for the rest. Commercial banks face slightly higher costs for cash than for card payments. For the provision of cash, the top three cost drivers for banks are cash withdrawals; cash and check deposits; and transportation of cash.

Fifth, among card payments, credit cards seem to be, to some extent, more costly than debit cards for commercial banks. For debit card payments, the key drivers of costs seem to be the management of purchases (i.e. IT and communications), and payment processing. For credit cards, the acquisition of new customers, analysis of credit risks, management and monitoring of activities, and customer services seem to account for a large share of the estimated costs. Debit cards have reached the lower unit social costs in some advanced countries. Yet, there are

⁹ Front office costs of retailers at a point of sale basically refer to the retailer’s labor costs associated with the actual payment at the counter. Settlement times are a key component. The labor time is measured from the moment when the customer is told the amount to be paid by the cashier until the moment the transaction is settled. Back office costs refer to the costs of managing purchases carried out with point of sale (POS) terminals, including labor costs, management costs, cost associated with IT and communications, etc.

economies of scale involved in each of the payment instrument as well as the underlying processing infrastructure.

1.3. Measuring Retail Payment Costs – A Theoretical Model

1.3.1. Pillar 1 – Payment Instruments

The ultimate goal of the model is to enable authorities and interested parties to estimate the costs associated with using different retail payment instruments, so that the results can be used to compare payment instruments, and ultimately derive savings in shifting to the more cost efficient payment instruments (the literature so far has shown that electronic payment instruments are the most cost efficient instruments). A number of factors which affect costs need to be taken into account in designing the model, since the process of initiating and/or receiving a payment does not solely depend on the payment instrument.

The different building blocks/pillars of the model are first presented and analyzed, and then the model is presented as a whole. Indeed, the different implementing countries would choose the relevant subset for each building block and gather the relevant information either through primary data (i.e. surveys), or already available data (i.e. secondary sources) to calculate the costs and savings associated with the use of retail payment instruments. The work presented here borrows commonly used and internationally established terminology in the context of retail payments, particularly from the “*Glossary of Terms Used in Payments and Settlement Systems*” by the Bank for International Settlements and the “*Practical Guide for Measuring Retail Payment Costs*” by the World Bank, among others. The contribution of this work lies in the fact

that the model presented here is comprehensive in including all cost-related factors that have been examined selectively in other studies and in the fact that it focuses on developing countries.

The first pillar examined is that of payment instruments, which are at the forefront of the model. There are two sets of payment instruments, the so-called paper-based payment instruments, and the electronic payment instruments. On the side of paper-based payment instruments, the primary ones include cash, checks, paper vouchers, and paper-based credit transfers, while less frequently used ones include traveler's checks and money orders. On the side of electronic payment instruments, the most prominent ones include: debit card, credit card, prepaid card, credit transfer, direct debit transfer, and mobile money. Caution needs to be demonstrated in the cases of certain "hybrid" instruments, which can be found in both, paper and electronic form (i.e. checks, vouchers, credit transfers). However, for the purpose of this model it suffices to examine the initiation and receiving side, separately. For instance, if a credit transfer is initiated in a paper format but goes to the recipient electronically, it will be counted as a paper-based payment from the payer's perspective, and as an electronic payment from the payee's perspective. Indeed, as shown in the following sub-sections, the model accounts for such nuances, which also have cost implications. The most widely used payment instruments are briefly defined below (using World Bank and Bank for International Settlement definitions), while Table 1.2 summarizes the factors that could potentially influence the adoption of a certain payment instrument by a user.¹⁰

¹⁰ For more detailed definitions of payment instruments see: "A glossary of terms used in payments and settlement systems", (Bank for International Settlements, 2003); "A Practical Guide for Measuring Retail Payment Costs", World Bank (2015); "Developing a National Retail Payments Strategy", World Bank (2012).

Table 1.1: Most widely used paper-based and electronic payment instruments

Paper-Based Payment Instruments				Electronic Payment Instruments					
Cash	Check	Paper Voucher	Paper-Based Credit Transfer	Debit Card	Credit Card	Prepaid Card	Electronic Credit Transfer	Direct Debit Transfer	Mobile Money

- **Cash:** *“Includes paper notes and coins that are printed by the central bank and constitute the legal tender of a country. Because of the anonymity of this instrument, cash is typically used to discharge a small-value payment obligation of a payer in direct, face-to-face, transactions and with immediate transfer to the other party in a transaction.”*
- **Check:** *“A written order from one party (the drawer) to another (the drawee, sometimes a bank) requiring the drawee to pay a specified sum on demand to the drawer or to a third party specified by the drawer. Checks may be used for settling debts and withdrawing money from banks.”*
- **Paper Voucher:** *“A document that can be exchanged for cash or can be used for the conditional purchase of goods and services, typically issued by public entities.”*
- **Debit Card:** *“A card enabling the holder to have his purchases directly charged to funds on his account at a deposit-taking institution and may sometimes be combined with another function such as cash withdrawing from an ATM or cash-back from a point of sale.”*
- **Credit Card:** *“A card indicating that the holder has been granted a line of credit. It enables the holder to make purchases and/or withdraw cash up to a prearranged*

ceiling. The credit granted can be settled in full by the end of a specified period or can be settled in part, with the balance taken as extended credit. Interest is charged on the amount of any extended credit and the holder is sometimes charged an annual fee.”

- **Prepaid Card:** *“A card-based product for general purpose use, where the record of funds is stored on the payment card (on magnetic stripe or the embedded integrated circuit chip) or a central computer system, and which can be drawn upon through specific payment instructions to be issued from the bearer’s payment card.”*
- **Credit Transfer:** *“A payment order or possibly a sequence of payment orders made for the purpose of placing funds at the disposal of the beneficiary. Both the payment instructions and the funds described therein move from the bank of the payer/originator to the bank of the beneficiary, possibly via several other banks as intermediaries and/or more than one credit transfer system. It can be either in paper form or electronic form.”*
- **Direct Debit Transfer:** *“Functions in a similar way to a credit transfer, the difference being that the payment instructions typically move from the bank of the payee/originator to the bank of the payer, possibly via several other third party intermediaries.”*
- **Mobile Money:** *“An e-float type of instrument where the record of funds is stored on the mobile phone or a central computer system, and can be drawn down through specific payment instructions issued from the bearers’ mobile phone.”*

Table 1.2: Factors that influence the adoption of payment instruments

Cost	<i>“The usage of payment instruments entails both explicit as well as implicit costs. Explicit costs include the direct charges paid by the payer for using the instrument, such as per transaction fees. Implicit costs incurred include, for example, the waiting time for processing the payment request or the cost of time spent commuting to a designated place to obtain cash to make payments or to be able to use the non-cash payment instrument.”</i>
'Safety and Reliability	<i>“A payer needs to have a high level of trust that a payment instrument will work as expected and discharge the payer’s payment obligation to the payee as required. This includes aspects related to system uptime, fraud misuse, and correcting processing errors.”</i>
Convenience	<i>“The payment instrument needs to be convenient to use. This includes aspects such as what the payer needs to remember, what the payer needs to physically carry, or how much time the transaction takes to complete when using that payment instrument.”</i>
Acceptance	<i>“A payer would want the payment instrument to be widely accepted for his payment needs. For example, a payment cardholder might not find his card useful if the card is not accepted at locations like grocery shops and restaurants, or for other uses that constitute a significant share of the cardholders’ routine payment needs.”</i>
Payment Confirmation and Reconciliation	<i>“A payer would want a confirmation that his payment has been processed. This is to serve as a reconciliation record and also as proof that the payment has been made.”</i>

Source: “Developing a Comprehensive National Retail Payments Strategy” (World Bank)

1.3.2. Pillar 2 – Actors

Two parties are involved in every payment, the payer and the payee. Those are the forefront actors, but there are also other actors involved in the background to provide the infrastructure, payment instruments, and processing services that make the payment possible. Identifying the actors involved in every payment is important to properly measure costs. The actors involved can be distinguished into the two categories of the demand side and the supply side. The demand side consists of consumers,¹¹ businesses, and government agencies. These actors can be considered the front end users, those who demand and make use of payments on a daily basis, by transacting among each other. Depending on the country, businesses can be considered any entities which have one employee or more, and pay taxes associated with their business. Moreover, depending on the administrative system of a country, government agencies

¹¹ Also encountered in the payments literature as individuals, persons, households.

can be distinguished at three levels: central or federal, state, and local. All those units and levels of government agencies are engaged in payments (some more than others), and as such, incur costs associated with the different payment instruments. The supply side consists of actors such as central banks, commercial banks, money transfer operators, ATM networks, cash-in-transit companies, and other entities that provide services or infrastructure related to payments. In other words, these are the actors who facilitate the printing, initiation, processing and settling of transactions among the demand side actors.

Table 1.3: Actors in the payment system

Demand Side			Supply Side				
Consumers	Businesses	Government Agencies	Central Bank	Commercial Banks	Non-Bank Payment Institutions	Third Party Payment Service Providers	Netting, Clearing, and Settlement Institutions

1.3.3. Pillar 3 – Payments Typology

This pillar consists of two main elements: the type and direction of the payment, and then the underlying need that triggers the payment. The first element indicates the payment type or the direction flow of the payment, showing which actor is the payer and which the payee (on the demand side). The second element indicates the payment need that triggers each transaction, and the need is directly linked to the actors engaged in the transaction and the direction flow (see Table 1.4 for all possible combinations). For instance, if there is a transaction between two consumers (both, the payer and the payee are individuals), one such need that would trigger the transaction would be sending remittances (money sent to a family from another family member

working at a different place within or outside the country). In another example, if the actors involved are a business (payer) and a consumer/person (payee), then the need for the transaction could be the payment of the salary from the business to the consumer. The distinction among these different categories is important because they determine the selection of a payment instrument to be used, the payment need, and the cost components.

Table 1.4: Payment typology – payment needs and payment flows

	Consumer (P) - Payee	Business (B) - Payee	Government (G) - Payee
Consumer (P) - Payer	P2P (Person-to-Person)	P2B (Person-to-Business)	P2G (Person-to-Government)
	<ul style="list-style-type: none"> • Payments to relatives/friends (remittances) • Payments in exchange for goods and/or services • Withdrawals • Deposits 	<ul style="list-style-type: none"> • Payments for retail/durable goods • Payments for services • Payments for travel expenses • Payments for utilities and other periodic bills 	<ul style="list-style-type: none"> • Payments of taxes, fines, fees, and other government obligations
Business (B) - Payer	B2P (Business-to-Person)	B2B (Business-to-Business)	B2G (Business-to-Government)
	<ul style="list-style-type: none"> • Payments of salaries 	<ul style="list-style-type: none"> • Payments for procurement of consumable and capital goods • Payments for regular transport expenses • Payments for utilities and other periodic bills • Deposits of cash receipts and cheques • Supply of change, and transfer of funds between own accounts 	<ul style="list-style-type: none"> • Payments of taxes, fines, fees, and other government obligations
Government (G) - Payer	G2P (Government-to-Person)	G2B (Government-to-Business)	G2G (Government-to-Government)
	<ul style="list-style-type: none"> • Payments of salaries • Payments of pensions • Payments of social benefits • Payments of tax refunds 	<ul style="list-style-type: none"> • Payments of corporate tax refunds 	<ul style="list-style-type: none"> • Deposits of cash receipts and cheques • Supply of change, and transfer of funds between own accounts • Payments to other government agencies

P=Person, B=Business, G=Government

Source: "Practical Guide for Measuring Retail Payment Costs" (World Bank)

1.3.4. Pillar 4 – Access Channels

The channel through which a payment is initiated and/or received also matters for the cost equation. For instance, a consumer can use his debit card to make a purchase at a supermarket, physically swiping the card, or can use the same payment instrument for the same purchase by filling out the debit card information on an online platform. In the former case, the access channel would be a point of sale or point of interaction (adding travel and waiting time to the overall cost), while in the latter case the access channel would be the internet. As such, it is important to define and distinguish the main access channels for the transactions. Two main categories can be distinguished: in-person payments, which require the physical presence of the payer and/or the payee at the point where the transaction is taking place, and remote payments, which do not require the physical presence of the payer and/or the payee at the point of transaction.

Table 1.5: Access channels

In-Person					Remotely	
Point of Interaction	Collection Office	Agent Outlet	Bank Branch	ATM	Internet	Mobile Network

The various access channels are defined below using standardized terminology established by the World Bank (WB), the Bank for International Settlements (BIS), and the Committee on Payments and Market Infrastructure (CPMI).¹²

¹² “A glossary of terms used in payments and settlement systems”, Bank for International Settlements (2003).

- **Point of Interaction:** Also known as point of sale and point of transaction, this access channel represents locations at which the payer and payee meet in order to transact. Some examples include a grocery store, a taxi, or a house at which the payer offers a payment to the payee in exchange of services provided (e.g. electrician).
- **Collection Office:** It is typically a government office which allows the payer to initiate a payment (e.g. taxes) or receive a payment (e.g. pension). Occasionally it refers to utility payment offices, as well (public and private entities).
- **Agent Outlet:** It is a third party that provides payment services on behalf of a payer or payee. An example could be a postal office which enters into an agreement with a ministry to distribute pensions to beneficiaries on behalf of the government. The services provided include payment initiation, collection, and mobile money account opening.
- **Bank Branch:** It represents a physical location where the payer can open an account, deposit and withdraw cash, make inquiries about his account balance, and be provided with services related to payment instruments other than cash.
- **Automated Teller Machine (ATM):** According to the glossary of the Committee on Payments and Market Infrastructure, this is *“an electromechanical device that permits authorized users, typically using machine-readable payment cards, to withdraw cash from their accounts and/or access other services such as balance inquiries, transfer of funds, or acceptance of deposits”*.

- **Internet:** This is a data communication network that allows users to access services such as balance inquiries, transfer funds, and payments in exchange of goods/services via a variety of internet-enabled devices.
- **Mobile Phone Network:** Also known as mobile network, it is a voice or text communication network that allows users to access services such as balance inquiries, transfer of funds, and other payments mobile phones. This access channel is exclusively associated with the use of mobile money.

1.3.5. Pillar 5 – Costs

The presentation and analysis of the four pillars above aim to make it easier for the identification of the cost elements. As mentioned in the beginning, the cost elements do not only depend on the payment instruments, but rather are a byproduct of the four parameters already analyzed. Before listing some specific cost elements, it is worth discussing definitions in the context of cost typology. Moreover, it should be mentioned that in addition to capturing the actual costs, the volumes of payments conducted through different payment instruments are equally crucial, because the volume constitutes the primary allocation key of costs across instruments, especially for costs not expressed upfront on a per transaction basis (e.g. bank account fees). Four cost definitions are important in the context of retail payment cost measurement.

- **Internal Costs:** Involve resources used by each actor independently, in the process of using payment instruments. These include, for example, the waiting time for processing a payment request or the opportunity cost of time spent commuting to a designated place to obtain cash.
- **External Costs (Transfers):** These costs are associated with payments made to other participants in the payment chain for services rendered (i.e. fees, tariffs). Specifically, they include the direct charges paid by the payer for using the instrument (i.e. per-transaction fee).
- **Private Costs:** The sum of internal and external costs generate private costs per instrument and per actor, the so-called private costs.
- **Social Costs:** They reflect the use of economic resources to society in the production of payment services. Specifically, they constitute the sum of all internal costs incurred by the relevant actors in the payments chain in the process of carrying out and accepting payments. In other words, since one party's revenue is another party's cost (for instance, an ATM fee is a consumer's cost but also a source of revenue for commercial banks), social costs can also be defined as the total private costs of payments minus total transfers. In this sense, social costs measure the sum of pure costs of producing, initiating, accepting, processing and settling payments incurred by the different stakeholders in the payments market, while "wiping out" transfers.

Table 1.6: Formal expressions for cost definitions

Private Costs (i,j) = Σ Internal Costs (i,j) + Σ External Costs (i,j) i = payment instrument; j = actor
Social Costs (i,j) = Σ Internal Costs (i,j) = Σ Private Costs (i,j) – Σ Transfers (i,j) i = payment instrument; j = actor

Some of the cost components pertaining to the demand and supply side are described in below. A more detailed picture of costs is provided later in Chapter 1 in the context of the Guyana case study.

Table 1.7: Indicative cost components and definitions

Demand Side	
Cost Component	Description
Time-based opportunity cost	Foregone time associated with traveling, waiting, and performing a payment. The time can be translated into monetary terms by using average or minimum national wage as a proxy.
Theft and losses	Include value losses associated particularly with cash and checks, due to own errors or theft.
Fees	Include fees paid to payment service providers for using certain payment instruments or for opening and maintaining a bank account.
Supply Side	
Cost Component	Description
Issuance of card	Costs of issuing and delivering cards to new customers.
Issuance of statement	Costs of issuing account statements or any other account reports and delivering them to customers.
Payment processing	Costs of processing a payment transaction from when the transaction is confirmed by the customer and sent to the processor until the customer account is debited or the retailer account is credited.
Fraud prevention	Costs of processing notifications from customers on card losses of theft, blocking credit cards, monitoring attempts to use the card, investigating fake cards, etc.
New customer acquisition	Costs of processing request for adherence, creating new accounts, and developing and implementing marketing activities for acquiring new customers.
Licenses	Costs paid by banks to major card companies such as VISA and MasterCard.
Management and monitoring	Costs of managing general activities (overhead costs, such as costs associated with staff, IT and communications, internal auditing costs, etc.).
Advertising and marketing	Costs of specific campaigns aimed at existing customers.
Withdrawals and deposits	Include the costs associated with withdrawals and deposits from ATMs and over the counter.
Safekeeping and cash handling	Costs of loading ATMs with cash, closing ATMs, and controlling cash stocks (staff costs).
Collection and transportation	Include the costs of collecting and transporting cash to and from branch counters, ATM machines and special clients. Such costs are typically associated with vehicles, staff, and insurance.

1.3.6. The Model as a Whole

This sub-section shows and explains how the different pillars come together in order to form the entire payments cost measurement model (Figure 1.1). The actors, both on the demand and supply side, are the driving engine of the payments market, as they interact with each other and are the bearers of the costs generated in the process of payments. On the left hand side of the model, the annual volume of paper-based payments (payer and payee end) is recorded, conducted by the end users (demand side) and processed by the payment service providers (supply side). In the process, payment instruments, payment needs, and access channels are taken into account. At the bottom left hand-side, the costs associated with paper-based payment instruments, combined with the other aforementioned factors, are noted. Primarily, average per transaction costs can be derived, based on the payment instrument and access channel, for each actor. Secondly, total annual costs can be derived, based on the payment instrument and access channel, for each actor (private costs), and for the entire economy (social costs). The right hand-side of the model includes identical elements and procedures as the left hand-side, but for electronic payment instruments this time.

After deriving the costs for the different payment instruments (and assuming electronic payment instruments are the most cost efficient), different migration scenarios can be constructed to move toward the more cost efficient payment instruments (e.g. 10 percent of all cash payments initiated by the three actors, jointly, across multiple channels, are substituted by electronic credit transfers through the internet). Based on the migration scenarios, the last step would be to derive savings for each actor, and for the entire economy.

The idea behind the model is that the payments universe within a country is a closed-loop system with two categories of payment instruments (paper-based and electronic). It can be

examined only from the cost perspective because it takes into account benefits indirectly (that is, the benefits of one category show up as costs of the other, and vice versa). The only limitation is that the model does not account for intrinsic benefits to the two payment instrument categories. For instance, as indicated in the relevant literature, a benefit that consumers associate with the use of cash is keeping track of their expenses in real time. Ultimately, though, this is a model to compare costs, and as such, focuses exclusively on the quantification and measurement of costs, and does not attempt to quantify and measure benefits.

The framework set out here can be implemented in any country, and is designed to allow for comparisons of results among different countries. At the same time, each implementing country can pick and choose the elements that are the most relevant for its national payment environment. The results presented in the context of consumers in Guyana later in this chapter are illustrative rather than not exhaustive of the methodology.

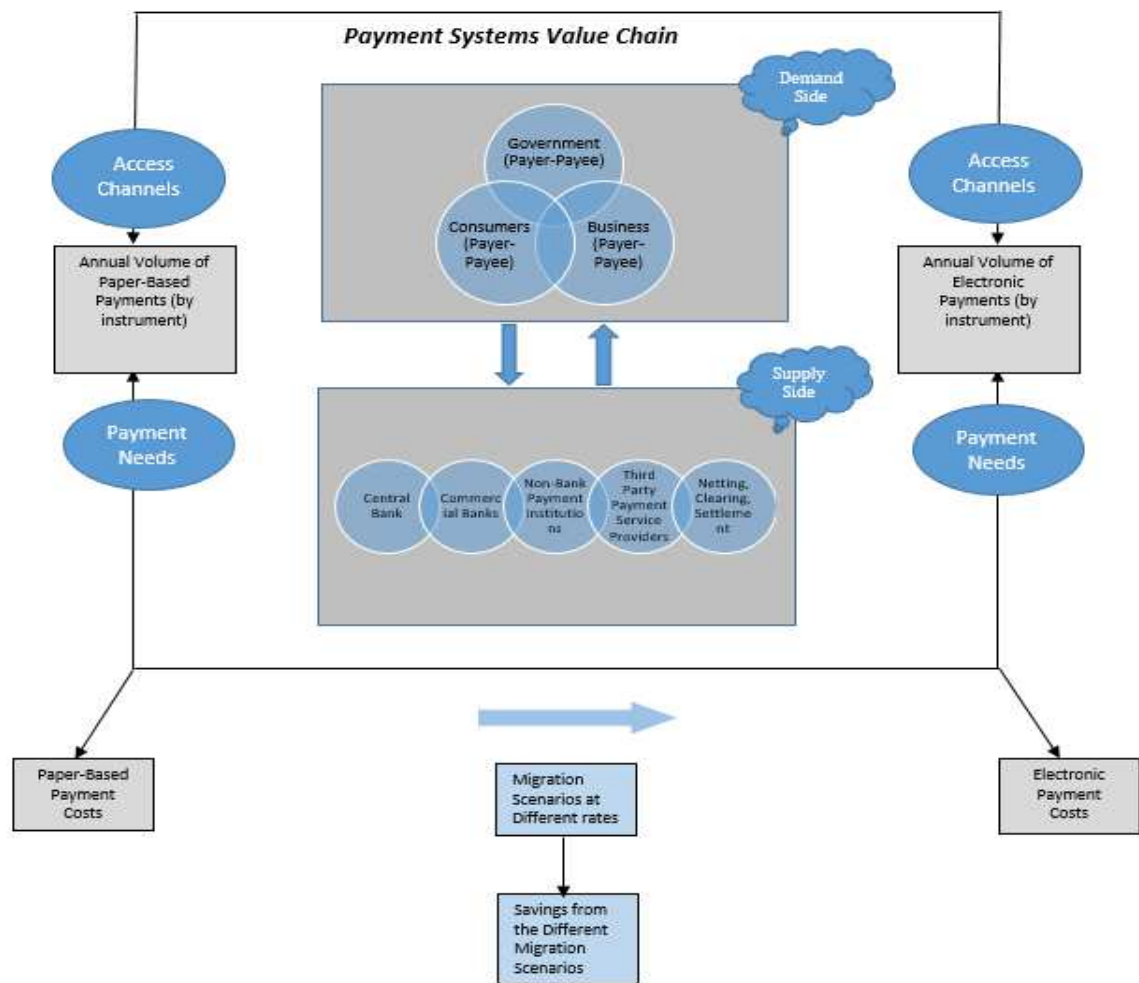


Figure 1.1: The payments cost model in its entirety

A closer examination of the cost aspect of the model can shed more light into how the different pillars are combined in order to derive the costs. The example presented below is illustrative. A payment need is selected as part of the example, that is, a P2P (person-to-person) remittance. The example focuses on the costs borne exclusively by the payer in this transaction. The payer has at his disposal three different payment instruments: cash, check, and electronic credit transfer. For each of these payment instruments, there are different access channels available. For instance, a payer could use cash at a bank branch or agent outlet. If he decides to go with check, he has to make the payment at a bank branch. Finally, if he uses an electronic credit transfer, he can do so through the internet. All these different combinations are associated with different “paths” in the decision tree, leading to different sets of costs: W, X, Y, Z. As such, not only does the model developed here help derive and quantify the different costs, but by doing so, it allows the user to choose the least costly method. The illustrative example also highlights the fact that even though the instrument chosen is important for the model, so are the other pillars, in order to derive the overall total costs for the entire “path.” Thus, it is not sufficient (or meaningful) to say, for instance, that payment instrument A is less costly to use than payment instrument B, because the other elements of the “path” have to also be mentioned for the statement to be complete and informative. The sections that follow on the case study of Guyana provide more clarity pertaining to the model.

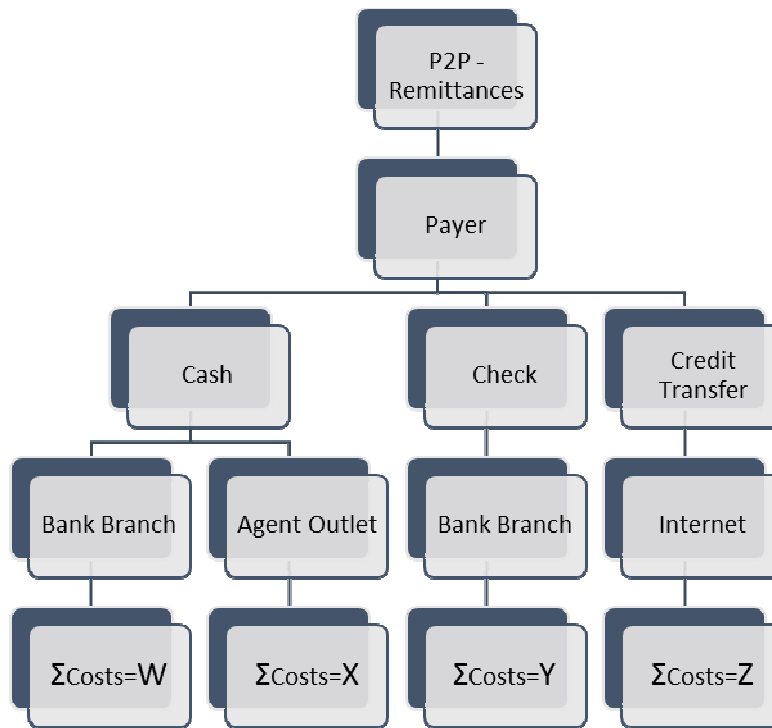


Figure 1.2: Illustrative example of cost derivation and decision-making tree for choosing the most cost efficient payment “path”

1.4. Model Application

1.4.1. The Case of Guyana

Guyana, located in the north-eastern part of South America, has a population of approximately 800,000 people and its 2014 GDP was estimated at USD 3 billion, with GDP/capita estimated at USD 3,750. The majority of the population is concentrated around the capital city, Georgetown. According to the World Bank, Guyana is the third poorest country in the Western Hemisphere, following Haiti and Nicaragua.¹³ Its economy relies primarily on agriculture and the mining of natural resources such as gold. The national currency of the country is the Guyanese dollar (GYD), with GYD 1 equaling USD 0.0048 (or USD 1 equaling GYD 208) as of early 2016.

Commercial banks are the main providers of payment services in Guyana, while five registered money transfer operators – referred to as Money Transfer Agents – provide remittance services. There is also a mobile money operator which offers its services in the country, Mobile Money Guyana (MMG), a subsidiary of Guyana Telephone and Telegraph (GTT) Company. In addition, there is one Building Society and twenty four credit unions. These institutions, however, offer only deposit and credit products and do not offer payment services to their customers. The Guyana Post Office provides remittance services and also processes cash disbursements for government social benefit programs.

Checks are widely used in addition to cash, with payment cards being the most used electronic retail payment instruments. Card payments are at an early stage of development in Guyana. Banks issue payment cards in association with the international card payment networks,

¹³ For more information, see World Bank overview on the economy of Guyana:
<http://www.worldbank.org/en/country/guyana/overview>

but there is no domestic switching arrangement for card payments and all inter-bank card payment transactions are cleared and settled outside the country. The same interchange fee applies for international transactions as for domestic transactions. Perhaps as a consequence of this, there are hardly any inter-bank card payment transactions and customers are steered toward using the ATMs and point of sale (POS) terminals of their own bank.

Government payments are primarily routed through a consolidated fund account (CFA) in the Bank of Guyana. Tax payments by corporations and individuals are primarily made by checks and are collected by the Guyana Revenue Authority (GRA). The GRA collects tax payments at its branches and remits the collected funds to the CFA. The Accountant General does a daily and monthly reconciliation of the revenue collected. The National Insurance Scheme (NIS) operates a social protection scheme for which the contributions are largely paid through checks and the benefits are largely paid out in cash at bank branches and at the post offices against vouchers. The NIS scheme covers around 125,000 employees of some 2,000 firms operating in Guyana. The participating employees receive paper vouchers for their various entitlements like pension and health benefits in the form of vouchers. The vouchers have information about the beneficiary, the valid from and to dates, and the amount payable. The beneficiaries can present these vouchers within the validity period at branches of designated commercial banks, offices of the NIS or the Guyana Post. The commercial banks and the Guyana Post are reimbursed upon submitting the vouchers against which they have paid.

The Guyana case study focuses on private costs (internal and transfers) incurred by consumers in the process of using a variety of payment instruments for payments initiated and received. The payment instruments examined in the case study, and which are relevant for Guyana, include: cash; check; paper voucher; paper-based credit transfer; debit card; credit card;

electronic credit transfer; mobile money. Moreover, to increase the accuracy level of the information collected in the consumer survey, the payments were broken down in the following categories: P2P/Person-to-Person (i.e. payments made to relatives or friends without exchanging goods/services; payments made in exchange of goods/services); P2B/Person-to-Business (i.e. payments for retail goods/services/regular expenses/utilities/durables); P2G/Person-to-Government(i.e. taxes/fines/other government obligations); B2P/Business-to-Person (i.e. salaries); G2P/Government-to-Person (i.e. salaries, pensions, social benefits); Deposits; Withdrawals. Finally, a variety of access channels through which payments are initiated/received, were also considered, given that they affect costs. Those channels are: point of sale/point of interaction; collection office; bank branch; ATM; agent outlet; internet; mobile network.

1.4.2. Questionnaire and Sampling Methodology

A household survey of 450 respondents regarding the costs of retail payment instruments was conducted in 6 (out of 10) administrative regions of Guyana between June and August 2014. The survey was conducted by the World Bank, Bank of Guyana and a market research firm, with the author contributing to the questionnaire design and sampling methodology.

Interviewers visited respondents at their place of residence to interview them regarding personal payments initiated and received by the respondent. Assuming the interviewee was willing to participate and fulfilled the eligibility criteria, the interviewer would first ask the household head to participate in the survey. If the household head was not available, then another household member 18 years or older would be chosen among household members present for the interview.

The questionnaire was divided into three main sections and the average response time was approximately 30 minutes. The first section captured socio-demographic information (e.g. age, gender, education, occupation, etc.) as well as financial inclusion data (e.g. transaction account ownership, debit/credit card ownership, mobile money use, etc.). The purpose of the second section was to gauge information on the volume of payments (received and initiated), based on payment needs, payment instruments and access channels. Payments were broken down by need in order to make it easier for consumers to recall the number of payments they received/initiated in the recent past (depending on the payment need, three different timeframes were offered: week, month, and year). The payments were also broken down by instrument and access channel, so that it was easier during the analysis to link costs to their respective instruments and channels used, particularly when annual aggregate data at the population level were derived. The third section of the questionnaire collected individual cost data associated with using specific payment instruments and access channels. Respondents were requested to provide a perception for certain cost elements (e.g. time it takes to get to a bank branch, waiting time, and transaction time), since it would have been impossible for them to have an accurate estimate. It should be mentioned that visuals were used during the interviews so that respondents could identify all payment instruments and access channels by looking at images, in order to reduce response errors.

The sampling frame for the survey was based on summary data for the enumeration areas (EAs) defined for the 2012 Guyana Population and Housing Census. In terms of the sample selection procedure, a stratified three-stage sample design was used for selecting the individuals for the survey. The primary sampling units (PSUs) selected at the first stage were the EAs (small operational areas defined on maps for the 2012 Census enumeration). The second stage of

selection included households listed in the EA selected. The third (final) stage was individual selection within the households selected in the second stage.

Guyana is divided into 10 administrative regions, and each region is further divided into coastal rural, coastal urban, and interior urban areas (although some regions have only one or two of the three areas). To increase the efficiency of the sample for country representativeness, the stratification technique was based on Region x Urban/Rural. In other words, a stratum is defined as a rural or urban area within each selected region. The final sample consisted of 9 strata (see Table 1.8). Due to the fact that they were hard to access, regions 1,2,8, and 9 were excluded from the sampling frame. These regions represent only 13 percent of the Guyanese population, and as such, omitting them from the sample was not expected to impact the representativeness of the results.

The following formula was used in order to estimate the sample size for the survey in Guyana.

Sample Size Formula: $n = (z^2) * (\sigma) * (1 - \sigma) * (k) / (e^2)$

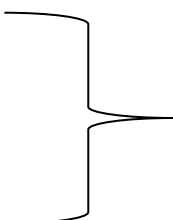
$z = 1.96$ (95% confidence interval)

$\sigma = 0.5$ (variance)

$k = 1.1$ (10% estimated non-response rate)

$e = 0.05$ (5% margin of error)

**$n \sim 450$
(Guyana)**



Given the sample size, the distribution across the strata was done in a way that matches the actual population distribution, as shown in Table 1.8. More, specifically, the sample distribution scheme included the following steps:

- Cumulate the measures of size (number of households) down the ordered list of PSUs within the stratum. The final cumulated measure of size is the total number of households in the frame for the stratum (M_h).
- To obtain the sampling interval for stratum h (I_h), divide M_h by the total number of PSUs to be selected in stratum h (n_h): $I_h = M_h/n_h$.
- Select a random number (R_h) between 0 and I_h . The sample PSUs in stratum h will be identified by the following selection numbers: $S_{hi} = R_h + [I_h \times (i - 1)]$, rounded up, where $i = 1, 2, \dots, n_h$. The i -th selected PSU is the one with a cumulated measure of size closest to S_{hi} that is greater than or equal to S_{hi} .

Ultimately, data were analyzed in STATA 12 and post-stratification weights were also used for each respondent in order to report data at the population level.

Table 1.8: Sample distribution and real population distribution

Region number	Region name	Coastal Rural (sample) ¹⁴	Coastal Urban (sample)	Interior Rural (sample)	Total (sample)	Percentage distribution by region (sample)	Percentage distribution by region (real population)
1	Barima-Waini	--- ¹⁵	---	0	0	0%	3%
2	Pomeroon-Supenaam	0	0	0	0	0%	6.5%
3	Essequibo Islands-West Demerara	66 (100%)	---	---	66 (100%)	15%	14%
4	Demerara-Mahaica	114 (49%)	118 (51%)	---	232 (100%)	51.5%	41.5%
5	Mahaica-Berbice	34 (100%)	---	---	34 (100%)	7.5%	7%
6	East Berbice-Corentyne	57 (70%)	24 (30%)	---	81 (100%)	18%	16.5%
7	Cuyuni-Mazaruni	---	---	10 (100%)	10 (100%)	2%	2.5%
8	Potaro-Siparuni	---	---	0	0	0%	1%
9	Upper Takutu-Upper Essequibo	---	---	0	0	0%	2.5%
10	Upper Demerara-Berbice	---	20 (74%)	7 (26%)	27 (100%)	6%	5.5%
Total		271 (60%)	162 (36%)	17 (4%)	450 (100%)	100%	100%

¹⁴ The sample percentage distribution across coastal rural, coastal urban, and interior rural for each region, is the same as the equivalent percentage distribution of the real population.

¹⁵ The notation refers to non-applicable cases.

1.4.3. Socio-Demographic Statistics

This sub-section examines the socio-demographic characteristics of the sample, and compares them to the 2012 Census data. It is worth emphasizing that achieving variation with regards to socio-demographic characteristics is important because they are likely to be indicators, to some extent, of payment patterns. Figure 1.3 summarizes the distribution statistics for all socio-demographic indicators. The gender distribution is roughly equal, with females constituting a slight majority. This approximates the Guyana 2012 Census findings in terms of gender distribution, which also show equal distribution between the two genders. Just over 50 percent of respondents were the household heads. It should not come as a surprise that not all respondents were the household heads given that many of them were likely at work during the time of the interviewer's visit. However, being the household head or not does not have any significant implications for the results given that the survey asks for individual payments.¹⁶ The age distribution is another characteristic captured in the survey. The sample has a relatively even distribution across the different age groups, with those between 30 and 39 being the most represented, while those 65 years and older the least represented, with a few non-responses (NR). The 2012 Census findings include the following population distribution: 0-14 years old (35.7 percent); 15-29 years old (25.6 percent); 30-39 years old (14.8 percent); 40-49 years old (11 percent); 50-64 years old (8.1 percent); 65 years old and above (4.8 percent).

¹⁶ The only implication with payments conducted by the household head is that even when the head makes personal payments, some of them might be related to the entire family, and as such, this might slightly increase the frequency of payments made by the head.

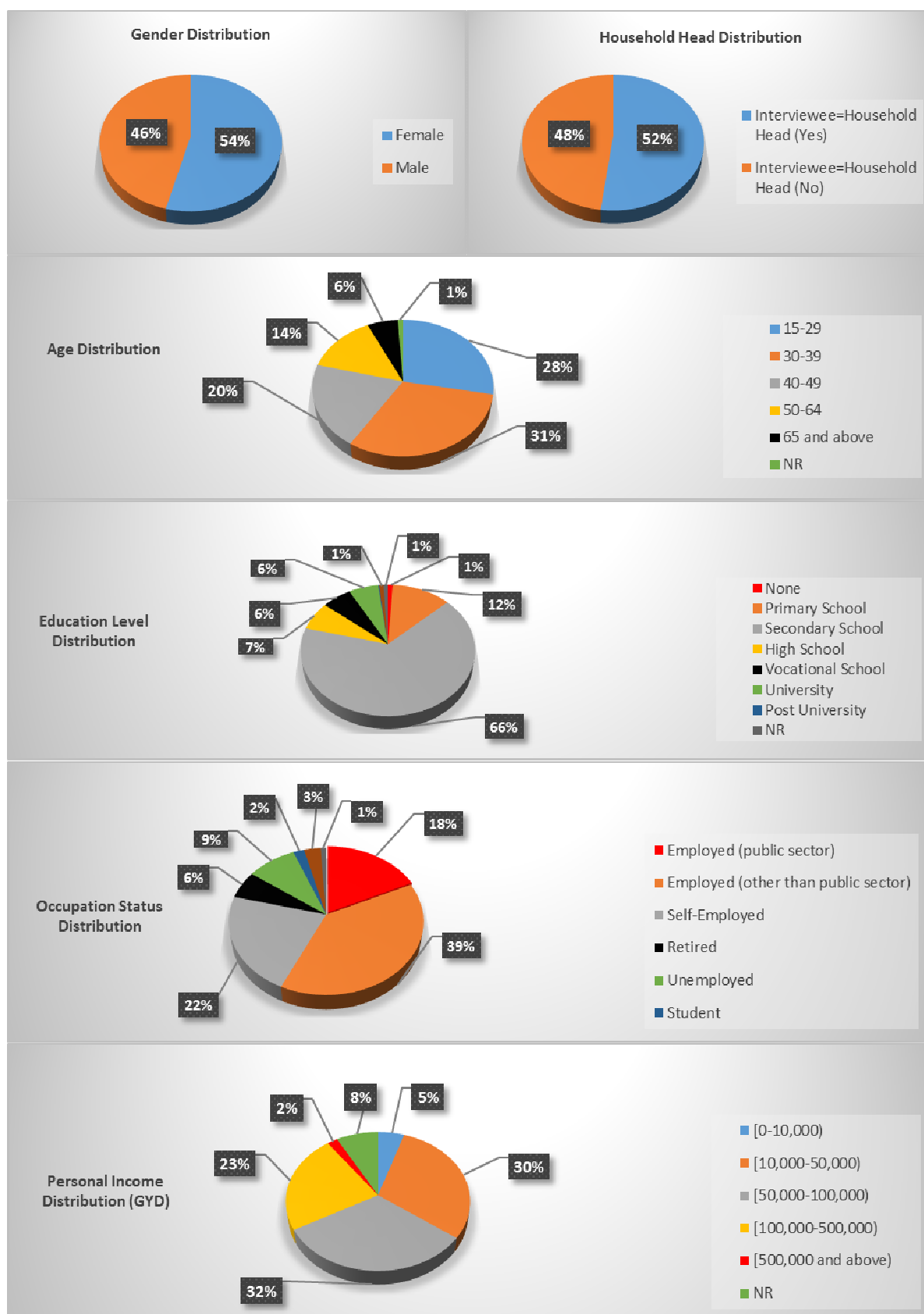


Figure 1.3: Socio-demographic statistics among the sample respondents

In terms of the education level, the respondents with secondary schooling constitute 66 percent, while the rest are distributed across the other education categories. This distribution is close to the population distribution indicated by the Census findings that report: no education (3 percent); primary education (26 percent); secondary education (62 percent); post-secondary (9 percent). The distribution across the occupation status categories shows that almost 80 percent of the respondents have some type of employment/self-employment, while the rest of the respondents are evenly distributed among the other categories. Again, there seems to be a good matching with the Census data on occupation: employed (70.3 percent); unemployed (8 percent); students (6.7 percent); home-duties (4.9 percent); retired (5.5 percent); disabled (2.5 percent); institutionalized (2.1 percent). Finally, in terms of the personal monthly income levels, 30 percent of the sample receives between GYD 10,000 (USD 48) and GYD 50,000 (USD 240), 32 percent receives between GYD 50,000 (USD 240) and GYD 100,000 (USD 480), 23 percent receives between GYD 100,000 (USD 480) and GYD 500,000 (USD 2,400), and all other respondents fall under the other income categories.

Even though socio-demographics did not constitute stratification criteria for choosing the sample, a satisfactory level of variation and representativeness was still achieved in this context.

1.4.4. Financial Inclusion Statistics

Financial inclusion statistics such as access to a transaction account for initiating and receiving payments, internet banking use, and debit/credit card ownership, are important because they help derive the share of consumers that deals only with cash and does not have access to an account or electronic payment instruments. The question regarding the transaction account was phrased in such a way that it does not imply ownership of the account by the respondent, since it could be co-held with other family members. The question simply gauged if the respondent had access. It is important to note the choice of the phrase “transaction account” was done deliberately. Indeed, consumers in Guyana might have an account with an institution other than a commercial bank, such a credit union, microfinance institution, or mobile money operator.

Data are broken down by region and area for the sample (see Table 1.11, Appendix 1). A striking number of 94 percent reported that they have access to one or more transaction accounts associated with one or more institutions. Given that the sample excludes certain regions (comprising 13 percent of the population), this number is slightly overestimated for the population. If the excluded regions were to be incorporated, different scenarios could be projected. For instance, if the assumption is that only 50 percent of residents in the excluded countries have access to a transaction account, the 94 percent would drop to 90 percent. At the urban/rural area level, the proportion of those with access to an account and those without access to an account does not differ significantly from the country level. In the coastal rural area, only 4 percent of the respondents replied that they do not have access to a transaction account while the same number was 5 percent for the coastal urban and 0 percent for the interior rural. When analyzing the data at the region level, the same pattern is observed. In almost every region, respondents reported to having access to at least one transaction account, except for region 4,

where 9 percent responded not having access to any account. The assessment of the data by area and region shows that location is not a factor in determining if a consumer has access to a transaction account in Guyana since the differences across areas and regions are almost non-existent. There appears to be widespread coverage in terms of access to accounts across the country.

Respondents were also asked to report if they had used internet banking at least once during the past 6 months (Table 1.12, Appendix 1). All commercial banks in Guyana provide internet banking services. Only 3 percent of respondents at the country level reported using internet banking. Interestingly enough, 87 percent of the respondents who did not use internet banking reported having access to a transaction account. The same pattern is observed when examining the data by area and region, where those who do not use internet banking comprise the vast majority, 80 percent or more. The proportion of those who use internet banking to those who do not use internet banking is similar in each area and region. Those who do not use internet banking while having access to a transaction account, range from 83 percent to 100 percent.

The other two financial inclusion indicators pertain to debit and credit card ownership (Tables 1.13 and 1.14, Appendix 1). At the country level, 73 percent of the respondents replied that they own a debit card. Also, 21 percent responded that they do not own a debit card but do have access to a transaction account, while 6 percent do not own a debit card and do not have access to a transaction account. The analysis of the data by rural and urban areas shows similar proportions of those who own a debit card to those that do not, with the debit card ownership ranging from 67 percent (coastal rural) to 88 percent (interior rural). Across regions, there is not much variation, although for regions 5 and 6, the debit card ownership drops to levels of 59 and 60 percent respectively, while for the other regions, the ownership levels range from 68 to 89

percent. Overall, while roughly 70 percent of the respondents reported owning a debit card, this is not reflected in usage, as is shown in the following sub-sections (majority of transactions occur in cash). Moreover, there is still a considerable portion of consumers who do not own a debit card, even though they have access to a transaction account, showing that the services and products that come with a transaction account are not fully utilized by approximately 20 percent of the respondents.

Only 9 percent of the respondents reported owning a credit card at the country level. Across areas, the coastal urban area stands out, where 18 percent of respondents own a credit card. In regions 5 and 7, none of the respondents reported owning a credit card, while region 4 has the highest ownership rate with 14 percent. Despite some exceptional areas and regions, overall the credit card ownership remains low in Guyana.

1.4.5. Annual Payment Flows Statistics

To derive the annual volume data for payments initiated, payments received, withdrawals, and deposits, a multi-step analysis process is followed. Payments initiated and received across all payment needs and across all access channels are considered. The volume for those payment needs reported on a weekly or monthly basis (in the questionnaire) is converted into an annual basis (multiplying by 52 and 12, respectively). The newly created variables (i.e. total number of annual payments by payment instrument) are tested in terms of their values being normally distributed. For those that are not normally distributed, the bottom 1 percent and the top 1 percent of the values are removed, since they constitute outliers that would affect the mean value.

Table 1.15 (Appendix 1) presents the results of the average and total annual payments initiated per respondent, by region, area, and payment instrument. It is worth noting that the averages are derived by also taking into account respondents who reported 0 payments and as such, the averages refer to the respondent and not the user of a specific payment instrument. Hence, the word “per respondent” is equivalent to “per population adult.” As expected, the average number of cash payments per respondent stands out, as it reaches approximately 570 annually, while the equivalent average numbers for all other payment instruments usage are below 1.

In terms of the number of payments initiated at the population level (detailed in Table 1.16, Appendix 1), cash payments account for almost 99.9 percent of all payments initiated, while the other 0.1 percent involves check payments, paper-based credit transfers, and debit and credit card payments. Overall, Guyanese consumers initiate approximately 243.3 million payments annually, of which 243.2 million involve cash.

With regards to payments received, the average Guyanese consumer receives annually 56 cash payments, 3 check payments, 0.1 paper vouchers and 0.1 electronic credit transfers. As the data analysis indicates, the Guyanese adult population receives annually approximately 21.4 million payments, of which 20 million in cash (93 percent), 1 million in checks (5 percent), and the remaining in paper vouchers, (around 300,000 or 1.5 percent) and electronic credit transfers (about 31,000 or 0.5 percent). The statistics for payments received are summarized in Tables 1.17 and 1.18 (Appendix 1).

Deposits and withdrawals are analyzed separately from initiated and received payments, across areas and regions. Cash deposits are considered those made at a bank branch, ATM, or agent outlet, while check deposits are normally made at a bank branch or ATM. In terms of cash

withdrawals, those made from a bank branch, an agent outlet, an ATM through a debit and credit card, and cash-out checks at a bank branch are considered. Overall, approximately 60 percent of the adult population makes at least one cash deposit annually, while 7 percent of the population makes at least one check deposit annually. In terms of cash withdrawals, those who make at least one withdrawal a year amount to 62 percent (see Tables 1.19 and 1.20 in Appendix 1).

1.4.6. Payment Needs and Access Channel Statistics

The payments (initiated and received) data are further analyzed by payment needs. For payments initiated, as expected, the vast majority (80 percent) comprises of purchases for frequent (daily) retail goods. In terms of other payments initiated, 2.5 percent are intended for transfers to relatives and friends (remittances), 7 percent for frequent services (e.g. household services, haircuts, etc.), 8.5 percent for periodic bills (e.g. telephone, electricity, school fees, etc.), another 1.7 percent for durable goods (e.g. furniture, electronic appliances, etc.), and 0.3 percent for government payments (e.g. taxes and fees). For payments received, 57 percent come in exchange of goods and services sold to other individuals, 22 percent from remittances, 17 percent from salary payments, 2 percent from pension payments, and another 2 percent from social assistance payments.

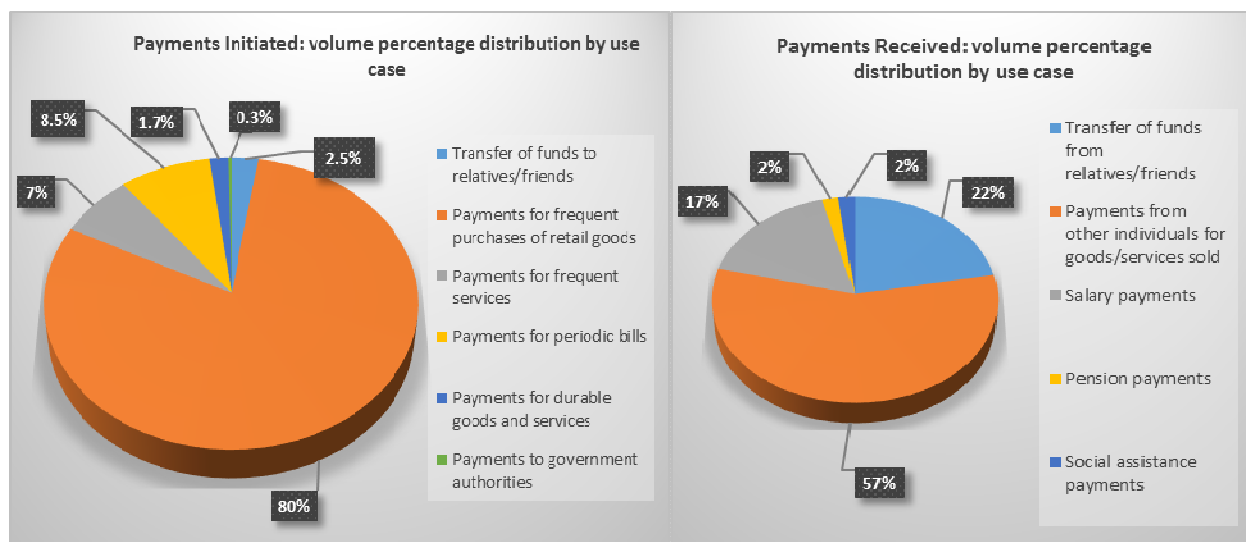


Figure 1.4: Distribution of annual payments by need

Figure 1.5 reports the distribution of access channels for payments initiated and received, regardless of the payment instrument used. For initiated payments, 83 percent are conducted through the point of interaction, 6 percent through a bank branch, 6 percent through an agent outlet, 4 percent through a collection office, 0.9 percent through the internet, and 0.1 percent through the mobile network. With regards to received payments, 65 percent are received through the point of interaction, 9 percent through a bank branch, 16 percent through an agent outlet, 6 percent through a collection office, 3.9 percent through the internet, and 0.1 percent through the mobile network.

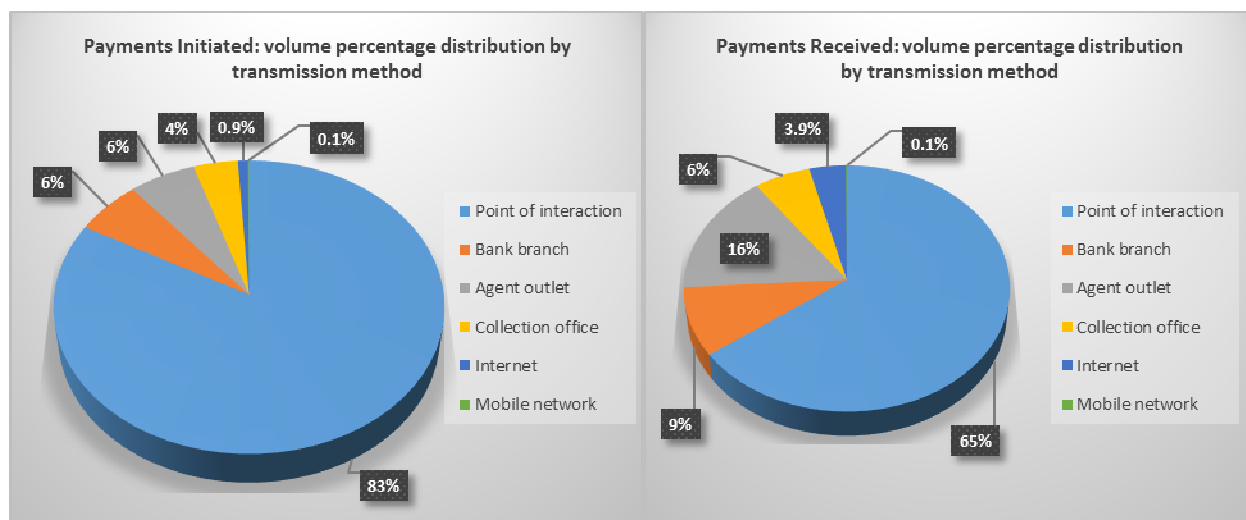


Figure 1.5: Distribution of annual payments by access channel

The statistics regarding the volume and distribution of transactions by payment instrument, payment need, and access channel are next used to derive overall annual payment costs. In part, the statistics are useful from a policy perspective because they can help authorities identify the areas and needs where cash is primarily used, and hence, design targeted policies to help the shift to electronic payments.

1.4.7. Retail Payment Costs

The ultimate goal is to derive the costs borne by consumers in Guyana for the use of different retail payment instruments. Before deriving costs associated with the actual payment instruments, costs associated with the different access channels are first calculated. For the derivation of the access channel costs, time-based cost components are added for each access channel, separately. For internet and mobile network, in addition to transaction time, the cost of accessing the internet and sending a message are also considered. A fee of GYD 3 (USD 0.01)

per minute was reported by the respondents for internet café access, and a fee of GYD 10 (USD 0.05) per text message.¹⁷ Time involved in payments is converted into monetary cost by using the minimum national wage as a proxy (GYD 32,000/month¹⁸ or GYD 3/minute; USD 15/month or USD 0.01/minute). Interviewees were also asked to report the distance they travel (in Km) to get to an access channel (to initiate or collect a payment) as well as the transportation mode they use. On average, respondents responded that half of the time they use paid transportation and the other half some form of unpaid transportation (such as walking) to reach an access channel for payments. As such, a weight of 0.5 is used to calculate the trip costs including transportation costs (other than time), and a weight of 0.5 is used to calculate the trip cost without paid transportation (the sum of the two is ultimately used in order to derive a single cost figure for the trip). The respondents also reported that on average, they spend GYD 20 (USD 0.1)/km traveled to get to an access channel.

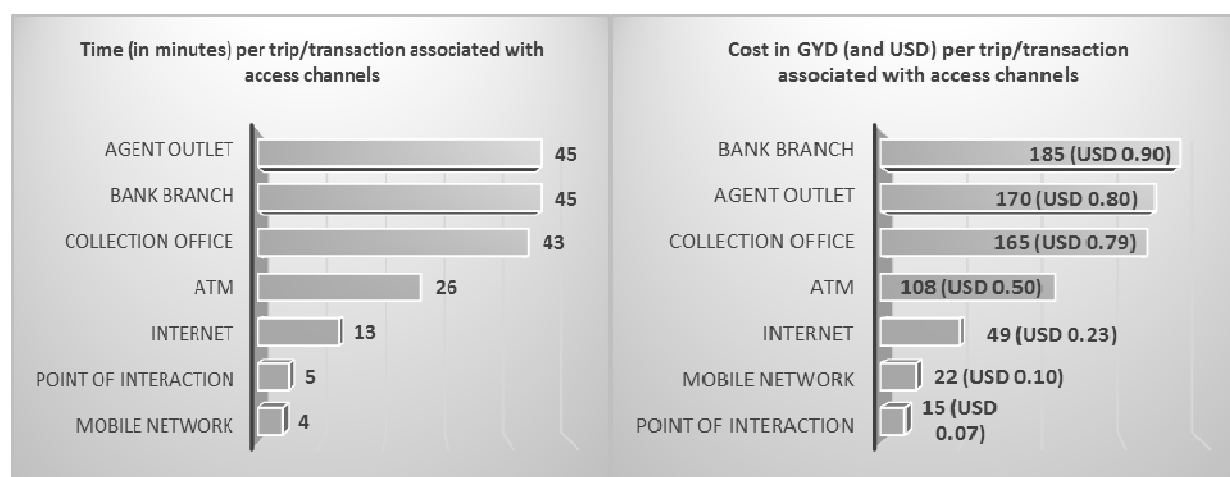


Figure 1.6: Cost by access channel (in time and monetary terms)

¹⁷ Market exchange rate is used for the conversions of GYD to USD.

¹⁸ Ministry of Labor, Human Services and Social Security – Given that there are different sets of minimum wages, the lowest is used (that for hourly workers which is GYD 200/hour or GYD 32,000/month and which is rounded to GYD 3/minute) in order to avoid any overestimations.

As shown, point of interaction has the lowest cost, given that only transaction time is taken into account for this access channel. Mobile network and internet follow in terms of low costs, while the highest costs are associated with ATM, bank branch, agent outlet, and collection office. A closer look indicates that the most costly access channels are linked to paper-based payment instruments. Specifically, a consumer would visit a bank branch, a collection office or an agent outlet only when dealing with a cash, check, or paper voucher transaction (Table 1.21 in Appendix 1 presents more details regarding access channel costs). More inferences can be made regarding the annual transmission method costs at the population level.

- Guyanese adults spend almost 1.07 billion minutes annually at the point of interaction to initiate and collect payments, across different instruments. This translates into annual opportunity costs of approximately GYD 3.2 billion (USD 15.4 million).
- Guyanese adults spend approximately 7.5 million minutes annually associated with trips and transactions at a bank branch (other than deposits and withdrawals), for payments initiated and received, translated into opportunity costs and transportation costs of GYD 3 billion (USD 14.4 million).
- Guyanese adults spend approximately 31.8 million minutes annually for trips and transactions associated with deposits and withdrawals at an ATM, equal to GYD 132.1 million in opportunity costs and transportation costs (USD 0.6 million).
- Guyanese adults spend approximately 474 million minutes annually for trips and transactions associated with a collection office for initiated and received payments. This translates into opportunity costs and transportation costs of GYD 1.8 billion (USD 8.6 million).

- Guyanese adults spend approximately 811 million minutes annually for trips and transactions associated with an agent outlet, for payments initiated and received. This is equivalent to opportunity costs and transportation costs of approximately GYD 3 billion (USD 14.4 million).
- Guyanese adults spend approximately 39.3 million minutes annually using the internet for payments initiated and received. This figure is equivalent to GYD 148.2 million (USD 0.7 million) in opportunity costs and internet fees.
- Guyanese adults spend approximately 1 million minutes annually using the mobile network to initiate and receive payments. This translates to GYD 5.8 million (USD 0.03 million) in opportunity costs and contract/message costs.

Costs associated with access channels are only part of the entire cost equation. There are additional costs specific to the payment instruments (described below), many of which were not reported on a per transaction basis during the survey. Those types of costs are disaggregated below and then added to the already derived per transaction cost associated with access channels. All results for the cost components are then combined into a single cost figure for each payment instrument used through a specific access channel.

- **Reconciliation time cost for bank account statements** is allocated equally among all payment instruments associated with having a bank account (i.e. cash, check, paper-based credit transfer, debit card, and electronic credit transfer). In theory, the distribution of the cost should be based on the volume of the payments by payment instrument. However, bank account statements have a unique nature in that they arrive on a periodic basis, regardless of the number of payments and the payment instrument used.

- **Reconciliation time cost other than bank account statements** was also reported by the respondents during the interview. Initially they were on a monthly basis and then converted into an annual basis. The respondents were asked to report any additional time they spend on reconciling specific payment instruments (other than bank account statements) and they reported additional reconciliation time for cash, checks, paper vouchers, paper-based credit transfers, and mobile money.
- **Losses due to fraud/theft/illiquidity** are reported on an annual basis in the survey.
- **The cost of opening and maintaining a bank account** is also distributed equally across multiple payment instruments (i.e. cash, checks, paper-based credit transfers, debit cards, and electronic credit transfers), following the same approach as in the case of reconciliation time for bank account statements.
- **Annual fees** are associated with specific payment instruments (here, checks) and constitute additional costs to bank account fees and reconciliation time.
- **Interest foregone** as a cost component is relevant for cash and checks. In the case of cash, this cost encapsulates the interest lost due to cash being held by the individual, rather than sitting in an interest bearing account. Knowing the value of daily cash held by consumers (as reported in the survey), as well as using 3 percent¹⁹ as the annual rate of return offered by a savings account (but discounted on a daily basis)²⁰, the value of interest that the cash could yield in a day (if deposited in the account) is derived. In the

¹⁹ 10 year average interest rate on savings – Caribbean Centre for Money and Finance:
<http://www.ccmf-uwi.org/files/publications/newsletter/Vol5No4.pdf>

²⁰ The assumption here is that the cash is spent at the end of the day (or the next day), since the respondents were asked to respond the value of daily cash held for daily expenses. As such, the interest would apply only for that specific day, and therefore, the annual interest rate has to be further discounted to a daily basis for the calculations.

case of checks, this cost component encapsulates interest lost from holding the check and not depositing it in an interest-bearing account. Using the average number of days that a checks is held by the recipient (approximately 2.5 days as reported in the survey), the number of checks received, the average value of a check received, as well as the 3 percent rate of return of a savings account, the lost interest is calculated, on an annual basis for a single user.

Indeed, access channel costs along with the cost components described above are combined to derive per transaction costs for a combination of payment instrument – access channel, for payments initiated and received, separately, as well as for deposits and withdrawals (see Figure 1.7 below and Tables 1.22 – 1.24 in Appendix 1). As indicated by the results, on the initiation side, the use of paper-based credit transfers and checks is the most expensive, on average. The highest cost is displayed by the use of paper-based credit transfer, GYD 322 (USD 1.5), as well as the use of checks, GYD 208 (USD 1). Conversely, the lowest cost is displayed by the use of a debit card at the point of interaction, GYD 19.5 (USD 0.09). These costs constitute averages across all access channels.

On the receiving side, the average cost of receiving a check payment is GYD 197 (USD 0.9), for receiving a paper voucher is GYD 167 (USD 0.8), and for receiving a cash payment is GYD 143 (USD 0.7). The equivalent cost for receiving an electronic credit transfer is only GYD 20 (USD 0.09), a striking difference compared to paper-based payment instruments. In general, for every access channel, electronic payment instruments offer lower cost alternatives than the equivalent paper-based payment instruments in Guyana. Electronic credit transfers are significantly cheaper to use, on average, than paper-based payment instruments, but they also

display lower costs compared to other electronic payment instruments such as debit/credit cards and mobile money.

Finally, in terms of deposits and withdrawals, the average cost across access channels for a single cash withdrawal amounts to GYD 169 (USD 0.8), while the equivalent cost for a cash deposit is estimated at GYD 156 (USD 0.7) and for a check deposit, GYD 210 (USD 1).

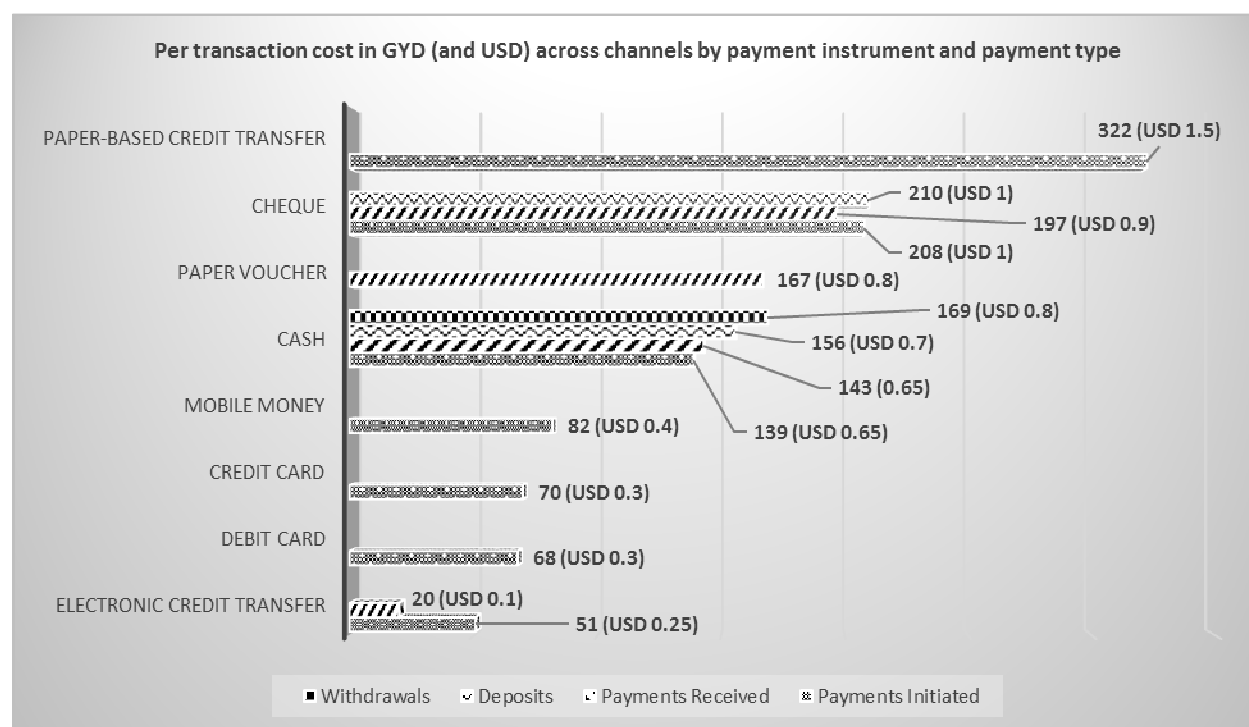


Figure 1.7: Per transaction cost by instrument and payment type (average across access channels)

As a final step, overall annual costs associated with each payment instrument are calculated and expressed relative to current GDP.²¹ Figure 1.8 shows the overall annual costs associated with each instrument as a percentage of current GDP, as well as the percentages of direct versus indirect cost components for each payment instrument. The vast majority of annual

²¹ The current level of GDP for Guyana is estimated at GYD 612 billion or approximately USD 3 billion.

payments costs comes from the use of cash, at 2.45 percent of GDP, followed by checks at 0.05 percent of GDP, paper vouchers at 0.007 percent of GDP, paper-based credit transfers at 0.002 percent of GDP, debit cards at 0.0006 percent of GDP, and credit cards at 0.0002 percent of GDP. Overall, the data indicate that paper-based payment instruments are the most expensive payment instruments. It can be argued that the high overall costs, particularly for cash, are driven both by the high volume and the high per transaction cost. With regards to direct and indirect costs, for the paper-based payment instruments, more than 50 percent of the costs are indirect opportunity costs, associated with productivity losses, while for electronic payment instruments, more than 50 percent of the costs come from direct fees. This analysis further emphasizes the fact that there are a number of inefficiencies behind paper-based payment instruments, mainly time-based, which can be minimized, if not totally eliminated, with the use of electronic payment instruments.

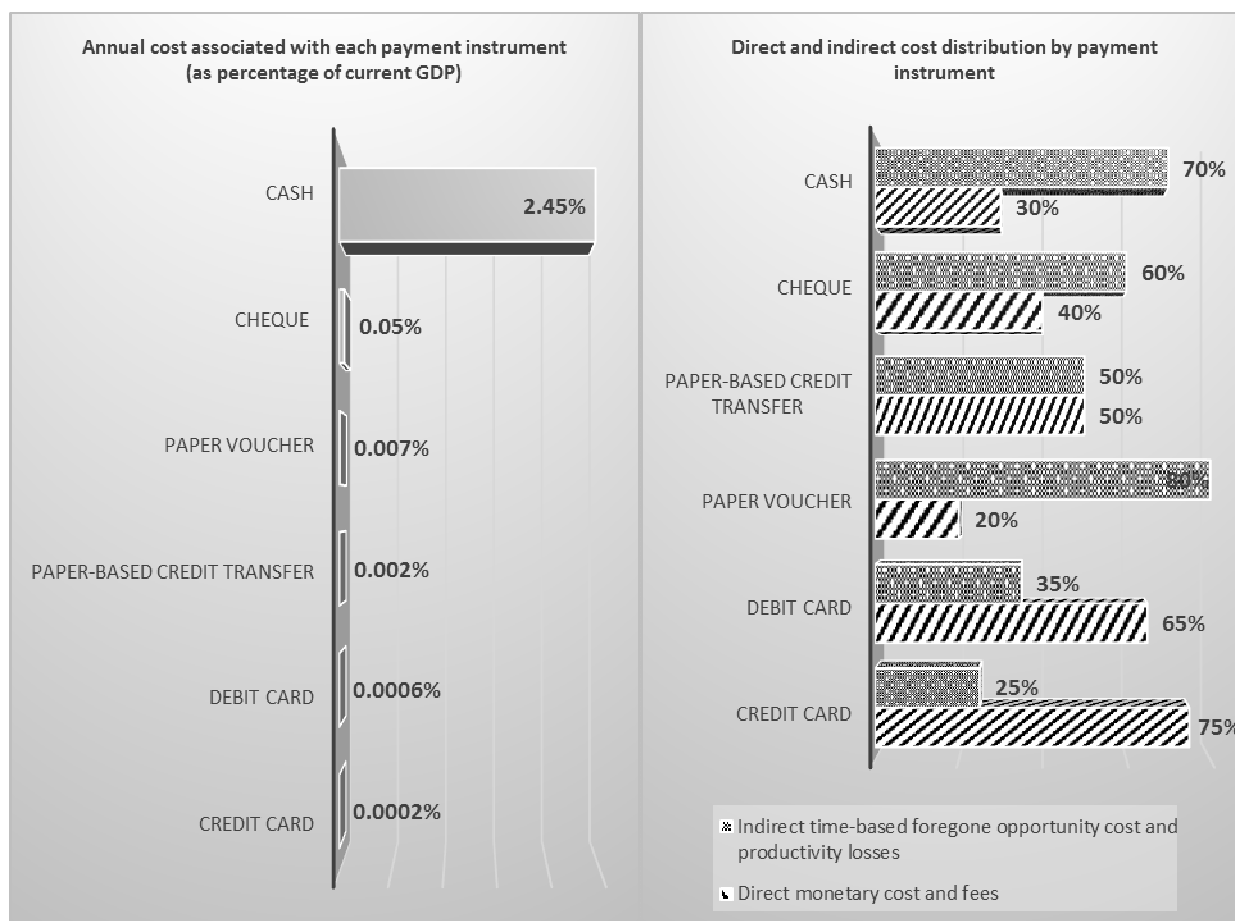


Figure 1.8: Total annual costs borne by consumers as percentage of GDP

1.4.8. Savings in Shifting from Paper-Based to Electronic Payment Instruments

The analysis provided above has shown that in the case of Guyana, consumers incur lower costs for using electronic payment instruments versus paper-based payment instruments. The natural question that arises is: how much could consumers save if they were to substitute their paper-based payments with electronic payments? How much do savings amount to on a per transaction basis and on an annual basis?

Calculating these savings helps make a business case for investing in the required policy actions and infrastructure to move to electronic payments. This sub-section explores different substitution scenarios of paper-based to electronic payments as well as the savings that can be achieved, for initiated and received payments, separately. It does so on two levels: first, on a per transaction level, by considering the most likely substitution scenarios and the per transaction savings, by taking into account the payment instrument as well as the access channel; and then second, on a more general level, by considering the substitution of multiple payments at different rates, and calculating the overall savings across the economy.

As summarized in Figure 1.9, significant gains are observed in all cases, with the lowest being 52 percent average efficiency gains from substituting a cash payment with a debit card or a credit card payment, and the highest being 92 percent average efficiency gains from substituting a paper-based credit transfer with a debit card or credit card payment, for initiated payments. Similarly, on the receiving side, the highest efficiency gains occur from replacing a check with an electronic credit transfer, at 91.5 percent, followed by 89 percent of efficiency gains observed when replacing cash with electronic credit transfer, while the savings from replacing a paper voucher with electronic credit transfer amount to 88 percent. Tables 1.25 – 1.26 in Appendix 1, report in detail different substitution scenarios and savings, taking into account the payment instrument and access channel, for payments initiated and payments received, separately.

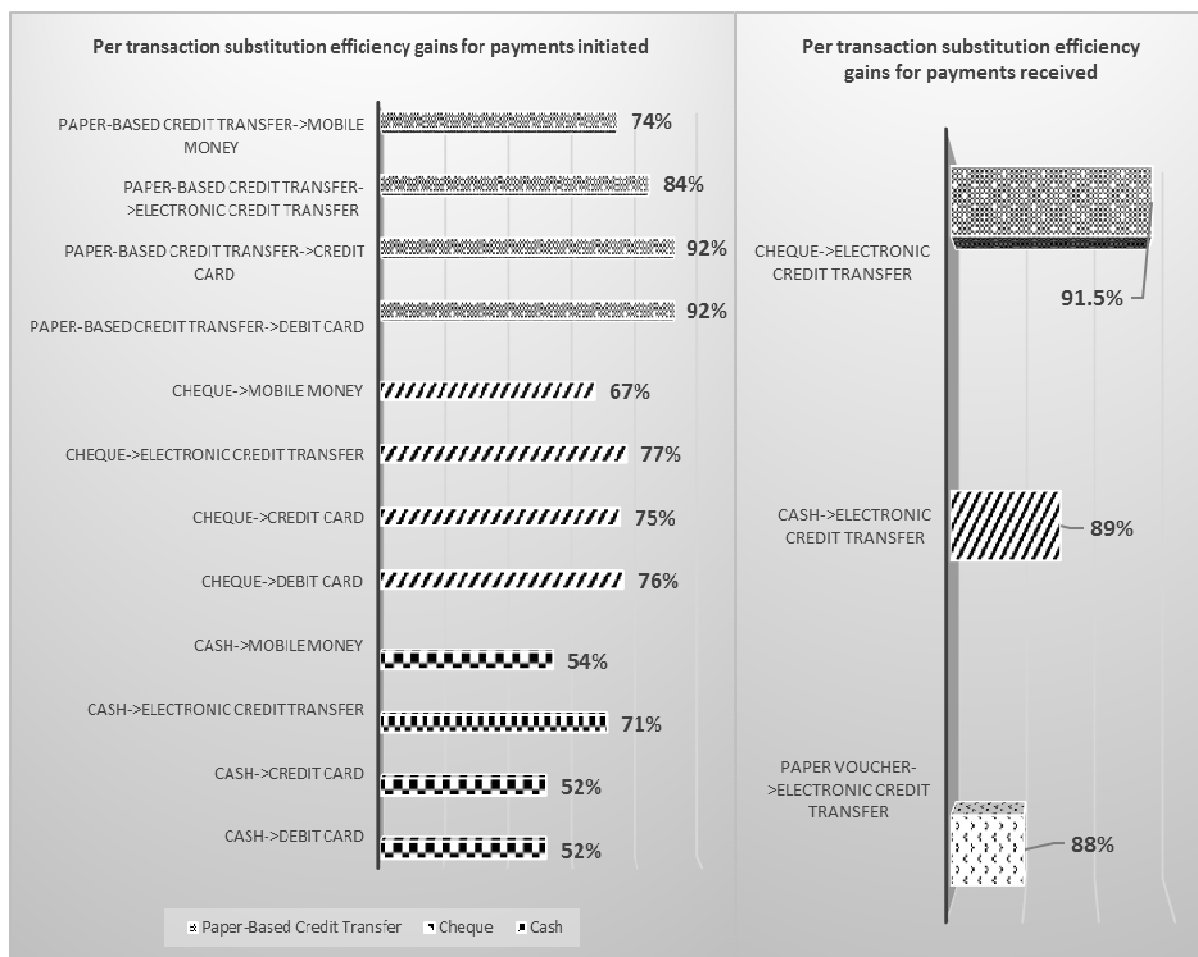


Figure 1.9: Per transaction savings in percentage terms

Overall savings are also examined pertaining to hypothetical scenarios derived at three different conversion rates of paper-based to electronic payments (at 35 percent, 70 percent, and 100 percent). Figure 1.10 below presents savings only from the 100 percent conversion scenario, while Table 1.27 (Appendix 1) details savings scenarios from all three conversion scenarios. Overall, the replacement of cash with electronic payment instruments results in the highest savings. More specifically, at 100 conversion rate of cash payments into debit cards, savings of up to 1.1 percent of the current GDP can be achieved (only for payments initiated, and the

reduction of costs associated with cash deposits and withdrawals). The same savings can be achieved if the initiated payments in cash are substituted by credit card payments. Savings are slightly higher if cash is replaced by electronic credit transfers (for both, initiated and received payments, as well as reduction in deposits and withdrawals), reaching 1.15 percent of GDP.

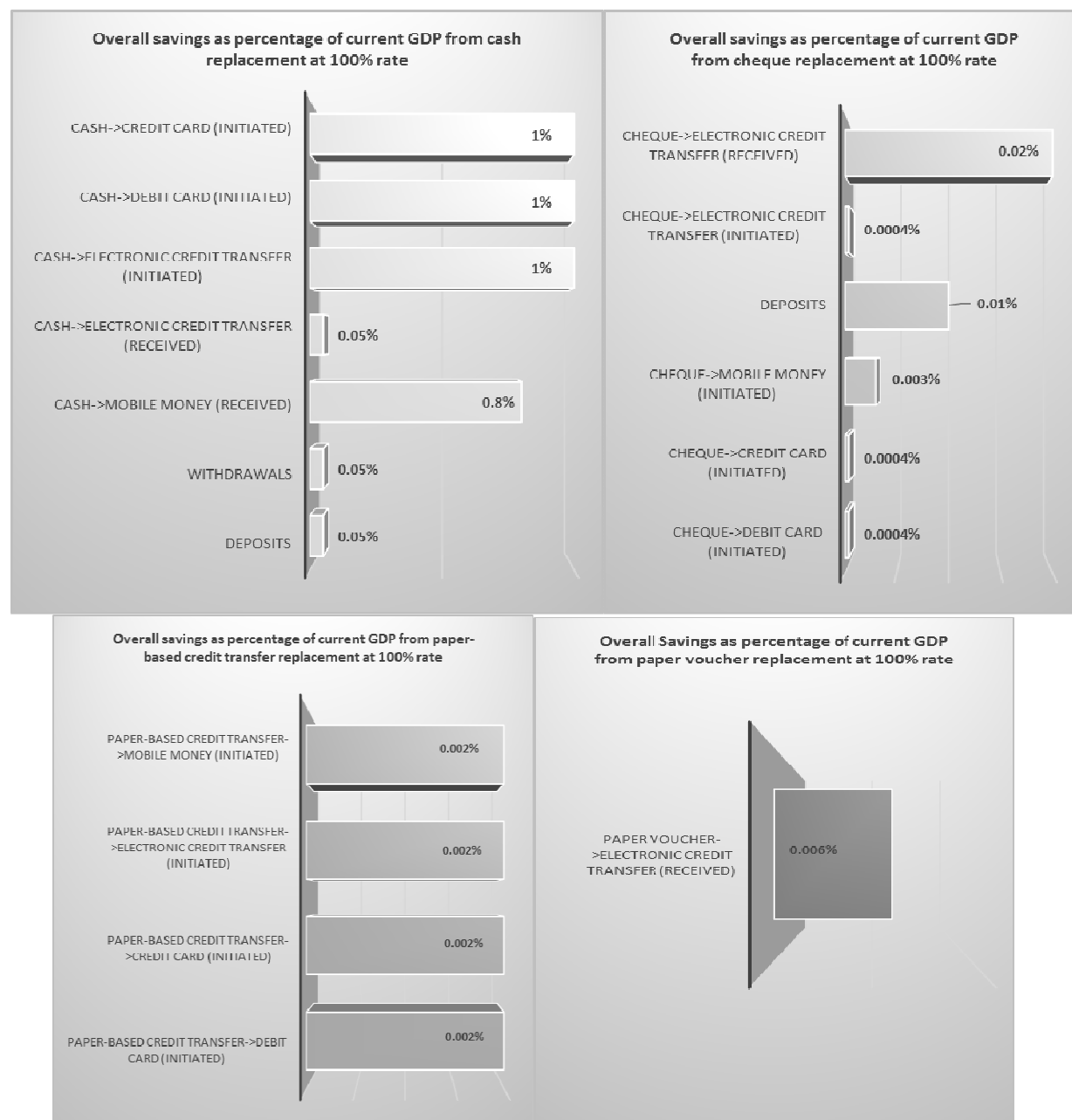


Figure 1.10: Savings scenarios at 100 percent conversion rate

1.5. Conclusion

This chapter focused on the theoretical and practical aspects of retail payment cost measurement. First, the chapter presented a comprehensive theoretical model to allow authorities and interested parties to measure costs associated with retail payment instruments. Second, the chapter provided a concrete example using Guyana as a case study and analyzing primary data to calculate the costs borne by consumers of using a variety of payment instruments. Previous cost studies on retail payments have been selective in terms of the components they have incorporated, hence making comparability across studies difficult. The theoretical model here provides a synthesis with all the different cost-related pieces together, and therefore offers a roadmap to researchers and practitioners in terms of the processes and factors that need to be taken into account when measuring retail payment costs. Even though the primary objective is to measure costs associated with payment instruments, the instruments themselves cannot be examined in isolation but rather in the context of other factors that they interact with. This is the reason why the model incorporated three other pillars; actors (demand and supply side), access channels, and payment needs. It is indeed the combination of these factors, with payment instruments at the forefront, which generates the costs, rather than simply the use of payment instruments themselves. Indeed, the model allows for the derivation of per transaction costs, by payment instrument, conducted through a specific access channel and for a specific payment need, as well as for the derivation of total annual costs, borne by the different actors, in the process of using different payment instruments. Subsequently, users of the model could then compare the different payment instruments based on cost efficiency, and as such, migration rates can be constructed from the least cost efficient to the more cost efficient payment instruments, as well as savings associated with the new reality.

The model is “tested” by using Guyana as a case study. A hypothesis tested is also that electronic payment instruments are more cost efficient than the equivalent paper-based. It should be mentioned that the overwhelming majority of payment cost studies conducted so far have had as a focal point advanced economies and it has been one of the objectives of this work to tailor the model toward developing countries. Thus, the choice of Guyana was not accidental. Moreover, Guyana is a small country in which cash and other paper-based payment instruments are predominant. However, there is political will in the country to undertake reforms and modernize the retail payments landscape to reduce costs. A consumer survey designed to measure consumer payment costs in Guyana by taking into account all relevant factors in addition to payment instruments was used. A representative sample of 450 consumers (based on geographic allocation) were selected and interviewed at their residence. The data was analyzed using STATA in order to make population references. The results confirmed the hypothesis that all electronic payment instruments (used in the context of all other factors) are more cost efficient than the equivalent paper-based instruments for consumers in Guyana. Specifically, in terms of ranking instruments from the most costly to the less costly (on a per transaction cost basis across access channels), the following holds for Guyana: paper-based credit transfer, check, paper voucher, cash, mobile money, credit card, debit card, and electronic credit transfer. Moreover, the costs associated with access channels which are more frequently used along with paper-based payment instruments showed to be the highest: bank branch, agent outlet, and collection office. Overall, the annual costs borne by consumers in using cash amount to 2.45 percent of the country’s GDP, while the equivalent cost for check usage amounts to an additional 0.05 percent of GDP. The total annual cost for the other payment instruments is not significant, reflecting the small volume of such transactions. Savings scenarios constructed as part of the

case study indicate that Guyanese consumers could save an amount equivalent to 1 percent of the country's GDP if they were to entirely switch from using cash to electronic payment instruments.

This is the first time that an in-depth measurement and analysis of consumer costs associated with retail payment instruments is presented in the context of a developing country. It is the objective of the author to extend this research and analysis to the other actors in the Guyanese economy (both, the demand and supply side) to provide a complete picture of the payment costs for the entire Guyanese economy. In general, the theoretical model presented here can serve both authorities and practitioners, particularly in developing countries, interested in measuring retail payment costs. Future research and work can contribute to further refining the model. Indeed, organizations such as the World Bank have already started focusing on doing some comprehensive work in the area of retail payment costs, which is a good signal since it means that developing countries will get the deserved attention in this respect. It should be mentioned that a theoretical model and practical application of payments cost measurement is a necessary but not sufficient condition for actual changes to occur. In other words, it is indeed a required first step to show empirically which instruments are more cost efficient in a country, and this can motivate, raise awareness, or even soften resistance for change. However, reforms and policies are needed to drive changes on the ground and actually move toward more cost efficient payment instruments such as electronic payment instruments. Such measures are discussed in Chapter 3 of this dissertation.

APPENDIX 1

Overview of payment costs literature

	Consumers	Businesses	Commercial Banks	Government	Central Bank
	No	Yes	Yes	No	No
	Yes	Yes	Yes	Yes	No
	Yes	Yes	Yes	Yes	No
	No	Yes	No	No	No
	No	Yes	Yes	No	Yes
	No	Yes	Yes	No	No
	Yes	Yes	No	No	
	No	Yes	Yes	No	No
	Yes	Yes	Yes	No	No
	Yes	Yes	No	No	
	Yes	Yes	Yes	No	No
	No	No	Yes	No	Yes
	Yes	Yes	Yes	No	No
	Yes	Yes	No	No	
	No	Yes	No	No	No
	Yes	Yes	Yes	No	No
	Yes	Yes	Yes	No	Yes
	No	No	No	Yes	No
	Yes	Yes	Yes	Yes	Yes
	No	Yes	Yes	Yes	Yes
	Yes	Yes	Yes	No	Yes
	Yes	Yes	Yes	No	Yes
	No	Yes	No	No	No
	Yes	Yes	No	Yes	
	Yes	Yes	Yes	Yes	No
	Yes	No	Yes	No	Yes
	Yes	Yes	No	Yes	No
	Yes	Yes	Yes	No	No

Table 1.10: Findings of existing studies on the Costs of retail payments²²

Study	Type of Cost	Cash	Paper Check	Credit Card	PIN Debit	Signature Debit	ACH ²³	e-Wallet	Ratio of Highest to Lowest Cost	Total Savings (paper-based to e-payments)
1) Humphrey & Burger (1989): USA	Average	\$ 0.04	\$ 0.79	\$ 0.88	\$ 0.47	\$ 0.47	\$ 0.29	---	22	---
2) Wells (1996): USA	Average	---	\$ 2.94	---	---	---	\$ 1.31	---	2.2	---
3) Stavins (1997): USA	Marginal	---	\$ 0.37	---	---	---	\$ 0.12	---	2.8	---
4) Raa & Shestalova (2002): Netherlands	Average (€100)	€ 0.90	---	---	€ 0.53	---	---	---	1.7	---
5) Humphrey et. al. (2003): 12 European Countries	Average	---	---	---	---	---	---	---	---	1% of GDP (annual)
6) Brits & Winder (2005): Netherlands	Average	€ 0.30	---	€ 3.59	€ 0.49	---	---	€ 0.93	12.0	---
7) Simes, Lancy & Harper (2006): Australia	Marginal (\$100)	\$ 0.93	\$ 1.76	\$ 1.01	\$ 0.80	\$ 0.99	---	---	2.2	---
8) National Bank of Belgium (2006): Belgium	Average	€ 0.53	---	€ 2.62	€ 0.55	---	---	€ 0.54	5.0	---
9) Garcia-Swartz et. al. (2006): USA	Marginal (\$11.52)	\$ 0.80	\$ 0.93	\$ 0.80	\$ 0.70	\$ 0.76	---	---	1.3	---
10) Banco de Portugal (2007): Portugal	Average	€ 1.85	€ 1.45	€ 2.44	€ 0.23	---	---	---	10.6	---
11) Bergman, Guidborg & Segendorf (2007): Sweden	Average	SEK 4.6	---	SEK 4.4	SEK 3.1	---	---	---	1.5	---
12) Central Bank of Brazil (2007): Brazil	Total	---	---	---	---	---	---	---	---	0.7% of GDP (annual)
13) Shampine (2007): USA	Marginal (\$54.24)	\$ 0.40	---	\$ 1.10	---	---	---	---	2.8	---
14) Takala & Viren (2008): Finland	Average	€ 0.30	---	€ 0.26	€ 0.26	---	---	---	1.2	---
15) Bank of Canada (2008): Canada	Unit (\$36.50)	\$ 0.25	---	\$ 0.82	\$ 0.19	---	---	---	4.3	---
16) Gresvik & Haare (2009): Norway	Average	Kr 7.06	---	Kr 20.90	Kr 4.13	---	---	Kr 4.52	5.0	---
17) Schwartz et al (2009): Australia	Total (annual)	0.4% of GDP	0.1% of GDP	0.2% of GDP	---	---	---	---	4.0	---
18) McKinsey & Company (2010): India	Total	---	---	---	---	---	---	---	---	\$ 22.4 billion (annual)
19) Central Bank of Hungary (2011): Hungary	Unit (HUF 100)	HUF 0.41	---	HUF 9.76	HUF 2.88	---	HUF 0.01	---	976.0	0.4% of GDP (annual)
20) European Central Bank (2012): 13 EU countries	Average	€ 0.49	€ 0.03 ²⁴	€ 0.09	€ 0.10	---	€ 0.11	---	16.3	---
21) Danmarks Nationalbank (2012): Denmark	Total (per transaction)	KR 7.36	---	KR 21.17	KR 11.89	---	---	---	2.9	---
22) Segendorf & Jansson (2012): Sweden	Average	€ 0.78	---	€ 1.10	€ 0.42	---	€ 0.67	---	2.6	---
23) Pleijster & Ruis (2012): Netherlands	Trans. Average	€ 0.22	---	€ 1.88	€ 0.21	---	---	---	8.9	---
24) Kleine, Krautbauer & Weller (2013): Germany	Total (annual)	€1 50/capita	---	---	---	---	---	---	---	---
25) Chakravorti & Mazzotta (2013): USA	Total (annual)	\$ 200 billion	---	---	---	---	---	---	---	---
26) Mazzota et al. (2014): India	Total (annual)	\$ 3.5 billion	---	---	---	---	---	---	---	---

²² The numbers in red indicate the highest cost payment instrument while the numbers in green indicate the lowest cost payment instrument for each study.

²³ ACH transactions refer to processing of debit/credit transfers.

27) Mazzota et al. (2014): Mexico	Total (annual)	\$ 1.2 billion	---	---	---	---	---	---	---	---
28) Stewart et al. (2014): Australia	Average (per transaction)	\$ 0.51	\$ 5.37	---	\$ 0.94	---	USD 0.41	---	13.0	---

Table 1.11: Sample distribution by transaction account access

Transaction account active access	Country Level	Rural/Urban			Region					
		<i>Coastal Rural</i>	<i>Interior Rural</i>	<i>Coastal Urban</i>	<i>Region 3</i>	<i>Region 4</i>	<i>Region 5</i>	<i>Region 6</i>	<i>Region 7</i>	<i>Region 10</i>
Commercial Bank	85%	84%	88%	88%	89%	86%	68%	88%	80%	85%
Other Institution	9%	12%	12%	7%	11%	5%	32%	12%	20%	15%
None (without active access to transaction account)	6%	4%	0%	5%	0%	9%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 1.12: Sample distribution by internet banking use

Active internet banking use (at least once over the past 6 months)	Country Level	Rural/Urban			Region					
		<i>Coastal Rural</i>	<i>Interior Rural</i>	<i>Coastal Urban</i>	<i>Region 3</i>	<i>Region 4</i>	<i>Region 5</i>	<i>Region 6</i>	<i>Region 7</i>	<i>Region 10</i>
Yes (with transaction account active access)	3%	1%	6%	4%	3%	3%	0%	0%	10%	0%
No (with transaction account active access)	87%	89%	94%	85%	97%	83%	100%	100%	90%	100%
No (without transaction account active access)	10%	10%	0%	11%	0%	14%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 1.13: Sample distribution by debit card ownership

Debit card ownership	Country Level	Rural/Urban			Region					
		<i>Coastal Rural</i>	<i>Interior Rural</i>	<i>Coastal Urban</i>	<i>Region 3</i>	<i>Region 4</i>	<i>Region 5</i>	<i>Region 6</i>	<i>Region 7</i>	<i>Region 10</i>
Yes (with transaction account active access)	73%	67%	88%	81%	68%	78%	59%	60%	80%	89%
No (with transaction account active access)	21%	27%	12%	13%	32%	13%	41%	40%	20%	11%
No (without transaction account active access)	6%	6%	0%	6%	0%	9%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 1.14: Sample distribution by credit card ownership

Credit card ownership	Country Level	Rural/Urban			Region					
		<i>Coastal Rural</i>	<i>Interior Rural</i>	<i>Coastal Urban</i>	<i>Region 3</i>	<i>Region 4</i>	<i>Region 5</i>	<i>Region 6</i>	<i>Region 7</i>	<i>Region 10</i>
Yes (with transaction account active access)	9%	4%	6%	18%	5%	15%	0%	1%	0%	7%
No (with transaction account active access)	82%	87%	94%	72%	95%	74%	100%	99%	100%	93%
No (without transaction account active access)	9%	9%	0%	10%	0%	11%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 1.15: Average per respondent (capita) annual number of payments/transfers initiated (by payment instrument and by stratum)

Region number	Region name	Rural/Urban (sample size)	Average no. of cash payments (per respondent)	Total no. of cash payments (all respondents)	Average no. of check payments (per respondent)	Total no. of check payments (all respondents)	Average no. of paper-based credit transfer payments (per respondent)	Total no. of paper-based credit transfers (all respondents)	Average No. of debit card payments (per respondent)	Total no. of debit card payments (all respondents)	Average o. of credit card payments (per respondent)	Total no. of credit card payments (all respondents)	Average no. of payments (per respondent)	Total no. of payments (all respondents)
3	Essequibo Islands-West Demerara	Coastal Rural (66)	635	41,910	0.2	13.2	0	0	0.01	0.66	0	0	635.21	41,924
4	Demerara-Mahaica	Coastal Rural (114)	559	63,726	0	0	0.05	24	0.1	11.4	0	0	559.1	63,761.4
		Costal Urban (118)	593	69,974	0	0	0.05	24	0.7	83	0.3	35.4	594.05	70,098
5	Mahaica-Berbice	Coastal Rural (34)	497	16,898	0	0	0	0	0	0	0	0	497	16,898
6	East Berbice-Corentyne	Coastal Rural (57)	555.5	31,663.5	0	0	0	0	0	0	0	0	555.5	31,663.5
		Coastal Urban (24)	377	9,048	0	0	0	0	0	0	0	0	377	9,048
7	Cuyuni-Mazaruni	Interior Rural (10)	617	6,170	0	0	0	0	0	0	0	0	617	6,170
10	Upper Demerara-Berbice	Coastal Urban (20)	762	15,240	0	0	0	0	1.2	24	0	0	763.2	15,264
		Interior Rural (7)	180	1,260	0	0	0	0	0	0	0	0	180	1,260
Sample (450)			572	257,400	0.1	45	0.1	45	0.3	135	0.1	45	572.6	257,670

Table 1.16: Population data on annual number of payments/transfers initiated (by payment instrument and by stratum)

Region number	Region name	Rural/Urban (sample size)	Population total no. of cash payments	Volume of cash payments as % of all payments	Population total no. of check payments	Volume of check payments as % of all payments	Population total no. of paper-based credit transfer payments	Volume of paper-based credit transfer payments as % of all payments	Population total no. of debit card payments	Volume of debit card payments as % of all payments	Population total no. of credit card payments	Volume of credit card payments as % of all payments	Population total no. of payments	% of all payments
3	Essequibo Islands-West Demerara	Coastal Rural (66)	43,083,480	99.97%	13,570	0.03%	0	0%	678	0%	0	0%	43,097,872	100%
4	Demerara-Mahaica	Coastal Rural (114)	57,289,674	99.94%	0	0%	21,576	0.04%	10,249	0.02%	0	0%	57,321,499	100%
		Costal Urban (118)	63,256,496	99.82%	0	0%	21,696	0.03%	75,032	0.12%	32,002	0.03%	63,368,592	100%
5	Mahaica-Berbice	Coastal Rural (34)	16,509,346	100%	0	0%	0	0	0	0	0	0	16,509,346	100%
6	East Berbice-Corentyne	Coastal Rural (57)	31,378,529	0%	0	0%	0	0%	0	0%	0	0%	31,378,528	100%
		Coastal Urban (24)	9,129,432	100%	0	0%	0	0%	0	0%	0	0%	9,129,432	100%
7	Cuyuni-Mazaruni	Interior Rural (10)	6,694,450	100%	0	0%	0	0%	0	0%	0	0%	6,694,450	100%
10	Upper Demerara-Berbice	Coastal Urban (20)	14,645,640	99.84%	0	0%	0	0%	23,064	0.16%	0	0%	14,668,704	100%
		Interior Rural (7)	1,205,820	100%	0	0%	0	0%	0	0%	0	0%	1,205,820	100%
Extrapolated country level			243,192,867	99.93%	13,570	0.01%	43,272	0.02%	109,023	0.03%	32,002	0.01%	243,374,243	100%

Table 1.17: Average per respondent (capita) annual number of payments/transfers received (by payment instrument and by stratum)

Region number	Region name	Rural/Urban (sample size)	Average no. of cash receipts (per respondent)	Total no. of cash receipts (all respondents)	Average no. of check receipts (per respondent)	Total no. of check receipts (all respondents)	Average no. of paper voucher receipts (per respondent)	Total no. of paper voucher receipts (all respondents)	Average no. of electronic credit transfer receipts (pre respondent)	Total no. of electronic credit receipts (all respondents)	Average no. of payments (per respondent)	Total no. of payments (all respondents)
3	Essequibo Islands-West Demerara	Coastal Rural (66)	50	3,300	5	330	0.1	6.6	0	0	55.1	3,636.6
4	Demerara-Mahaica	Coastal Rural (114)	49	5,586	1.5	171	0.02	2.3	0.2	22.8	50.72	5,782
		Costal Urban (118)	65	7,670	5	590	0.08	9.5	0.1	12	70.18	8,281.2
5	Mahaica-Berbice	Coastal Rural (34)	44	1,496	0	0	0.09	3	0	0	44.09	1,499
6	East Berbice-Corentyne	Coastal Rural (57)	28	1,596	0	0	0.05	2.85	0	0	28.05	1,599
		Coastal Urban (24)	25	600	0	0	0.25	6	0	0	25.25	606
7	Cuyuni-Mazaruni	Interior Rural (10)	22	220	0	0	0.1	1	0	0	22.1	221
10	Upper Demerara-Berbice	Coastal Urban (20)	32	640	1.2	24	0.1	2	0	0	33.3	666
		Interior Rural (7)	24	168	0	0	0	0	0	0	24	168
Sample (450)			56	25,200	3	1,350	0.1	45	0.1	45	59.2	26,640

Table 1.18: Population data on annual number of payments/transfers received (by payment instrument and by stratum)

Region Number	Region Name	Rural/Urban (sample size)	Population total no. of cash receipts	Volume of cash receipts as % of all receipts	Population total no. of check receipts	Volume of check receipts as % of all receipts	Population no. of paper voucher receipts	Volume of paper voucher receipts as % of all receipts	Population no. of electronic credit transfer receipts	Volume of electronic credit transfer receipts as % of all receipts	Population total no. of receipts	% of all receipts
3	Essequibo Islands-West Demerara	Coastal Rural (66)	3,392,400	90.75%	339,240	9.07%	6,785	0.18%	0	0%	3,738,425	100%
4	Demerara-Mahaica	Coastal Rural (114)	5,021,814	96.61%	153,729	2.96%	2,068	0.04%	20,497	0.39%	5,198,018	100%
		Costal Urban (118)	6,933,680	92.62%	533,360	7.12%	8,588	0.11%	10,848	0.15%	7,486,205	100%
5	Mahaica-Berbice	Coastal Rural (34)	1,461,592	99.8%	0	0%	2,931	0.2%	0	0%	1,464,523	100%
6	East Berbice-Corentyne	Coastal Rural (57)	1,581,636	99.81%	0	0%	2,824	0.19%	0	0%	1,584,609	100%
		Coastal Urban (24)	605,400	99.01%	0	0%	6,054	0.99%	0	0%	611,454	100%
7	Cuyuni-Mazaruni	Interior Rural (10)	238,700	99.55%	0	0%	1,085	0.45%	0	0%	239,785	100%
10	Upper Demerara-Berbice	Coastal Urban (20)	615,040	96.1%	23,064	3.6%	1,922	0.3%	0	0%	640,026	100%
		Interior Rural (7)	160,776	100%	0	0%	0	0%	0	0%	160,776	100%
Extrapolated country level			20,011,038	93%	1,049,393	5%	300,500	1.5%	31,345	0.5%	21,392,276	100%

Table 1.19: Average per respondent (capita) annual number of deposits and withdrawals (by payment instrument and by stratum)

Region number	Region name	Rural/Urban (sample size)	Average no. of cash deposits (per respondent)	Total no. of cash deposits (all respondents)	Average no. of check deposits (per respondent)	Total no. of check deposits (all respondents)	Average no. of cash withdrawals (per respondent)	Total no. of cash withdrawals (all respondents)
3	Essequibo Islands-West Demerara	Coastal Rural (66)	10	660	1.5	99	11	726
4	Demerara-Mahaica	Coastal Rural (114)	9.5	1,083	0.2	23	10	1,140
		Costal Urban (118)	11	1,298	2.5	295	15	1,298
5	Mahaica-Berbice	Coastal Rural (34)	8	272	0.5	17	11	374
6	East Berbice-Corentyne	Coastal Rural (57)	7	399	0.2	11	10	570
		Coastal Urban (24)	7.5	180	0.5	12	20	480
7	Cuyuni-Mazaruni	Interior Rural (10)	5	50	1	10	13	130
10	Upper Demerara-Berbice	Coastal Urban (20)	9.5	190	1	20	7	140
		Interior Rural (7)	0	0	0	0	0	0
Sample (450)			9	4,050	1	450	11	4,950

Table 1.20: Population data on annual number of deposits and withdrawals (by payment instrument and by stratum)

Region number	Region name	Rural/Urban (sample size)	Population total no. of cash deposits	Population total no. of check deposits	Population total no. of cash withdrawals
3	Essequibo Islands-West Demerara	Coastal Rural (66)	678,480	101,772	746,328
4	Demerara-Mahaica	Coastal Rural (114)	973,617	20,677	1,024,860
		Costal Urban (118)	1,173,392	266,680	1,173,392
5	Mahaica-Berbice	Coastal Rural (34)	265,744	16,609	365,398
6	East Berbice-Corentyne	Coastal Rural (57)	395,409	10,901	564,870
		Coastal Urban (24)	181,620	12,108	0
7	Cuyuni-Mazaruni	Interior Rural (10)	54,250	10,850	141,050
10	Upper Demerara-Berbice	Coastal Urban (20)	182,590	19,220	134,540
		Interior Rural (7)	0	0	0
Population			3,905,102	458,817	4,150,438

Table 1.21: Time and monetary costs associated with a trip/access channel (across payment instruments)

	Point of Interaction	Bank Branch	ATM	Collection Office	Agent Outlet	Internet	Mobile Network
Average transport time (minutes)	---	20	18	18	20	5	---
Average waiting time (minutes)	---	20	5	20	20	---	---
Average transaction time (minutes)	5	5	3	5	5	8	4
Average total time (minutes)	5	45	26	43	45	13	4
Average distance (Km)	---	5	3	3	3	1	---
Average internet cost per minute	---	---	---	---	---	3	---
Average cost per SMS	---	---	---	---	---	---	10
Average total monetary cost	GYD 15 USD 0.07	GYD 185 USD 0.9	GYD 108 USD 0.5	GYD 165 USD 0.7	GYD 170 USD 0.8	GYD 49 USD 0.25	GYD 22 USD 0.1

Table 1.22: Per transaction cost by payment instrument and access channel for payments initiated

	Cash	Check	Paper-Based Credit Transfer	Debit Card	Credit Card	Electronic Credit Transfer	Mobile Money
Point of Interaction	GYD 21 USD 0.1	GYD 83 USD 0.4	---	GYD 19.5 USD 0.1	GYD 20 USD 0.1	---	---
Bank Branch	GYD 191 USD 0.9	GYD 256 USD 1.2	GYD 322 USD 1.6	---	---	---	---
Collection Office	GYD 182 USD 0.9	GYD 256 USD 1.2	---	---	---	---	---
Agent Outlet	GYD 162 USD 0.8	GYD 236 USD 1.1	---	GYD 159 USD 0.8	GYD 161.5 USD 0.8	---	---
Internet	---	---	---	GYD 26 USD 0.1	GYD 27 USD 0.1	GYD 51 USD 0.25	---
Mobile Network	---	---	---	---	---	---	GYD 82 USD 0.4
Simple average cost across access channels	GYD 139 USD 0.7	GYD 208 USD 1	GYD 322 USD 1.6	GYD 68 USD 0.3	GYD 70 USD 0.35	GYD 51 USD 0.25	GYD 82 USD 0.4

Table 1.23: Per transaction cost by payment instrument and access channel for payments received

	Cash	Check	Paper Voucher	Electronic Credit Transfer
Point of Interaction	GYD 21 USD 0.1	GYD 67 USD 0.3	---	---
Bank Branch	GYD 195 USD 0.95	GYD 240 USD 1.2	GYD 180 USD 0.9	---
Collection Office	GYD 185 USD 0.9	GYD 260 USD 1.3	GYD 171 USD 0.8	---
Agent Outlet	GYD 170 USD 0.8	GYD 220 USD 1	GYD 150 USD 0.7	---
Internet	---	---	---	GYD 20 USD 0.1
Per transaction simple average cost across access channels	GYD 143 USD 0.7	GYD 197 USD 0.95	GYD 167 USD 0.8	GYD 20 USD 0.1

Table 1.24: Per transaction cost by payment instrument and access channel for withdrawals and deposits

Withdrawals	Cash	Check²⁵	Debit Card²⁶	Mobile Money²⁷	Average across payment instruments
Bank Branch	GYD 189 USD 0.9	GYD 213 USD 1	---	---	GYD 201 USD 0.95
ATM	---	---	GYD 115 USD 0.6	---	GYD 115 USD 0.5
Agent Outlet	---	---	---	GYD 160 USD 0.8	GYD 160 USD 0.8
Simple average across access channels	GYD 189 USD 0.9	GYD 213 USD 1	GYD 115 USD 0.6	GYD 160 USD 0.8	GYD 169 USD 0.8

Deposits	Cash	Check
Bank Branch	GYD 189 USD 0.9	GYD 284 USD 1.4
ATM	GYD 116 USD 0.6	GYD 136 USD 0.7
Agent Outlet	GYD 162 USD 0.8	---
Simple average across access channels	GYD 156 USD 0.8	GYD 210 USD 1

²⁵ The check withdrawal from a bank branch represents a cash-out process in this case.

²⁶ Even though debit card is the instrument through which cash is obtained from an ATM, the respective cost is still attributed to cash.

²⁷ In the case of an agent outlet, the deposit and withdrawal of cash is made in exchange for mobile money.

Table 1.25: Per transaction savings from substitution scenarios (by payment instrument and access channel) for payments initiated

	Point of Interaction→ Point of Interaction	Agent Outlet→Agent Outlet	Agent Outlet→Inter net	Agent Outlet→Mobile Network	Bank Branch→Internet	Bank Branch→Mobile Network	Collection Office→Internet	Collection Office→Mobile Network	Average across access channels
Cash→Debit Card	GYD 0.5	GYD 3	GYD 136	---	GYD 165	---	GYD 156	---	GYD 92
	USD 0.002	USD 0.01	USD 0.6		USD 0.8		USD 0.7		USD 0.45
	2%	2%	84%		86%		86%		52%
Cash→Credit Card	GYD 1	GYD 0.5	GYD 135	---	GYD 164	---	GYD 155	---	GYD 91
	USD 0.004	USD 0.002	USD 0.7		USD 0.8		USD 0.7		USD 0.4
	5%	0.3%	83%		86%		85%		52%
Cash→Electronic Credit Transfer	---	---	GYD 111	---	GYD 140	---	GYD 131	---	GYD 127
			USD 0.5		USD 0.7		USD 0.6		USD 0.6
			68%		73%		72%		71%
Cash→Mobile Money	---	---	---	GYD 80	---	GYD 109	---	GYD 100	GYD 96
			---	USD 0.4		USD 0.5		USD 0.5	USD 0.5
			---	49%		57%		55%	54%
Cheque→Debit Card	GYD 63.5	GYD 77	GYD 210	---	GYD 230	---	GYD 230	---	GYD 162
	USD 0.3	USD 0.4	USD 1		USD 1.1		USD 1.1		USD 0.8
	76.5%	33%	89%		90%		90%		76%
Cheque→Credit Card	GYD 63	GYD 74.5	GYD 209	---	GYD 229	---	GYD 229	---	GYD 161
	USD 0.3	USD 0.35	USD 1		USD 1.1		USD 1.1		USD 0.8
	76%	32%	89%		89%		89%		75%
Cheque→Electronic Credit Transfer	---	---	GYD 185	---	GYD 205	---	GYD 205	---	GYD 165
			USD 0.9		USD 1		USD 1		USD 0.8
			72%		80%		80%		77%
Cheque→Mobile Money	---	---	---	GYD 154	---	GYD 174	---	GYD 174	GYD 167
			---	USD 0.75		USD 0.85		USD 0.85	USD 0.8
			---	65%		68%		68%	67%
Paper-Based Credit Transfer→Debit Card	---	---	---	---	GYD 296	---	---	---	GYD 296
			---		USD 1.45				USD 1.45
			---		92%				92%
Paper-Based Credit Transfer→Credit Card	---	---	---	---	GYD 295	---	---	---	GYD 295
			---		USD 1.45				USD 1.45
			---		92%				92%
Paper-Based Credit Transfer→Electronic Credit Transfer	---	---	---	---	GYD 271	---	---	---	GYD 271
			---		USD 1.3				USD 1.3
			---		84%				84%
Paper-Based Credit Transfer→Mobile Money	---	---	---	---	---	GYD 240	---	---	GYD 240
			---			USD 1.2			USD 1.2
			---			74%			74%

Table 1.26: Per transaction savings from substitution scenarios (by payment instrument and access channel) for payments received

	Bank Branch→Internet	Collection Office→Internet	Agent Outlet→Internet	Average across access channels
Cash→Electronic Credit Transfer	GYD 175	GYD 165	GYD 150	GYD 163
	USD 0.85	USD 0.8	USD 0.7	USD 0.8
	90%	89%	88%	89%
Cheque→Electronic Credit Transfer	GYD 220	GYD 240	GYD 200	GYD 220
	USD 1	USD 1.2	USD 0.9	USD 1
	92%	92%	91%	91.5%
Paper Voucher→Electroni c Credit Transfer	GYD 160	GYD 151	GYD 130	GYD 147
	USD 0.8	USD 0.7	USD 0.6	USD 0.7
	89%	88%	87%	88%

Table 1.27: Total savings for different substitution scenarios at three different conversion rates

	Savings: 35% Conversion Rate			Savings: 70% Conversion Rate			Savings: 100% Conversion Rate		
Cash→Debit Card (initiated)	GYD 2.2 billion	USD 10.8 million	0.35% of GDP	GYD 4.4 billion	USD 21.5 million	0.7% of GDP	GYD 6.3 billion	USD 31 million	1% of GDP
Cash→Credit Card (initiated)	GYD 2.2 billion	USD 10.8 million	0.35% of GDP	GYD 4.4 billion	USD 21.5 million	0.7% of GDP	GYD 6.3 billion	USD 31 million	1% of GDP
Cash→Electronic Credit Transfer (initiated)	GYD 2.1 billion	USD 10.3 million	0.35% of GDP	GYD 4.2 billion	USD 20.6 million	0.7% of GDP	GYD 6.2 billion	USD 30.4 million	1% of GDP
Cash→Electronic Credit Transfer (received)	GYD 138 million	USD 676,000	0.003% of GDP	GYD 276 million	USD 1.3 million	0.0035% of GDP	GYD 394 million	USD 1.9 million	0.05% of GDP
Cash→Mobile Money (initiated)	GYD 1.65 billion	USD 8 million	0.28% of GDP	GYD 3.3 billion	USD 16.2 million	0.56% of GDP	GYD 4.7 billion	USD 23 million	0.8% of GDP
Cash Withdrawals	GYD 127 million	USD 622,000	0.003% of GDP	GYD 254 million	USD 1.2 million	0.056% of GDP	GYD 363 million	USD 1.8 million	0.05% of GDP
Cash Deposits	GYD 127.5 million	USD 625,000	0.02% of GDP	GYD 255 million	USD 1.2 million	0.04% of GDP	GYD 365 million	USD 1.8 million	0.05% of GDP
Cheque→Debit Card (initiated)	GYD 0.85 million	USD 4,165	0.00015% of GDP	GYD 1.7 million	USD 8,330	0.0003% of GDP	GYD 2.4 million	USD 11,760	0.0004% of GDP
Cheque→Credit Card (initiated)	GYD 0.85 million	USD 4,165	0.00015% of GDP	GYD 1.7 million	USD 8,330	0.0003% of GDP	GYD 2.4 million	USD 11,760	0.0004% of GDP
Cheque→Electronic Credit Transfer (initiated)	GYD 0.78 million	USD 3,822	0.00015% of GDP	GYD 1.55 million	USD 7,600	0.0003% of GDP	GYD 2.2 million	USD 10,780	0.0004% of GDP
Cheque→Electronic Credit Transfer (received)	GYD 33.5 million	USD 164,150	0.007% of GDP	GYD 67 million	USD 328,300	0.014% of GDP	GYD 95.5 million	USD 468,000	0.02% of GDP
Cheque→Mobile Money (initiated)	GYD 0.65 million	USD 3,185	0.001% of GDP	GYD 1.3 million	USD 6,370	0.002% of GDP	GYD 1.8 million	USD 8,820	0.003% of GDP
Cheque Deposits	GYD 23 million	USD 112,700	0.0035% of GDP	GYD 45.5 million	USD 222,950	0.007% of GDP	GYD 65 million	USD 318,500	0.01% of GDP
Paper-Based Credit Transfer→Debit Card (initiated)	GYD 4.5 million	USD 22,000	0.0007% of GDP	GYD 9 million	USD 44,100	0.0014% of GDP	GYD 12.8 million	USD 62,800	0.002% of GDP
Paper-Based Credit Transfer→Credit Card (initiated)	GYD 4.5 million	USD 22,000	0.0007% of GDP	GYD 9 million	USD 44,100	0.0014% of GDP	GYD 12.8 million	USD 62,800	0.002% of GDP
Paper-Based Credit Transfer→Electronic Credit Transfer (initiated)	GYD 4 million	USD 19,600	0.0007% of GDP	GYD 8 million	USD 39,200	0.0014% of GDP	GYD 11.7 million	USD 57,330	0.002% of GDP
Paper-Based Credit Transfer→Mobile Money (initiated)	GYD 3.5 million	USD 17,150	0.0007% of GDP	GYD 7 million	USD 34,300	0.0014% of GDP	GYD 10.3 million	USD 50,470	0.002% of GDP
Paper Voucher→Electronic Credit Transfer (received)	GYD 14 million	USD 68,600	0.002% of GDP	GYD 28 million	USD 137,200	0.004% of GDP	GYD 40.2 million	USD 197,000	0.006% of GDP

CHAPTER 2: THE MACROECONOMIC IMPACT OF ELECTRONIC PAYMENTS

2.1. Motivation and Objectives

This chapter of the dissertation focuses on the macroeconomic benefits of the transition from paper-based to electronic payments, examining the impact of payments using debit and credit cards on household consumption.²⁸ The empirical model is based on Zandi et al (2013), with a considerably richer dataset in terms of the number of years and countries. The results confirm that the use of payment cards has a positive impact on private consumption and gross domestic product (GDP), while finding a meaningful effect for both consumption and GDP – and a larger impact for both than Zandi et al.

The impact of the use of payment cards on private consumption is assessed for a panel of 76 countries (both developing and developed) from 1998 to 2014 (see more details under Data and Methodology). Using a dataset of 56 countries from 2008 to 2014, Zandi et al found that card usage raised consumption by an annual average of 0.140 percentage points, and boosted GDP by an annual average of 0.082 percentage points across the 56 countries. The time period used by Zandi et al coincides with the global financial downturn and recession, a period of weak household spending. The dataset here with a longer time span and coverage across different business cycles provides more data variation.

The results from the analysis of this chapter indicate that the transition to electronic payments matters for both the economy as a whole (for GDP) and for individual families

²⁸ The term “cards” and/or “payment cards” refers to debit and credit cards. This holds true for the entire Chapter 2 of the dissertation.

(through higher consumption). Increased usage of payment cards would not only prove to be beneficial for individual groups and stakeholders (at the micro level), as shown in Chapter 1, but also for the entire economy at the macro level.

2.2. Context and Background

The transition from paper to electronic payments, notably payment cards, affects the economy through multiple channels. Increased efficiency and reduced costs are foremost, but there also could be positive externalities such as reduced tax evasion and reduced underground economy and crime. Moreover, expanded financial inclusion from easier access to financial services could lead to poverty reduction, and improved GDP levels through stronger consumption.

Levine (2004) provides a systematic review of research on the role of financial systems in economic growth. His review shows that the overwhelming majority of quantitative and qualitative work has found a strong positive link between the well-functioning of the financial system and economic growth.²⁹ Payment systems are an integral part of the financial system—though not the aspect that has received the most attention compared to banking. Even when financial development is simply approximated by access to private credit through the use of credit cards, there is still a strong correlation with economic growth.³⁰

Empirical studies have also explored the link between the use of cash and the extent of the underground economy in a country. Bajada and Schneider (2005) measure the underground economy for 17 Asian countries as a function of demand for currency, with estimates for the

²⁹ Levine (2004), p.87.

³⁰ Levine (2004), p.53.

underground economy as a share of official GDP ranging from 11 percent for Japan to 52 percent for Thailand.³¹ The authors define the underground economy as the unmeasured economic activity in which value added is not recorded in the economic statistics because of the failure to report income (often reflecting the usage of cash). The underground economy activities can be illegal (e.g. drug trafficking) or legal (e.g. tax evasion/avoidance). In either case, cash is the primary instrument that facilitates those activities. The currency demand model estimates the size of the underground economy based on the assumption that such activities are undertaken in cash and that an increase in the underground economy will raise the demand for cash.³² The model includes explanatory variables such as real income, interest rates, and income tax rates.

Similarly, Schneider (2014) finds that a country could reduce its underground economy by 50 percent replacing cash payments with debit and credit card payments in specific economic sectors (i.e. cars and car parts, non-specialized retail stores, restaurants, transportation).³³ In addition, Wright et al (2014) show that the replacement of cash payments for social benefit purposes with card payments reduces crime. Using a difference-in-differences model with data from 1990 to 2011, the authors exploit the difference in timing of the Electronic Benefit Transfer (EBT) program in different Missouri counties. They find that the introduction of the EBT program had a strong negative effect on crime rates, including notable declines in reports of burglary (8 percent reduction), assault (12.5 percent), and larceny (10 percent). Overall crime rate dropped by 9.8 percent after the introduction of the EBT program, while the number of non-drug related arrests dropped as well.

³¹ Bajada and Schneider (2005), p.19.

³² For more information on currency demand approach empirical models, see: Hassan and Suk-Yu (2010), p.8.

³³ Schneider (2011), p.11.

The usage of electronic payments leads to expanded financial inclusion, which in turn has implications for poverty reduction. For instance, a user who opens a mobile money account will be able to use not just mobile money but also will be able to use the account for micro-savings and credit history building. These activities in turn could lead to micro-insurance and micro-lending. Indeed, access to credit is vital to the poor, but the fundamental step here is the access to electronic services. A World Bank and Committee on Payments and Market Infrastructure report on the Payment Aspects of Financial Inclusion identifies large volume frequent payments (e.g. social benefits, pensions) conducted electronically as a catalytic pillar of financial inclusion. Moreover, according to a 2013 report by the Gates Foundation, the spread of electronic payments goes together with broader financial inclusion.³⁴

Park and Mercado (2015) examine the impact of financial inclusion on poverty and inequality in 37 developing Asian countries from 2004 to 2012. They find a robust and significant correlation between greater financial inclusion and lower poverty and income inequality. Further, Dabla-Norris et al (2015) show that financial inclusion benefits the private sector through a more efficient allocation funds, hence increasing output.

The above references are all examples of different channels through which electronic payments contribute to improved economic performance. Some of these channels are directly linked to consumption while others have an indirect contribution. The two most prominent papers that have looked exclusively at the direct impact of payment cards on consumption are Hasan et al (2013) and Zandi et al (2013). The former paper uses data from 27 EU countries (before Croatia joined) over the period 1995 to 2009, and finds that an increase in card payments of 1 million Euro (equal to an increase in the value spent through debit and credit cards of 1.2

³⁴ “Fighting poverty through payments: Transforming the economics of payments to build inclusive financial systems that serve the poor”, Bill & Melinda Gates Foundation (2013), p.80.

percent), would lead to an increased level of GDP of 0.07 percent or 6 million Euro, primarily driven by household consumption.

The latter paper, by Zandi et al, examines 56 countries (both developing and developed) that account for 93 percent of the world's GDP, between 2008 and 2012. The authors find that on average, card usage raised overall household consumption by 0.7 percent across all 56 countries for the five years examined. Moreover, card usage added USD 983 billion (2008 USD) to global GDP, cumulatively for the years examined. This translates into 1.9 million jobs created between 2008 and 2012. When dividing the countries into developed and emerging markets, the authors find that for developed countries, a 1 percent increase in card penetration is associated with a 0.056 percent increase in consumption and 0.032 percent higher GDP. Similarly, for emerging markets, they come to find that a 1 percent increase in card penetration is associated with a 0.056 percent increase in consumption and a 0.028 percent increase in GDP. The authors find that payment cards added 0.8 percent to GDP for emerging economies and 0.3 percent for advanced economies across the five years. Overall, real GDP grew at an average rate of 1.8 percent between 2008 and 2014, and the increased card penetration contributed 0.17 percentage points.

2.3. Data and Methodology

2.3.1. Overview

The objective is to assess the impact of payment card usage on consumption and GDP levels. A regression model following Zandi et al is estimated in which real private consumption is modeled as a function of three factors: card penetration (debit and credit card spending as percentage of overall household spending); real interest rate; disposable income. The primary

goal is to measure the coefficient of card penetration in the regression model—to assess the contribution of debit and credit cards after taking into account the traditional main influence on consumption of disposable income.

The empirical general model used is a pooled Ordinary Least Squares (OLS) with time series cross section data:

$$y_{it} = \beta_0 + \sum_{k=1, \dots, K} (\beta_k * x_{kit}) + e_{it} ;$$

with $i=1,2,\dots,N$ a cross-sectional unit (here a country – 76 countries covered); $t=1,2,\dots,T$ the time period (here a year – 17 years covered, from 1998 to 2014); $k=1,2,\dots,K$ the number of explanatory variables (here 3 variables). The model in this case has the following forms:

$$\begin{aligned} \text{Log (real per capita consumption)} &= \beta_0 + \beta_1 * (\text{card penetration})_{it} + \\ &\beta_2 * (\text{real interest rate})_{it} + \beta_3 * (\text{real per capita disposable income})_{it} + e_{it} ; \\ i &= \text{country and } t = \text{year.} \quad (1) \end{aligned}$$

$$\begin{aligned} \text{Log (real per capita consumption)} &= \beta_0 + \beta_1 * (\text{card penetration})_{it} + \\ &\beta_2 * (\text{card penetration})_{it}^2 + \beta_2 * (\text{real interest rate})_{it} + \beta_3 * (\text{real per capita} \\ &\text{disposable income})_{it} + e_{it} ; \quad i = \text{country and } t = \text{year.} \quad (2) \end{aligned}$$

In essence, this is a consumption model with an additional factor, that of card penetration, as the variable of interest. The second version of the model also incorporates a squared term of the main explanatory variable to explore the possibility of a non-linear relationship between card

penetration and consumption. This could rise, for example, if there are network externalities so that higher card penetration has an increasing impact as the network gets denser. Moreover, the models are estimate for three groups of countries: for the entire dataset of 76 countries (developed and developing); for the 37 developed countries (high income); and for the 39 developing countries (middle income).

It should also be emphasized that as in other econometric models, this model is not immune to endogeneity, since the dependent variable of per capita consumption is endogenously determined in relation to disposable income and to the main explanatory variable, card penetration (and possibly with the real interest rate). However, unless an institutional variable is found to use as an instrumental variable for card penetration (since they are not correlated with consumption), this simultaneity cannot be resolved. Unfortunately, it is difficult to identify institutional variables that are consistent across time and across countries. As such, this is acknowledged as a limitation of the model. The empirical results should thus be treated as correlations rather than structural relationships. Some other endogeneity issues are further discussed below.

All monetary figures are in USD real terms (inflation adjusted using CPI for each country). Other than real interest rates, all other variables pertain to consumers/individuals/households. The dependent variable is expressed in logarithmic terms for easier interpretation of the results, so that the estimated coefficients correspond to percentage changes. Moreover, the dependent variable reflects annual private consumption per capita, and it includes all per capita spending conducted through any payment instrument (paper-based and electronic).

The main explanatory variable of interest is card penetration, which represents the value share of debit and credit card spending as a percentage of overall private spending. The debit and credit card spending covers the use of the cards both for e-commerce (through internet use) and for points of sale (swiping a magnetic stripe card or inserting a chip-based card). Other type of payment cards, such as prepaid cards, are not included here because in many countries they are not part of the retail payments market. The ultimate purpose is to isolate the impact of card penetration on consumption, and subsequently, on the GDP. Ideally, the impact of debit and credit cards should be explored separately, however, the fact that for certain countries in certain years there is spending data only for one of the two payment cards makes this impossible. Bundling them together allows for more complete data.

The other explanatory variables that are part of the model can be viewed as control variables. Macroeconomic theory and rational behavior suggests that the higher the interest rates, the lower the incentive to consume, and the higher the income, the higher the tendency to consume.

2.3.2. Descriptive Statistics

Data on debit and credit card spending were obtained from Euromonitor International, while data on private consumption, income, and real interest rates from the World Development Indicators (World Bank), International Financial Statistics (IMF), and, individual central bank databases.

The dataset contains 76 countries (spread across all continents), of which 37 are advanced economies/developed nations, while 39 are emerging economies/developing nations. The

classification is based on the World Bank country's income level.³⁵ Advanced economies are typically those considered as high income economies, while middle income and low income countries fall under developing countries. As such, the 37 developed nations included in the dataset are all high income (USD 12,736 or more of GNI per capita), while of the 39 developing countries, 15 are lower middle income (USD 1,046 to USD 4,125 of GNI per capita), and 24 are upper middle income (USD 4,126 to USD 12,735 of GNI per capita).³⁶ No low income countries are included in the dataset given that the payment card usage is extremely low in such countries (see Table 2.3 in Appendix 2 for a complete list of the countries covered). The combined GDP of the 76 countries constitutes 96 percent of the world's GDP, and as such, the dataset includes a good balance between high and middle income countries and is also globally representative.

Variation is also ensured in terms of the time dimension. Countries are examined during a 17-year time span, from 1998 to 2014. While Zandi et al consider a 5-year time period marked by a global recession (2008-2012), the dataset used here includes two global business cycles with periods of both recession and growth.

In terms of the main descriptive statistics, the patterns of card penetration (the main variable of interest) are displayed in Figure 2.1 for the different categories of countries. Card penetration represents the value of debit and credit card spending as a percentage of overall household spending, per year. Card penetration displays a consistently increasing trend for lower and upper middle income countries, while there is more volatility observed in high income countries. The higher card penetration volatility for high income countries could potentially be explained by the fact that there are more payment instruments (particularly electronic) available to the consumers of those countries, and as such, they can alternate between payment cards and

³⁵ World Bank classification of countries by income: <http://data.worldbank.org/about/country-and-lending-groups>

³⁶ All monetary figures are in 2015 USD.

other electronic instruments (e.g. credit transfer or direct debit)—overall electronic payments might be increasing throughout. For middle income countries, the fact that payment cards are the most prominent electronic payment instruments available, along with the fact that those countries have been catching up with advanced economies in terms of the payments infrastructure, have likely led to the consistent card penetration growth.

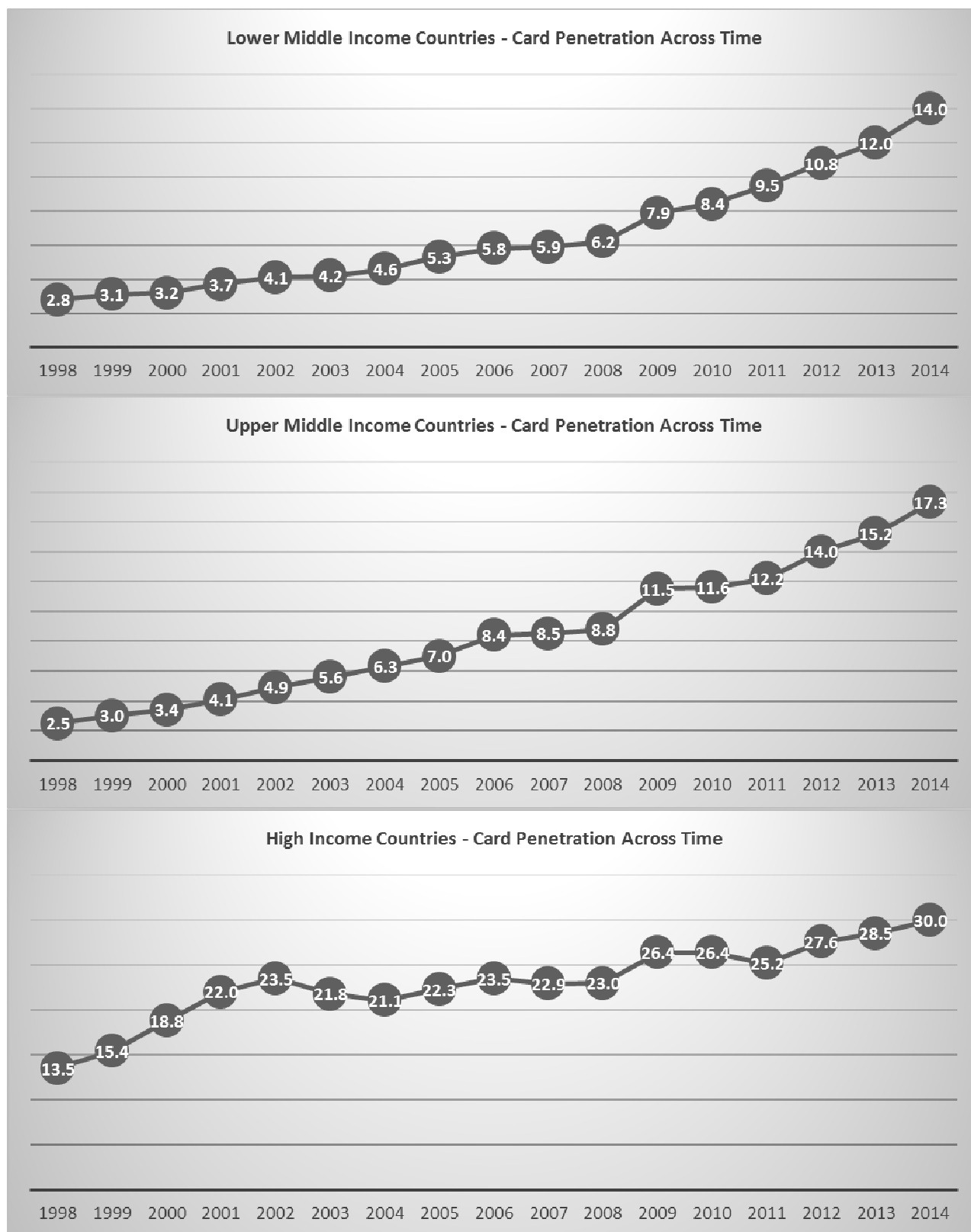


Figure 2.1: Card penetration for different country categories across time

Both 1998 (starting) and 2014 (ending) card penetration values are higher for high income countries than for middle income countries (the values for lower and upper middle income countries do not diverge significantly from each other). However, the change in card penetration over this period is similar across the groups. This is an indicator that if middle income countries continue with the same growth rate, they are likely to catch up with high income countries in card usage within a decade. This should not come as a surprise given that many high income countries have reached a saturation point in the usage of debit and credit cards, while emerging markets still have significant potential for usage and new technologies. For high income countries, the cumulative growth rate in card penetration between 1998 and 2014 has been approximately 17 percentage points; for upper middle income countries, the equivalent cumulative growth has been close to 15 percentage points; for lower middle income, the cumulative growth rate has been 11 percentage points.

Table 2.4 (Appendix 2) summarizes the values for the other variables used in the model, as well as consumption-to-GDP ratio values, which although not part of the model, are used as an additional piece of information in order to calculate the impact of card penetration on GDP. The values are classified by year and income level category, while averages across countries are also derived.

2.3.3. Model Specification and Analysis

The 76 countries and 17 years in the panel include 1,292 observations, with no missing data for any of the variables. There are different ways to analyze panel data. However, since one of the objectives of this analysis is to compare findings with those from Zandi et al, the model used here, pooled OLS, is consistent with that used by the aforementioned authors. Moreover,

the initial analysis indicates that the OLS model is a good fit for the data, since the hypothesis that all coefficients are different from zero is not rejected ($\text{Prob} > \chi^2 = 0.000$). However this dissertation expands the analysis by also examining the possibility of a non-linear relationship by including the squared card penetration in a second regression. The statistical package STATA 12 is used in order to perform the analysis. The commands `.xtset` and `.xreg` are used for STATA to treat the data as panel data and perform the regression, while standard errors are clustered. There are multiple commands that can be used in order to perform panel data regressions (e.g. `.areg`, `.xtre`, `.xtgls`), but in most cases, the coefficients generated are the same (Torres-Reyna, 2007).³⁷

Panel data can be complicated to work with. For instance, in addition to the explanatory variables, there could be country specific characteristics (normally embedded in the error term), not captured in the model, affecting the dependent variable, or correlated with the explanatory variable(s), causing endogeneity issues. Indeed, there could be a case of unobserved and/or uncaptured variation across the space dimension of the panel data. In the converse case, the assumption would be that there are no such country specific characteristics that could drive the results, and as such, the variation across the countries would be random, and the dependent variable would be affected mainly by the predictors. Said in the language of econometrics, the former case would be dealt with by using country fixed effects, while the latter case by using country random effects. In order to resolve the dilemma of which method should be used in the analysis, the Hausman test is performed. The null hypothesis of the test is that the error terms are not correlated with the explanatory variables. The χ^2 statistic generated from the test rejects the null hypothesis, and as such, leads to the conclusion that country fixed effects should be incorporated into the model.

³⁷ Torres-Reyna (2007), p.18.

Another complication with panel data could also arise due to time specific characteristics affecting the dependent variable. In other words, there could be certain events in some years, across all countries, which are driving the results. Again, a decision must be made if time fixed effects or time random effects should be used in the model, in addition to country fixed effects. STATA allows for resolving the dilemma. By performing a test (.testparm), year dummy variables are created, and the following null hypothesis is tested: the dummy variables are jointly 0. The F-statistic obtained fails to reject the null hypothesis, which means that no fixed time effects are needed, since the variation across years is not contributing to the dependent variable.

The main models, models (1) and (2) are used, but with country fixed effects incorporated (see more under Results and Discussion). The coefficient of the card penetration (the main explanatory variable of interest) generated from the regression, is then used in order to calculate the impact of card penetration on consumption, across countries and across years. This follows the approach used by Zandi et al. Subsequently, the coefficient can also be used to calculate the impact of card penetration on the GDP, since the consumption-to-GDP ratio is known for countries across time.

2.4. Results and Discussion

The regression results from models (1) and (2) for the different country categories are examined below. The first thing that stands out in the results is that almost all coefficients (except for real interest rate in certain cases) are significant at 1 percent, which reinforces the choice of the explanatory variables and model. The coefficients of the control variables show the expected signs, with the real interest rate having a negative coefficient (except for model (2) in the regression for developing countries) and per capita disposable income having a positive

coefficient. The sign of the squared card penetration variable in model (2) is negative in all three cases, demonstrating that after a certain point, the impact of card penetration on consumption starts decreasing. While the coefficient of the squared term is significant at the 1 percent level, the magnitude is very small (the first non-zero shows only at the fourth decimal). Moreover, the differences in the card penetration coefficient between model (1) and model (2) are minor in that there are no decimal gains, although model (2) displays slightly higher coefficients. Further, when examined by country category, card penetration for developing countries seem to have a much larger coefficient than the one for developed countries. However, for the further analysis of the card penetration impact on consumption and GDP levels, model (1) from the complete dataset is used since it includes more data points and offers a lower bound for the estimation, reducing the risk of overestimations.

Table 2.1: Regression results

Complete Dataset (76 countries)						
Dependent variable: Log (per capita consumption)	Model (1)			Model (2)		
Explanatory Variable	Coefficient (Standard Error)	t-Statistic	Probability	Coefficient (Standard Error)	t-Statistic	Probability
Card penetration	0.0115** (0.00067)	16.98	0.000	0.0279** (0.00145)	19.15	0.000
Card penetration^2	---	---	---	- 0.0002** (0.00001)	-12.52	0.000
Real interest rate	- 0.0018** (0.00065)	-2.77	0.006	- 0.0006 (0.00062)	-1.01	0.314
Per capita disposable income	0.0007** (0.00001)	10.64	0.000	0.0005** (0.00001)	8.34	0.000
Constant	8.1118 (0.01391)	582.90	0.000	7.9981 (0.01593)	501.83	0.000
**: Significance at 1 percent level						
Developed Economies (37 countries)						
Dependent variable: Log (per capita consumption)	Model (1)			Model (2)		
Explanatory Variable	Coefficient (Standard Error)	t-Statistic	Probability	Coefficient (Standard Error)	t-Statistic	Probability
Card penetration	0.0057** (.00059)	9.74	0.000	0.0135** (0.00134)	10.10	0.000
Card penetration^2	---	---	0.000	- 0.0001** (0.00001)	-6.42	0.000
Real interest rate	- 0.0052** (0.00078)	- 6.62	0.000	- 0.0047** (0.00076)	-6.14	0.000
Per capita disposable income	0.0007** (0.00001)	14.32	0.000	0.0006** (0.00005)	12.53	0.000
Constant	9.1862 (0.01702)	539.48	0.000	9.1143 (0.01992)	457.49	0.000
**: Significance at 1 percent level						
Developing Economies (39 countries)						
Dependent variable: Log (per capita consumption)	Model (1)			Model (2)		
Explanatory Variable	Coefficient (Standard Error)	t-Statistic	Probability	Coefficient (Standard Error)	t-Statistic	Probability
Card penetration	0.0161** (0.00112)	14.37	0.000	0.0377** (0.00235)	16.01	0.000
Card penetration^2	---	---	0.569	- 0.0003** (0.00003)	- 10.22	0.000
Real interest rate	- 0.0005 (0.00092)	- 0.57	0.000	0.0010 (0.00087)	1.21	0.225
Per capita disposable income	0.0008** (0.00001)	6.06	0.000	0.0006** (0.00001)	4.59	0.000
Constant	7.1865 (0.01383)	519.43	0.000	7.0731 (0.01694)	417.44	0.000
**: Significance at the 1 percent level						

Card penetration has a positive impact on consumption, given the positive sign of the card penetration coefficient. On average, a 1 percent increase in card penetration is associated with a 0.011 percent increase in per capita consumption and a 0.006 percent increase in GDP, holding all other parameters constant (complete dataset, model (1)).³⁸ The card penetration coefficients derived in all different cases in Table 2.1 are smaller than the equivalent coefficients generated from the model of Zandi et al, which is 0.168 for developed countries, and 0.289 for developing countries. However, this does not provide any indication in terms of what is the actual contribution of card penetration, on an annual average, to consumption and GDP. The annual contribution of card penetration is presented in Table 2.2 and the figures shown for consumption and GDP are larger than those found by Zandi et al. A more detailed analysis estimates the actual impact of card penetration on consumption and GDP levels, for each country across each year (see Tables 2.5 – 2.10 in Appendix 2). The card penetration coefficient is multiplied by the value of card penetration for each country every year, to derive the annual contribution of card penetration to consumption (in percentage points). The derived figure is then multiplied with the share-to-GDP ratio for each country every year to generate annual contribution of card penetration to GDP. The United States is used as an illustrative example. For 2014, the card penetration ratio was 37 percent, which when multiplied with the card penetration coefficient in the regression (0.011) results in 0.407 percentage points, generating the contribution of card penetration to consumption level for the United States in 2014. Subsequently, the derived figure (0.407 percentage points) is then multiplied with the consumption-to-GDP ratio for 2014 for the United States (68.2 percent) to derive the contribution of card penetration to the country's level of GDP (0.278 percentage points). This

³⁸ The contribution to GDP is derived by multiplying the card penetration coefficient with the average (across time and countries) consumption-to-GDP share.

means that annual U.S. income is more than a quarter of a percentage point higher as a result of card spending as compared to a situation in which there were zero card usage.

Table 2.2 below summarizes the results for the three categories of countries. From 1998 to 2014, on average, card penetration was associated with increased consumption of 0.072 percentage points for lower middle income countries, of 0.093 percentage points for upper middle income countries, and of 0.254 percentage points for high income countries. Overall, card penetration had added to the level of world consumption 0.419 percentage points or USD 16.2 billion (2014). The coefficients are not just statistically significant, as shown from the regression analysis, but also economically significant.

Similarly, from 1998 to 2014, on average, card penetration increased annual GDP by 0.050 percentage points in lower middle income countries, by 0.056 percentage points in upper middle income countries, and by 0.137 percentage points in high income countries. Overall, card penetration contributed to the world GDP by an annual average of 0.243 percentage points, which translates into USD 160 billion per year. To put things in context, the contribution of card usage to global income approximately amounts to the 2014 GDP of Kuwait, and is slightly lower than the 2014 GDP of Bangladesh and Vietnam (USD 183 and USD 185 billion, respectively) and slightly higher than the 2014 GDP of Hungary and Ukraine (USD 136 and 130 billion, respectively). It also amounts to approximately 0.8 percent of the 2014 U.S. GDP.

Table 2.2: Summary of results

Annual Average Contribution of Card Penetration to Consumption (percentage points)				Annual Average Contribution of Card Penetration to GDP (percentage points)			
Lower Middle Income	Upper Middle Income	High Income	Total	Lower Middle Income	Upper Middle Income	High Income	Total
0.072	0.093	0.254	0.419	0.050	0.056	0.137	0.243
17%	23%	60%	100%	20%	24%	56%	100%

As shown in Table 2.2 above, the use of payment cards in middle income countries (collectively) and in high income countries contributed almost equally to the overall global consumption and global income. Tables 2.5 – 2.10 (Appendix 2) detail the impact of card penetration on consumption and GDP for all countries from 1998 to 2014. In terms of the year pattern, there is a steadily increasing impact on consumption and GDP for most countries. Looking more closely at the three country categories, among lower middle income countries, Kenya has the lowest annual average impact of increased card penetration on consumption, with a contribution of 0.003 percentage points, while the highest impact is observed for Morocco, with 0.362 percentage points. In terms of the GDP, cards added an average of 0.002 percentage points to Kenya’s annual income (the average annual GDP growth rate in Kenya for the same period has been 4.2 percent), and added an average of 0.213 percentage points to Morocco’s annual GDP (the average overall annual economic growth rate for Morocco has been 4.4 percent). For Morocco, the additional annual income due to card usage translates into an average annual figure of approximately USD 150 million – this is 0.213 percent of Morocco’s GDP of USD 110 billion. The differences in the national payment systems of the two countries might explain the results. Kenya has been one of the pioneer countries in terms of mobile payments (M-PESA Kenya).³⁹ Debit and credit cards have been circumvented, to some extent, as mobile payments are more accessible given their basic infrastructure. This might explain why there is little apparent impact of the shift to electronic payments in Kenya, because these are measured as payment cards whereas the usage instead is through the mobile phone system. The case of Morocco is also interesting because before the “Arab Spring,” the country was a prominent

³⁹ M-PESA Kenya is the largest mobile money service provider in the country, operated by Safaricom and Vodafone.

tourist attraction in Northern Africa. The additional debit and credit card payments made by tourists are reflected in higher consumption for Morocco.

The examination of the upper middle income countries indicates that China has the highest average annual additional consumption and GDP associated with card penetration, 0.407 percentage point increase in consumption and 0.161 percentage point contribution to the level of income as measured by GDP, while for the same period the annual average GDP growth rate for China has been 9.5 percent. Other Asian countries in the same income category, such as Malaysia and Thailand, also show significant impact. China's large market and exposure to international investments explains the results, to some extent. On the other hand, findings indicate that card penetration in Algeria has added the lowest average to consumption, contribution by an average annual of 0.001 percentage points (or annual average of USD 45 million), while the equivalent average contribution to the annual GDP for the same country is estimated at 0.0004⁴⁰ percentage points of the annual GDP of USD 552 billion. Of the Latin American countries in this income category, Brazil displays the highest average impact on consumption, with an average of 0.206 percentage points.

Among the high income countries, the largest average contribution of card penetration to consumption is shown by New Zealand, estimated at 0.677 percentage points (while the contribution of card usage to economy's GDP is 0.393 percentage points). Australia, South Korea, Singapore, the Nordic countries, and Canada also display high averages, while the impact in the United States is lower (average of 0.286 percentage points of additional consumption and average of 0.193 percentage points of GDP). Despite the technological advancements in the United States in the space of retail payments infrastructure, there is a persistent use of paper

⁴⁰ In Table 2.8, the number is rounded up to three decimal points and shows as 0.001.

checks which has reduced the momentum of card penetration. The United States is often cited as one of the exceptions among advanced economies in that the role of paper checks has not been undermined by the presence of a variety of electronic payments options. Conversely, countries like Singapore or Sweden have been cited in the literature for their almost exclusive use of payment cards, with the latter country's central bank even contemplating to stop printing physical currency.⁴¹ Such differences among advanced economies are often attributed to cultural factors and consumer habits. One could also argue that the lower inequality rates observed in the Nordic countries, or New Zealand, versus the United States, could potentially explain the lower card penetration in the United States, which subsequently leads to a lower impact of cards on consumption and GDP. In other words, payments infrastructure is a necessary but not sufficient condition in order to achieve a high card penetration.

Among high income countries, Greece seems to be the country where card penetration has contributed, on average, the least to consumption, with an annual impact of 0.046 percentage points (average annual of USD 73.5 million to GDP annually). The average annual GDP impact is 0.031 percentage points. The low impact of card penetration on the economy is not just a result of the current economic crisis, since it has been low even before, but rather the crisis has further lowered the impact. The economic and political situation in Greece before and after getting into the Troika⁴² bailout program, offers potential explanations. Tax evasion has been a major issue in Greece, which along with the heavy borrowing of the government, led to large accumulated debt. Cash has been the main instrument used to camouflage tax evasion, by both consumers and merchants. Even though Greece has been a major tourist destination in Southern Europe, tourists

⁴¹ "In Sweden, a Cash-Free Future Nears" New York Times (December, 2015).

http://www.nytimes.com/2015/12/27/business/international/in-sweden-a-cash-free-future-nears.html?_r=0

⁴² Troika consists of three international institutions: IMF, European Central Bank, and European Commission.

would primarily use cash for their payments due to lack of electronic payments infrastructure, which in many cases was not installed deliberately. After the debt crisis and the country's entrance into a bailout agreement with Troika, Greece has been undertaking reforms which aim to also fight tax evasion, and payment cards have obtained a prominent role in this respect. However, the issue has now shifted to the overall low level of consumption and investments in Greece, due to austerity measures implemented.

The results derived show promising signs and underline the significance of payment cards in the macroeconomic context. Regardless of how small the consumption or GDP added due to card usage, the consistently growing figures for every country demonstrate the further potential payment cards have in making an even larger impact, as electronic payments infrastructure becomes more readily available and consumers change their habit of using cash and checks. The positive macroeconomic impact of cards eventually translates into new jobs created and benefits a variety of populations segments. Indeed, even in the worst case scenarios, such as the example of Greece, card usage can help create a significant number of new jobs, which would translate into more money into the hands of consumers, higher consumption (hence further economic growth), and more tax revenues to the government, which can further be redistributed for public goods.

There are a variety of mechanisms through which payment cards positively impact economic growth. The most direct one, as shown here, is through additional consumption, which is ensured by the security and transparency that come with using electronic payment instruments such as cards. Indeed, the fact that non-authorized card payments can be disputed by the card owner provides an important safety feature which enables users to make card payments in any place, and more so in places where merchants are hesitant to accept checks or other payment

instruments. Moreover, the platform of e-commerce, which is exclusively linked to the usage of cards (and other electronic payment instruments), allows for additional spending which is not possible by using cash. E-commerce by itself, has the potential to bring about significant consumer spending in developing countries, as the internet infrastructure improves and domestic online merchants are authorized to operate. This is important because by having the option to buy goods and services from domestic online merchants (versus international ones such as Amazon.com), consumers benefit from not having to pay import taxes and fees. Furthermore, the fact that credit cards extend a credit line to users (assuming no credit card bubbles) enables income calibration and consumption smoothing, which can serve as mechanisms that drive the economy's engine constantly and do not allow it to lose momentum. This is particularly impactful in times of recession, when income and spending are at low levels.

Other mechanisms through which cards might influence the economy involve merchants and the government. In the former case, as consumers spend more through cards, the inventory for merchants is reduced, and as such, they turn to more investments and additional production, which in turn leads to more jobs and income, creating a positive cycle and a win-win situation. In the latter case, card usage helps governments reduce tax evasion and as such, the additional tax revenue can be re-invested back through government spending, further increasing GDP. Finally, by creating the necessary electronic payments infrastructure that would enable more card usage, foreign investments and tourism can be boosted, further adding to GDP levels.

2.5. Conclusion

This chapter of the dissertation explored the impact of payment cards on consumption and GDP. Using a unique panel dataset of 76 developed and developing countries across a 17-year span (1998-2014), a pooled OLS country fixed effects model (similar to the one used by Zandi et al and similar to a consumption model) was used. The results showed that card penetration (value of debit and credit card spending as a percentage of overall household spending) has a positive impact on consumption and GDP, and that the annual average contribution of card penetration to consumption and GDP levels is higher than what Zandi et al found. The regression analysis performed here also showed that all coefficients are significant at the 1 percent level. This work contributes to the existing literature not only through the rich dataset it uses, but also through the detailed analysis and figures of card contribution provided for each of the 76 countries (separated by income level) for each year, from 1998 to 2014. In addition to the world patterns observed with regards to the contribution of card penetration to consumption and GDP, individual countries can use the results in order to assess their own performance across time and the role that payment cards play in their economy from year to year. In addition, mechanisms were also explored in terms of how card usage leads to more consumption and more income (as expressed by GDP), and why some specific countries included in the dataset do better than others with regards to the impact cards have on their economies.

This analysis provides a stepping stone for future similar work in the area. Very limited empirical research has been dedicated to the macroeconomic impact of payment cards, and as such, it is the author's hope that this work can spark discussion and further research in the field. For instance, future work could attempt to find an institutional type of explanatory variable, in

lieu of card penetration, in order to overcome the issue of endogeneity. Other research directions could involve separating card penetration at POS terminals versus e-commerce, and perform separate regression analysis in order to assess if it is the use of home internet that is primarily driving the impact of cards on consumption, rather than the use of cards at POS terminals. In addition, if data is available, the impact of debit and credit cards on consumption and GDP could be explored separately, since the research conducted so far, including the one presented here, has treated the two collectively. Finally, low income countries could also be incorporated in the analysis. Given that card usage is extremely low, the impact of mobile money usage could be explored, instead, since it has become a main alternative non-paper payment instrument in such countries, pushing aside payment cards.

APPENDIX 2

Table 2.3: List of countries in the dataset

Developed Nations		Developing Nations	
<i>Lower Middle Income (15)</i>	<i>Upper Middle Income (24)</i>	<i>High Income (37)</i>	
Bolivia	Argentina	Canada	Slovenia
Guatemala	Brazil	U.S.A.	Spain
Venezuela	Colombia	Chile	Sweden
Georgia	Costa Rica	Uruguay	Switzerland
Ukraine	Dominican Republic	Austria	UK
Cameroon	Ecuador	Belgium	Israel
Egypt	Mexico	Croatia	UAE
Kenya	Peru	Czech Republic	Hong Kong
Morocco	Belarus	Denmark	Japan
Nigeria	Bulgaria	Estonia	Singapore
India	Macedonia	Finland	South Korea
Indonesia	Romania	France	Australia
Pakistan	Russia	Germany	New Zealand
Philippines	Serbia	Greece	
Vietnam	Turkey	Hungary	
	Algeria	Ireland	
	Tunisia	Italy	
	South Africa	Latvia	
	Azerbaijan	Lithuania	
	China	Netherlands	
	Iran	Norway	
	Kazakhstan	Poland	
	Malaysia	Portugal	
	Thailand	Slovakia	

Table 2.4: Descriptive statistics

Variable	Per Capita Consumption (real USD)				Per Capita Disposable Income (real USD)				Consumption-to-GDP Ratio (%)			
<i>Year</i>	<i>Lower Middle Income</i>	<i>Upper Middle Income</i>	<i>High Income</i>	<i>Average</i>	<i>Lower Middle Income</i>	<i>Upper Middle Income</i>	<i>High Income</i>	<i>Average</i>	<i>Lower Middle Income</i>	<i>Upper Middle Income</i>	<i>High Income</i>	<i>Average</i>
1998	771.7	1,978.2	13,166.0	5,305.3	876.5	2,390.4	15,731.7	6,332.9	71.9	65.2	57.7	64.9
1999	771.9	1,970.0	13,552.0	5,431.3	877.7	2,246.0	16,067.3	6,397.0	71.5	64.5	57.9	64.6
2000	789.2	2,040.5	13,967.1	5,598.9	909.9	2,304.5	15,639.2	6,284.5	68.7	63.2	57.3	63.1
2001	810.4	2,060.5	14,375.3	5,748.7	918.2	2,276.0	15,661.0	6,285.1	69.8	63.6	56.9	63.4
2002	810.0	2,114.7	14,603.0	5,842.6	869.7	2,242.4	16,615.0	6,575.7	69.6	63.0	57.0	63.2
2003	826.4	2,193.4	14,787.6	5,935.8	911.0	2,475.1	19,325.5	7,570.5	69.3	62.3	56.7	62.8
2004	871.0	2,340.1	15,164.8	6,125.3	1,036.6	2,901.2	21,905.3	8,614.4	67.9	61.8	56.2	62.0
2005	921.0	2,491.2	15,433.7	6,282.0	1,185.2	3,424.4	23,381.2	9,330.3	67.7	60.6	55.9	61.4
2006	983.8	2,645.7	15,799.4	6,476.3	1,419.3	3,898.0	25,047.7	10,121.7	67.5	59.0	55.4	60.6
2007	1,060.4	2,832.4	16,226.3	6,706.4	1,718.5	4,704.9	28,113.6	11,512.3	68.5	58.0	55.1	60.5
2008	1,101.9	2,943.0	16,238.4	6,761.4	2,085.4	5,433.9	29,945.8	12,488.4	67.7	58.0	55.6	60.4
2009	1,095.2	2,876.5	15,738.0	6,569.9	2,096.5	5,108.9	27,331.2	11,600.0	70.6	58.5	56.2	61.8
2010	1,102.1	2,995.7	15,906.1	6,668.0	2,428.3	5,797.8	28,563.7	12,263.3	68.2	57.5	56.0	60.6
2011	1,150.8	3,115.0	15,994.5	6,753.4	2,404.8	6,584.3	30,791.6	13,260.2	68.7	56.4	55.8	60.3
2012	1,195.6	3,213.3	16,033.7	6,814.2	2,664.9	6,934.0	30,356.4	13,318.4	69.0	57.1	55.9	60.7
2013	1,240.6	3,302.6	16,159.5	6,900.9	2,735.2	7,210.4	31,422.8	13,789.5	70.8	57.6	55.9	61.4
2014	1,247.8	3,375.5	16,575.3	7,066.2	2,895.1	7,127.5	32,222.6	14,081.7	69.1	59.8	56.5	61.8
Average	985.3	2,617.0	15,277.7	6,293.3	1,649.0	4,297.6	24,007.2	9,984.6	69.2	60.4	56.4	62.0

Table 2.5: Lower middle income countries – contribution of card penetration to consumption (percentage points)

Country	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average
Bolivia	0.010	0.015	0.019	0.027	0.042	0.060	0.077	0.085	0.096	0.089	0.083	0.088	0.088	0.084	0.102	0.106	0.119	0.070
Guatemala	0.013	0.016	0.017	0.017	0.024	0.026	0.029	0.032	0.046	0.047	0.048	0.080	0.059	0.055	0.062	0.065	0.068	0.041
Venezuela	0.010	0.012	0.012	0.013	0.019	0.030	0.047	0.046	0.061	0.080	0.081	0.099	0.140	0.246	0.264	0.343	0.437	0.114
Georgia	0.001	0.002	0.004	0.010	0.015	0.021	0.023	0.042	0.047	0.058	0.062	0.144	0.160	0.179	0.210	0.235	0.263	0.087
Ukraine	0.002	0.006	0.008	0.008	0.007	0.007	0.013	0.009	0.011	0.013	0.029	0.034	0.047	0.060	0.069	0.071	0.111	0.030
Cameroon	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.036	0.042	0.039	0.042	0.042	0.038	0.037	0.043	0.045	0.049	0.025
Egypt	0.006	0.007	0.008	0.010	0.014	0.018	0.023	0.027	0.030	0.032	0.035	0.039	0.050	0.078	0.086	0.103	0.120	0.040
Kenya	0.002	0.002	0.003	0.004	0.006	0.004	0.004	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Morocco	0.177	0.198	0.243	0.290	0.303	0.287	0.295	0.334	0.353	0.354	0.349	0.395	0.453	0.459	0.527	0.545	0.597	0.362
Nigeria	0.082	0.087	0.028	0.034	0.029	0.031	0.035	0.036	0.044	0.035	0.043	0.091	0.041	0.040	0.046	0.039	0.043	0.046
India	0.002	0.003	0.004	0.005	0.007	0.008	0.010	0.014	0.019	0.021	0.027	0.025	0.022	0.031	0.041	0.053	0.062	0.021
Indonesia	0.028	0.022	0.026	0.030	0.027	0.025	0.030	0.036	0.035	0.039	0.052	0.067	0.062	0.062	0.068	0.077	0.091	0.046
Pakistan	0.074	0.079	0.077	0.089	0.102	0.094	0.084	0.077	0.068	0.057	0.053	0.066	0.060	0.052	0.056	0.062	0.066	0.072
Philippines	0.064	0.060	0.067	0.077	0.079	0.085	0.088	0.087	0.087	0.088	0.085	0.093	0.097	0.097	0.099	0.106	0.120	0.087
Vietnam	0.001	0.001	0.001	0.001	0.001	0.004	0.005	0.006	0.017	0.022	0.029	0.042	0.065	0.078	0.101	0.132	0.171	0.040
Total Average	0.032	0.034	0.035	0.041	0.045	0.047	0.051	0.058	0.064	0.065	0.068	0.087	0.092	0.104	0.118	0.132	0.155	0.072

Table 2.6: Lower middle income countries – contribution of card penetration to GDP (percentage points)

Country	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average
Bolivia	0.008	0.012	0.014	0.020	0.031	0.042	0.052	0.056	0.060	0.056	0.051	0.058	0.055	0.051	0.060	0.064	0.067	0.047
Guatemala	0.011	0.013	0.014	0.014	0.020	0.022	0.025	0.028	0.040	0.041	0.043	0.069	0.050	0.047	0.053	0.056	0.058	0.035
Venezuela	0.006	0.007	0.006	0.007	0.010	0.016	0.023	0.021	0.029	0.041	0.042	0.062	0.078	0.136	0.156	0.223	0.224	0.062
Georgia	0.001	0.002	0.003	0.008	0.012	0.015	0.017	0.028	0.037	0.041	0.048	0.117	0.120	0.133	0.151	0.167	0.183	0.066
Ukraine	0.001	0.003	0.005	0.004	0.004	0.004	0.007	0.005	0.007	0.008	0.013	0.022	0.030	0.040	0.047	0.050	0.079	0.018
Cameroon	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.026	0.030	0.029	0.031	0.032	0.028	0.028	0.033	0.035	0.037	0.018
Egypt	0.005	0.005	0.006	0.008	0.010	0.013	0.017	0.019	0.021	0.023	0.025	0.030	0.037	0.059	0.070	0.083	0.099	0.030
Kenya	0.001	0.002	0.002	0.003	0.004	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Morocco	0.108	0.120	0.149	0.168	0.176	0.164	0.168	0.192	0.203	0.207	0.203	0.225	0.259	0.271	0.315	0.327	0.356	0.213
Nigeria	0.069	0.065	0.015	0.026	0.022	0.025	0.026	0.027	0.028	0.027	0.028	0.068	0.027	0.026	0.027	0.028	0.030	0.033
India	0.001	0.002	0.003	0.003	0.004	0.005	0.006	0.008	0.011	0.012	0.016	0.015	0.013	0.018	0.024	0.032	0.038	0.013
Indonesia	0.019	0.016	0.016	0.019	0.018	0.017	0.020	0.023	0.022	0.025	0.032	0.039	0.035	0.035	0.038	0.044	0.052	0.029
Pakistan	0.053	0.060	0.058	0.068	0.076	0.069	0.062	0.059	0.053	0.044	0.044	0.052	0.048	0.043	0.046	0.050	0.053	0.056
Philippines	0.046	0.043	0.048	0.056	0.059	0.063	0.066	0.065	0.065	0.065	0.063	0.069	0.069	0.071	0.073	0.078	0.087	0.064
Vietnam	0.001	0.001	0.001	0.001	0.000	0.002	0.003	0.004	0.011	0.015	0.020	0.029	0.043	0.052	0.065	0.086	0.113	0.026
Total Average	0.023	0.024	0.024	0.029	0.031	0.032	0.035	0.039	0.043	0.045	0.046	0.062	0.063	0.072	0.082	0.094	0.107	0.050

Table 2.7: Upper middle income countries – contribution of card penetration to consumption (percentage points)

Country	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average
Argentina	0.018	0.019	0.020	0.020	0.051	0.047	0.040	0.047	0.057	0.063	0.064	0.085	0.098	0.107	0.123	0.150	0.215	0.072
Brazil	0.039	0.071	0.084	0.135	0.183	0.205	0.220	0.206	0.206	0.202	0.211	0.258	0.228	0.223	0.288	0.340	0.401	0.206
Colombia	0.061	0.066	0.057	0.064	0.078	0.105	0.107	0.102	0.115	0.105	0.099	0.111	0.105	0.117	0.129	0.156	0.188	0.104
Costa Rica	0.013	0.015	0.017	0.013	0.021	0.023	0.026	0.029	0.042	0.041	0.042	0.071	0.044	0.041	0.043	0.044	0.050	0.034
Dominican Republic	0.010	0.012	0.012	0.011	0.016	0.023	0.028	0.022	0.032	0.035	0.037	0.054	0.039	0.038	0.043	0.048	0.052	0.030
Ecuador	0.030	0.065	0.081	0.066	0.043	0.039	0.046	0.046	0.068	0.074	0.075	0.094	0.079	0.075	0.081	0.095	0.109	0.069
Mexico	0.014	0.014	0.014	0.016	0.018	0.025	0.031	0.035	0.046	0.056	0.059	0.076	0.074	0.082	0.090	0.092	0.101	0.050
Peru	0.066	0.100	0.105	0.122	0.090	0.087	0.104	0.103	0.158	0.160	0.152	0.189	0.155	0.144	0.147	0.174	0.207	0.133
Belarus	0.001	0.004	0.005	0.009	0.008	0.008	0.009	0.008	0.008	0.008	0.009	0.021	0.021	0.030	0.036	0.033	0.035	0.015
Bulgaria	0.001	0.001	0.002	0.004	0.008	0.012	0.021	0.032	0.040	0.018	0.024	0.027	0.029	0.028	0.036	0.041	0.046	0.022
Macedonia	0.009	0.009	0.015	0.026	0.044	0.067	0.091	0.142	0.178	0.147	0.129	0.172	0.181	0.162	0.216	0.227	0.244	0.121
Romania	0.002	0.003	0.004	0.005	0.006	0.008	0.009	0.015	0.021	0.022	0.027	0.036	0.044	0.050	0.062	0.064	0.079	0.027
Russia	0.001	0.003	0.005	0.008	0.013	0.022	0.034	0.032	0.031	0.028	0.037	0.049	0.064	0.076	0.090	0.104	0.125	0.042
Serbia	0.001	0.001	0.001	0.003	0.004	0.006	0.009	0.011	0.014	0.012	0.016	0.030	0.040	0.039	0.057	0.061	0.071	0.022
Turkey	0.014	0.019	0.035	0.057	0.087	0.103	0.131	0.140	0.166	0.164	0.203	0.263	0.246	0.265	0.323	0.377	0.499	0.182
Algeria	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
South Africa	0.053	0.060	0.074	0.096	0.121	0.098	0.093	0.107	0.129	0.139	0.163	0.167	0.136	0.136	0.157	0.196	0.235	0.127
Tunisia	0.001	0.002	0.003	0.005	0.006	0.004	0.004	0.004	0.004	0.004	0.005	0.006	0.005	0.006	0.006	0.007	0.008	0.005
Azerbaijan	0.009	0.013	0.023	0.019	0.026	0.041	0.069	0.091	0.090	0.065	0.058	0.084	0.075	0.080	0.100	0.105	0.106	0.062
China	0.027	0.027	0.033	0.037	0.054	0.087	0.131	0.186	0.316	0.411	0.411	0.627	0.794	0.890	0.922	0.974	0.998	0.407
Iran	0.005	0.007	0.008	0.011	0.016	0.021	0.021	0.022	0.020	0.017	0.033	0.035	0.037	0.043	0.051	0.061	0.073	0.028
Kazakhstan	0.001	0.001	0.003	0.008	0.012	0.017	0.022	0.026	0.031	0.033	0.043	0.096	0.087	0.101	0.111	0.100	0.104	0.047
Malaysia	0.094	0.110	0.126	0.152	0.185	0.201	0.215	0.220	0.227	0.225	0.225	0.253	0.249	0.247	0.260	0.276	0.295	0.210
Thailand	0.177	0.162	0.177	0.204	0.212	0.218	0.204	0.209	0.212	0.210	0.203	0.220	0.219	0.230	0.245	0.270	0.314	0.217
Total Average	0.027	0.033	0.038	0.045	0.054	0.061	0.069	0.076	0.092	0.093	0.097	0.126	0.127	0.134	0.151	0.167	0.190	0.093

Table 2.8: Upper middle income countries – contribution of card penetration to GDP (percentage points)

Country	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average
Argentina	0.012	0.014	0.014	0.014	0.032	0.030	0.027	0.031	0.037	0.040	0.041	0.056	0.064	0.069	0.081	0.099	0.139	0.047
Brazil	0.025	0.046	0.054	0.086	0.113	0.127	0.132	0.124	0.124	0.121	0.126	0.160	0.138	0.134	0.178	0.211	0.251	0.127
Colombia	0.040	0.042	0.039	0.045	0.055	0.072	0.072	0.067	0.074	0.068	0.063	0.070	0.066	0.072	0.079	0.095	0.115	0.067
Costa Rica	0.008	0.009	0.009	0.008	0.013	0.018	0.022	0.018	0.027	0.025	0.027	0.040	0.029	0.029	0.032	0.035	0.038	0.023
Dominican Republic	0.010	0.012	0.012	0.011	0.016	0.023	0.028	0.022	0.032	0.035	0.037	0.054	0.039	0.038	0.043	0.048	0.052	0.030
Ecuador	0.022	0.042	0.052	0.048	0.031	0.028	0.032	0.031	0.045	0.048	0.046	0.058	0.050	0.046	0.049	0.057	0.065	0.045
Mexico	0.010	0.010	0.010	0.012	0.013	0.017	0.021	0.024	0.030	0.037	0.039	0.051	0.050	0.055	0.060	0.063	0.069	0.034
Peru	0.048	0.072	0.076	0.088	0.065	0.061	0.071	0.068	0.096	0.096	0.094	0.121	0.095	0.087	0.090	0.107	0.130	0.088
Belarus	0.001	0.002	0.003	0.005	0.005	0.005	0.005	0.004	0.004	0.004	0.005	0.012	0.011	0.014	0.017	0.016	0.018	0.008
Bulgaria	0.001	0.001	0.002	0.003	0.005	0.008	0.015	0.022	0.027	0.012	0.016	0.017	0.019	0.018	0.023	0.026	0.028	0.014
Macedonia	0.007	0.006	0.011	0.019	0.034	0.054	0.073	0.114	0.140	0.114	0.102	0.132	0.137	0.120	0.159	0.163	0.170	0.091
Romania	0.002	0.002	0.003	0.004	0.005	0.006	0.007	0.012	0.016	0.016	0.020	0.026	0.032	0.036	0.044	0.046	0.049	0.020
Russia	0.000	0.001	0.002	0.004	0.007	0.011	0.017	0.016	0.015	0.013	0.018	0.027	0.033	0.037	0.045	0.054	0.074	0.022
Serbia	0.001	0.001	0.001	0.002	0.003	0.004	0.007	0.008	0.011	0.009	0.012	0.023	0.031	0.030	0.044	0.046	0.054	0.017
Turkey	0.014	0.019	0.035	0.057	0.087	0.103	0.131	0.140	0.166	0.164	0.203	0.263	0.246	0.265	0.323	0.377	0.499	0.182
Algeria	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
South Africa	0.033	0.038	0.047	0.061	0.074	0.059	0.057	0.066	0.080	0.085	0.097	0.099	0.081	0.081	0.095	0.119	0.142	0.078
Tunisia	0.001	0.001	0.002	0.003	0.004	0.003	0.002	0.002	0.003	0.003	0.003	0.004	0.003	0.004	0.004	0.005	0.008	0.003
Azerbaijan	0.007	0.010	0.016	0.013	0.017	0.026	0.040	0.038	0.031	0.021	0.019	0.036	0.030	0.030	0.040	0.044	0.049	0.032
China	0.012	0.012	0.015	0.017	0.024	0.037	0.053	0.073	0.120	0.148	0.145	0.224	0.273	0.311	0.329	0.351	0.378	0.161
Iran	0.003	0.003	0.004	0.005	0.007	0.010	0.009	0.010	0.008	0.007	0.007	0.007	0.006	0.005	0.007	0.009	0.013	0.010
Kazakhstan	0.001	0.001	0.002	0.004	0.006	0.009	0.012	0.013	0.014	0.015	0.019	0.045	0.040	0.043	0.051	0.051	0.063	0.025
Malaysia	0.039	0.046	0.055	0.070	0.083	0.090	0.095	0.097	0.101	0.102	0.101	0.124	0.119	0.117	0.127	0.141	0.153	0.096
Thailand	0.096	0.091	0.099	0.117	0.121	0.125	0.117	0.120	0.118	0.112	0.112	0.122	0.117	0.125	0.135	0.147	0.172	0.120
Total Average	0.018	0.021	0.024	0.029	0.034	0.038	0.043	0.046	0.054	0.054	0.055	0.074	0.073	0.075	0.086	0.096	0.113	0.056

Table 2.9: High income countries – contribution of card penetration to consumption (percentage points)

Country	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average
Canada	0.581	0.604	0.624	0.659	0.688	0.643	0.622	0.612	0.591	0.603	0.622	0.674	0.584	0.564	0.582	0.623	0.687	0.621
U.S.A.	0.170	0.184	0.199	0.205	0.223	0.228	0.252	0.283	0.303	0.320	0.326	0.319	0.336	0.353	0.368	0.388	0.407	0.286
Chile	0.023	0.025	0.030	0.042	0.053	0.068	0.069	0.075	0.092	0.140	0.154	0.191	0.193	0.190	0.188	0.192	0.222	0.115
Uruguay	0.008	0.009	0.012	0.015	0.036	0.064	0.072	0.071	0.085	0.086	0.082	0.094	0.094	0.065	0.065	0.063	0.068	0.058
Austria	0.044	0.059	0.086	0.107	0.123	0.107	0.105	0.114	0.119	0.115	0.114	0.124	0.138	0.135	0.152	0.153	0.160	0.115
Belgium	0.162	0.194	0.260	0.299	0.299	0.221	0.194	0.207	0.212	0.187	0.167	0.193	0.243	0.230	0.268	0.268	0.279	0.228
Croatia	0.008	0.015	0.022	0.027	0.031	0.035	0.037	0.042	0.050	0.049	0.045	0.067	0.077	0.078	0.096	0.102	0.114	0.061
Czech Republic	0.052	0.065	0.106	0.111	0.111	0.111	0.111	0.118	0.116	0.108	0.096	0.115	0.113	0.135	0.184	0.208	0.241	0.124
Denmark	0.280	0.307	0.371	0.416	0.402	0.362	0.346	0.414	0.445	0.431	0.413	0.439	0.458	0.445	0.506	0.524	0.544	0.418
Estonia	0.017	0.019	0.077	0.164	0.171	0.155	0.154	0.178	0.205	0.209	0.191	0.241	0.249	0.213	0.270	0.279	0.295	0.182
Finland	0.153	0.187	0.256	0.323	0.334	0.286	0.281	0.307	0.327	0.332	0.334	0.434	0.431	0.369	0.417	0.411	0.425	0.330
France	0.181	0.197	0.230	0.242	0.237	0.203	0.182	0.184	0.184	0.175	0.164	0.190	0.309	0.305	0.343	0.344	0.361	0.237
Germany	0.091	0.095	0.110	0.116	0.114	0.097	0.089	0.088	0.088	0.082	0.081	0.089	0.098	0.094	0.103	0.102	0.104	0.096
Greece	0.014	0.024	0.039	0.037	0.035	0.051	0.055	0.062	0.061	0.057	0.053	0.052	0.048	0.046	0.050	0.049	0.048	0.046
Hungary	0.015	0.023	0.037	0.044	0.049	0.051	0.054	0.062	0.081	0.078	0.084	0.104	0.120	0.125	0.143	0.153	0.164	0.081
Ireland	0.059	0.069	0.094	0.133	0.146	0.140	0.137	0.149	0.165	0.176	0.214	0.298	0.365	0.364	0.437	0.453	0.469	0.227
Italy	0.035	0.041	0.055	0.076	0.094	0.087	0.087	0.093	0.100	0.097	0.093	0.104	0.108	0.103	0.116	0.117	0.119	0.090
Latvia	0.022	0.037	0.059	0.059	0.060	0.076	0.079	0.085	0.089	0.096	0.094	0.123	0.132	0.109	0.138	0.142	0.152	0.091
Lithuania	0.002	0.004	0.006	0.010	0.019	0.028	0.069	0.085	0.106	0.106	0.062	0.071	0.080	0.066	0.082	0.085	0.088	0.057
Netherlands	0.201	0.242	0.297	0.339	0.349	0.302	0.284	0.292	0.313	0.298	0.292	0.320	0.337	0.320	0.355	0.352	0.358	0.309
Norway	0.549	0.609	0.717	0.789	0.714	0.652	0.620	0.619	0.606	0.553	0.557	0.621	0.593	0.563	0.596	0.603	0.652	0.624
Poland	0.006	0.010	0.024	0.034	0.037	0.045	0.054	0.057	0.062	0.069	0.071	0.097	0.105	0.113	0.145	0.163	0.174	0.075
Portugal	0.249	0.299	0.409	0.436	0.464	0.408	0.390	0.408	0.421	0.386	0.377	0.441	0.452	0.441	0.481	0.450	0.447	0.409
Slovakia	0.011	0.017	0.024	0.021	0.028	0.032	0.034	0.041	0.088	0.093	0.086	0.103	0.113	0.100	0.136	0.150	0.163	0.073
Slovenia	0.012	0.016	0.035	0.062	0.069	0.065	0.069	0.076	0.083	0.080	0.078	0.079	0.082	0.074	0.088	0.090	0.092	0.068
Spain	0.045	0.054	0.065	0.076	0.118	0.105	0.102	0.107	0.110	0.102	0.096	0.103	0.110	0.109	0.126	0.132	0.139	0.100
Sweden	0.144	0.171	0.212	0.305	0.418	0.327	0.298	0.404	0.415	0.402	0.429	0.501	0.485	0.454	0.482	0.468	0.502	0.377
Switzerland	0.163	0.232	0.402	0.494	0.472	0.346	0.273	0.308	0.320	0.295	0.252	0.269	0.278	0.229	0.268	0.279	0.293	0.304
UK	0.202	0.232	0.268	0.315	0.328	0.334	0.316	0.325	0.336	0.321	0.358	0.444	0.461	0.467	0.493	0.524	0.518	0.367
Israel	0.107	0.123	0.123	0.130	0.148	0.155	0.170	0.184	0.190	0.178	0.160	0.179	0.177	0.171	0.187	0.179	0.182	0.161
UAE	0.004	0.010	0.021	0.061	0.068	0.081	0.077	0.076	0.070	0.067	0.062	0.086	0.073	0.071	0.075	0.071	0.068	0.061
Hong Kong	0.247	0.283	0.315	0.348	0.390	0.439	0.483	0.535	0.546	0.526	0.527	0.523	0.564	0.587	0.593	0.614	0.636	0.480
Japan	0.125	0.114	0.118	0.138	0.149	0.152	0.155	0.170	0.195	0.218	0.209	0.203	0.197	0.182	0.185	0.228	0.235	0.175
Singapore	0.250	0.279	0.340	0.356	0.364	0.369	0.388	0.434	0.466	0.483	0.475	0.502	0.498	0.473	0.485	0.511	0.547	0.425
South Korea	0.374	0.333	0.291	0.399	0.637	0.644	0.608	0.570	0.550	0.573	0.724	0.874	0.815	0.832	0.891	0.923	0.940	0.646
Australia	0.376	0.479	0.526	0.662	0.752	0.707	0.603	0.586	0.612	0.597	0.536	0.684	0.594	0.558	0.555	0.585	0.681	0.594
New Zealand	0.496	0.591	0.809	0.926	0.832	0.710	0.674	0.657	0.753	0.615	0.671	0.807	0.611	0.529	0.590	0.618	0.617	0.677
Total Average	0.148	0.169	0.207	0.243	0.258	0.240	0.232	0.245	0.258	0.251	0.253	0.291	0.290	0.277	0.304	0.313	0.330	0.254

Table 2.10: High income countries – contribution of card penetration to GDP (percentage points)

Country	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average
Canada	0.330	0.339	0.340	0.362	0.385	0.358	0.340	0.331	0.320	0.328	0.337	0.385	0.330	0.312	0.322	0.346	0.383	0.344
U.S.A.	0.110	0.120	0.131	0.137	0.150	0.154	0.170	0.190	0.203	0.215	0.222	0.218	0.229	0.243	0.253	0.266	0.278	0.193
Chile	0.015	0.016	0.019	0.028	0.035	0.043	0.042	0.044	0.051	0.079	0.094	0.114	0.114	0.116	0.118	0.123	0.143	0.071
Uruguay	0.006	0.007	0.009	0.012	0.026	0.045	0.050	0.049	0.060	0.061	0.057	0.063	0.063	0.043	0.043	0.042	0.046	0.041
Austria	0.024	0.032	0.046	0.058	0.066	0.058	0.057	0.062	0.064	0.060	0.059	0.066	0.075	0.072	0.081	0.083	0.086	0.062
Belgium	0.086	0.101	0.136	0.158	0.154	0.114	0.098	0.104	0.106	0.093	0.085	0.099	0.125	0.118	0.139	0.138	0.144	0.117
Croatia	0.005	0.009	0.014	0.017	0.020	0.021	0.022	0.025	0.029	0.029	0.026	0.039	0.045	0.046	0.058	0.062	0.069	0.037
Czech Republic	0.026	0.033	0.054	0.055	0.055	0.056	0.055	0.057	0.055	0.050	0.046	0.056	0.056	0.066	0.091	0.103	0.117	0.061
Denmark	0.141	0.150	0.174	0.194	0.189	0.171	0.165	0.198	0.211	0.205	0.196	0.214	0.219	0.215	0.247	0.256	0.264	0.200
Estonia	0.009	0.011	0.042	0.090	0.095	0.086	0.086	0.098	0.112	0.111	0.103	0.129	0.130	0.107	0.138	0.143	0.153	0.098
Finland	0.075	0.091	0.122	0.154	0.162	0.143	0.139	0.153	0.164	0.162	0.166	0.228	0.230	0.198	0.228	0.226	0.235	0.168
France	0.098	0.107	0.125	0.132	0.130	0.111	0.100	0.101	0.102	0.096	0.091	0.107	0.174	0.170	0.191	0.191	0.200	0.131
Germany	0.051	0.054	0.063	0.066	0.065	0.056	0.051	0.051	0.050	0.045	0.045	0.051	0.055	0.052	0.058	0.057	0.058	0.055
Greece	0.010	0.016	0.026	0.025	0.024	0.033	0.036	0.042	0.040	0.038	0.036	0.036	0.034	0.032	0.035	0.035	0.035	0.031
Hungary	0.008	0.012	0.020	0.024	0.027	0.029	0.030	0.034	0.043	0.042	0.045	0.055	0.063	0.066	0.077	0.081	0.086	0.044
Ireland	0.029	0.033	0.045	0.061	0.066	0.063	0.061	0.066	0.073	0.080	0.104	0.141	0.172	0.167	0.197	0.204	0.207	0.104
Italy	0.021	0.025	0.033	0.045	0.056	0.052	0.052	0.055	0.060	0.057	0.056	0.063	0.066	0.063	0.071	0.071	0.072	0.054
Latvia	0.014	0.024	0.037	0.036	0.037	0.047	0.048	0.052	0.057	0.058	0.055	0.074	0.083	0.067	0.083	0.086	0.092	0.056
Lithuania	0.002	0.002	0.004	0.007	0.012	0.018	0.045	0.055	0.069	0.068	0.040	0.048	0.051	0.041	0.051	0.053	0.056	0.037
Netherlands	0.101	0.122	0.149	0.169	0.175	0.151	0.140	0.142	0.146	0.137	0.132	0.145	0.151	0.144	0.160	0.159	0.160	0.147
Norway	0.266	0.287	0.304	0.337	0.320	0.298	0.275	0.260	0.244	0.224	0.214	0.262	0.249	0.227	0.236	0.243	0.267	0.265
Poland	0.004	0.007	0.015	0.022	0.024	0.029	0.035	0.036	0.039	0.042	0.044	0.060	0.064	0.069	0.089	0.099	0.111	0.047
Portugal	0.157	0.189	0.259	0.273	0.291	0.257	0.248	0.262	0.272	0.250	0.250	0.285	0.297	0.290	0.319	0.295	0.295	0.264
Slovakia	0.006	0.010	0.013	0.012	0.016	0.018	0.020	0.023	0.050	0.052	0.049	0.062	0.066	0.058	0.078	0.085	0.093	0.041
Slovenia	0.007	0.009	0.020	0.035	0.038	0.036	0.037	0.041	0.043	0.041	0.040	0.043	0.046	0.041	0.050	0.049	0.049	0.037
Spain	0.027	0.032	0.039	0.045	0.069	0.060	0.059	0.062	0.063	0.058	0.054	0.058	0.063	0.063	0.074	0.077	0.082	0.058
Sweden	0.067	0.080	0.100	0.141	0.194	0.152	0.137	0.186	0.186	0.178	0.192	0.236	0.225	0.210	0.224	0.218	0.233	0.174
Switzerland	0.096	0.137	0.234	0.287	0.275	0.202	0.159	0.177	0.178	0.160	0.136	0.148	0.151	0.124	0.146	0.152	0.249	0.177
UK	0.129	0.150	0.173	0.204	0.213	0.214	0.203	0.209	0.214	0.204	0.230	0.287	0.297	0.300	0.319	0.340	0.334	0.236
Israel	0.058	0.066	0.066	0.072	0.083	0.087	0.096	0.103	0.107	0.102	0.093	0.103	0.102	0.098	0.106	0.101	0.104	0.091
UAE	0.004	0.009	0.017	0.038	0.043	0.049	0.048	0.044	0.041	0.041	0.038	0.047	0.043	0.037	0.036	0.036	0.039	0.039
Hong Kong	0.152	0.170	0.185	0.208	0.226	0.252	0.283	0.308	0.315	0.313	0.317	0.320	0.346	0.371	0.383	0.406	0.422	0.291
Japan	0.070	0.065	0.067	0.079	0.086	0.088	0.089	0.098	0.113	0.125	0.122	0.122	0.117	0.110	0.112	0.140	0.154	0.103
Singapore	0.098	0.115	0.141	0.162	0.168	0.167	0.162	0.170	0.173	0.172	0.183	0.188	0.177	0.169	0.177	0.187	0.201	0.167
South Korea	0.169	0.158	0.156	0.218	0.354	0.345	0.312	0.298	0.290	0.300	0.379	0.451	0.410	0.424	0.458	0.470	0.474	0.333
Australia	0.217	0.279	0.305	0.389	0.437	0.415	0.351	0.339	0.348	0.338	0.302	0.372	0.329	0.301	0.298	0.322	0.378	0.336
New Zealand	0.300	0.349	0.469	0.524	0.479	0.408	0.388	0.383	0.440	0.349	0.387	0.467	0.352	0.307	0.345	0.350	0.383	0.393
Total Average	0.081	0.093	0.114	0.133	0.142	0.131	0.125	0.131	0.137	0.133	0.135	0.157	0.156	0.148	0.163	0.169	0.182	0.137

CHAPTER 3: SHIFTING FROM CASH TO ELECTRONIC PAYMENTS – ASSESSMENT AND POLICY INTERVENTIONS IN THE ALBANIAN PAYMENTS ECOSYSTEM

3.1. Motivation and Objectives

The first two chapters of this dissertation explored the cost efficiency of electronic payment instruments and the macroeconomic contribution of the use of payment cards to consumption and GDP. The evidence in both chapters suggests that an economy and its actors are better off operating under an electronic payment system. The following questions arise: if a country is indeed convinced by the evidence, has achieved internal consensus, and is willing to move toward electronic payments, how can it accelerate the transition in practice? What are the mechanisms, policy interventions, regulations, and incentives that it needs to deploy to drive changes on the ground? Which actors will be responsible for the changes? These are some of the questions explored in Chapter 3 in the context of Albania.

As shown in Figure 3.1, a national payment system typically includes eight pillars that can be classified into three broad categories. Depending on how advanced payment systems are in a country and what the national objectives are, the focus and emphasis for policies to enhance the transition to electronic payments will vary between the pillars for different countries at different points in time. The focus of Chapter 3 is on the two pillars of cross border payments and retail payments in Albania. They are classified as part of the Non-Systemically Important Systems, Instruments, and Services—these pillars are economically important and susceptible to policy influence (in the good sense), but they are not systemic in the sense that they are not directly linked to macroeconomic parameters. In the context of retail payments, the usage of

payment cards (i.e. debit and credit cards) is assessed, and in the context of cross-border payments, the market for international remittances is assessed, with emphasis on cost competitiveness and transparency.

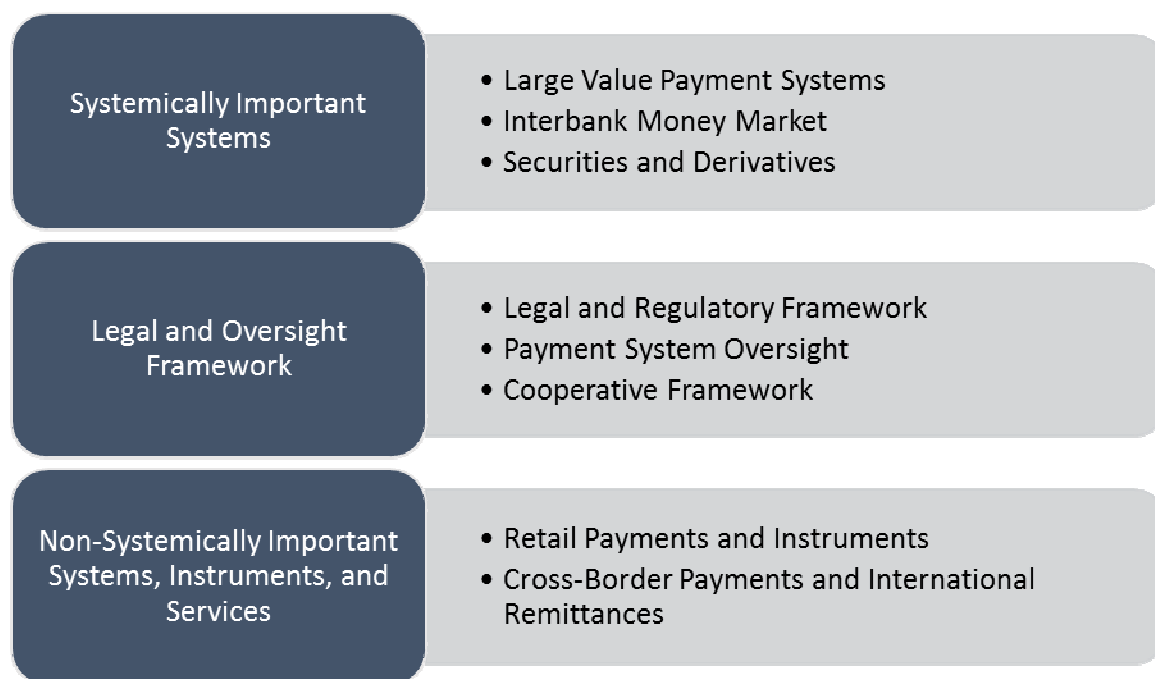


Figure 3.1: Pillars of a national payments system
Source: *Payment Systems Development Group, World Bank*

Retail payments are relevant for all stakeholders in a society and affect people's lives on a daily basis. These transactions refer to frequent payments of relatively low value: the purchase of a car or a house would not be considered a retail payment, but the purchase of clothing or food would. Moreover, in the region of the Balkans, Albania ranks last in terms of payment cards in circulation and POS terminals (Table 3.1). Cash is still prevalent in the country, leading to high social costs. The results from the previous chapters suggest that increased payment card usage would bring about savings and benefits to both individual stakeholders and to the economy as a

whole. Further, the market of payment cards has also been indicated as an area of priority and potential interventions by the central bank of Albania (known as the Bank of Albania/BoA).⁴³

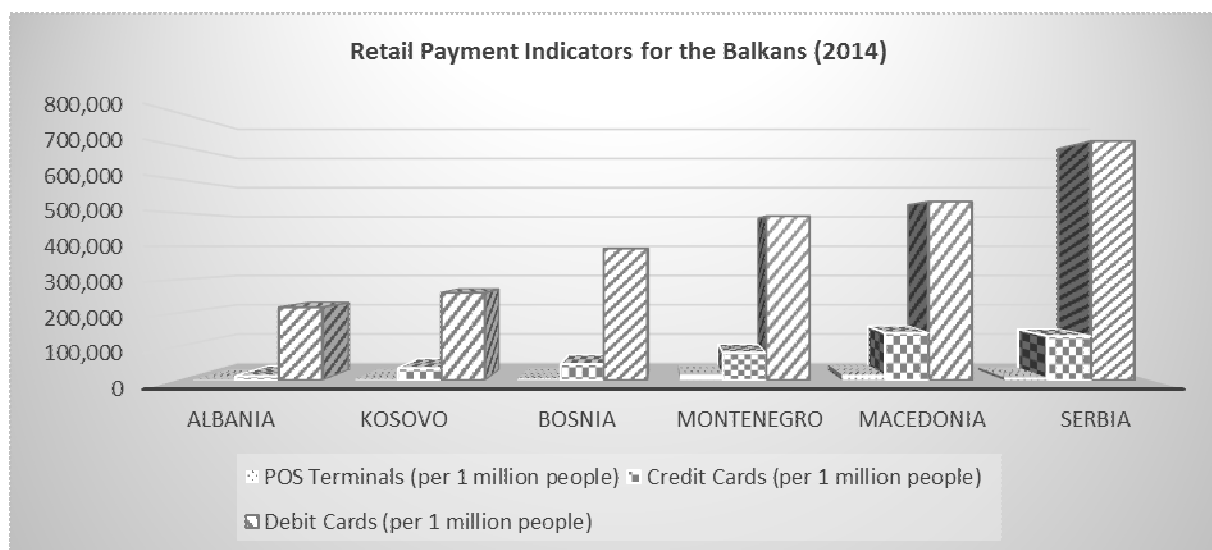


Figure 3.2: POS terminals and debit/credit cards in circulation across Balkans for 2014

Source: Central Bank of Kosovo

The main objective of the analysis in the context of retail payments is to describe and assess the development of the retail payment market in Albania, and to provide in-depth diagnostics of the status quo while identifying barriers that have hindered the further usage of cards in Albania. Indeed, some of the statistics⁴⁴ are telling: only 22 percent of Albanian adults own a debit card; 38 percent of those adults with access to a transaction account do not own a debit card; 79 percent of adults with a debit card use it exclusively for cash withdrawal. The analysis is then used to suggest a series of policies to increase the usage of payment cards in Albania, relying on lessons from other countries, and on the professional experience of the

⁴³ Global Payments Survey (World Bank).

⁴⁴ Findex Database on Albania (World Bank). <http://microdata.worldbank.org/index.php/catalog/1120>

author in the field of payments. No such case study has been undertaken before for Albania, but more broadly, the results and policy suggestions will be of general relevance to developing countries.

The cost of sending/receiving remittances is still high in Albania, between 7-8 percent of the value of the funds to be transferred (depending on the source country),⁴⁵ compared to the World Bank's goal of 5 percent. Indeed, cost reduction likely would lead to both more remittances coming in to the country and a greater value of those funds accruing to the intended recipients.⁴⁶ This is vital for a country such as Albania where almost one million Albanian nationals have migrated outside the borders of the country (equal to one third of the population living within the borders as of today), and for which remittances constitute a significant part of the economy — almost 8 percent of country's GDP. Even with the global recession that followed after 2008, remittance flows toward Albania did not change significantly. One of the issues with the remittances market in Albania is that informal channels are still prominent, driving costs up.

The analysis here provides an assessment of the remittances market in Albania in terms of players, cost structure, and dynamics, and identifies the drivers of the high costs. It next provides recommendations on potential policy interventions that would increase competition, lead to the introduction of new products and services to compete with the use of cash and informal channels, drive down prices and commission fees, and provide more transparency for the end-users — Albanians receiving money from overseas.

The methodology relies on a number of sources: desk research, including country documents from domestic and international institutions; Bank of Albania and World Bank surveys; the author's expertise and experience in the area of retail payments; the author's own

⁴⁵ Remittance Prices Worldwide (World Bank). <https://remittanceprices.worldbank.org/en/countrycorridors>

⁴⁶ Gibson et al (2006).

observations from field trips to Albania (native country); interviews with representatives from the Bank of Albania and Albanian Association of Banks; and a focus group with consumers (10 consumers of different socio-demographic backgrounds)⁴⁷.

3.2. Context and Background

Albania is located in the Western Balkans – Southern Europe, and has a population of approximately three million people spread over 29,000 square kilometers, with density comparable to that of Wisconsin, in the United States. The country is divided into 12 administrative regions, with approximately 54 percent of the population in urban areas. Albania has a young population and labor force, with the median age being 32 years. It is considered an upper middle income country according to the World Bank's classification, and its GDP per capita for 2014 was estimated at USD 3,995 (in nominal terms) while the real GDP growth was estimated at 1.9 percent for the same year (in the Western Balkans, Albania's growth rate has been lower than Kosovo and Macedonia, but higher than Montenegro and Serbia).⁴⁸ The main economic sectors of the country include: agriculture; tourism and services; construction; transport; telecommunication; manufacturing; textile and clothing; food and tobacco; energy and mining. The average unemployment rate was 17.5 percent in 2014 while the share of the population living below the international poverty rate (USD 1.25) was estimated at approximately 15 percent.

In the context of financial infrastructure, free markets emerged in 1991 in Albania after the fall of the communist regime. This was also the time when the private banking system started

⁴⁷ Table 3.7 in Appendix 3 lists some socio-demographic characteristics of the focus group consumers.

⁴⁸ Sources of socio-demographic/economic data: CIA World Factbook and World Development Indicators (World Bank Group).

to develop, and along with it, payment systems. Three time periods can be distinguished in the post-communist financial system of Albania.

1991 – 1995 (Free Markets and the Emergence of Commercial Banks): Free and democratic elections took place in Albania in the early ‘90s after almost 50 years under a communist regime. The democratically elected government at the time requested assistance from international institutions such as the International Monetary Fund (IMF), World Bank and the International Finance Corporation (IFC) to operate in a market environment, develop the banking sector, and achieve sustained macroeconomic stability (there was high inflation, and issues of privatizations had to be handled). At the time, the government started to attract foreign investors in the banking sector, with private banks such as the Italian-Albanian bank, Tirana Bank (part of the Bank of Piraeus group based in Greece), and Dardania Bank (a private domestic bank) beginning to operate in the country. However, almost 90 percent of deposits remained controlled by state banks.⁴⁹ The payment system was entirely based on cash, with the majority of currency being in circulation rather than in banks.⁵⁰ The completion time for payment transactions between accounts held in the same state-owned banks was 5-6 days, which made it quite unattractive for citizens to deal with banks.⁵¹ Toward the end of 1995, the currency in circulation/deposit ratio was approximately 64 percent,⁵² meaning Albanian citizens were holding cash and surely looking for alternative investment opportunities.

1996 – 1997 (“Pyramid Schemes”): This time period was characterized as a highly eventful period in the post-communist financial, political and social history of Albania. Since 1994, the Albanian government had tolerated the operation of informal credit markets and

⁴⁹ Bushati (2008), p.21.

⁵⁰ Naqellari et al (2014), p.332.

⁵¹ Jarvis (1999), p.5.

⁵² Ibid.

financial firms/institutions, which boomed between 1996 and 1997. The main premise of those financial institutions was to offer unrealistically high rates of return to depositors, reaching up to 100 percent in one month. These were effectively forms of a Ponzi scheme that went by the term “pyramid schemes” in Albania.⁵³ Most such firms did not have any capital and relied on new deposits to pay the rate of return to earlier investors.⁵⁴ There were six main such firms around Albania, leading to a race of increasing interest rates through the process of competing with each other and attracting new deposits to maintain their operations. There were a number of reasons that those firms flourished for some time in the country: Albanians had a lot of cash accumulated that was not invested in formal banks; the government turned a blind eye and did not monitor and regulate them (despite the repeated warnings of the IMF and the World Bank) until the damage was already done; the lack of financial literacy which characterized a nation emerging from a centralized system and that did not fully understand the principles of capitalism. Almost two million Albanians had deposited money into the “pyramid schemes” by the first half of 1996, an unimaginable number for a country with a three million population.⁵⁵ The firms collected almost USD 1.2 billion before they eventually went bankrupt, one after the other, within a matter of days, in the beginning of 1997.⁵⁶ Most of the deposits, which had ended up in banks outside Albania, were never recovered, while some assets were frozen and taken under state control. Most of the executives of the firms were imprisoned. However, few people managed to get back their deposits.⁵⁷ This sparked political upheavals in the country, which led to clashes, the collapse of the government, prolonged anarchy and ultimately to the United

⁵³ Ibid, p.9.

⁵⁴ Such schemes are considered short-lived as comes a time when people stop depositing and therefore, they cannot pay back the rate of return to all existing depositors, and eventually, depositors lose even their initial investment.

⁵⁵ Jarvis (1999), p15.

⁵⁶ Shingjergji (2012), p.83.

⁵⁷ As a matter of fact, there are still legal battles going on between the Albanian government and individuals seeking to recover their deposits.

Nations sending peace keeping troops to restore order. The rise and fall of “pyramid schemes” in Albania is important in the context of the banking sector and payment systems because it left a negative legacy to the Albanian people for the formal financial sector. Almost every single household in Albania lost money, and many Albanians, even today, distrust banks.

1998 – Present (Complete Privatization of Commercial Banks and Development of Payment Systems): The “pyramid schemes” were an awakening call for Albania and after law and order was restored and a new government was elected, the parliament passed new laws and regulations to monitor the banking sector. This period also marked the complete privatization of commercial banks. In addition to mergers and acquisitions, new international players entered the banking market in Albania. Raiffeisen, an Austrian banking group, completed the largest acquisition of one of the previously state-owned banks. The American Bank of Albania, along with additional Greek banks such as Alpha Bank, Emporiki, and National Bank of Greece, among others, started operating in the country. Indeed, the new regulatory framework, along with the new structure of the banking system, dominated by foreign banks, provided positive signals to the market and increased the level of comfort for the depositors. The foreign banks operating in Albania did not just guarantee safe deposits, but also brought in new technology, products, services, and know-how to accommodate the local needs.

As of early 2016, 16 private commercial banks operate in Albania, with branches across the country, three of which are domestically-owned while the rest have foreign capital (for a complete list of commercial banks in Albania see Table 3.8 in Appendix 3). Commercial banks are represented by the Albanian Association of Banks. There are 21 non-bank financial institutions in the country, 333 foreign exchange bureaus, 2 unions of savings and credit associations, and 121 savings and credit associations. The Bank of Albania also plays an

important part in the banking context and payment systems in the country. Specifically, the Bank of Albania has three roles pertaining to payment systems.

Operational Role: The Bank of Albania provides settlement means for payments, including a large value payment system in domestic currency and an automated clearing system for the netting and clearing of payments.

Oversight Role: The Bank sets standards and regulations for the healthy cooperation and competition of players in the payment space.

Catalyst Role: It promotes efficiency across payment systems and payment instruments, by providing space to innovative products and services to come to the domestic market.

The Albanian authorities have undertaken several legal and administrative initiatives to reduce cash transactions in the economy, while also aligning their payment regulatory framework with that of the European Union (EU). Albania is an EU candidate country which is soon expected to officially start the negotiation process by opening the different accession chapters.

The National Payments Committee (NPC) was launched in Albania in October 2015, with the Bank of Albania spearheading this initiative. The essence is to bring the different actors together such as the Bank of Albania, various government agencies, consumer advocacy groups, and commercial banks, to facilitate discussions, keep up with new technologies, and incorporate new regulations that would foster further innovation in the retail payment space in Albania.⁵⁸

⁵⁸ National Committee on Payment Systems holds inaugural meeting (Bank of Albania).
http://www.bankofalbania.org/web/PRESS_RELEASE_7334_2.php?kc=0,26,0,0,0

The year of 2015 was also when the Bank of Albania licensed the operation of M-PESA Albania, a mobile money operator.⁵⁹ The concept of mobile money did not exist in Albania before this initiative. The idea behind the licensing was to expand financial inclusion for the unbanked, those that do not have or do not meet the requirements to open and maintain a bank account at a commercial bank. Mobile money is fundamentally value stored in a mobile phone through a specific platform that does not require a smart phone, and that can be exchanged for cash, and vice versa, at designated physical points. Users can transfer money to other M-PESA account holders, or make payments to private companies and government agencies for various transactions. M-PESA has been particularly successful in Kenya, primarily due to the large rural-urban migration, through which migrants working in cities use this scheme to send money back to their families in the rural areas. Across the years, there have also been modifications in laws to reduce cash transactions, modernize payment procedures, and foster innovation in the payment market in Albania.

3.3. Assessment of the Retail Payments Market

3.3.1. Debit and Credit Cards

Even though paper-based payment instruments are still predominant in the Albanian market, in the recent years there has been a shift toward electronic payment instruments. This has been particularly the case in the last five years due to the accumulation of “bad” loans, with banks shifting their focus from lending to payments services and products as a stream of profit.

⁵⁹ M-PESA in Albania.

http://www.vodafone.al/vodafone/Vodafone_Albania_receives_the_license_for_mobile_money_services_in_Albania_4170_2.php

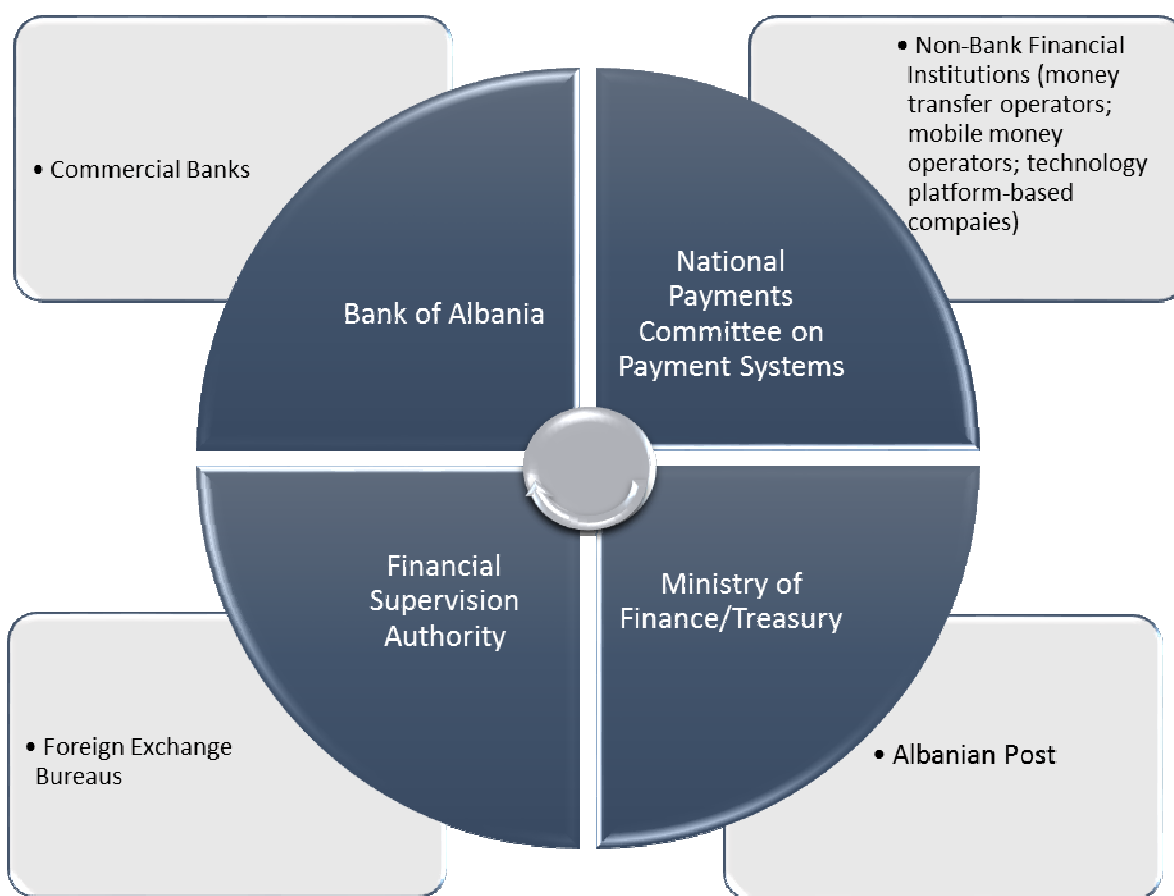


Figure 3.3: Actors in the Albanian retail payments market

In countries like Albania, where the modernization of payment systems started in the early '00s, the transition has been from cash to card payments, skipping the use of checks (which has been a transitory step for countries which started the modernization even earlier, such as the UK), while for lower income countries (such as Kenya) in which the modernization started in the late '00s, the transition is even skipping payment cards and moving to mobile money. Statistics on various indicators associated with debit and credit cards have been gathered by Bank of Albania and the Albanian Association of Banks, starting from 2004, while more detailed statistics on all payment instruments (except for cash) exist since 2008.

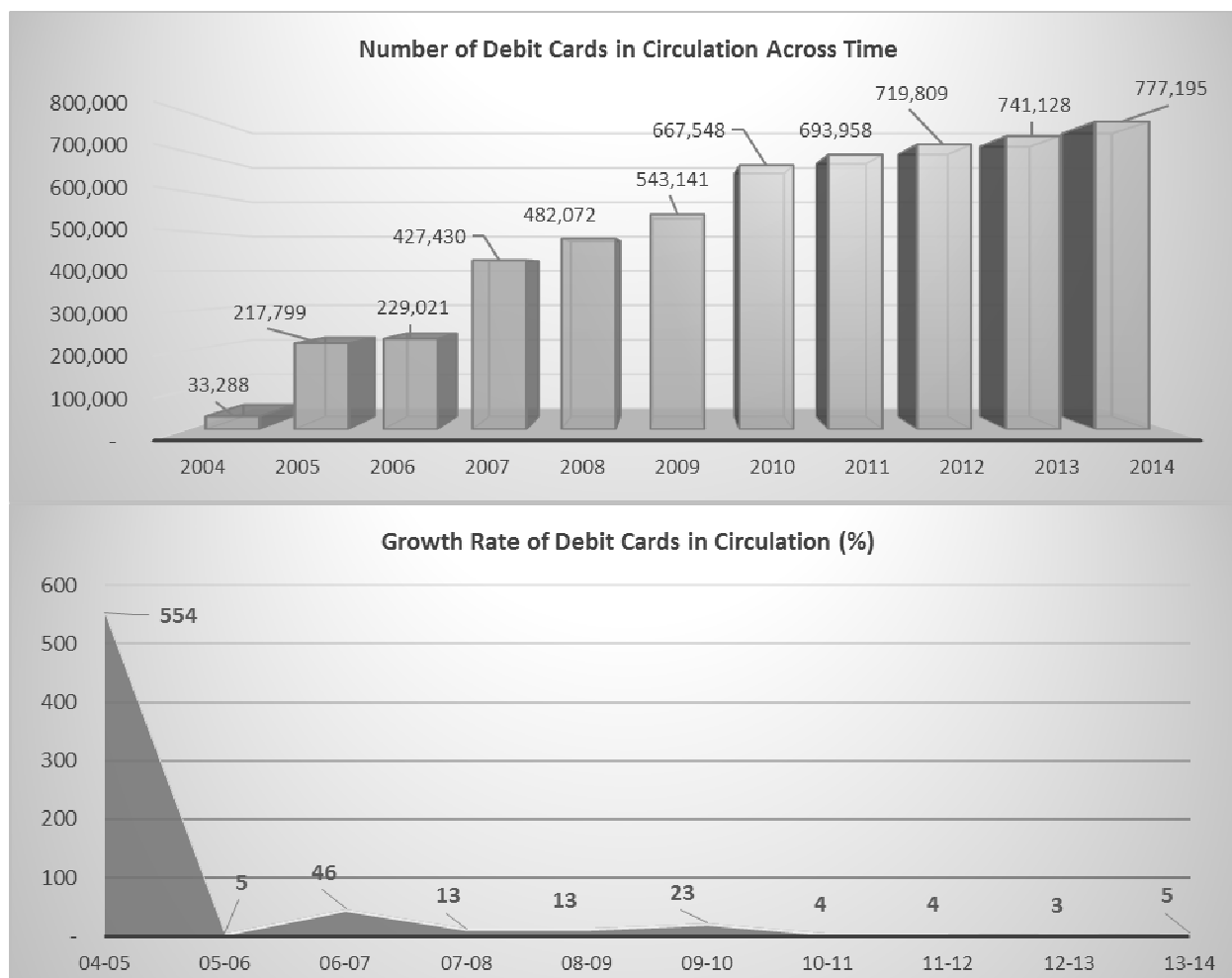


Figure 3.4: Debit card statistics across time

Source: Bank of Albania and author's calculations

As Figure 3.4 above indicates, there has been an impressive growth in the number of debit cards in circulation over the last 10 years in Albania. Even in absolute numbers, the evidence is strong, since in 2014, there were almost 800,000 debit cards in circulation, a significant number for a country with three million people. However, this statistic does not necessarily translate into usage, as shown later.

The growth rate is particularly striking between 2004 and 2005, which is partially explained by the entrance of more commercial banks in the domestic financial sector, hence

issuing more cards. Moreover, this was the time period when the public administration mandated that all public employees open a bank account (also known as “salary account” among the Albanian audience), to receive their salary through a direct credit transfer. Thus, as more public employees opened bank accounts, they would automatically be offered a debit card along with the account, increasing the number of cards in circulation. After this anomaly, the growth rate, although always positive, has decelerated to lower and stable levels, reaching an average of 4 percent overall the last five years. In fact, the growth has been moderate, if not weak, and this is an observation that was also acknowledged by the Albanian Association of Banks during an interview with their representative. This weak growth does not seem to follow the rapid increase in other technological infrastructure in Albania, although one has to also recognize the impact of the global financial crisis, which shook the trust of investors and consumers/businesses in the banking system, even though Albania was not exposed to a large degree to global financial markets.

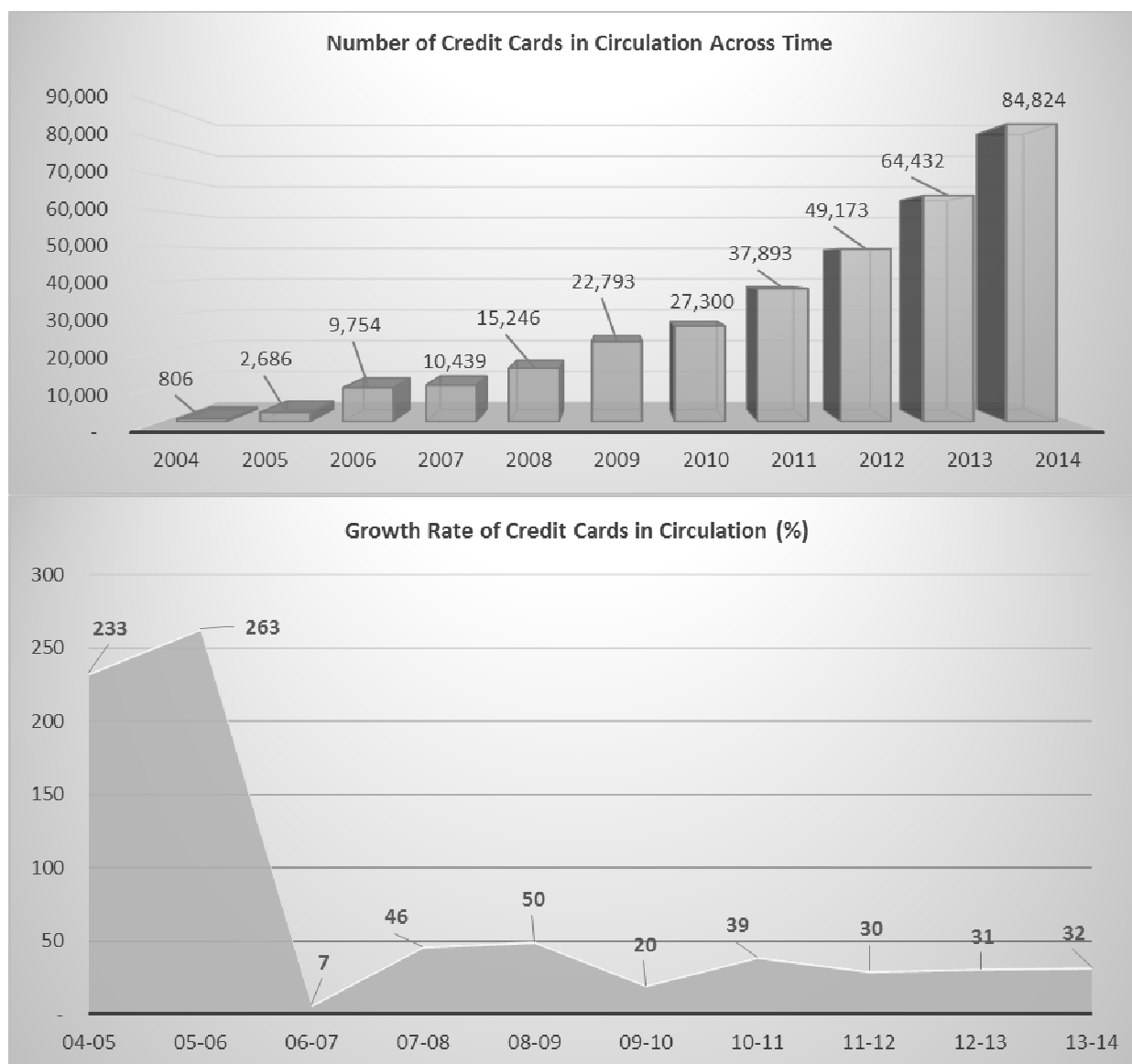


Figure 3.5: Credit card statistics across time

Source: Bank of Albania and author's calculations

The evolution in the market for credit cards indicates a different pattern compared to that of debit cards (Figure 3.5). In absolute terms, credit cards in circulation are fewer than debit cards. This should not come as a surprise because of the fundamental differences of the two. A credit card guarantees the extension of a credit line to the user, while a debit card is linked to a

user's own account. Moreover, there are more requirements in terms of obtaining and maintaining a credit card (e.g. certain income threshold, annual fees), which go beyond having a bank account (the only prerequisite for a debit card). Hence, the multiple prerequisites exclude many consumers from obtaining a credit card.

The number of credit cards in circulation also demonstrates positive growth, especially in the first three years. With the exception of 2006 to 2007, the growth rate of issued credit cards has been much higher than the equivalent for debit cards, averaging a 30 percent annual rate. This shows that the demand for credit cards has been more consistent, and higher in percentage terms than that for debit cards. It is hard to pin down the specific factors that explain the high growth rates of credit cards in circulation in Albania. Socio-economic indicators have not changed in any drastic way in the country, and it cannot be argued that more people fulfil the requirements needed to obtain a credit card. However, there have been some decreases in credit card related fees (i.e. annual fees and overdraft fees) that might have potentially impacted demand for credit cards. Another reason might be related to political developments. In 2010, the European Commission and the European Parliament granted Albanians (along with other non-EU Balkan citizens) the right to travel and visit visa-free all Schengen⁶⁰ countries in Europe. This provision increased the number of Albanian visitors to European countries. More Albanian visitors started using (hence, applying for) foreign currency credit cards issued in Albania when traveling to other European countries.

The number of cards (debit and credit) in circulation does not tell the entire story, since a card in the hands of a user does not translate into actual usage. Statistics on the usage also have to be explored. The Bank of Albania provides payment usage statistics by instrument since 2008.

⁶⁰ It consists of 26 European countries which allow free movement within their territories (no internal borders).

The left-hand side graphs of Figure 3.6 below show the number of cards in circulation versus the number of card payments (in exchange for goods and/or services, excluding cash withdrawals) from 2008 to 2014. The card usage ratio is then derived in the right-hand side graphs, by dividing the number of annual card payments by the number of cards in circulation. In essence, the card usage ratio indicates the average number of annual payments made by a card holder.

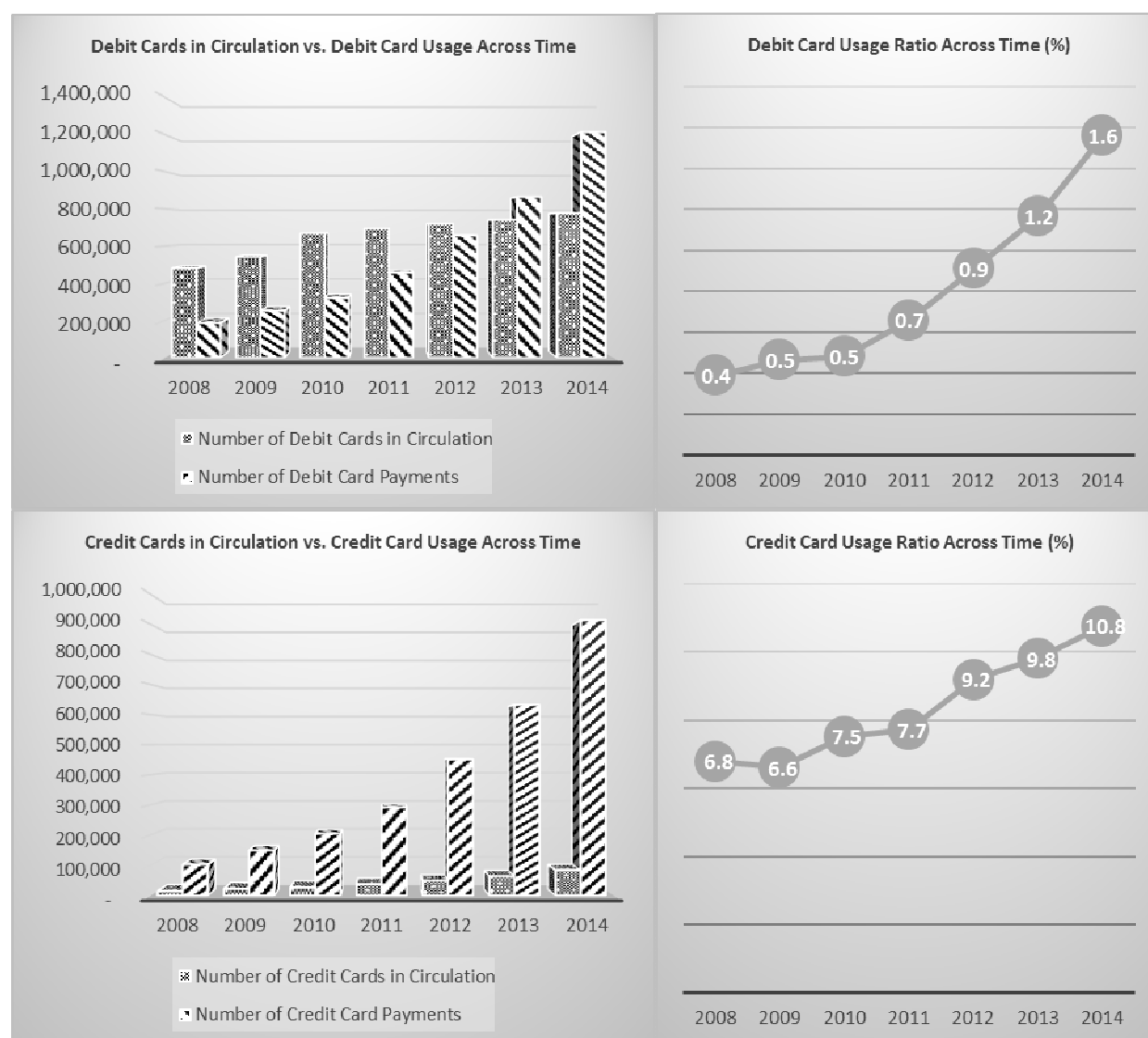


Figure 3.6: Cards in circulation versus card usage across time

Source: Bank of Albania and author's calculations

The first thing that stands out is that it was not until 2013 that the debit card usage ratio exceeded 1. In other words, before 2013, there were more debit cards in circulation than debit card payments in Albania. On average, a debit card holder made less than a payment annually using the debit card before 2013. Even though the situation was reversed in 2013, the change has been minor. For 2013, the debit card usage ratio was 1.2, while for 2014, 1.6. This metric is quite informative because it reveals that the issue with respect to debit cards in Albania is the extremely low usage. The low usage levels might also be driven by the weak demand for new debit cards across the years. The fact that on average, a debit card holder made 1.6 payments during 2014 should serve as a basis for policymakers to explore how to further incentivize debit card holders to actually use their cards for payments.

Albanians are not averse to plastic: the usage pattern for credit cards displays high levels of usage. The high growth rates observed in the number of credit cards in circulation have also been accompanied by strong usage, with the usage ratio for credit cards having fluctuated between 6 and 11, roughly, since 2008. For instance, in 2008, on average, a credit card holder made 6.8 credit card payments, while in 2014, the equivalent average was 10.8. These are considerably higher usage ratios than with debit cards. The usage ratios could be indicative of the fact that credit card holders are more “loyal” users, of higher socio-economic status and education level.⁶¹

⁶¹ A number of international studies have shown that there is some correlation between socio-demographics and usage of payment cards. The impact of socio-demographic and education factors on the usage of payment cards in Albania is further explored in the following sections.

3.3.2. Payment Cards vs. Other Payment Instruments

It is also worth exploring the share of debit and credit card payments among all payment instruments (paper-based and electronic, excluding cash). Overall, paper-based credit transfers occupy a high share of the entire payments pie, as shown in Table 3.1. While in 2008, debit and credit card payments were responsible for 2 percent and 1 percent of all payments, respectively, the equivalent numbers in 2014 were 10 percent and 8 percent. Indeed, in 2014, debit card payments and credit cards payments occupied the second and third largest shares of all payments in Albania. The share lost from paper-based credit transfer seems to have been gained by payment cards, since electronic credit transfers and checks have almost no change, while there is a drop in direct debits. The statistics show that payment cards prevail within electronic instruments, and that they primarily compete with paper-based credit transfers and cash (not reflected here).

Table 3.1: Percentage volume of transactions by payment instrument across time (excluding cash)

	2008	2009	2010	2011	2012	2013	2014
Paper-Based Payment Instruments							
Paper-Based Credit Transfers	87%	80%	79%	78%	75%	73%	70%
Checks	2%	1%	1%	1%	1%	1%	1%
Electronic Payment Instruments							
Direct Debits	6%	11%	11%	10%	10%	7%	7%
Electronic Credit Transfers	2%	2%	2%	2%	2%	3%	4%
Debit Card Payments	2%	4%	4%	5%	7%	9%	10%
Credit Card Payments	1%	2%	3%	4%	5%	7%	8%
Total							
Total	100%	100%	100%	100%	100%	100%	100%

Source: Bank of Albania

Table 3.2 further breaks down the use of debit and credit cards (in aggregate) into categories, to isolate the actual payments at the point of sale; this is important since cards

(primarily debit cards) can be used for other purposes such as cash withdrawals, which do not necessarily involve the purchase of goods/services. Indeed, the numbers are striking. In 2008, card payments at the point of sale accounted for only 3.5 percent of all transactions, while in 2014, they accounted for 11 percent. Despite the increase, this share is still negligible compared to the share of ATM cash withdrawals, which accounted for 96.5 percent of activity in 2008 and 89 percent in 2014. Not only is the usage of payment cards low in Albania, but at an even more micro level, when holders use them, they do not use them for actual purchases, but primarily for cash withdrawals, which in essence, turns them into a cash-alike instrument and the benefits they have as electronic instruments do not get utilized.

Table 3.2: Volume of card transactions by category across time

	2008	2009	2010	2011	2012	2013	2014
ATM cash withdrawals	7,910,609	8,717,982	9,877,583	10,778,879	11,300,330	11,729,920	12,205,989
	~ 96.5%	~ 95.5%	~ 95%	~ 93.5%	~ 91%	~ 89%	~ 89%
Card payments at POS terminal	291,131	403,214	527,411	750,397	1,107,425	1,496,640	1,479,042
	~ 3.5%	~ 4.5%	~ 5%	~ 6.5%	~ 9%	~ 11%	~ 11%
Cash-back at POS terminals	2,999	2,647	1,654	2,088	3,450	2,764	881
	~ 0%	~ 0%	~ 0%	~ 0%	~ 0%	~ 0%	~ 0%
Credit transfer via ATM	271	366	260	277	80	61	40
	~ 0%	~ 0%	~ 0%	~ 0%	~ 0%	~ 0%	~ 0%
ATM cash deposits	133	91	47	11	5	21	6
	~ 0%	~ 0%	~ 0%	~ 0%	~ 0%	~ 0%	~ 0%
Total card transactions	8,205,143	9,124,300	10,406,955	11,531,652	12,411,290	13,229,406	13,685,958
	100%	100%	100%	100%	100%	100%	100%

Source: Bank of Albania and author's calculations

3.3.3. Regional Comparison

To form a more complete picture of the payment cards space in Albania, it is worth comparing Albania to its neighbour Balkan countries. As mentioned in the beginning of the chapter, one of the reasons that motivated this case study was exploring the reasons why Albania lags behind its neighbour countries in almost all payment indicators, and to formulate policies to reverse this pattern. The question that arises is: has Albania lagged behind across all years or is it a more recent development?

Table 3.3: Number of debit and credit cards in circulation across time in the Balkans

	2009		2010		2011		2012		2013	
	Debit Cards	Credit Cards	Debit Cards	Credit Cards	Debit Cards	Credit Cards	Debit Cards	Credit Cards	Debit Cards	Credit Cards
Albania	543,141	22,793	667,548	27,300	693,958	37,893	719,809	49,173	741,128	64,432
Bosnia	---	---	---	---	1,480,855	180,453	1,513,818	202,866	1,562,277	209,059
Kosovo	507,399	31,508	480,659	37,922	548,253	74,873	599,651	95,942	645,048	109,332
Macedonia	1,021,370	188,612	1,048,180	303,158	1,098,800	290,638	1,156,562	295,815	1,188,947	313,365
Montenegro	318,875	56,935	314,181	54,327	303,630	50,897	307,249	49,673	347,572	49,289
Serbia	4,991,846	1,022,544	5,211,929	936,008	5,270,241	969,806	4,875,796	951,614	5,133,080	955,221

Source: Bank of Albania

Table 3.3 shows in absolute terms the number of debit and credit cards in circulation across time in the non-EU Balkan countries. Given that Serbia has twice the population of Albania, it naturally has a much larger number of debit and credit cards in circulation. The only country that lags behind Albania in both debit and credit cards in circulation is Montenegro, which has a quarter of the Albanian population. In per capita terms, though, Albania has had fewer debit and credit cards than all other neighbour countries across time. Nevertheless, what

seems to stand out is the fact that for many other Balkan countries, there have been negative growth rates or very modest positive growth rates in the number of payment cards issued, which has never been the case for Albania. It seems most of the countries in the region have reached some sort of saturation point, while the Albanian market seems the most dynamic, and this should be viewed as a positive signal moving forward, as there is still space for growth and improvement.

However, the numbers presented in Table 3.4 below, comparing the number of e-banking accounts and the number of interbank payments across the region and across time, are not encouraging for Albania. E-banking accounts are defined as those transaction accounts with online capabilities (i.e. check statements online, make online transfers, etc.), while interbank payments (excluding large value) are defined as those payments performed using an electronic instrument, and cleared by the national clearing house. In per capita (or per 100,000 people) terms, Albania ranks last in both metrics. In absolute terms, the only country that has fewer e-banking accounts is Montenegro (in part because of its smaller population). The low numbers of e-banking accounts for Albania indicate that most bank account holders perform services related to bank accounts at a physical branch, adding to the overall cost and time needed to perform transactions. In terms of interbank payments (which include electronic credit transfers and direct debits, in addition to debit and credit card payments), the disparity between Albania and neighbouring countries is striking. Albania's interbank payments processed in 2013 were roughly 360,000, while the second country in the ranking (Montenegro) had 10 times more, and the country with the most interbank payments (Macedonia) had almost 100 times more than Albania. This statistic highlights once again the low usage of payment cards in Albania, this time at a regional level.

Table 3.4: E-banking accounts and interbank payments in the Balkans across time

	2009		2010		2011		2012		2013	
	E-banking accounts	Interbank payments	E-banking accounts	Interbank payments	E-banking accounts	Interbank payments	E-banking accounts	Interbank payments	E-banking accounts	Interbank payments
Albania	15,034	102,304	27,368	332,777	37,138	388,208	54,926	361,552	113,930	363,507
Bosnia	52,000	28,346,898	67,802	31,060,	94,339	31,729,367	96,041	33,073,839	122,522	35,026,526
Kosovo	40,924	3,295,287	55,292	3,296,887	68,990	3,443,454	97,089	3,473,972	131,365	5,797,403
Macedonia	296,914	16,623,623	221,599	18,199,000	306,981	23,320,000	389,722	23,771,404	468,097	24,293,052
Montenegro	18,155	3,545,830	22,816	3,672,911	27,230	3,781,354	34,811	3,885,722	48,215	4,187,292

Source: Central Bank of Kosovo

3.4. Barriers and Policy Interventions in the Payment Cards Market

3.4.1. Consumers

What is it on the side of Albanian consumers that is stopping them from owning and using payment cards, particularly debit cards, which come with no implicit or explicit cost? Consumers constitute an important and yet complex group of stakeholders to study because different consumer segments have different needs and display different socio-demographic characteristics that drive their preferences. The statistics explored in the previous sections show clearly that payment cards are underutilized in Albania.

One could argue that Albania's private banking system and the products it offers are still relatively new, while the cash habit is old. In other words, people are still getting used to the modern payment technologies and instruments available in the country. From a regional perspective, even though other neighbour countries underwent communist regimes, Albania's

regime was the harshest and the population was the most isolated from market institutions.⁶² This could explain Albania falling behind since other countries had a head start and began their payment systems development even while in non-completely democratic regimes, while Albania was completely cut off from the rest of the world until 1991. Moreover, the rise and fall of “pyramid schemes” left a mark in people’s memories. Even though it has been almost 20 years since that harsh period in Albania’s recent history, many Albanians still have a negative connotation of banks. The lack of trust is particularly evident in older generations. If consumers do not fully trust banks, they will not fully trust the products and services provided by them.

Further empirical evidence from the World Bank helps shed light into factors that affect banking and payment behaviors among Albanian consumers. According to a 2015 World Bank survey⁶³, almost 77 percent of adults do not have access to a bank account in rural Albania, while in urban areas, 55 percent of adults do not have access to a bank account. In addition to the lack of banking infrastructure, the discrepancy between rural and urban areas is also due to the limited information that consumers have in rural areas regarding banking products. Bank account ownership is directly linked to payment cards because it constitutes a prerequisite for a consumer to obtain a debit and/or credit card.

A 2013 consumer survey by the Bank of Albania looked at the impact of socio-demographic characteristics on payment choices with the goal of gathering information that would allow it to design policies and interventions to increase the usage of payment cards.⁶⁴ The survey concluded that education (general and financial education) and income are relevant factors which demonstrate a positive correlation, with bank account ownership and card usage.

⁶² Muco (1997).

⁶³ Survey on the Cost of Retail Payments (World Bank).

⁶⁴ Survey on the Use of Payment Instruments – Individuals, Bank of Albania (2013).

Policymakers cannot control for factors such as income (but instead must take it as a given in this instance), but they can design financial literacy campaigns for different age groups. A country wide financial literacy campaign could have a large impact because it would reach a broad audience. The focus group, from which information was gathered directly by the author, further underscored that the lack financial education, particularly on electronic payment instruments, is a legitimate issue in the country. Two out of the 10 consumers in the focus group could not tell the difference(s) between a debit card and a credit card. Some other participants who seemed more knowledgeable on payment cards argued that while they had a debit card, they did not have an incentive to use them, since the bank branch was close to their residence, and as such, could easily withdraw cash and use cash for their payments.

A 2015 study by Klapper, Lusardi, and Oudheusden (World Bank and George Washington University) ranked 140 countries in terms of financial literacy based on four indicators. Using data from the 2014 Gallup World Poll Survey, the authors captured interviewee's responses on four questions related to risk diversification, inflation, numeracy, and compound interest. According to the methodology, a person is defined as financially literate if they get at least three correct answers out of the four questions. For Albania, the data show that only 14 percent of the adult population is financially literate, with a rank of 139. This is a tie with Afghanistan and ahead only of Yemen, in which only 13 percent adults are rated as financially literate. These results further reinforce the need for intense financial education programs and campaigns in Albania.

What steps can be taken in practice to change consumer behavior pertaining to payment instruments? To begin with, the Albanian Association of Banks could design a brief brochure with some basic facts regarding the use of payment cards and their advantages compared to cash.

The brochures could then be shared with all clients who visit bank branches. Albania is a small country and such initiatives could have a wide reach and a large impact. Institutionalizing financial education and incorporating it into the school's curriculum is also an initiative worth considering by the Albanian authorities. There are countries which are seriously considering it, India being one of them.⁶⁵ Not only would this policy equip the younger generations with adequate knowledge regarding financial inclusion and payment instruments, but it would also have a spill-over effect on older generations, as the students would share the knowledge with other members of their family. At the workplace, while all public employees are required to open and maintain a bank account to receive their salaries directly from their employers, this is not the case for private sector employees. The Banking Association could work with employers to organize information sessions on a regular basis. This would allow to reach employees of different economic sectors, in different parts of the country. Private sector employers cannot legally require their employees to have an account, but through informational sessions, they can give the opportunity to the employees to learn more about the benefits of bank accounts and payment cards, hoping that the employees will opt for opening an account, and therefore also accessing other products and payment instruments that come with a bank account.

3.4.2. Merchants

Even when consumers are convinced about the payment card benefits and are willing to use them for purchases at physical stores, they could find resistance from merchants. In the case that the store is not equipped with the necessary electronic payment terminal/card reader (POS),

⁶⁵ Financial literacy may become part of school curriculum, Times of India (June 2012).
<http://timesofindia.indiatimes.com/city/mumbai/Financial-literacy-may-become-part-of-school-curriculum/articleshow/15011953.cms>

the consumer would have to revert to cash. It should be emphasized that the merchant pays a fixed cost for the installation and maintenance of the POS infrastructure, and a variable fee (normally a percentage of the transaction value), the so-called merchant discount rate, to its bank (the acquirer) for offering the payment processing services. Not only is POS infrastructure limited among Albanian merchants, but even merchants equipped with such infrastructure often times tell their customers that their POS is out of service to ensure that customers pay in cash (this situation is familiar from taxi drivers in many U.S. cities). According to the consumer focus group participants, this is widely recognized as a trick used by merchants to transact in cash and thereby avoid issuing receipts, and also to not pay the card processing fee to their banks.

As indicated by the Bank of Albania data shown in Figure 3.7, the growth rate in the number of POS terminals installed slowed after an initial surge in 2004 and 2005. Even in absolute terms, the almost 6,500 POS terminals in the country constitute a negligible number compared to other countries in the region. Given that a large store such as a supermarket has multiple POS terminals, it means that fewer than 6,500 physical stores in Albania accept debit and credit cards.

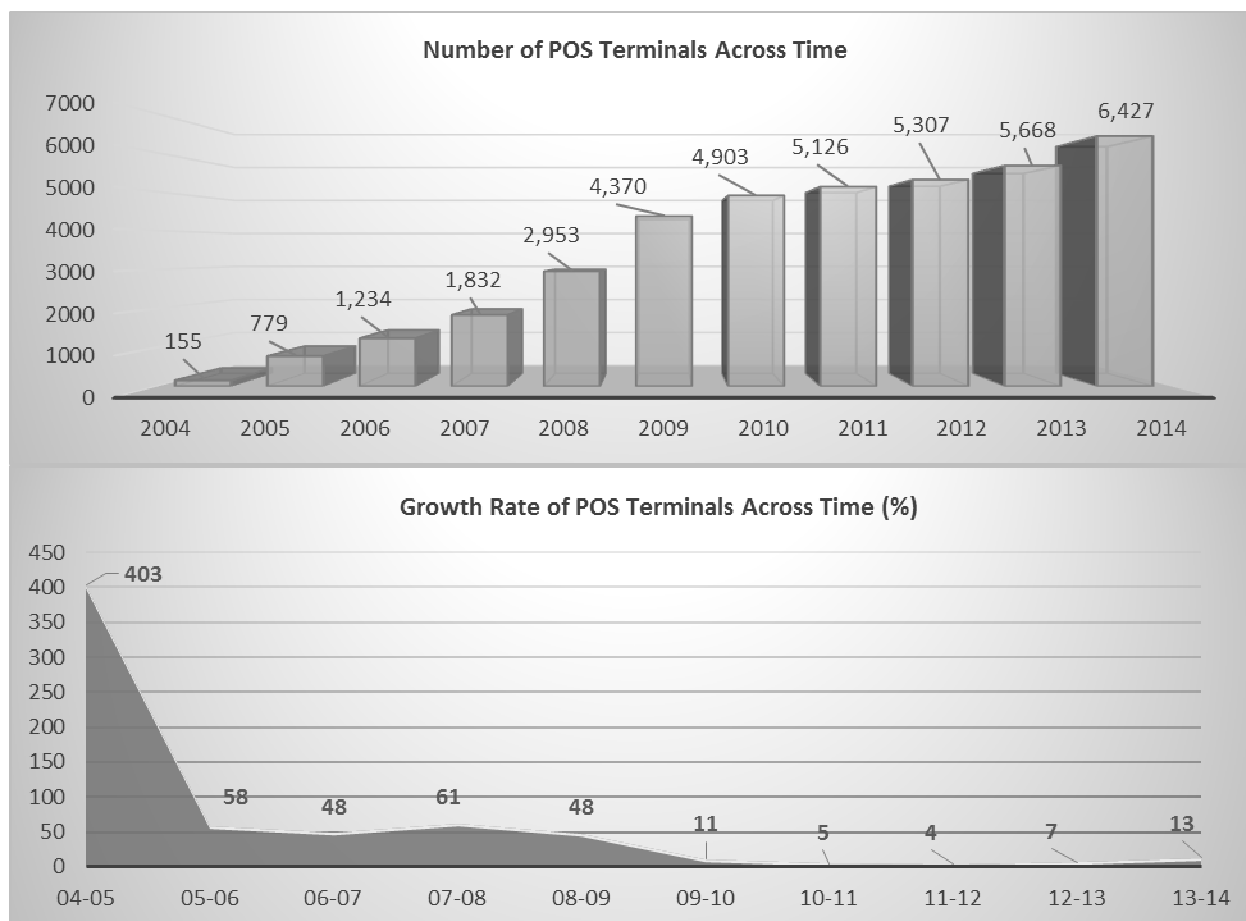


Figure 3.7: POS statistics across time

Source: Bank of Albania and author's calculations

From a regional perspective (Table 3.5), even Kosovo and Montenegro with much smaller populations than Albania have almost double the number of POS terminals. This discrepancy is a serious obstacle in the use of payment cards for purchases—and as shown in the previous chapters, a source of economic inefficiency. Regardless of the growth in the cards in circulation and the willingness of consumers to use them, there will not be any impactful change, if they are not matched with POS terminals that can accommodate the demand.

Table 3.5: Absolute number of POS terminals in the Balkans across time

	2009	2010	2011	2012	2013
Albania	4,379	4,903	5,126	5,307	5,668
Bosnia	16,529	17,834	18,589	19,320	20,402
Kosovo	5,251	6,194	7,534	8,592	9,071
Macedonia	31,447	31,491	33,435	33,267	37,167
Montenegro	7,202	8,333	10,131	10,779	11,111
Serbia	59,058	57,459	58,012	62,656	59,822

Source: Central Bank of Kosovo

The lack of POS terminals goes in hand with the lack of interoperability. As a result, merchants that possess a POS terminal in their store can accept only a certain type of card brand, which means that they have to install multiple POS terminals for different card brands, and thus, pay multiple installation and subscription fees for the service. The lack of interoperability is due to the fact that banks have not cooperated sufficiently with each other to create interoperable technology for card payments, because they have not so far seen it as a worthwhile investment, given the low demand for payment cards in the Albanian market. There seems to be a concern among merchants regarding the fees they incur as part of the variable costs. While this is a valid concern, the issue of cost should be viewed in comparative terms. In other words, merchants should compare the costs they pay for card payments with the equivalent cost of accepting and processing cash. As Chapter 1 of this dissertation showed, the costs associated with electronic payment instruments are typically lower, on average, than those associated with cash and other paper-based payment instruments, when all implicit and explicit cost components are taken into account.

There are ways to deal with the issues pertaining to the lack of POS terminals and lack of interoperability. A carrot and stick approach could be followed and Albania could benefit from the international experience. On the one hand, the government could offer incentives for merchants to install POS, and on the other hand, it could design tougher penalties for those that deliberately avoid accepting cards as a way that facilitates tax evasion. Mexico demonstrates a replicable and successful model. Under the so-called FIMPE⁶⁶ program, Mexican government agencies and 15 financial institutions came together in 2002 to design national incentive programs and promotions for merchants to install POS terminals, advertise the benefits of accepting cards versus cash, and standardize the technological payment platform across the country (i.e. interoperability). The initial timeframe of the program rollout was a three year period. In some cases, the financial institutions would install the infrastructure for free at merchant stores. In other cases, the banks would require merchants to pay only an USD 8 fee monthly for every USD 4,000 of transaction value, as supposed to a per transaction fee. The incentive scheme was in place for a year, and after that, merchants would start paying market fees. The idea was that throughout the year that merchants were incurring the lower fees, they would realize the large benefits of dealing with payment cards, and as such, would want to continue the subscription after the year was over, even at higher market fees, because they were still paying less compared to the cost of accepting cash.

The campaign had great results in Mexico. Card transactions in stores increased by 170 percent between 2002 and 2006. For debit cards, the share of usage for ATM cash withdrawals decreased from 87 percent in 2002 to 68 percent in 2006, while the share of usage for payments in stores increased from 13 percent in 2002 to 32 percent in 2006. The growth rate of POS card

⁶⁶ The FIMPE project (Mexico). <http://www.fimpe.com.mx/index.html>

transactions in Mexico exceeded the regional (Latin America) growth rate between 2002 and 2006. The POS terminal network expanded by 96 percent throughout the country in the four-year time period. Moreover, new POS technology was incorporated into government payments for social transfers, health programs and subsidies. Indeed, all indicators showed large positive growth. FIMPE is still in existence and tries to constantly bring in new merchants into the POS network. In a sense, this is a scheme designed to get a merchant over the fixed cost of moving to electronic payments.

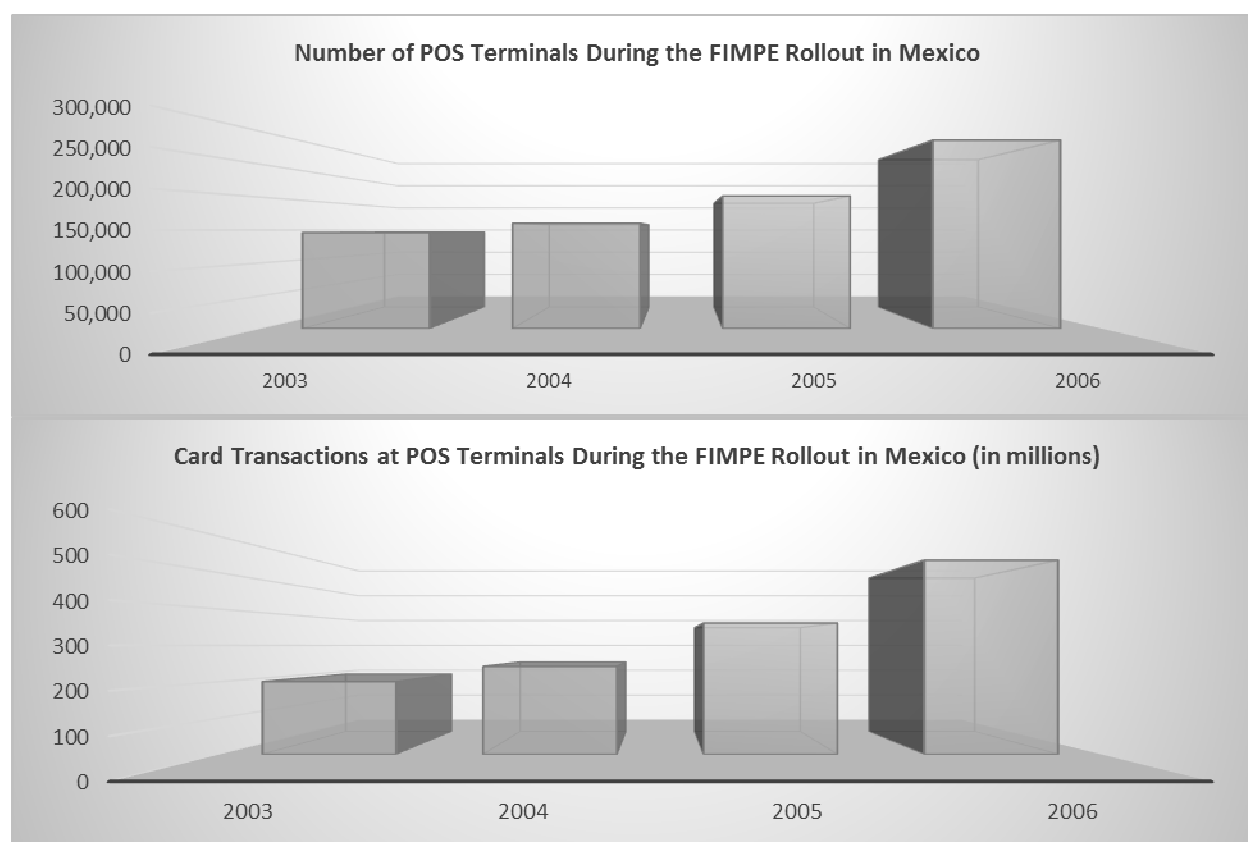


Figure 3.8: POS terminals installed and card transactions conducted under FIMPE in Mexico
Source: FIMPE project

Another successful incentive scheme is that implemented in South Korea. Under the South Korean scheme, the government provided a tax credit on the VAT of up to USD 5,000 a year for merchants that install POS terminals and accept payment cards, while the card readers were installed for free.⁶⁷ This saw a long list of merchants opting for POS terminals and it has increased tax revenue at the business level for the South Korean government, since many businesses have come out of the shadows and into the formal economy as a result.

Both, the Mexican and South Korean cases constitute a good basis for the Albanian policymakers to take note. Naturally, such interventions would need to be adapted to the Albanian reality and payment landscape to be fruitful, but given the small population of the country, they would have a widespread impact, which would be evident in a shorter period than what it took in Mexico and South Korea. Specifically, the challenge in Albania lies in the fact that there is a significant number of micro-businesses (1-3 employees), which sell items of low value (up to USD 20). Such businesses are likely to show more resistance to installing electronic payment infrastructure, unless they are fully subsidized by the government.

The advantage of the aforementioned incentive schemes is that they distribute the costs across all stakeholders. Eventually, benefits will also be shared by everyone. Higher usage and acceptance of payment cards would lead to lower tax evasion for the government, an increased customer base for financial institutions and banks, and lower costs for merchants, while also reducing the use of cash. In parallel, though, there must be strong political will in Albania to enforce the legal side, when it comes to tax evasion and merchants deliberately not installing POS to find comfort in the anonymity of cash. There has been good signs even in this respect from the current government. Since September 2015, the Albanian government, having at the

⁶⁷ Kim and Kim (2010), p.26.

forefront the Ministry of Economic Development and the Ministry of Finance, have been undertaking (still ongoing) a campaign against informality and underground economy, monitoring closely all retail payments, and urging unregistered businesses to register, to equip their stores with POS terminals, and issue receipts, while tough measures are implemented for those merchants that do business without issuing receipts. It is estimated that almost 50 percent of all businesses in Albania do not issue receipts to the buyers. Cash has so far been a great tool in the hands of those wanting to operate in the underground economy. There has been an increasing push by the government for the use of electronic payment instruments, to help combat informality.⁶⁸

3.4.3. Payment Service Providers

Commercial banks constitute one of the most important actors among providers of payment instruments and services. They typically have a dual role in that they issue debit and credit cards to users (primarily consumers)⁶⁹ even while representing merchants. During a P2B (person-to-business) transaction, when a consumer swipes their card for a payment at a POS terminal, the money has to eventually move from the payer's (the consumer) bank account to the payee's (the merchant) bank account. A series of steps (i.e. netting, clearing, settlement) occur in the background, but eventually, the merchant's representative bank is involved in the process, communicating with the consumer's bank for the amount to be credited to the merchant's bank account. In this role, banks are known as acquirers. In the Albanian context, commercial banks have not been very proactive in the payment space. Until the 2008 global downturn, the main

⁶⁸ Government warns of tough nationwide campaign against informality. Tirana Times (August, 2015). <http://www.tiranatimes.com/?p=123204>

⁶⁹ Payment cards are produced under certain brand names such as MasterCard and Visa, however, they do not deal directly with consumers, but with commercial banks, which have an intermediary role.

profit source for commercial banks in Albania was lending. However, since the beginning of the global recession in 2008, there has been a high level of non-performing loans accumulated in Albania (increased from 3.3 percent at the end of 2007 to 22.7 percent at the end of 2012)⁷⁰, which has made commercial banks more conservative in terms of their consumer/business lending policies. As such, they have shifted their focus to payment services and products. Consumers interviewed brought up the issue of high fees and the inconsistency at which they are applied, for various electronic payment instruments and products provided by banks. The response from the Albanian Association of Banks to these concerns has been that the average costs of the products banks offer in Albania are below the equivalent costs in the region.

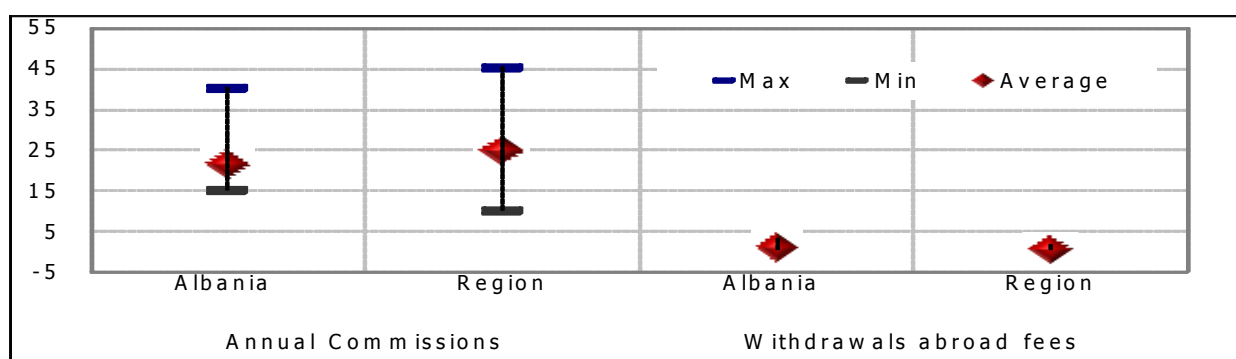


Figure 3.9: Fees charged for credit card usage and maintenance (Euros)

Source: Bank of Albania

The numbers in Figure 3.9 do not tell the complete story because they pertain to credit cards only. Individuals in the focus groups argued that they get charged for services such as changing the PIN code of their debit card, which are free in other countries. The Bank of Albania collects aggregated data on all fees and charges applied by the 16 commercial banks operating in

⁷⁰ Non-Performing Loans in the Albanian Banking System. Deloitte (2013).

the country.⁷¹ This could serve as a comparison basis for customers, although the database is not always updated in real time.

One way to alleviate some costs for end users is for the banks in Albania to offer reward programs, similar to the ones described for the merchants. In the case of consumers it could be cash-back cards, or cards that allow for the accumulation of points with purchases that could eventually be translated into gift cards. As studies have shown, such explicit monetary incentives increase the adoption and use of payment cards.⁷² In some countries, banks have offered the option to consumers who use their cards to enter a lottery and win various prizes. It is quite remarkable that in Mexico, during the rollout of FIMPE program, multiple lotteries took place and more than 3,100 cars were given away. This approach had a significant media impact and triggered a visible change in the consumers' behavior. In November 2015, the Ministry of Finance in Albania announced the launch of a national lottery for those consumers who obtain and keep their VAT (value added tax) receipts from transactions.⁷³ The process calls for consumers to post a certain number of receipts to the Ministry of Finance within a specific time frame. All participants will then enter a lottery and 500 winners will be selected from a randomized computer program for an overall amount of approximately USD 64,000. This is a good step towards reducing informality and incentivizing consumers to also do their part in asking for the transaction receipts. A similar incentive-based lottery could be applied for card payments, along with the support of banks and other payment service providers. During the interview with the Association of Banks, the issue of payment infrastructure also came up. The

⁷¹ A list of commission fees charged by commercial banks in Albania.

http://www.bankofalbania.org/web/Commissions_to_individuals_6329_2.php?kc=0.8.8.1.0

⁷² Valverde and Zegarra (2009).

⁷³ Albania to hold a National Lottery for the VAT receipt. Independent Balkan News Agency (November 2015).

<http://www.balkan.eu.com/albania-hold-national-lottery-vat-receipt/>

lack of interoperability is not only hurting merchants, as mentioned above, but is also hurting commercial banks because they have to individually invest in infrastructure such as ATM and POS terminals, rather than relying on cost efficient synergies to build common infrastructure. This would be a potential intervention moving forward, because it would reduce costs for commercial banks, which would subsequently translate into lower costs for merchants and customers.

The lack of interoperable payment infrastructure speaks also to the difficulties in settling foreign currency transactions in Albania. It is estimated that around 20 percent of all payments in Albania are conducted in foreign currency.⁷⁴ While this is not necessarily bad for a country increasingly exposed to the Euro, the payment system in Albania is primarily designed for payments conducted in local currency (Albanian Lek - ALL). Indeed, the two main inter-bank payment systems managed by the Bank of Albania (AIPS and AECH) provide net settlements for local currency payments. As a result, there are delays and high costs for the settlement of foreign currency payments, which in turn translate into opportunity and pecuniary costs for the customers. The idea of a Faster Payments initiative could be considered as an alternative option in Albania (for both, domestic and foreign currency transactions), although such initiative would require the participation and investment of multiple actors such as Bank of Albania and commercial banks. However, countries that have moved forward with this kind of payment infrastructure modernization, have seen significant benefits and returns. The UK has been one such example.⁷⁵ It invested around USD 300 million, but the benefits outweighed the costs because the time of processing, settling and clearing was reduced significantly, as is shown in Figure 3.10.

⁷⁴ Albanian Association of Banks.

⁷⁵ Greene et al (2014).

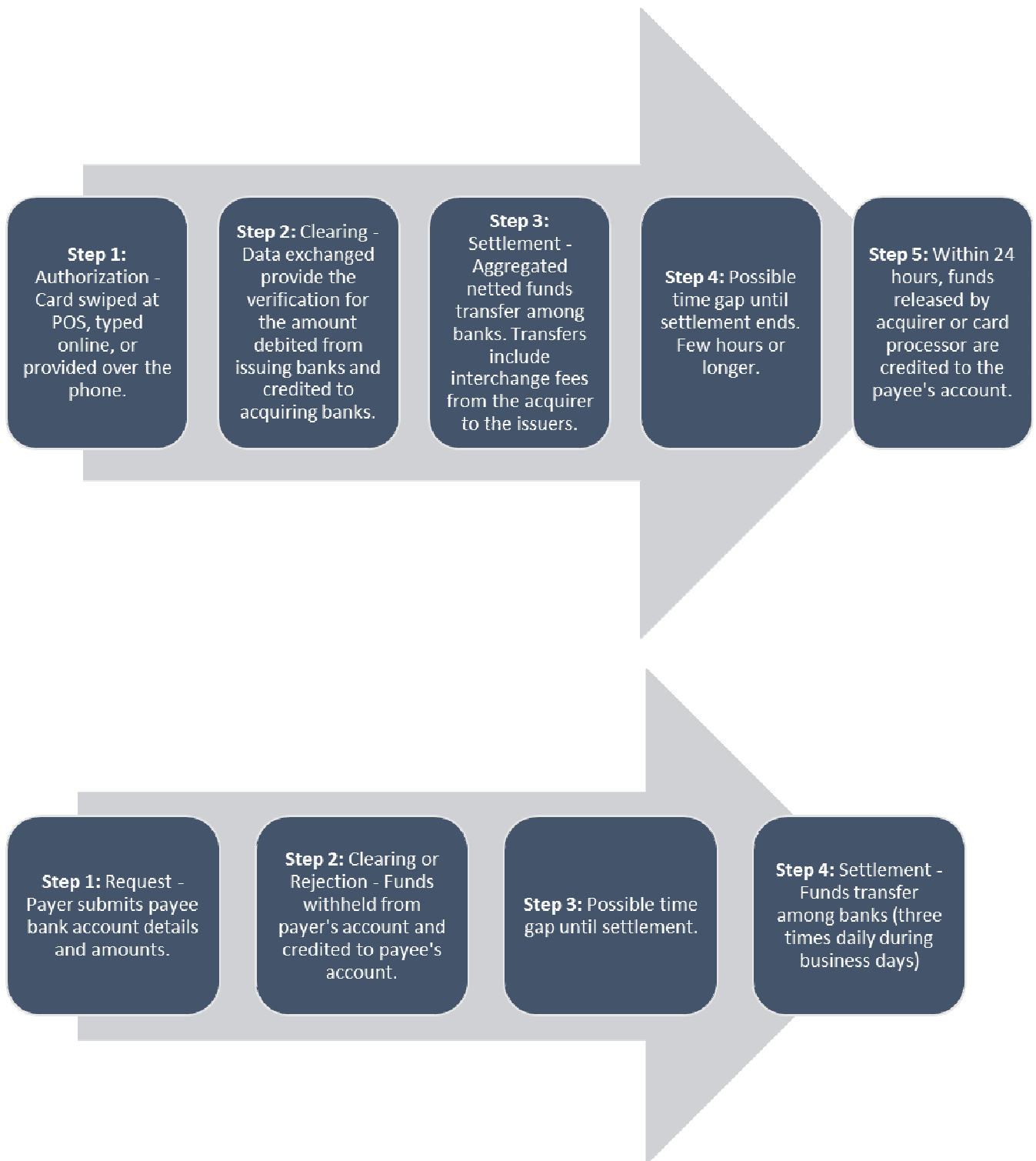


Figure 3.10: Upper part shows the traditional/current payments model structure and lower part represents Faster Payments

Source: Greene et al (2014)

A natural question is why payment service providers have not already invested in common infrastructure, and more generally in modern payment infrastructure that would facilitate more electronic payments? One argument is that the upfront investments required from the banks and other service providers might be too high, while the benefits accrued might not be proportionally distributed. In other words, the modernization process will also benefit actors that are not necessarily contributing to the initial investment (e.g. consumers) while the costs are borne exclusively by the providers. This is the reason why successful models in the world have almost always included the participation of the government in the initial investment such as through subsidies.

However, the reason behind the lack of such investments is not always based on a cost-benefit calculation. For instance, Macedonia is considered as one of the most advanced countries in the Balkans in terms of payment infrastructure, and in certain metrics is even comparable to EU countries.⁷⁶ This is primarily due to the fact that the Macedonian authorities have modernized the regulatory framework in a way that has given more space for electronic payment instruments to grow. Specifically, the use of paper checks was abolished in 2007 by law, leading to production and processing related savings, and those savings were instead invested for the electronic payment infrastructure. To reinforce this point, one of the reasons that the M-PESA service of mobile money in Kenya took off was due to the accommodating nature of the existing regulatory framework. Indeed, Safaricom, the telecommunication company that started M-PESA in Kenya took advantage of the favorable legal and regulatory framework and overcame the high initial investment needed (particularly pertaining to building the agent network needed throughout the country), becoming fully operational in less than a year and capturing almost 70

⁷⁶ “Payment, clearing and settlement systems in Macedonia”, Bank for International Settlements (2013). <http://www.bis.org/cpmi/publ/d113.pdf>

percent of the market share in the first two years. Once economies of scale are achieved for any type of electronic payment instrument, payment service providers can more easily achieve profitability while there are lower costs for both the demand and supply side.

It is not sufficient to argue that the only reason why service providers have not invested in modern infrastructure is because they will not reap enough savings (or all savings) in the process, while still being the sole investors. Other factors matter as well, and the phenomenon should be put in the context of the country examined each time. In the case of Albania, for instance, the low demand for electronic payments is a large factor, and this is why incentivizing and educating consumers about electronic payments is relevant to payment service providers. The legal and regulatory framework in Albania, which is explored in detail in the next subsection, is outdated, and the bureaucracies create disincentives for actors to go ahead with such investments. It took M-PESA Vodafone almost two years from the moment they applied to be approved by the Albanian authorities to operate their mobile money service in the country—even though the technical details of the system had been proven in Kenya already. This was due to the fact that a lot of adjustments had to be made in the legal framework. The delay could have discouraged other firms wanting to enter the Albanian market.

What's important for the payment service providers is to “read” what the needs of consumers are in terms of electronic payment products and services in the Albanian market. M-PESA providers filled a need that was obvious in Kenya due to internal migration and the objective to send money among relatives, without needing to physically travel. Similarly, there is space for electronic payment services and instruments for the Albanian consumers, particularly pertaining to international remittances and the payment of utility bills. Moreover, the role of the government will be significant because once the Albanian government channels all its

disbursements and collections electronically, it automatically increases the volume of electronic payments, but also sets the example for other actors to follow.

3.4.4. Legal and Regulatory Framework

The legal and regulatory framework also have to be part of interventions and reforms in the context of the retail payment market in Albania. The technical level policy interventions need to be supported and accompanied by the relevant regulatory guidelines to have a meaningful and long-lasting impact. Albania is an EU candidate country and will soon start its technical level negotiation process to become a full EU member. In the process, it must align laws and regulations in multiple areas with international standards. With regards to retail payments, international organizations such as the World Bank, the Bank for International Settlements (BIS), and the IMF, have issued guidelines pertaining to the legal and regulatory framework that should support a national payment system. More specifically, the document entitled “*World Bank Guidelines for Developing a Comprehensive National Retail Payments Strategy*”, identifies and describes the main ingredients of a stable payment system such as cost effectiveness, reliable underlying financial infrastructure, and effective oversight over retail payments. Another document issued by the World Bank and the Bank for International Settlements entitled “*Payment Aspects of Financial Inclusion (PAFI) Guidelines*”, identifies barriers to transaction account access and usage such as “*high fees/commissions/costs, informality, inadequate financial literacy/customer perceptions, poor design of transaction accounts and payments products/services, and inadequate infrastructure on the supply side*”. Overall, such guidelines that have been generated as a consequence of expertise and research by international authorities in the field of retail payments, should be utilized by Albanian authorities, to make sure that

indeed, the domestic regulatory framework is in line with the principles described in the aforementioned documents. One of the regulatory issues has to do with the upper limit for paying in cash at stores. As it stands, it is still too high, around USD 2,800⁷⁷, compared to other EU countries. For instance, in Greece the upper limit is below the Euros 500 (approximately USD 540) ceiling. Intervening in the legal framework to reduce the limit would also have an impact on the use of payment cards in stores, particularly for durable goods (e.g. furniture).

Another regulatory issue pertains to government payments in the country. Government payments encapsulate all payments to government agencies (collections), such as social security obligations, electricity bills,⁷⁸ license fees, and fines, among others, and from government agencies (disbursements), such as pensions, salaries, and social assistance benefits, among others. As of now, only salaries of public employees are disbursed directly to the bank accounts of the beneficiaries (account-to-account). All other government disbursements follow a different procedure, which is based on cash. The Ministry of Finance, through its Treasury department, collects all money orders from the different government agencies in charge, and reconciles all the information. Ultimately, it sends the list with the information regarding the beneficiaries to commercial banks and postal offices with which it has agreements based on the types of payment disbursements. The commercial banks tap into the funds available in the account of the Ministry of Finance (which usually holds bank accounts with most commercial banks in Albania) to then distribute the funds to the beneficiaries. The banks also do some reconciling on their end when disbursing the cash. For postal offices, the procedure is similar, the difference being that in the absence of liquidity, they have to transport the cash from commercial banks to their offices around the country, to liquidate beneficiaries on behalf of the government. The Albanian Post

⁷⁷ Law 8560. Article 36/1. 1999. Department of Taxation. Albania.

⁷⁸ The electricity distributor is a public enterprise in Albania.

has been incorporated into the government payment scheme to utilize their widespread network of physical points, particularly in remote areas, where bank branches do not exist.

The current scheme of government payments is quite problematic. Commercial banks are used as cash-out points in essence, increasing the costs associated with the use of cash, for all three parties; government, banks, and beneficiaries. Moreover, there are delays and errors in the process, because the lists have to be reconciled at three different levels: initial government agency, Ministry of Finance, commercial bank/postal office. A similar procedure as in the case of public employee salary disbursements needs to be put in place for all other government disbursements, particularly for those of periodic nature such as pensions and social assistance benefits. Establishing an account-to-account procedure for G2P (government-to-person) payments would reduce the use of cash, and the associated costs. This would require beneficiaries to open bank accounts. Such scheme could be implemented in two ways. The funds could be transferred from the Treasury's account held with the commercial banks to the users' accounts. The second way, which resembles the Treasury Single Account (TSA) model, would allow the reconciliation of funds to be done within the Bank of Albania. Both, the Treasury and the commercial banks in the country hold accounts with the Bank of Albania. Hence, the settlement between the Treasury and the commercial banks could be done at the central bank level, but the end result would still be the same, end beneficiaries receive their funds directly to their bank accounts. What is characteristic about the Treasury Single Account model is that the single account held with the central bank can accommodate all incoming and outgoing government payments. Moreover, this kind of system allows the Treasury to have a comprehensive picture of the government's payment flows and balances. This model is also known as Integrated Financial Management Information System (IFMS). It is very effective for

government procurements, too, as it simplifies the process, reduces time, and cost for the government agencies, which do not have to deal with cash.⁷⁹

Table 3.6: Benefits of the Integrated Financial Management System for each activity

Activity	Benefits of IFMS
Sourcing	<i>“Improves transparency of the procurement process as it allows visibility into vendor adherence to contract terms.”</i>
Order Placement	<i>“Enforces government procurement policies at point of purchase through the use of spending limit and spend type controls on a card-by-card basis and each program having separate control mechanism.”</i>
Payment and Settlement	<i>“Eliminates manual entry of invoice data as card statements are received and reviewed electronically and issuers provide regular, customized electronic reporting to the agencies/budget institutions on spending information by program and at account level.”</i>
Reconciliation	<i>“Provides detailed “fingerprints” at each step of the transaction, from purchase to approval to reconciliation, and, automatically allocates the transactions to general ledger codes and cost centers to reduce time and any coding errors through processing.”</i>
Control and Audit	<i>“Increases visibility into the overall spending patterns with transaction data near real time and, establishes automated triggers to notify program administrators of any fraud or abuse.”</i>
Reporting	<i>“Integrates data into general ledger electronically, and, creates transaction level data and reports that allow for more accurate program level reporting.”</i>

Source: “General Guidelines for the Development of Government Payment Programs” (World Bank)

On the collection side, a considerable number of payments are conducted in cash at different points. However, there seems to be some progress toward electronic collections. A centralized online platform/portal, under the name e-Government Albania, through which users can make payments for various services to government agencies, has been operating, although it

⁷⁹ General Guidelines for the Development of Government Payment Programs (Payment Systems Development Group, World Bank), p.55.

is not widely used.⁸⁰ Regulatory interventions can take place so that payments made to government agencies are made exclusively through the portal, and cash payments are eliminated. There seem to be some issues with this initiative. The idea behind this system is to invite third parties, normally private sector payment technology providers (for online and mobile payments) to operate the portal and have an intermediary role. However, the procedure for obtaining a license is quite lengthy and the interested party has to sign individual contracts with each relevant government agency (which is in charge of a specific P2G payment) rather than a single collective agreement. This raises the cost for firms that want to be part of this scheme, and could even be considered an entry barrier, most likely contradicting the international guiding principles mentioned above in the context of payment systems. The relevant legal provisions could be modified to allow for easier participation.

Finally, the legal and regulatory framework should ensure a proportionate, transparent, conducive, and non-discriminatory environment for retail payments. This is crucial for innovation and competition, because it would allow entry for innovative and cost efficient products. More incentives should be given to start-up payment companies that design products, for which the Albanian market is in need. Micro-payments, for instance, are prevalent in Albania (and all of them are conducted in cash) and as such, electronic payment instruments that display properties similar to those of cash, should be promoted. One such instrument could be prepaid cards, which can be top-up type of cards, filled with cash anytime at no cost (the only cost is the cost of initial purchase of the card), and would not require a bank account, while also allowing customers to maintain their anonymity.

⁸⁰ E-Government Albania Portal. <https://www.e-albania.al/>

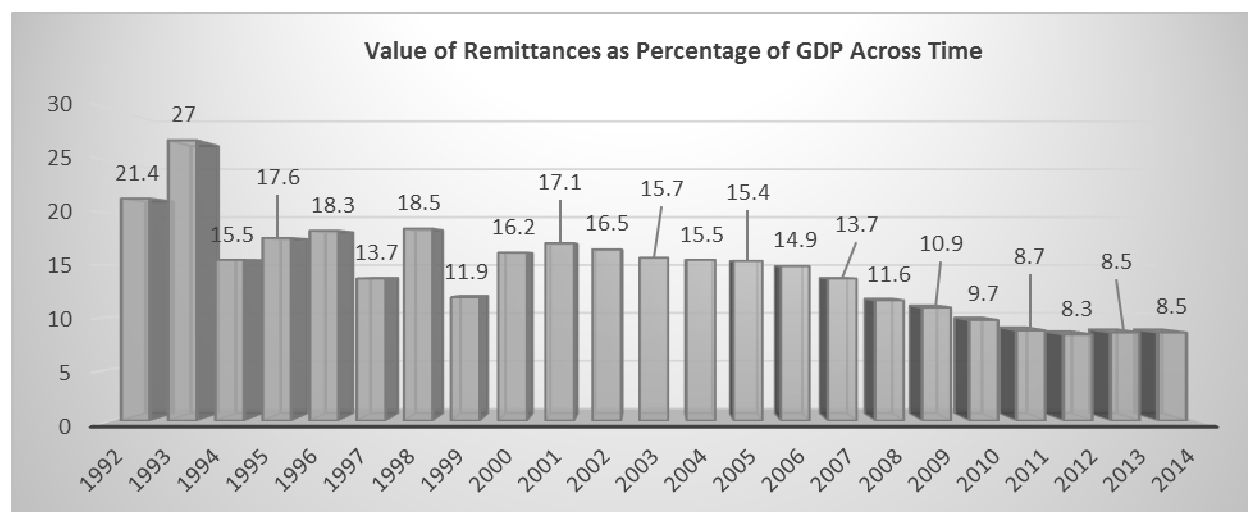
3.5. Assessment of the Remittances Market

Albania has been a source country of migrants over the last 25 years, since the fall of communism. However, two periods of mass migration stand out in the recent post-communist history of the country. The first wave of Albanian migrants living the country was in the early '90s, when the borders opened and the Albanians felt freedom after almost 50 years of dictatorship and isolation. To many Albanians, leaving the country and heading toward the western world was a lifelong dream to experience a world in absolute contrast with what they had known during communism. The second wave of migration took place in 1997-1998, a period which coincides with the fall of the “pyramid schemes” in Albania. The exact number of Albanian migrants living abroad is not known but an OECD report estimated that there were almost one million Albanian migrants living in OECD countries (excluding ethnic Albanians of other territories), equal to almost one third of the current population living within the Albanian borders.⁸¹ The two main destinations include Greece and Italy, due to geographic proximity. Other destinations include the UK, continental Western Europe, the US, Canada, and Australia.

Despite the negative side effects that come with migration for an economy such as brain drain, there are also positive effects, remittances being the main one. Various household surveys conducted in Albania show that almost every single household in the country has some family abroad, and that they receive remittances from them on a regular basis.⁸² Indeed, remittances have been critical for the Albanian economy as they constitute a considerable portion of the GDP. Figure 3.11 below shows the value of remittances as percentage of the country's GDP from 1992 until 2014 as well as the value remittances in absolute monetary terms (real USD).

⁸¹ World Migration in Figures. United Nations – OECD (October 2013).

⁸² Remittance Statistics – First Meeting of the Luxembourg Group (2006), p.7.



Year	Value (real USD)	Year	Value (real USD)
1992	152 million	2004	1.2 billion
1993	332 million	2005	1.3 billion
1994	307 million	2006	1.4 billion
1995	427 million	2007	1.5 billion
1996	551 million	2008	1.5 billion
1997	300 million	2009	1.3 billion
1998	504 million	2010	1.1 billion
1999	407 million	2011	1.1 billion
2000	598 million	2012	1 billion
2001	699 million	2013	1.1 billion
2002	733 million	2014	1.1 billion
2003	889 million		

Figure 3.11: Remittances across time

Source: World Development Indicators (World Bank)

Despite the fluctuations, the share of remittances has stabilized at just below 10 percent of the GDP over the last 5 years. In 2014, the 8.5 percent of the GDP which remittances accounted for translated into USD 1.1 billion.⁸³ In the context of Albania, remittances are primarily used for consumption and small investments. IMF statistics show that they have been a critical source of income. In urban households, on average, remittances constitute about 33 percent of disposable income, while for rural households, about 40 percent of disposable

⁸³ GDP: USD 13.37 billion for 2014

income.⁸⁴ Remittances have been a stabilizing factor in the Albanian economy in terms of offsetting some of the impact from high unemployment, low wages, and chronic poverty. As indicated by Madani et al (2013), on average, the value of annual remittances sent by a single migrant corresponds to 2.5 times the average sum of all wages of a family.⁸⁵

With regards to balance of payments, remittances have a central role for Albania. In Figure 3.12 below, remittances are compared to the three main categories of incoming payments: exports, foreign direct investments (FDI), and official development assistance (ODA). All values are expressed in GDP percentage terms, from 1992 to 2014.

The first graph in Figure 3.12 compares remittances to exports. It is not surprising that during the first decade of democracy in Albania, the value of remittances exceeded that of exports, since the Albanian export sector was still adjusting to its new free market structure and to international competition. Moreover, the events of 1997 with the fall of the “pyramid schemes” set the Albanian economy back. Starting in late ‘90s and until 2014, exports have been increasing steadily and account for a larger GDP share than remittances. In 2014, remittances accounted for 8.5 percent while exports for 36.4 percent of the GDP.

The second graph compares remittances to FDI. Until 2007, remittances were much higher than the FDI flowing into the country. Starting in 2008, the gap has been steadily decreasing and FDI started catching up, as a consequence of remittances decreasing and FDI increasing. In 2014, FDI accounted for 8.7 percent of GDP, only 0.2 percentage points more than remittances.

Finally, the third graph compares remittances to ODA received by Albania. Except for 1992, which constitutes an anomaly because of the transition to democracy, the pattern is clear

⁸⁴ Remittance Statistics – First Meeting of the Luxembourg Group (2006), p.9.

⁸⁵ Madani et al (2013), p.418.

for all other years. Remittances far exceed the value of development assistance. Indicatively, in 2014, assistance accounted only for 2.7 percent of the GDP, far lower than the 8.5 percent GDP share of remittances.

Overall, it can be said that, on average, throughout the past 25 years, remittances constitute the second largest category of incoming payments in Albania, after exports, although occasionally they have been the largest category. As such, remittances can fill the gap in the foreign exchange market, given the absence of foreign currency from the other categories. Moreover, as some studies have shown, remittances can also be used for capital good purchases, further increasing the country's competitiveness.⁸⁶ This further reinforces the macro economic significance of remittances.

⁸⁶ Glytsos (2002).

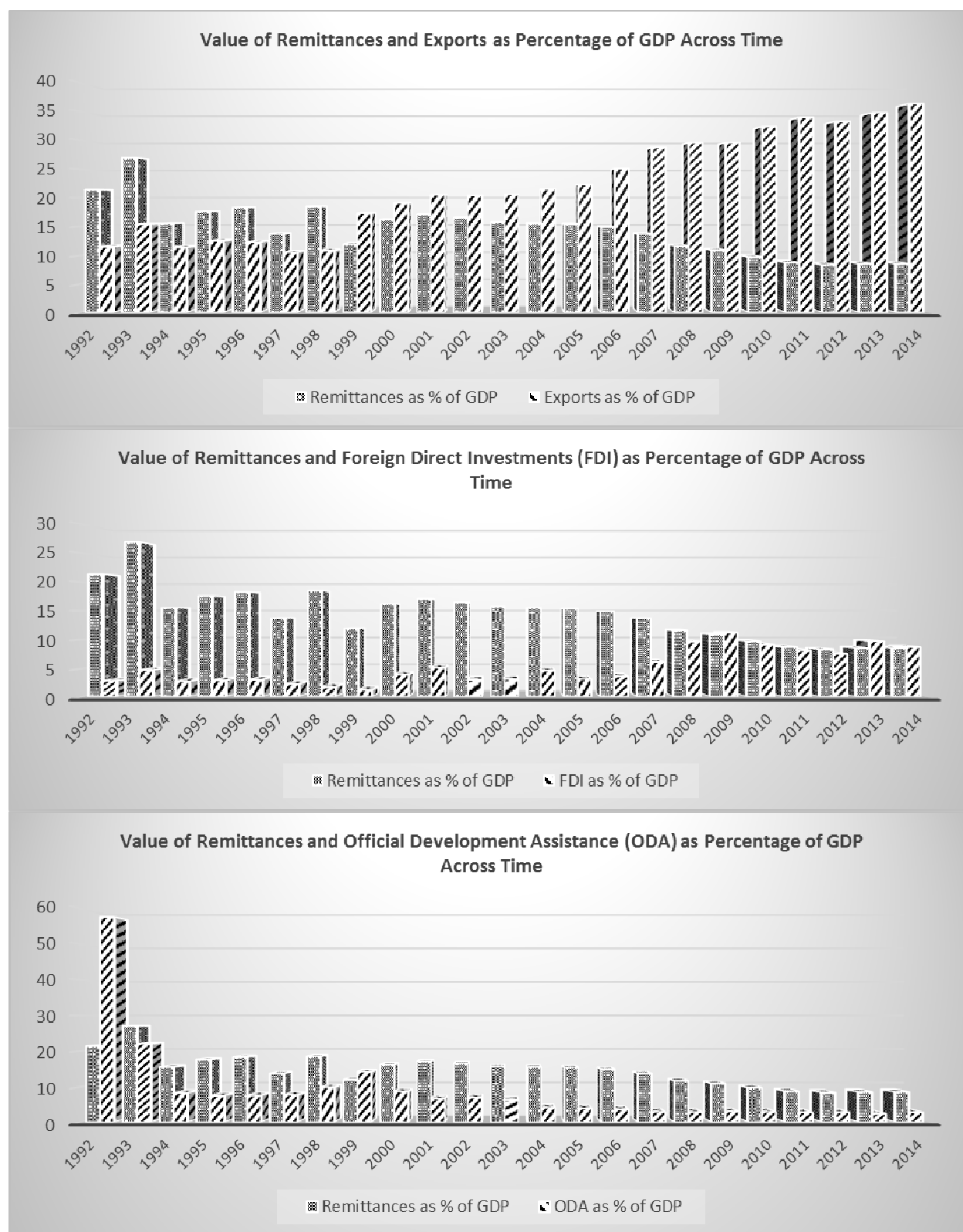


Figure 3.12: Remittances vs. exports, FDI, and ODA across time

Source: World Development Indicators (World Bank)

A number of international empirical studies have been conducted to test the role of remittances in times of crises for the receiving country. An IMF paper by Bettin et al (2014), shows that remittances are countercyclical, increasing in value in response to negative developments in the economy of the recipient country. The authors use panel data and look at migrants living and working in 103 Italian provinces, sending remittances to 107 developing countries, from 2005 to 2011. The same conclusion is also reached by Frankel (2010), using 64 pairs of countries, bilaterally, from 1979 to 2005. Remittances can be perceived as extra help being offered by migrants in times when the home country is facing extraordinary situations. They help with consumption smoothing in the country, and also compensate for other incoming payments (such as FDI and exports) which decrease significantly in times of crises. Indeed, Albania received the largest GDP shares of remittances during years of crises: in 1993, which was a transition year, right after the first democratic elections in the country; in 1998, after the fall of the “pyramid schemes”; and in 2001, after the crisis of the ethnic Albanian refugees fleeing into Albania, following the war of Kosovo.

It is clear from the statistics presented that the role of remittances is vital to the Albanian households and the Albanian economy as a whole. Research shows that cost is an important determinant of the volume and value of remittances sent to a country. For instance, one of the most prominent papers in the field, by Gibson et al (2005), empirically examines the cost-elasticity of remittances. Using household survey data from Tonga migrants living in New Zealand, the authors find that a 30 percent cost reduction in sending remittances would lead to an increase in the value of remittances sent by 14 percent. Peregaux (2015) also finds in her empirical research of Senegalese workers in Europe that as costs of remittances decrease, the value of remittances sent to Senegal increases. Similarly, a report from the Inter-American

Development Bank (IDB) finds that a reduction in sending fees and competitive exchange rate fees can add up to 14 percent of the value added in remittances sent.

Since 2008, the World Bank has been collecting and publishing the prices of different routes for sending and receiving remittances through the Remittance Prices Worldwide database. The database, which is an online interactive tool, updates average costs for different international corridors of sending USD 200 and USD 500 as percentage of value sent, for every quarter. It does so for different sending channels, such as banks, money transfer operators, and postal offices, and it also calculates a total annual average. In 2010, the G-20 (20 largest economies) countries committed to providing resources and technical assistance to reduce the cost of international remittances, with the goal of reaching a global average cost of 5 percent of the value sent. According to calculations by economists and the Global Remittances Working Group, spearheaded by the World Bank, the 5 percent cost would allow current migrants around the world to send to their home countries (primarily developing countries) an additional USD 15 billion.⁸⁷

Currently, the Remittance Prices Worldwide database captures the costs of only two corridors for Albania, from Italy and the UK. For the third quarter of 2015, the average cost of sending USD 200 to Albania from Italy was estimated at 6.95 percent of the value sent,⁸⁸ while the equivalent cost from the UK was estimated at 8.97 percent.⁸⁹

The cost is expected to be higher from corridors where informal channels are used, such as Greece (which borders Albania), where migrants either travel themselves to Albania, or use

⁸⁷ Reducing Transfer Costs of Migrant Remittances (World Bank).

<http://siteresources.worldbank.org/INTECA/Resources/June2ECARemittance.pdf>

⁸⁸ Remittance Prices Worldwide (World Bank): Italy-to-Albania

<https://remittanceprices.worldbank.org/en/corridor/Italy/Albania>

⁸⁹ Remittance Prices Worldwide (World Bank): U.K.-to-Albania

<https://remittanceprices.worldbank.org/en/corridor/United-Kingdom/Albania>

other networks of friends to deliver the cash hand-to-hand.⁹⁰ Nevertheless, the current costs of remittances are still high in Albania, and far from the 5 percent objective set by the G-20 committee. Banks have a limited role in the remittance space in Albania, with the majority of remittances received through money transfer operators such as Western Union and MoneyGram.⁹¹ Cash is still prevalent in the remittance space, and electronic instruments are not widely used, and this is potentially a reason for the high costs and inefficiencies observed in the Albanian market.

3.6. Barriers and Policy Interventions in the Remittances Market

3.6.1. Demand Side – Consumers

Lack of information and education regarding remittances is a major issue in Albania, as reflected in the focus group with consumers. A solution could be sought in an approach which has been followed by the World Bank successfully in a number of countries.

The World Bank has been undertaking an international campaign both to educate consumers about remittances and to help remittance service providers learn how to better connect with customers. The so-called Project Greenback 2.0 aims at increasing efficiency in the remittance market by working closely with migrants who send remittances and recipient families.⁹² The idea is to select a certain city or region within a country with a lot of remittance activity either on the sending or the receiving side and implement the campaign. It could then be rolled out in other parts of the country. Greenback has been implemented successfully in a

⁹⁰ Uruci and Gedeshi, p.10

⁹¹ Ibid, p.9.

⁹² Greenback 2.0 Project (World Bank).

<https://remittanceprices.worldbank.org/en/project-greenback-20-remittances-champion-cities>

number of countries so far. Some of the main objectives of the project include: educating remittance recipients to use financial services that provide them with meaningful benefits for their needs to close the information gap; helping financial institutions understand better the needs of remittance recipients, so that they can invest in products and services that fit in with the market needs; facilitating discussion groups so that all stakeholders from the demand and supply side come together to figure out ways to minimize the use of cash and encourage the use of electronic products in the context of remittances. Such projects would be particularly meaningful in certain Albanian regions, particularly in the northern part of the country (i.e. the region of Kukes), where poverty rates are high and remittances constitute the primary source of income.

3.6.2. Supply Side – Commercial Banks and Money Transfer Operators

Even though in theory there are multiple providers of services in the space of remittances in Albania, in practice, the country has only the two large money transfer operators, Western Union and MoneyGram that channel the largest volume of remittances. Commercial banks have a limited role when it comes to the volume of remittances, not due to legal or regulatory obstacles, but rather because banks themselves have not invested in this department. Bank participation would increase competition domestically and lead to lower prices.

The business model of money transfer operators is based on the cash-in and cash-out processes. Physical cash, particularly when it circulates, is associated with large costs, which are borne by service providers and passed on to consumers through higher fees. The reduction of cash use as part of remittances would eventually result in fee reductions, as well. This would require that a larger volume of remittances be sent electronically from account-to-account, which would also require the involvement of banks in the process. Albania has the advantage that it is

home to several international banks originally based in the same countries from which most remittances originate, namely Greece and Italy. Indeed, three Albanian banks have Greek ownership, while two banks have Italian ownership. This could be leveraged to increase their activity in the remittance space. The banks that operate in both the source and destination country of remittances, could design specific remittance accounts or other related products for the remitters and their families in Albania, tailored to their needs, financial capabilities, and affordability. For instance, in the United States, commercial banks which also operate in Mexico allow Mexican migrants to pay electronic bills on behalf of their families in Mexico. The bills are typically paid for utility services, telephone and internet, school fees, and insurance. This process is followed as a multi-party agreement that involves U.S. banks, Mexican banks, and other companies in Mexico, such as utility providers, insurance providers, and academic institutions. This innovative service serves multiple purposes. It eliminates the use of cash entirely; this removes monetary and time costs for the recipients since they do not need to deal with withdrawing the remittances, converting them to local currency, and making the actual payment to the utility provider (or education and insurance provider). The arrangement further increases competition and drives costs down in the remittance market, in both the source country (the U.S. in this case), and the destination country of Mexico. Such remittance products would find a great response in the Albanian market, since utility payments constitute a significant share of the consumption basket for the typical Albanian household.

Channeling remittances electronically through banks has also another advantage in addition to lower costs. For families that fall under the low income category, which is the case for most remittance recipients, it is hard to build a credit history. Having a consistent pattern of receiving remittances can be used effectively to build a credit history and prove credit

worthiness, opening doors for access to credit and small loans. This is a new vehicle being used by many banks around the world, and regulators are stepping in, to make it easier for such information to be shared in a safe way that does not infringe on privacy, so that remittances are linked to credit access. This relatively new field, known as credit reporting, has become a vital component in national payment strategies and payment system reforms. The World Bank *“General Principles for Credit Reporting”* constitute a great tool for policymakers and the private sector to build an effective system of credit reporting that elevates the role of remittances sent and received electronically in the context of credit worthiness.

Finally, another effective way to increase competition in the remittance market in Albania would be to license new actors in the field. One possibility would be to involve the Albanian Post, which has the physical infrastructure and business model already set up. The Albanian Post already provides services related to government payments, has a wide network of offices that could be further utilized to incorporate remittance services, as well. India has been a pioneer in this respect, as of August 2015, when the Reserve Bank of India licensed India Post to provide banking services, including remittance related services.⁹³

3.6.3. Supply Side – Exchange Rate Market

Exchange rate fluctuations are an important influence on remittance market dynamics. Exchange rates affect the value of remittances, since they determine how much the recipient receives when the foreign currency remitted is converted into local currency for use in the domestic market. The high volume of foreign currency transactions in Albania was already

⁹³ India Got Banking License from RBI (Post Bank of India).
<http://www.postbankofindia.org/2015/08/india-post-got-banking-license-from-rbi.html>

discussed in the payment cards context. Indeed, multiple foreign currencies enter Albania in the form of remittances, the primary ones being the Euro and USD.

Many merchants (e.g. shopping malls) in Albania have two prices (or even more in some cases) for their goods and services (in the domestic currency, ALL, and in Euros) but the Euro price is usually higher when compared to the equivalent ALL. In other words, merchants try to some extent to take advantage of arbitrage opportunities and lack of real time exchange rate information on the consumer side. Indeed, the exchange rate market seems to lack transparency and monitoring mechanisms. Many Albanians who receive remittances through money transfer operators (e.g. Western Union, MoneyGram), prefer to cash out the funds in the currency of the remitter's country and convert them into local currency (Albanian Lek/ALL) in the so-called foreign exchange bureaus, hoping for a better exchange rate. This is one of the reasons why Albania has 333 licensed foreign exchange bureaus within its territory in early 2016.⁹⁴ This could be a result of either lack of information among consumers regarding exchange rates offered by the different actors, or a result of uncompetitive foreign currency prices offered by the large players such as the international money transfer operators. Either way, a comparative national database (of electronic or other accessible format) is urgently needed in the country. This could come as a result of a synergy among money transfer operators, foreign exchange bureaus, and the Bank of Albania. The database could also be extended for remittance sending/receiving prices.

⁹⁴ 2013 Bulletin of the Bank of Albania.

3.7. Conclusion

Chapter 3 of this dissertation used Albania as a case study to explore the status quo of the retail payment and remittance market. Albania ranks last in the Balkan region in terms of payment card adoption and usage rate, and the increase in their usage has been stated as one of the primary objectives of the Bank of Albania. Moreover, given that there is a significant number of Albanian migrants living in other countries, remittances have proved to be a stable source for macroeconomic growth. However, the high average price of sending and receiving remittances in Albania (higher than the 5 percent considered as a competitive price by the Global Remittance Working Group established by the G-20), along with the lack of transparency, which occur due to the use of cash, have negative impacts on the value of remittances sent to the country. As empirical studies have shown, a decrease in the prices of sending and receiving remittances is correlated with an increase in the value of remittances sent, and as such, a more modern and cost efficient remittance Albanian market would attract more remittances, further contributing to consumption, investments, and general macroeconomic growth.

Using a variety of data sources such as desk research, surveys, interviews, and focus groups, among others, this part of the dissertation provided an in-depth assessment of the payment cards market in Albania, how it has changed across time, and where it presently stands. The analysis showed that despite the consistent positive growth rates in debit and credit card adoption (also represented by cards in circulation), the usage rate has been extremely low, particularly for debit cards. Indeed, the average Albanian credit card holder makes 10 times more retail payments annually using his credit card, than the average Albanian debit card holder using his debit card. On the one hand, this sounds paradoxical given that the usage of credit cards is more costly than that of debit cards, due to the additional requirements and annual fees

associated with maintaining a credit card. On the other hand, the discrepancy can be partially explained by the fact that credit card holders are of higher economic status than debit card holders, and as such, they are likely to use their credit card more often. The analysis also showed that although Albania has fallen behind in all payment indicators in the region, the growth rates in the different indicators are higher than in the neighbor countries. This can be perceived as a sign of optimism in that while the payment markets might have reached a saturation point in other Balkan countries, Albania has still capacity to grow and catch up in the near future.

The in-depth assessment helped to also identify the sticking points in the cards market. While debit cards do well in usage compared to other electronic payment instruments in Albania, they still have not won the battle with paper-based instruments such as cash and paper-based credit transfers. Moreover, a closer look at debit cards indicate that they are primarily used for cash withdrawals (almost 90 percent of the times) and not for actual purchases at stores or online. This makes them more of a cash-alike instrument, further adding to the costs associated with physical cash. As indicated by the author's analysis, this issue has multiple roots. First, Albanian consumers have limited financial literacy and knowledge regarding payment cards and electronic payment instruments, in general. Second, very few merchants have terminals for payment cards installed in their stores, making it hard to use cards even for those consumers who are willing to do so. Third, only recently did commercial banks start focusing on payment systems, as the lending department became less profitable due to the "bad" loans accumulated. Fourth, consumers complain about the high costs of electronic payment services provided by the commercial banks in Albania. This has come as a byproduct of the lack of interoperability and the lack of common investments by banks, as each bank operates its own system, driving costs up, which are ultimately passed to the end user/consumer. Fifth, many types of government

disbursements and collections are still conducted through cash, further perpetuating the cycle of cash usage. Policies of different nature are then recommended to address these five root issues in the payment cards market. They vary from formal financial education, incentives and penalties for merchants to increase POS terminals in stores, common investments from commercial banks and Bank of Albania in payment infrastructure, to increase interoperability and reduce costs and fees, modernization of government payments to avoid cash disbursements/collections, and interventions in the legal and regulatory framework to ensure innovation, transparency, and cost efficiency.

A similar approach was also followed when analyzing the remittances market in Albania. An assessment of the remittances market was provided across time and the statistics presented for the past 25 years confirmed the significance of remittances flowing into Albania, and their role in consumption smoothing and investments, particularly in times of crises. However, the under-utilization of account-to-account services (which eliminate the use of cash) associated with remittances, the lack of specific banking products designed for remittance senders and recipients, and the lack of transparency and competitiveness in the exchange rate market, were identified as main reasons for driving remittance prices up in Albania, and as such, negatively impacting the value of remittances sent to Albania. A series of policies and actions are recommended to tackle these issues. Some of them include: the rollout of programs such as the World Bank's Greenback project, which focuses exclusively on the financial education of remittance senders/recipients, banks, and money transfer operators; more innovation in the design of banking products tailored toward the needs of remitters, particularly by banks that operate in both, the country of the remittance sender and the remittance recipient; monitoring and

regulations in the foreign exchange market, to prevent and fight speculative actions by the actors involved in this market.

Overall, this is the first qualitative study of its kind that brings forward a full analysis of the payment cards and remittances market in Albania, and as such, contributes new evidence to the literature. Moreover, what makes this study unique is the fact that it brings together the voices of the different actors and stakeholders (due to the representativeness of the sources used), on the demand and supply side of payments. This approach ensures a holistic and transparent diagnosis of the real situation on the ground. In addition, the assessment, which spans multiple years, allows for the identification of the issues and sticking points in the Albanian market, which subsequently makes policy subscription easier. Although a one-size-fits-all approach should be avoided, countries with similar characteristics and structural issues such as Albania could also benefit from this work, particularly in terms of the policies suggested. Indeed, it is the case that many countries have the political willingness to move forward with the modernization of their payment systems, however, often times, they lack a policy roadmap of bring about the changes in practice.

This work is of particular significance to Albania because it comes at a time when the country is an EU candidate country, and the financial sector and its components (payments being one of them) has to be modernized and aligned with the principles and guidelines of the rest of the EU in the process of full integration. It is also of relevance to the Bank of Albania which has been playing an increasingly prominent role in the payment systems modernization initiatives, and as such, is always looking for more feedback in terms of forward looking policy steps.

Finally, this work can also be further expanded and used as a stepping stone for more future research. Specifically, future work could extend the regional (Balkan) comparison

provided here to the EU level. For instance, a comparison of Albania with an ex-communist Eastern European country (EU member) could be explored to bring forward the lessons that Albania can learn in the context of payments from such countries, in its path toward the EU membership. Furthermore, the exploration of pricing schemes could be of particular interest for the Albanian card and remittances market. That is, given the Albanian market structure, the current conditions, and the actors in play, models could be designed that predict the most competitive costs and fees for payment cards and remittance products, so that consumers are drawn toward electronic instruments and payment service providers continue to make a profit.

APPENDIX 3

Table 3.7: Socio-demographics and financial inclusion statistics about the focus group participants

Participant	Gender	Age	Occupation Status	Bank Account Ownership	Debit Card Ownership	Credit Card Ownership
1	Male	21	Student	No	No	No
2	Male	30	Employed (public sector)	Yes	Yes	Yes
3	Female	28	Employed (private sector)	Yes	Yes	No
4	Female	45	Unemployed	No	No	No
5	Female	60	Retired	No	No	No
6	Female	52	Employed (public sector)	Yes	Yes	No
7	Male	48	Employed (private sector)	Yes	Yes	Yes
8	Male	55	Self-Employed	No	No	No
9	Female	35	Stay-at-home Mother	Yes	No	No
10	Male	25	Unemployed	Yes	No	No

Table 3.8: Commercial banks operating in Albania (by ownership)

Bank	Ownership
Raiffeisen Bank	Foreign
United Bank of Albania	Foreign
Veneto Bank	Foreign
Tirana Bank	Foreign
National Bank of Greece	Foreign
International Commercial Bank	Foreign
Alpha Bank	Foreign
Intesa Sanpaolo Bank of Albania	Foreign
Procredit Bank	Foreign
Emporiki Bank of Albania	Foreign
Credit Bank of Albania	Foreign
First Investment Bank	Foreign
Societe Generale Albania	Foreign
Credins Bank	Domestic
National Commercial Bank	Domestic
Union Bank	Domestic

CONCLUSION

What are the general lessons learnt from the findings and analysis provided in this dissertation, and how can this work serve as a basis for future research? The framework to measure the cost of payments constitutes a significant contribution to the literature and can serve as a powerful tool in the hands of both academics and practitioners. It is the first model of its kind which incorporates all types of cost elements (including time-based costs) and takes into account all cost determinants. Previous studies have looked at only some of the cost determinants separately (e.g. certain actors or certain access channels). Indeed, the theoretical framework provides a consistent methodology that can be applied to any country, regardless of its economic or national payment status. At the same time, the framework can be modified and adjusted based on country needs, circumstances, and objectives. However, the results can still be compared across countries and even for the same country during different periods in time, if a country wants to monitor its progress in terms of the payment costs.

The theoretical aspect of the retail payment cost analysis provided in this dissertation opens the door to multiple applications. Ideally, an international database with various country data pertaining to payment instrument costs can be gradually built so that authorities and other stakeholders have access and use the data to advance payment modernization reforms and drive changes on the ground. Such data can also be particularly useful for international projects such as the 2020 Universal Financial Access (UFA) platform spearheaded by the World Bank, with the objective to help two billion people around the world gain access to bank accounts and electronic payment instruments by 2020. The World Bank is working with the local authorities in various developing countries in order to achieve the objective in a fast and efficient way. As such, cost

data related to payment instruments could further assist the World Bank with having a stronger case to convince the various stakeholders to opt for electronic payments.

On the implementation side of the framework, the case of Guyana is presented as an indicative case study. As mentioned above, the framework can be implemented in any country, although the focus has to primarily be on developing countries since they are the ones in need of such data and analysis as they struggle with the dominance of cash and other paper-based instruments. The choice of Guyana is justified in that the Bank of Guyana is in the process of modernizing their payment systems and as such, it is the right time to be looking at the country's payment costs and further support the work of the central bank with the findings provided here. Moreover, since survey primary data were used for the Guyana case study, the country's small population made it easier to draw a small and yet country representative sample, due to the limited resources. It is also worth emphasizing that the limited resources for this study led to the partial application of the framework on the ground to the extent that only payment costs pertaining to consumers were examined, while in reality the framework consists of more sets of actors (i.e. consumers and businesses on the demand side, and payment service providers on the supply side). The consumer results from Guyana provide a partial picture in that it is not obvious that the other actors (particularly businesses and payment service providers) would benefit from the transition to electronic payments in addition to consumers. It is the objective of the author to further build on this research by gathering cost related data pertaining to the other stakeholders in Guyana so that a complete picture is formed regarding the costs and savings for each stakeholder, but also for the economy as a whole. In the medium run, countries with larger population sizes can be selected in order to apply the framework, so that there is data variation. It should be reiterated that developing countries (low and middle income countries) should be

given priority because they have been neglected by previous studies and also many of them are at a crossroad in terms of which direction to move with reforms.

Despite the implementation limitations, the findings regarding the cost of payments borne by Guyanese consumers are fascinating. The hypothesis that all types of paper-based payment instruments are more costly, on a per transaction basis, than the equivalent electronic ones is confirmed. However the magnitude of the costs exceeds by far what other theoretical frameworks have suggested. For instance, Humphrey et al (2003) suggest that on average, a country could save up to 1 percent of its GDP (for the entire economy) when replacing all paper-based payments with electronic payments. The findings of this dissertation suggest that in the context of Guyana the 1 percent of GDP savings is absorbed only by consumers. In other words, if the other actors were also included in the study, the total savings for the entire economy would have exceeded by far the 1 percent of GDP. Another surprising finding of this study is the overall high annual cost of cash borne by consumers in Guyana. Concretely, Guyanese consumers incur annually costs equivalent to 2.5 percent of the 2014 country's GDP in initiating and receiving cash. The overall high cost is driven by both the high per transaction cash cost and also the high volume of cash payments (almost 99 percent of all retail payments). The main lesson from the findings in Guyana is that cash is much more expensive than scholars and practitioners have estimated thus far, particularly in developing countries. This is primarily due to the fact that the methodology applied here rigorously and systematically measured all explicit and implicit costs. The results further reinforce the urgent need to reduce the use of cash. Another interesting finding is the fact that most costs for paper-based payments are time-based costs, or otherwise known as productivity losses. While such costs are not direct costs, they constitute economic costs that are relevant for most developing countries, particularly for those that have large

portions of their population living in rural areas. In those cases, consumers have to spend significant amounts of time and give up other profitable activities in order to travel to the nearest urban centers and perform paper-based transactions. In the presence of electronic payment instruments, such time-based opportunity costs would be significantly reduced, if not eliminated.

The methodology introduced does not take into account infrastructure and upfront investment costs needed to set up the required systems that support electronic payment instruments, but rather focuses on per transaction marginal costs associated with using different payment instruments (assuming the electronic infrastructure already exists). This is acknowledged as a limitation of the model, although infrastructure costs need to be treated separately because they often require calculations based not simply on domestic data but also on the experience of other countries that have undertaken similar investments. Indeed, future research could examine the infrastructure costs needed for a country that lags behind in electronic payments. Simulations could then be used in order to project infrastructure costs based on a country's current status of retail payments systems. Nevertheless, the need for upfront investments in order to promote electronic payments should not be seen or used as an argument against pursuing reforms in the area of payments. Particularly in the case of developing countries, there are numerous international organizations and developmental agencies that provide technical and financial assistance (often times with no strings attached) in order to help them leapfrog, especially when it comes to the initial investment costs.

Another limitation of the model is that it does not capture benefits directly but only costs, and as such it can be considered as a cost comparative model, putting in juxtaposition the costs associated with paper-based and electronic payment instruments. One argument that was also made in the beginning of the dissertation is the fact because a payment system is a closed system,

consisting of paper-based and electronic payment instruments, the costs of one category can be perceived as the benefits of the other category, and vice versa. Naturally, the risk is that some inherent benefits cannot be captured that way. A few studies have attempted to measure benefits pertaining to payment instruments. The common issue they have ran into is the difficulty to quantify benefits since most of them are not explicit and as such, proxies need to be used in order to convert them into monetary terms. Nevertheless, the fact that the methodology presented in this dissertation does not account for explicit benefits does not make its application less informative, since the important element it adds to the literature is the comparative basis. Even as such, the framework is designed in a way that benefits can still be incorporated without changing its core structure, the difference being that it will then be converted into a cost-benefit study rather than a cost comparative study which is the case now.

The exploration of the macroeconomic aspect of retail payments, as explored in Chapter 2, carries an equally important weight to the cost aspect. Both dimensions together can serve as a powerful argument to make a business case and social case for why electronic payments make sense to be promoted, adopted, and used widely. The limited number of empirical studies on the impact of card usage on GDP have provided some general insight, but as in the case of cost measurement, the focus has primarily been on advanced economies. The Zandi et al (2013) study is one of the few empirical studies that have included in the dataset developing countries as well, but the issue there being the recessionary time period chosen (between 2008 and 2012) for the global economy. The findings from the model and the dataset used in Chapter 2 shed some more light on the macroeconomic significance of payment cards, since the results indicate higher impact than what Zandi et al suggest. The results are particularly significant for developing countries since card penetration is moving at a higher growth rate compared to advanced

economies, creating more potential for cards to have an impact on those economies. Despite the limited in-store POS terminal infrastructure for card usage, the e-commerce has been taking off in many developing countries, since internet has become more widespread. What stands out from the results derived in Chapter 2 is the fact that for all countries examined, regardless of the economy cycle (recession or expansion), the contribution of card penetration to consumption and GDP has been positive and increasingly larger in magnitude from year to year, since 1998.

Obviously there is a lot of potential to further expand the study presented here and in general, more research is needed on the macroeconomic scope of payments, on a quantitative and qualitative basis. In addition to performing more econometric tests pertaining to the fitness of the model, ideally an institutional variable need to be sought in place of card penetration so as to deal with endogeneity issues. Some additional mechanisms of how electronic payments impact the economy can be explored in depth, beyond the direct impact of card usage on consumption. For instance, there is an argument to be made about the reliance of the underground economy on cash and how replacing cash payments could automatically lead to a lower level of underground economy and tax evasion. Indeed, a study which would quantify such macroeconomic benefits would be value added to the benefits coming from extra consumption. Furthermore, it would be interesting to also explore the impact that electronic payment infrastructure has on foreign investments. Investors assess a series of factors when deciding to invest in a country and the safety and efficiency of payment systems constitute such factors. Similarly, efficient payment infrastructure that allows for the use of electronic payment instruments can impact the choice and behavior of tourists, and this is particularly relevant for countries that host large number of tourists on an annual basis. Greece is a great example in that tourists coming from other Eurozone countries can easily use their debit/credit cards without having to deal with cash and

with exchange rate fees, given the common currency. This is significant because it provides the safety of not having to carry cash in a foreign country.

Macroeconomic benefits could also be found in cash. For instance, some economists argue that seigniorage is a significant benefit for a central bank and the economy associated with “printing” currency, the counterargument being the increase of inflation. In addition, there can also be macroeconomic risks or costs associated with electronic payment instruments. The use of credit card, in particular, could lead to overspending and accumulation of debt at the household level, potentially leading to an economy wide “bubble.” This is why a separate research study listing, examining, and quantifying the positive and negative externalities to an economy from the use of both paper-based and electronic payment instruments would be valuable. Such stand-alone study or analysis could even incorporate the upfront infrastructure costs needed for the modernization of payment systems, since such types of costs cut across multiple stakeholders and thus, can be considered of macroeconomic nature.

The third and final dimension that was explored in this dissertation is the policy one, and more specifically how to drive payment system modernization on the ground through policy interventions. Although Albania was used as a case study to tackle this issue, a lot of other countries, particularly low and middle income, face the same question. The theoretical evidence that show the benefits of electronic payments is a necessary but not sufficient condition to realize the reforms. Authorities in the different countries, including Albania, have to pay close attention to the domestic conditions. The model presented in Chapter 1 is constructed in a non-preemptive way. In other words, the Guyana case study shows that all electronic payment instruments are less costly than paper-based payment instruments but then depending on the country, the most cost efficient instrument among the electronic ones might vary. For example, in the case of

Guyana, electronic credit transfer is the cheapest instrument among the electronic ones, and this can be a good basis for the authorities to build on their modernization strategy and promote electronic credit transfers. For another country, the most cost efficient alternative could be mobile money and therefore the infrastructure investments should support mobile money in that particular country.

The case of Albania shows that both incentives (in the form of financial education and subsidies) and regulations are needed in order to promote electronic payments on the ground. The subsidies are particularly important for the first stage of the changes which includes the upfront investment from merchants and financial institutions on modern infrastructure. Regardless of the country examined, though, the role of the government will be crucial in the process for two main reasons. The first reason has to do with the influence that the government as an actor has over the other actors, including consumers, merchants, and payment service providers. The influence indeed stems from the legal, regulatory, and fiscal power that can be used to bring all other actors on board with the payment modernization reforms. The second reason has to do with the fact that any government can start the modernization process from within, before even dealing with the other actors, acting in essence as the driving engine in the process. Government payments count for the majority of retail payments (in terms of volume and frequency) in every country, due to pension and social benefits on the disbursing side, and taxes/other government obligations on the receiving side. Minor regulatory adjustments can be made to initiate and receive all government payments through electronic methods, and this would constitute a first major step towards a comprehensive change on the ground. Not only would this step “force” the other actors to receive and initiate government payments electronically, but it

would also make sure that people get equipped with a bank account, which is a prerequisite to electronic payment instrument adoption and usage.

Overall, the role of the government as an actor in the transformation process overshadows all other factors that might be hindering the transition to electronic payments due to the aforementioned reasons. As such, future work should shed more light into the exact actions that a government should undertake (within itself and across actors) in order to pursue a fast and sustainable path toward electronic payments.

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