ESSAYS ON MIGRANTS' REMITTANCES AND THE FINANCIAL SECTOR

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0. Introduction: Essays on Migrants' Remittances and the Financial Sector

I. REMITTANCES AND DEVELOPMENT ON THE INTERNATIONAL POLICY AGENDA

Officially registered remittances to developing countries – the money sent home by migrants to support their families back home – have grown extraordinarily in the last two decades, from 55 billion USD in 1995 to an estimated 325 billion USD in 2010 (Mohapatra, Ratha, and Silwa 2011). For the group of developing countries, these transfers are an important and stable source of external finance (Dilip Ratha 2003), second in value only to foreign direct investment and three times the value of official development aid (Mohapatra, Ratha, and Silwa 2011). Whereas the United States is by far the world's largest remittance-sending country, the three largest receivers of remittances in the world are India (55 bil. USD estimated in 2009, World Bank 2010), China (51 bil. USD) and Mexico (23 bil. USD). In relative terms, small and poor countries with large diasporas are the most dependent on remittances. In Latin America, many Central American and Caribbean countries had shares of remittances of up to ten per cent of GDP or higher in 2009; these countries included Honduras, El Salvador, Haiti, Jamaica, Nicaragua, and Guatemala (ibid). Remittances have proven to be relatively resilient to macro-economic turbulence, resisting the strong cyclical movements that characterize other international financial flows such as foreign direct investment, bank lending, and short-term portfolio investment. During the most recent financial crisis, remittance flows were less affected than other private capital flows and recovered relatively quickly from a 5.4 per cent decline in 2009 (Mohapatra, Ratha, and Silwa 2011).

The importance of remittances for many countries has triggered a lot of interest among policy-makers, who have 'discovered' remittances as a potentially important source of capital for development in receiving countries. In recent years, most leading

international organizations have dedicated flagship reports to the nexus between migration, remittances, and development (IMF 2005; World Bank 2006; UNDP 2009; OECD 2005), raising the question of whether remittances would become a new mantra in the development discourse – one which responds to the search for a third communitarian way of development between pure market liberalism and state-led development strategies (Kapur 2004; cp. de Haas 2010, 275), and where diasporas play an important role in the economic development of their home countries.

II. SHIFTING PARADIGMS ON MIGRATION, REMITTANCES, AND DEVELOPMENT[1]

The growing interest in the development potential of remittances has been accompanied by numerous academic publications on the direct and indirect positive or negative effects of remittances on receiving countries. While it is widely accepted that remittances have contributed significantly to the material well-being of receiving households and to poverty reduction (R. Adams and Page 2005), they also affect receiving countries through several secondary and indirect channels that have to be taken into account when analysing their impact on receiving countries. These indirect effects of remittances include consumption multipliers from spending remittances (Glytsos 2005; Durand, Parrado, and Massey 1996), or consequences for the labour market through rising wages (Mishra 2007; Airola 2008). Other economy-wide effects have been attributed to the impact of remittances on exchange rates. On the one hand, remittances have contributed to the macro-economic stability of receiving countries: because remittances are less volatile than other private capital flows, they tend to

[1] This subchapter draws on previous contributions in Ambrosius et al. (2012a; 2012b) and Fritz et al. (2010).

stabilize the exchange rate and may sustain current-account deficits (Buch and Kuckulenz 2010; Singer 2010). On the other hand, large inflows of foreign currency tend to appreciate the nominal or real exchange rates, leading to negative effects on the competitiveness of export-oriented sectors (Amueda-Dorantes and Pozo 2004; P. A. Acosta, Lartey, and Mandelman 2009), similarly to the phenomenon known as "Dutch disease" in the literature on natural resource booms.

The wider implications of these direct and indirect effects of remittances on the economic development of receiving countries have been interpreted in different manners. Early research on remittances and development was dominated by structuralist positions, with a mostly critical tone regarding the impact of remittances on migrant-sending communities (cp. de Haas 2010; Durand, Parrado, and Massey 1996, 424f). These critical views, often formulated by sociologists and anthropologists, stemmed from the observation that income from remittances is, to a large degree, spent on receiving households' daily consumption rather than on 'productive' investment or on luxury goods, with few benefits for the local economy (Wiest 1979; Lipton 1980; Mines 1981; Reichert 1981; and Binford 2003; Cortina, de la Garza, and Ochoa-Reza 2005; Canales 2005 for more recent contributions along similar lines). In this tradition, authors with a critical perspective on globalization, such as Delgado Wise and Márquez Covarrúbias (2008), argue that remittances are the result of strangled economic and social development rather than a tool for growth and well-being. In their view, these flows help sustain the fragile socioeconomic situation of the migrants' countries of origin, expanding the asymmetries between North and South and exacerbating phenomena such as employment insecurity, poverty, and social marginalization. Therefore, instead of altering structural development constraints, remittances, according to these authors, at best constitute a palliative measure against the deteriorating

socioeconomic situation of the population, which has been caused by failed macro-economic structural policies (Canales 2006; Canales 2008a).

While critical views on the impacts of migration and remittances have not vanished, the 1980s and 1990s saw a paradigmatic shift towards more positive views on the role of migration and remittances in the development process. Earlier studies that criticized the 'unproductive' ways in which remittances were spent have been contested by more recent contributions that have compared spending behaviour among receiving and non-receiving households, finding that remittances have a positive impact on investment in human and physical capital. According to these studies, remittances enable households to undertake investments in human or physical capital they would not otherwise be capable of making. Remittance-receiving households have therefore been found to spend a higher share of their income on education (R. Adams and Cuecuecha 2010; Hanson and Woodruff 2003; Cox Edwards and Ureta 2003), health (Amuedo-Dorantes and Pozo 2009; Valero and de Lourdes Treviño 2010), and entrepreneurship (Massey and Parrado 1998; Woodruff and Zenteno 2007). Many of these more recent contributions have been influenced by the insights of the New Economics of Labor Migration (NELM, see Stark and Bloom 1985; Lucas and Stark 1985; Rosenzweig and Stark 1989), a school of thought that led to a re-thinking of the relationship between remittances and development by putting the transnational household at the centre of analysis. Earlier analyses of migration's impact on home countries usually stopped with the act of migration, which was seen as constituting a loss of human capital for migrant-sending communities. In contrast to these positions, the NELM studied migration as an implicit family arrangement that involves the whole household. According to this view, migration and remittances are informal household mechanisms of asset-accumulation and self-insurance that can be modeled within absent or rudimentary markets for

finance and insurance (Stark and Levhari 1982; J. E. Taylor 1986; E. J. Taylor and Wyatt, T.J. 1996), a feature typical of rural areas in developing countries. Families invest in sending one or more members abroad and receive a return in the form of remittances, the monetary expression of a long-term relationship with emigrating family members. Following the work of the NELM, a number of studies have analysed migration decisions as part of the risk-management and asset-building strategies of transnational households: remittances are seen to provide insurance for those family members who stay behind, through the diversification of household incomes, and tend to increase in the case of negative events (e.g. Agarwal and Horowitz 2002; Gubert 2002; Yang 2008; Yang and Choi 2007).

III. THE RESEARCH QUESTION: WHAT IS THE IMPACT OF REMITTANCES ON THE FINANCIAL SECTORS OF THE RECEIVING COUNTRIES?

Although migration and remittances can be perceived as 'self-help' strategies enabling households to self-insure and to finance investment in human or physical capital in the context of absent or rudimentary formal institutions for finance and insurance, migration and remittances do not take place in an institutional vacuum. Departing from and extending the ideas of the NELM, the guiding research question of this dissertation is as follows: How do migration and remittances, while they take place within a context of incomplete or rudimentary institutions for credit and insurance, influence financial markets in the migrants' countries of origin?

This research question is addressed by the following two hypotheses. The first hypothesis postulates that access to transnational money transfers functions as a substitute for financial services. The second hypothesis proposes that remittances improve receiving households' access to financial services. These two hypotheses are

less contradictory than they sound: Remittances can be a substitute for credit and insurance from financial institutions and a 'catalyst' for improved access to financial services at the same time. Recent research based on financial diaries has shown that poor households mix and combine different financial tools and instruments to cope with expected and unexpected financial gaps (Rutherford 2003; Collins et al. 2009). Since migration and financial services are both asset-building and risk-management tools, remittances and financial services may, in some cases, substitute for each other – for example, when family members in the US function as a source of capital from outside the regular household to cover emergency spending, similarly to credit or insurance from financial institutions. In other cases remittances and financial services may complement each other because financial institutions offer a way of saving remittances or because financial institutions may accept remittances as collateral for loans.

Linkages between remittances and the financial sector have a high relevance with respect to the impacts of these transfers on receiving countries. First, receivers themselves may benefit from more efficient asset-building strategies through monetary savings options and, eventually, from improved access to other financial services such as credit and insurance products. Access to adequate financial services among poor households plays an important role in reducing poverty and may lead to a more equitable distribution of income (Jalilian and Kirkpatrik 2002; Thomas Beck, Demirgüç-Kunt, and Levine 2007). Beyond these direct benefits to receivers, the linking of remittances with financial services has potentially wider economic effects. Savings from remittances can be channelled to their most productive use and be matched with the demand for credit elsewhere, thereby also benefiting those who do not directly receive remittances themselves. There is a broad consensus among development economists that financial institutions play a crucial role in the process of economic

development (see Levine 1997 for an overview). For example, cross-country studies have shown that a relative increase in savings and credit is associated with an increase in both growth and per capita income (Goldsmith 1969; R. G. King and Levine 1993; Thorsten Beck, Levine, and Loayza 2000a; Thorsten Beck, Levine, and Loayza 2000b).

The regional focus of this Ph.D. thesis is on Latin America, with single case studies on Mexico and El Salvador, and a comparative study that includes Mexico, El Salvador, and the Dominican Republic. The Mesoamerican and Caribbean regions that these countries represent have the highest remittance dependency rates worldwide, with remittances sent mainly from emigrants in the US (World Bank 2010). Mexico, one of the main recipient countries of remittances in the world, has more than 10 per cent of its population of approximately 110 million people living outside their country of birth. Mexicans make up the largest group of immigrants in the US (Pew Hispanic Center 2009). Despite a 16 per cent decrease in the sending of remittances following the 2008 US financial crisis, remittances still play an important role in the Mexican economy. In 2009 they were approximately the same in value as foreign direct investment (FDI) to Mexico, contributing 2.5 per cent to the country's GDP (ibid). In El Salvador remittances are even more important to the economy, and the country ranks among the world's top ten receivers of remittances, which amount to 16 per cent of the country's GDP (2009, ibid.). Today, 1.6 million Salvadorans live in the US; of these people, one million were born in El Salvador, representing 16 per cent of the country's population of roughly six million (US Census 2008, cited from Pew Hispanics Center 2010). In the Dominican Republic, the size of the diaspora is one million (10 per cent of the population), and the remittances equal 7 per cent of GDP (World Bank 2010).

At the same time, all of the countries studied are characterized by weakly developed domestic financial sectors, with the level of domestic credit provided by the banking

sector at 40 per cent (Dominican Republic) and 45 per cent (Mexico and El Salvador) of GDP in 2010, compared to an average of 113 per cent in developing Asia and an average of more than 200 per cent in OECD countries (World Bank 2011a). Access to financial services is also strongly limited in all three cases: According to Honohan (2008), less than a third of the adult population has access to formal financial services (measured by usage of savings accounts), compared to rates above 90 per cent in Western Europe. A general judgement in policy reports (e.g. Orozco 2006; Jaramillo 2005), which is also supported by the analysis of household data used in this Ph.D., is that many remittance receivers belong to lower-income groups, often from rural areas, and are usually not serviced by the commercial banking sector. In the sending countries, too, many migrants do not hold bank accounts due to language barriers or the fact that they are undocumented residents (Paulson et al. 2006). Because of this, remittances from Latin American immigrants in the US are in most cases sent and received in cash via money transfer operators (MTOs).

IV. ESSAYS ON MIGRANTS' REMITTANCES AND THE FINANCIAL SECTOR: KEY FINDINGS AND CONTRIBUTION TO RESEARCH

This doctoral thesis addresses a research gap that exists between research on remittances and research on financial sector development. In spite of the high ranking of linkages between remittances and receiving countries' financial development on the policy agenda, few academic studies so far have brought both research areas together, with the exception of those by Aggarwal et al. (2010) and Aslı Demirgüç-Kunt et al. (2011). Reasons for a relative lack of systematic work on these topics may lie in the fact that scholars are usually specialized either in financial sector development or in migration research and little communication occurs between these fields of research. Moreover, the scarcity of detailed data including information on both financial service

usage and migration histories and/or remittances poses a challenge to researchers. By applying a variety of quantitative and qualitative research methods that range from micro-econometric panel data techniques to comparative case study designs, this thesis contributes to a better understanding of the relationship between remittances and the financial sector. The four single papers[2] of this cumulative dissertation can be divided into two broad thematic topics. Papers one, two, and three analyse the impact of remittances on the financial sectors of the receiving countries. While papers one and two use Mexican household panel data to study the question of whether remittances are a substitute for credit (paper one) or a 'catalyst' for financial access (paper two), paper three provides further evidence on the impact of remittances on the development of the financial sector from a case study on El Salvador. Paper four (co-authored with Barbara Fritz and Ursula Stiegler) takes a closer look at the institutional settings of financial markets in remittance-receiving countries, borrowing partially from research questions and methods more commonly used in political science. In this paper we analyse those initiatives that capitalize on remittances in order to improve access to further financial services within the institutional setting of the financial market in in El Salvador, Mexico and the Dominican Republic.

In the following section I provide a short summary of the research questions of each of the four essays, explain the methodology used and highlight each essay's main contributions to the current research. Because each paper is intended to stand on its own, certain arguments, and the way they are framed in relation to the current research, are similar in more than one of them.

[2] All papers are either under review (papers one, two, and four), orforthcoming (paper three) at the time of submission of this doctoral thesis.

1. ARE REMITTANCES A SUBSTITUTE FOR CREDIT? CARRYING THE FINANCIAL BURDEN OF HEALTH SHOCKS IN NATIONAL AND TRANSNATIONAL HOUSEHOLDS

Although several authors refer to the substitution of credit through remittances as a theoretical argument for their empirical findings (explicitly for example Woodruff and Zenteno 2007; Giuliano and Ruiz-Arranz 2009), to my knowledge, the question of whether remittances and credit are substitutes for each other has not been directly tested in previous studies. In this article, Mexican household panel data is used to study the effect of exogenous events – health-related shocks – that create a demand for finance among exposed households and to compare the effect that these events have on the debt levels of national and transnational households. The results from the treatment-effect model show that, while the occurrence of serious health shocks that required hospital treatment doubled the average debt burden of exposed households compared to the matched control group, households with close family members (a parent, child, or spouse) in the US did not see an increase in their debt due to health shocks. These findings are consistent with the insights of the New Economics of Labor Migration that remittances respond to the needs of transnational families to finance emergencies. The results from this research also call into question the unidirectional interpretation of the correlation between remittances and health spending (Amuedo-Dorantes, Sainz, and Pozo 2007; Amuedo-Dorantes and Pozo 2009; Valero and de Lourdes Treviño 2010) or health indicators (Kanaiaupuni and Donato 1999; Frank and Hummer 2002; Hildebrandt and McKenzie 2005; López Córdova 2005) in previous studies. Here, the opposite perspective is taken: Increased health spending caused by health shocks may create demand for alternative financial sources such as credit or remittances in liquidity-constrained households, thereby reducing a household's need to rely on debt financing.

2. ARE REMITTANCES A 'CATALYST' FOR FINANCIAL ACCESS? EVIDENCE FROM MEXICAN HOUSEHOLD DATA

A number of policy reports have emphasized that linking remittances with additional financial services increases the development impact of these financial flows (see, for example, Orozco 2004a; Terry and Wilson 2005; Orozco and Fedewa 2006). Receivers may benefit from more efficient asset-building strategies through monetary savings options and, eventually, from improved access to other financial services such as credit and insurance products. Beyond these direct benefits to receivers, linking remittances with financial services has potentially wider economic effects. Savings from remittances can be channelled to their most productive use and be matched with the demand for credit elsewhere, therefore also benefiting those who do not directly receive remittances themselves.

As mentioned above, remittances might not only be a substitute for financial services, but might also function as a driver of institutional change at the local level. In policy discussions it has been claimed that remittances often create an initial contact with formal financial institution, paving the way for further financial services (e.g. Orozco 2004a; Orozco and Fedewa 2006). However, although remittances figure prominently in policy discussions, academic publications on the impact of remittances on financial development are scant, with the notable exceptions of Aggarwal et al. (2010) and Aslı Demirgüç-Kunt et al. (2011), who have found evidence that remittances are correlated positively with indicators of financial development at the cross-country (macro) level (Aggarwal et al.) and the municipal (meso) level (Demirgüç-Kunt et al.). The case study on Mexico adds to this recent line of research, and is the first study that uses household panel data to investigate the relationship between remittances and financial development. This approach allows me to analyse the relationship between remittances

and access to financial services in a more detailed way than previous studies have done, and to control for unobserved time-constant household heterogeneity through household fixed effects.

The results show that receiving remittances is strongly correlated with the holding of savings accounts and, to some degree, with the availability of borrowing options. These effects are stronger and more significant for the rural subset, and the linkages between remittances and the financial sector are more important for non-traditional financial institutions from the micro-finance sector than for commercial banks. These results support the argument made by Orozco and Hamilton (2005), Hastings (2006), and Orozco (2008), among others, that institutions from the micro-finance sector are often 'closer' to remittance receivers, both socially and geographically, and are therefore better positioned to link remittances with further financial services. The household data used in this study indicates that remittances function as a 'catalyst' for financial access, especially for rural households from lower-income groups, which tend to use non-traditional financial institutions from the micro-finance sector more than commercial banks.

3. REMITTANCES AND FINANCIAL DEVELOPMENT: LESSONS FROM THE SALVADORAN CASE

The case study on El Salvador adds further evidence regarding the impact of remittances on the financial sectors of receiving countries by extending research to a new country setting. El Salvador presents an interesting case, and not just because of its strong dependence on remittances, which amounted to 16 per cent of GDP in 2009 (World Bank 2010). The government also followed an active policy of 'banking' migrants in the 1980s, dividing the US market among the major state-owned banks in order to capture remittances for the domestic banking sector. Moreover, next to traditional banks, a relatively consolidated micro-finance sector has been engaged in paying remittances in El Salvador since the late 1990s.

The first part of the paper, which is based on interviews with experts from financial and government institutions, discusses how different kinds of financial institutions have responded to the demands of remittance receivers for financial services in the Salvadoran context and analyses their potential to provide financial access to remittance receivers. Challenges for the micro-finance sector in remittance markets differ from those faced by commercial banks: While commercial banks have to downscale their supply to reach low-income households and those living in rural areas, the challenge for pro-poor financial institutions from the MFI sector is to link their rural and low-income focus with access to global payment systems.

The second part of the paper focuses on the commercial banking sector, for which official data is available, and analyses the correlation between remittances and indicators of financial development. In contrast to the paper on the Mexican case, which uses household panel data to study the relationship between remittances and financial

access, this paper follows the approach previously used by Aslı Demirgüç-Kunt et al. (2011) and crosses banking data with remittance data at the municipal level. Although coverage of the banking sector is limited to larger municipalities and those with better-than-average socioeconomic indicators, the empirical results show that the banking sector in remittance-intensive municipalities is more developed in terms of per capita savings and the number of accounts. However, in spite of banks reaching out to remittance receivers, existing inequalities have also been reproduced through the traditional banking sector. Poor and geographically isolated households are largely excluded from banking services and therefore hardly benefit from the banking of remittances.

4. REMITTANCES FOR FINANCIAL ACCESS: EMERGING FORMS OF GOVERNANCE IN LATIN AMERICA

The role of financial institutions in remittance markets varies across countries. However, systematic research on the institutional contexts of financial markets and how they relate to remittances is scant. It has been dominated by best practices and case studies on initiatives that have included remittances in their product portfolio, offering financial services to remittance-receiving households from low-income groups, often from rural areas.

This joint work, with Barbara Fritz and Ursula Stiegler, links research on remittances and micro-finance from the discipline of economics with political science insights on multi-actor governance. We analyse initiatives that link remittances with access to further financial services within the particular institutional setting. Adopting a comparative approach, we look at the Dominican Republic, El Salvador, and Mexico. While the context of a high level of remittance dependency creates similar challenges in

all cases, the emerging forms of governance show remarkable variety. Our research finds that this is explained by neither agency nor structure alone, but rather by the interplay of for-profit, non-profit, and state actors embedded in the specific structures of the remittance markets and micro-finance sectors of each country. Whereas a high level of institutional development within micro-finance institutions (MFIs) facilitates the establishment of strategic networks between MFIs and institutions on the sending side, it can be difficult for deposit-taking financial institutions to break into existing monopolies when transfer markets are heavily dominated by MTOs. Finally, governments have been crucial in shaping financial and remittance markets, not only by taking on indirect roles through regulation and rule-setting but also by intervening directly in remittance markets.

V. CONCLUSION

While much of the growing research on migrants' remittances has focused on poverty effects and the spending of remittances, this doctoral thesis contributes to an understanding of how remittances influence the economies of receiving countries by focusing on a relatively neglected research topic, the linkages between remittances and the financial sector. This is an important issue, as it draws attention to some of the indirect effects of remittances, whereas concentrating solely on the spending of this source of income misses an important part of the picture. The linkages between remittances and the financial sector increase the former's development impact by providing receiving households with additional risk-management and asset-building tools, and by channelling savings from remittances to fulfil demands for credit elsewhere.

Adding to this relatively recent line of research, the thesis adopts different perspectives on the impact of remittances on financial sector development and applies a variety of methodological approaches ranging from micro-econometric panel data techniques (causal inference using a treatment effect model in the first paper and household fixed effects in the second paper), to mixed qualitative-quantitative methods (third paper), to multi-actor governance analysis and a comparative case study (fourth paper). The mix of quantitative and qualitative methods, together with the interdisciplinary perspectives applied, has proven to be useful in gaining a more complete understanding of the behaviour of transnational households within their institutional contexts.

The main message of this thesis is that remittances can be both a substitute for credit as well as a 'catalyst' for improved access to financial services in receiving countries. These findings are not contradictory: Migration and remittances on the one hand and financial services on the other are both part of the risk-management and asset-building strategies of households. They partially replace absent or rudimentary institutions for formal credit and insurance and partially complement each other – for example, when financial institutions provide households with savings options or accept remittances as collateral for loans. This interpretation contrasts with critiques of the overly 'consumptive' spending of remittances. Instead, this study's observations from the case studies on Mexico and El Salvador indicate that remittance receivers demonstrate a strong demand for savings options. Moreover, in countries such as El Salvador, where remittance inflows are large relative to the size of the financial sector, savings from remittances can contribute to liquidity of the financial sector in an important way.

The linkages between remittances and the financial sectors of the receiving countries depend on the specific institutional setting in each country. Consequently, the second part of this thesis emphasizes the institutional frameworks and specific initiatives that

link remittances with additional financial services, and, more generally, the role that governance by the state and other actors may play in creating favourable conditions for economic and social development. Remittances are the private income of transnational households. Institutional frameworks that open up monetary savings and borrowing options and facilitate the more efficient use of remittances for families are therefore more promising than a paternalistic debate on the 'correct' use of these incomes.

1. Are Remittances a Substitute for Credit? Carrying the Financial Burden of Health Shocks in National and Transnational Households

Abstract

This paper tests for the assumption that remittances are a substitute for credit by comparing the response to health-related shocks among national and transnational households using Mexican household panel data. While the occurrence of serious health shocks that required hospital treatment doubled the average debt burden of exposed households compared to the control group, households with nuclear family members (a parent, child, or spouse) in the US did not increase their debts due to health shocks. This finding is consistent with the view that remittances respond to households' demand for financing emergencies and make them less reliant on debt-financing.

Keywords: Remittances; Health Shocks; Household Debt; Latin America; Mexico

JEL Classification: F24, D14, I15, O12

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I. INTRODUCTION AND RELATED LITERATURE

Vulnerability to poverty depends, to a large to degree, on the household's ability to insure against and to cope with shocks (e.g. Kochar 1995). Formal and informal borrowing has been shown to be a key instrument used by households to cover liquidity shortages in cases of idiosyncratic shocks, such as health-related shocks. In a quasi-experimental setting of bus accidents in India, Mohanan (2011), for example, finds that debt was the principal mechanism used by households to mitigate the shock's effects while consumption was smoothed quite well. Although taking up debt may be chosen by households to avoid other, eventually more harmful strategies to cope with such events, like the sale of assets, work more, take children out of school, or cut investment spending (Jacoby and Skoufias 1997; Beegle, Dehejia, and Gatti 2006; Guarcello, Mealli, and Rosati 2009; specifically on health shocks: Islam and Maitra 2011; Gertler, Levine, and Moretti 2009), the financing of health care expenditures through debt can also create large and lasting financial burdens for households (Damme et al. 2004).

This paper's hypothesis is that remittances – the money sent home by migrants – function as a substitute for credit when households face liquidity shortages. The New Economics of Labor Migration (e.g. Stark and Bloom 1985; Rosenzweig and Stark 1989; Lucas and Stark 1985) has described international migration as a household strategy of reducing vulnerability to negative shocks through the diversification of household income. Remittances provide an insurance function to the family staying behind and, from the perspective of the transnational household, can be considered a return on the cost of sending family members abroad. Building on these insights, many empirical studies have since confirmed that remittances follow altruistic motives and increase in the case of negative events (e.g. Agarwal and Horowitz 2002; Gubert 2002; Yang 2008; Yang and Choi 2007). Because the migrant's income earned abroad is

usually not hit by the same shocks as the family income at home, remittances have even been found to reduce vulnerability to large covariate shocks like economic crises and natural disasters (Yang 2008; Yang and Choi 2007), where local insurance systems provide only limited protection (Dercon and Krishnan 2000; Carter 1997).

Although I am not aware of studies that directly test whether remittances and credits function as substitutes for credit, several studies implicitly or explicitly build on this assumption. Different behavior of spending by remittance-receiving households is often explained within a theoretical framework of imperfect credit markets, where remittances help poor households overcome liquidity constraints that restrict investment in human or physical capital (e.g. Calero, Bedi, and Sparrow 2009; E. J. Taylor and Wyatt, T.J. 1996). More explicitly, Woodruff and Zenteno (2007) refer to the substitution between remittances and credit as an explanation for their empirical findings that credit-constrained Mexican microenterprises with transnational ties invest more than micro entrepreneurs without such ties. Along a similar line of argument, Giuliano and Ruiz-Arranz (2009) find a larger impact on growth in countries with low levels of financial development because – as they argue –, remittances can substitute for the lack of access to credit and enable households and enterprises to increase their investment in human and physical capital in countries with larger credit constraints, which translates into higher growth. Finally, recent research has investigated the impact of remittances on the financial sector and found that remittances had an impact on savings, but ambiguous evidence on the use of loans (Aggarwal, Demirgüç-Kunt, and Martinez Peria 2010; Anzoategui, Demirgüç-Kunt, and Martinez Peria 2011; Demirgüç-Kunt et al. 2011), indicating that remittances may relax liquidity constraints among receiving households that then reduces their demand for credit.

This paper uses Mexican household panel data to answer the question of whether remittances and credits are substitutes for each other. The empirical strategy consists in studying the effect of health-related shocks that create a demand for finance among exposed households; and to compare the effect of these events on the debt levels of national and transnational households. The hypothesis is that households with close transnational ties were less prone to increased levels of indebtedness when they faced health shocks because they were able to cover liquidity shortages caused by catastrophic events through remittances. This research contributes to the existing literature in several ways. First, although liquidity constraints have been the theoretical underpinning of many empirical studies on remittances, to my knowledge, no studies have directly tested whether remittances and credit function as substitutes or as 'functional equivalents' of each other. Authors who have explicitly asked whether remittances compensate for a lack of access to credit (Woodruff and Zenteno 2007; Giuliano and Ruiz-Arranz 2009) explained indirect outcomes such as investment, profit, and growth via an alleviation of capital constraints due to remittances, but have not directly studied the substitution of loans. Moreover, these studies have focused on productive credit. For households, the financing of liquidity shortages due to negative events such as health shocks may be just as important.

Second, up until the present, migration and remittances have almost exclusively been studied as causally linked to health spending (R. Adams and Cuecuecha 2010; Amuedo-Dorantes, Sainz, and Pozo 2007; Amuedo-Dorantes and Pozo 2009; Valero and de Lourdes Treviño 2010) or health indicators (López-Córdova 2005; Frank and Hummer 2002; Zhunio, Vishwasrao, and Chiang 2012; Hildebrandt and McKenzie 2005; Kanaiaupuni and Donato 1999). In fact, increased health spending may not (only) be a voluntary household choice of human capital investment driven by changes in income

composition or by migrants' influence on income allocation decisions, as argued by these authors;[3] rather, increased health spending caused by health shocks may create demand for alternative financial sources like credit or remittances by liquidity-constrained households. In this paper, support is given to a perspective based on the insights of the New Economics of Labor Migration where remittances respond to the need of transnational families to finance emergencies, therefore reducing a household's need to rely on debt-financing.

The impact of health-related shocks on debt levels in national and transnational households is empirically studied with reference to Mexico, which provides a suitable case study for two reasons. First, despite the existence of a public health system in Mexico, its coverage is limited, with about half of the population being uninsured in 2002 (Secretaría de Salud 2002; cp. Amuedo-Dorantes and Pozo 2009, 74). Those that

[3] Beyond the direct income effect of remittances, which increases living standards and may translate into better sanitary conditions (e.g. López-Córdova 2005; Hildebrandt and McKenzie 2005, 278), two types of arguments are given as explanations for remittances' effect on health, even when controlling for income. The first type of argument postulates that remittances are used differently than other regular household income because they are perceived as non-permanent by receiving households. Building on the Friedman's permanent-income hypothesis (Friedman 1957), these authors assume that the propensity to save (or to accumulate assets, e.g. to invest in human capital like health and education) is higher for income from transitory sources (R. Adams and Cuecuecha 2010; Amuedo-Dorantes and Pozo 2009, 71). The second argument is related to decision-making processes in transnational households, assuming that migrants have a say on how remittances are spent and prioritize health-related spending over other uses (e.g. Valero and de Lourdes Treviño 2010, 213) or transmit 'health knowledge' (e.g. Frank and Hummer 2002; Hildebrandt and McKenzie 2005, 278f) to their families. This type of argument – and either the positive or negative effects of migration on health – can be framed within sociological theories on 'social remittances' (Levitt 1998).

are not employed in the formal sector (the informal, self-employed, or unemployed population) are especially at risk, as they only receive incomplete public health care.[4] Moreover, even when they have access to basic health care, the informal or self-employed are usually not insured against the indirect effects of health shocks, such as an inability to work. In Mexico, many families face economic ruin and poverty as a consequence of financing their own health care (Felicia Marie Knaul et al. 2006) due to the immediate costs of treatment and medicine, but also due to secondary costs related, for example, to the loss or reduction of income from work. Second, many Mexican households have close transnational ties with the US and Mexican migration to the US has long historical roots (Durand, Massey, and Parrado 1999). Emigration rates increased strongly in the 1990s and 2000s despite the US' stricter immigration rules and border enforcement policies. In 2009, an estimated 11.4 million Mexican-born immigrants (ca. 10% of the population of Mexico) lived in the US, about half of them without legal documents (Pew Hispanic Center 2009). Mexico is one of the main receivers of remittances in absolute terms worldwide, with about 22 billion USD in 2009, after India and China (World Bank 2011b), and remittances contributed to 2.5% of GDP (ibid.), with an estimated 6% of all Mexican households receiving remittances in 2002 (Esquivel and Huerta-Pineda 2007).

The rest of the paper is organized as follows: The following section (section II) describes the data and explains the econometric strategy, where the effect of health shocks on a change in debt burden is estimated on a dataset of treated households

[4] Although a 2004 reform of the health system aimed at more universal coverage and opened access to the informally employed via the Popular Health Insurance program "seguro popular" (Felicia Maria Knaul and Frenk 2005)

(exposed to health shocks) that where matched to households from the control group (unexposed to health shocks). Section III presents the main results. Health shocks in general have an important effect on a change in debt burdens, but not for households with nuclear family members (a parent, child, or spouse) in the US. Section IV draws conclusions from the findings and addresses open research questions.

II. MODEL SPECIFICATION AND DATA DESCRIPTION

Data for the empirical analysis comes from the Mexican Family Life Survey (MxFLS), a panel data survey carried out jointly by the *Centro de Investigación y Docencia Económica* (Center for Research and Teaching in Economics, CIDE) and the *Universidad Iberoamericana* in Mexico City. As a multi-thematic database, the MxFLS combines information on household finance with migration histories and a large number of additional socioeconomic characteristics of households and individuals, next to a book with community level data. The MxFLS is a nationally representative sample of households that were selected under criteria considering national, urban-rural, and regional representations on pre-established demographic and economic variables undertaken by the National Institute of Geography, Statistics, and Information (*Instituto Nacional de Estadística, Geografía e Informática* INEGI). The approximate sampling size is 8,440 households with approximately 35,000 individual interviews in 150 communities throughout the Mexican Republic. Out of a total of four survey rounds that are planned through 2012, survey results for 2002 and 2005 are available at the time of writing. The same households in the MxFLS are followed over time so that changes across time can be observed for each household, while the empirical analysis below uses data from the 7,558 households where information on health shocks and debt were observed at both time periods.

The effect of health shocks on household debt as a function of their transnational family ties are estimated through ordinary least squares (OLS), with a difference-in-difference equation (Ashenfelter and Card 1985) of the following basic form:

$$\Delta DBT_i = \beta_1 SHK_i + \beta_2 SHK_i * TRN_i + \beta_3 X_{i,2002} + u_i,$$

where ΔDBT is the dependent variable and stands for the change in debt burden of household i between 2002 and 2005. SHK is a binary treatment variable that takes the value "1" when a health shock occurred in household i during the same time period. TRN is a second binary variable that stands for transnational family linkages of household i. Interacting the two dummy variables SHK and TRN allows for an estimation of different coefficients for health shocks for households with or without transnational linkages, while X is a matrix of pre-shock control variables for household i in 2002, β are the estimated coefficients, and u is the usual error term.

The dependent variable of interest, ΔDBT (the change in debt burden of households between 2002 and 2005), is measured in units (as a share) of total monthly household consumption. Scaling household debt in this way has several advantages compared to an indicator that measures debt in absolute amounts. First, it automatically weights household debts to the income position and paying capacities of households. One and the same amount of debt may be of a lighter burden for wealthier households (proxied by consumption levels) than for poorer households. Second, measuring the debt burden of households in units of monthly household consumption automatically takes into account the differences in household sizes and their changes, and automatically corrects for changes in average price levels. Finally, the results can be interpreted more easily

and their magnitudes can be understood more intuitively than a monetary value that gains meaning only in relation to its purchasing power in a specific context. It is important to note that debt as reported by households do not necessarily refer to formal credit. Many households have debt with family members outside the household, friends, colleagues, moneylenders, pawnshops, etc. Here, the definition for the existence of household debt is a monetary obligation to pay back the loan and not its origin from a financial institution or other sources. Households are asked whether they owe money and how much, independently of its source.

The variable on health shocks SHK refers to households where at least one household member suffered a serious disease or accident that required hospital treatment, with 648 households reporting the occurrence of such an event by at least one household member between 2002 and 2005 (around 9% of all households). Beyond the direct costs of medical treatment, such events potentially have a strong impact on the household economy, for example through the disruption of work activity or long-term care for the affected.

Transnational household links, TRN, are defined as the existence of familial relationships in the US and are used as a proxy for access to remittances because close family relationships across borders have been identified as a good predictor for receiving remittances in a large number of studies (cp. Carling 2008, 588). Moreover, many other variables that were found to be correlated with remittance-sending behavior, such as gender and time spent abroad, may actually reflect transnational parental relationships and often separation from a couple (ibid.) Studies that have controlled for kinship variables have found time spent abroad to be insignificant (Merkle and Zimmermann, 1992; Goza and Marteleto, 1998), suggesting that it is not time spent abroad *per se* that matters, but the fact that migrants are often separated from family

members at the initial stages of the migration process and reunify with their families in later stages. However, transnational ties may be of different intensity and not all households with transnational ties necessarily receive financial support. In Mexico, the share of households that regularly receives remittances from their relatives in the US was estimated to lie at around 6% in 2002 (Esquivel and Huerta-Pineda 2007). In addition to these, households that that do not receive remittances on a regular basis might eventually receive special-event-transfers in order to cover emergency expenditures, such as medical care. For the present purpose, the criterion is a theoretical access to remittances and the existence of transnational (monetary) support systems within families, although this group is larger than those that receive remittances on a regular basis.

Monetary support mechanisms are plausibly stronger among close relatives from the nuclear family (parents, children, and couples) compared to more distant relatives (grandparents, grandchildren, cousins, uncles/aunts, nephews, nieces, parents-in-law, brothers-in-law, etc.) (e.g. Rodriguez 1996). According to the MxFLS, almost one out of two Mexican households had a transnational family link in 2005 (46% of all households), defined broadly as those households where at least one household member had a relative living in the US. In 18% of all households, a member of the nuclear family (a, parent, child or spouse) lived in the US.[5] The data refers to transnational

[5] The small group size prevented me from further disaggregating groups and comparing the strength of different kinds of parental ties within these groups. Moreover, groups were often overlapping because many households had more than one family member in the US. For example, excluding spouses from the definition of nuclear family members hardly made a difference because most households that had a spouse in the US also had a parent or child abroad.

family linkages in 2005 because the interest lies in those households that were, at least in principle, able to receive remittances in 2005, *after* health shocks occurred.

The validity of the empirical model is based on two assumptions: First, a general concern in estimating causal effects in the social sciences is that 'treatment' conditions are often not applied randomly, but units of observations (in this case, households) self-select into groups of treatment or groups of control. Households that suffer from health shocks may on average be different from 'healthier' households in several ways: For example, they may differ in poverty and income levels, insurance coverage, age structures, and access to health infrastructure, among other things. The data allows taking into account these systematic differences across groups before they suffer a health shock and to control for the confounding covariates, which are correlated with both the occurrence of health shocks as well as with a change in their debt levels. The vector X in the equation above includes a number of pre-shock control variables for 2002 that are correlated with either the occurrence of health shocks or a change in debt levels between 2002 and 2005 (or both). Under the assumption of 'ignorability of treatment assignment' or 'selection on observables', the distribution across the treatment and control groups is therefore random with respect to outcomes, conditional on these confounding covariates (Rubin 1974; cp. Gelman and Hill 2006, 183ff). Second, according to Rosenbaum (1984), conditioning on post-treatment variables that have been affected by treatment leads to biased estimates of the treatment effect. Interacting health shocks with transnational family linkages in 2005 controls for a variable that could, in principle, be affected by treatment, either in a positive or negative way: For example, disease or accidents in the household could prevent family members from migrating because the physical presence of household members is required to take care of relatives or because the costs of health care undermine the financing of any

possible migration. On the other hand, migration could also be an ex-post coping strategy by households and therefore increase with health shocks. The assumption that the transnational status of households was not affected by the occurrence of health shocks can be tested directly from the data by running a regression of health shocks on the existence of transnational linkages in 2005.

In order to validate the robustness of the results, the regression as described in the formula above is also run on a balanced dataset of 1,292 households that contains only those households from the control group that are, on average, very similar to the treatment group on a broad set of pre-treatment indicators, while other households are disregarded in the statistical analysis. Even when observable pre-treatment characteristics can be controlled for, the estimation of the treatment effects can still be biased, either when the distribution of variables differs strongly between groups of treatment and control cases (imbalance, see G. King and Zeng 2006) or when several variables have to be controlled for on many different dimensions, which makes it difficult to create comparable groups (Rosenbaum and Rubin 1983). In order to minimize bias that may result from an imbalance and lack of common support, a propensity score is created for each household through logistic regression on pre-treatment characteristics describing the probability of suffering from a health shock between 2002 and 2005 (Rosenbaum and Rubin 1983; cp. Gelman and Hill 2006, 183f). This one-score summary is then used to find the nearest match from the control group for each of the 646 households from the treatment group.

Table 1 gives an overview of all variables that were finally used in the analysis, either for matching households that were exposed to health shocks with comparable households from the control groups or as pre-treatment controls in the main regression. Variables refer to socioeconomic household characteristics, such as per capita

consumption, household size, age, and working activity of the household's head. The model also accounts for initial debt levels, whether households know a person or institution where they could obtain a loan, and the history of health-related and other kinds of shocks suffered by households. A different set of variables is related to the location of households: Whether households lived in a rural community with less than 2,000 habitants, whether the community had health facilities, and whether credit opportunities (from bank or non-bank institutions) were available in the community. For additional details, definitions of variables, and descriptive statistics, see Table 1.

Table 1: Variables and Data Description

variable name	variable description	mean (share)	sd	number of obs.
dependent (outcome) variable				
change in debt burden	change in household debt between 2002 and 2005, measured in units of total monthly household consumption	0.00 *[0.52]*	7.07 *[6.40]*	7,558 *[1,292]*
treatment variable				
health shock	binary variable whether accident or disease by a household member occurred between 2002 and 2005 that required hospitalization	8.5% *[50%]*		7,558 *[1,292]*
transnational household links				
any relatives	at least one household member has a relative in the US (child, parent, sibling, spouse, grandparent/child, aunt/uncle, cousins, brothers/sisters in-law, parents in-law, etc.) in 2005	45.6% *[43.8%]*		7,558 *[1,292]*
nuclear family	at least one household member has either a parent, child, or spouse in the US in 2005	17.8% *[17.1%]*		7,558 *[1,292]*
control and matching variables: Pre-treatment household characteristics (2002)				
shock history	binary variable whether any shock – health shocks or other shocks (loss of job, business failure, natural disasters, crop loss, etc.) – occurred during the previous 5 years	30.5% *[34.2%]*		7,558 *[1,292]*
initial debt burden	household debt level, measured in units of total household consumption	1.08 *[0.92]*	4.76 *[3.64]*	7,558 *[1,292]*

Table 1: Variables and Data Description - Continued

variable name	variable description	mean (share)	sd	number of obs.
per capita consumption	monthly per capita consumption, in Mexican pesos	1,148 *[1,086]*	1,601 *[1,466]*	7,558 *[1,292]*
household size	total number of household members	4.29 *[4.56]*	2.06 *[2.14]*	7,558 *[1,292]*
working	binary variable whether head of household is earning income from work or business	80.2% *[83.0%]*		7,558 *[1,292]*
borrowing options	binary variable whether at least one household member knows a person or an institution where he/she could obtain a loan	55.0% *[60.4%]*		7,558 *[1,292]*
age	age of the head of household	48.11 *[48.07]*	15.58 *[15.02]*	7,558 *[1,292]*
control and matching variables: Community characteristics				
rural	binary variable that takes the value "1" for households that live in communities with less than 2,000 inhabitants	42.5% *[41.5%]*		7,558 *[1,292]*
credit opportunities	binary variable that takes the value "1" for communities with loan facilities (bank or non-bank institutions)	59.0% *[61.8%]*		7,558 *[1,292]*
health facilities	binary variable that takes the value "1" for communities with health facilities	57.8% *[54.9%]*		7,558 *[1,292]*

Missing data on the covariates have been imputed using the 'mice' package (Buuren and Groothuis-Oudshoorn 2010, written for the statistical software R). Values in squared brackets refer to the matched data. The most extreme values of the dependent variable for a change in debt burden (ten households, or about 0.13% of the total sample) with a change in debt burden above/below 70 times the value of total household consumption were deleted. The estimated results were very sensitive to these outliers arising from very low consumption values together with moderate-to-high absolute debt levels. These were of low reliability because slight changes either in the denominator or the numerator strongly affected the size of the indicator.

III. RESULTS

In order to ensure that the interaction term on a post-treatment variable (transnational family links) does not bias the results, the effect of health shocks on a change in transnational family linkages was tested using a logit regression model with the same pre-treatment variables as regressors that are included in the main model of health shocks on a change in debt burdens. Changes in transnational status can occur in two ways: Households without transnational links may turn into transnational households through emigration; or formerly transnational households did not anymore report relatives in the US in 2005, either because temporary migrants returned, or because household member(s) who formerly reported family links abroad are not members of the household anymore (for example, because they migrated as well, or left the households for other reasons). In order to be able to run logistic regressions of the effect of health shocks on changes of transnational status of households, changes in this binary dependent variable are split into positive and negative outcomes. Table 2 shows results for four different definitions of the outcome variable (positive/negative changes for households reporting any relative living in the US; and positive/negative changes for households reporting the existence of a nuclear family member – parent, child or spouse - in the US). Health shocks had neither a statistically significant effect on the broad definition of transnational households (any relative in the US) nor on the more narrow definition (parents, children and spouses). Based on the Chi^2 test statistics from log likelihood ratio tests, the Null Hypothesis, that the occurrence of health shocks had no effect on transnational links, could not be rejected in any of the four specifications. Following Rosenbaum (1984), the inclusion of an interaction term between health shocks and transnational family links in 2005 in the main model should therefore not bias the results.

In contrast to the model fitted to the complete dataset, the model was also run on the subset of matched data with only exposed and unexposed households that were, on average, the most similar to each other on a broad set of pre-shock indicators. Logistic regression on the occurrence of health shocks was used to find a matching subset of the data that provided a good balance between exposed and unexposed households on key characteristics that are expected to predict both the occurrence of health shocks as well as a change in debt burdens. The adequacy of the model was assessed by evaluating the balance that resulted from matching based on the propensity scores as estimated from the logistic regression. The regression model that was finally used for the creation of a matched sample is given in Appendix 1, using nearest-neighbor matching.[6] Figure 1 graphically compares standardized differences between exposed and unexposed households for the matched and unmatched data. The matching resulted in an improvement in the balance, especially for those variables that differed the most between exposed and unexposed households, notably the share of household members covered by medical insurance, the existence of health facilities in the community, household size, and the number of children relative to household size.

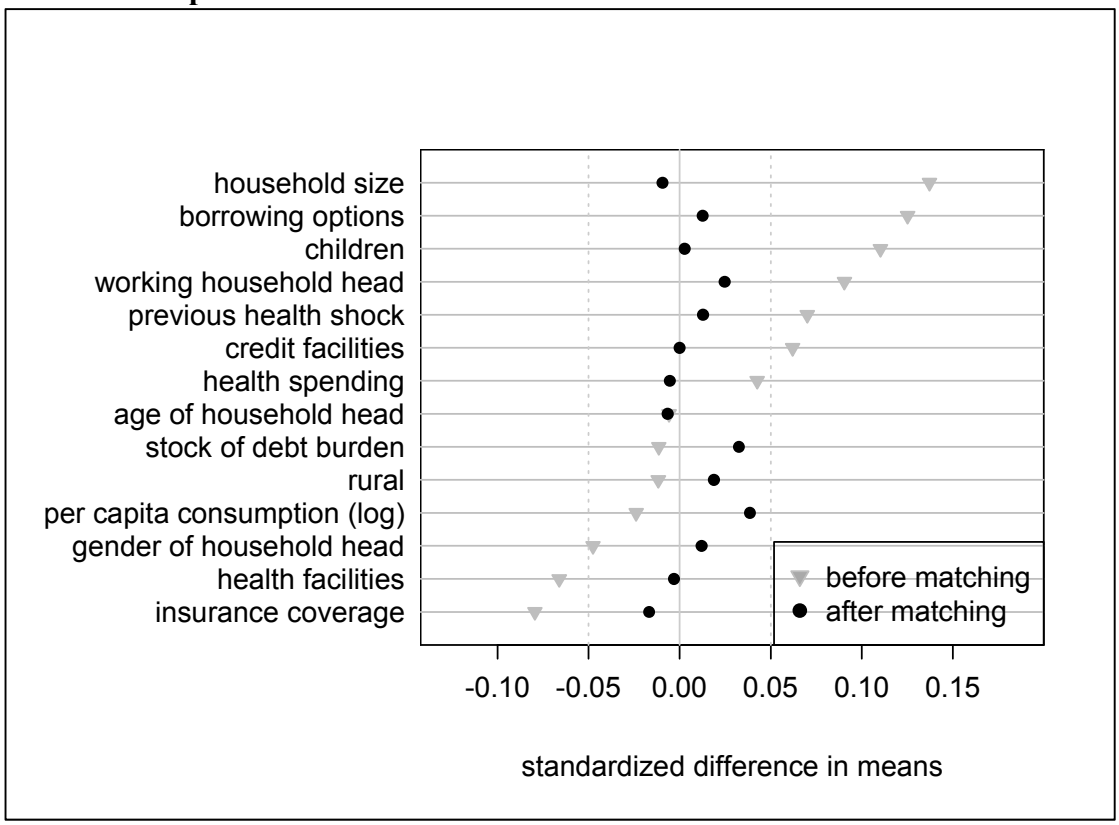
[6] The function 'matching' from the package 'arm' was used for the matching (Gelman et al. 2010, written for the statistical software R)

Table 2: Logit Regression for the Effect of Health Shocks on a Change in Transnational Status

	positive change in transnational family status		*negative change in transnational family status*	
	nuclear family	*any relative*	*nuclear family*	*any relative*
	I	II	III	IV
(Intercept)	-4.855***	-3.625***	-0.963*	0.27
	[0.678]	*[0.422]*	*[0.577]*	*[0.425]*
health shock between 2002 and 2005	-0.087	-0.009	-0.066	0.035
	[0.176]	*[0.113]*	*[0.156]*	*[0.116]*
shock history (pre 2002)	0.163	0.099	0.074	-0.071
	[0.1]	*[0.066]*	*[0.094]*	*[0.075]*
debt burden (2002)	0.021	0.022*	0.015	0.009
	[0.017]	*[0.013]*	*[0.019]*	*[0.015]*
debt burden^2 (2002)	-1.78E-04	-2.90E-04	-3.05E-04	-1.85E-04
	[2.74E-04]	*[2.35E-04]*	*[3.88E-04]*	*[2.67E-04]*
log of per capita consumption (2002)	0.059	0.125***	-0.241***	-0.113***
	[0.053]	*[0.035]*	*[0.049]*	*[0.038]*
age (2002)	0.016***	0.002	0.004	-0.006***
	[0.003]	*[0.002]*	*[0.003]*	*[0.002]*
working (2002)	-0.667***	-0.102	-0.124	0.111
	[0.114]	*[0.087]*	*[0.116]*	*[0.098]*
rural	0.211**	-0.324***	0.112	-0.175**
	[0.101]	*[0.068]*	*[0.093]*	*[0.073]*
borrowing options (2002)	0.07	0.205***	0.09	-0.226***
	[0.098]	*[0.064]*	*[0.09]*	*[0.069]*
state fixed effects	*(yes)*	*(yes)*	*(yes)*	*(yes)*
residual deviance	*3541*	*6896*	*4036*	*6063*
degrees of freedom	*7533*	*7533*	*7533*	*7533*
AIC	*3591*	*6946*	*4086*	*6113*
log likelihood test Chi^2	*0.247*	*0.007*	*0.182*	*0.091*
(p - value)	*(0.619)*	*(0.934)*	*(0.67)*	*(0.763)*

Dependent variables are measured as positive/negative changes in transnational status of households. A log-likelihood test is run against the Null Hypothesis that excluding health shocks from the regression has no effect on the results, given all the predictor variables used in specification III in Table 3a. The low Chi^2 (and high p-values) in all specifications do not justify a rejection of the Null Hypothesis. Standard errors are given in square brackets. Stars denote significance at 1% (***), 5% (**) and 10% (*).

Figure 1: Standardized Differences in Pre-Treatment Means Compared to the Control Group for Matched and Unmatched Data



The figure shows the differences between households from the treatment and control groups in units of standard deviations to make them comparable before and after nearest-neighbor matching based on the logistic regression in Annex 1 is carried out. The balance (here shown as standardized differences on the means) improved after matching for most of the variables, especially for those variables with the largest imbalance before matching. The variable 'children' refers to the number of children below the age of 17 relative to household size; 'insurance' coverage refers to the share of household members covered by medical insurances; and 'health spending' refers to spending on health as a share of total household spending. Further details on variables that are not in Table 1 are available from the author upon request. The graphical representation is inspired by Gelman and Hill (2006, 202).

Tables 3a and 3b present the results for the main model of health shocks on a change in debt burdens of households for alternative specifications on the complete and matched data. In both tables, Columns I and II report the average estimated effect of health shocks on a change in debt burdens for all households, without considering the existence of transnational links. The coefficient for health shocks is significantly different from zero at a 1% level in all specifications. However, the model without any controls (Column I) has a low R^2, indicating that health shocks alone explain only a relatively small part of the variation of the change in debt burdens.

In both the matched and unmatched specifications of the model, adding pre-treatment control variables improved the model's fit, as indicated by the higher R^2. In both cases, income levels (proxied by the log of per capita consumption), initial debt levels, and whether households were located in rural areas were important predictors for a change in debt burdens in the following period. Households with older household heads also had, on average, increased their debt burden less compared to households headed by younger individuals, everything else being equal. Households with high debt burdens in 2002 had a higher probability of reducing their debt burden between 2002 and 2005. The significance of the squared term for the stock of debt burdens points to a non-linear relationship between the initial level of debt and a change in debt levels between 2002 and 2005. The model's fit also improved by including state fixed effects that account for differences across states that are not captured by individual variables, such as different growth rates across states or other regional effects, while the matched and unmatched model specifications differ on some of the control variables. In the specification fitted to the matched data, the size of households was controlled for, with smaller households having a higher probability of increasing their debt burden in the following period. In the model on the complete data, the existence of borrowing options in 2002 was an

important predictor. The shock history of households prior to 2002, and whether the household's head was gaining income from work or business, were not individually significant in this specification on the whole data set, but did improve the overall fit of the model.

All specifications led to similar magnitudes and significance levels for the coefficient on health shocks. With an estimated coefficient around one when controlling for pre-treatment differences (Column II), the effect is sizeable and statistically significant. In 2002, the average debt burden across all households was 1.1 times the total monthly household consumption (or about 0.9 times the value of total household consumption for the matched data). This means that, for the average household, the occurrence of a serious health shock doubled the average expected debt burden of households compared to the control group of households that were not exposed to health shocks in the same time period. This confirms previous findings from the literature that taking up loans is an important mechanism for coping with health shocks (e.g. Mohanan 2011).

This paper's main interest (and its novel contribution) lies on the interaction term of health shocks with transnational family linkages. The coefficient on the interaction term informs whether the change in debt burdens among households with a transnational family link was affected differently by shocks compared to households without such links. Columns III and IV include interaction terms between health shocks on two alternative definitions of transnational household links based on the classification of family relationships in section II: The interaction term on transnational linkages in 2005 in Column III is defined as a binary variable based on whether households had a nuclear family member in the US (either a parent, child, or spouse). The interaction term in Column IV is based on the broadest possible definition of transnational family links, defined as the existence of any kind of family linkages by at least one household

member, including siblings, uncles/aunts, grandparents and – children, cousins, etc. While interactions on the broader definitions of transnational households are not significantly different from zero and have the expected sign only in the specification on the unmatched data, the interaction on the narrowly defined transnational links (parent, child, or spouse) in Column III is important in size and is significant in both the matched and unmatched specifications (at a 5% level for the matched data and at a 1% level when fitted to the complete dataset). The results show that households with a member of the nuclear family – a parent, child, or spouse – in the US are much less vulnerable to the effects of health shocks on a change in their debt burdens. Taking into account uncertainty around the point estimate, health shock had basically no effect on a change in debt burdens among households with nuclear family members in the US when compared to an effect between 1.2 (matched data) and 1.3 (unmatched data) for households without nuclear family members in the US. The size and significance of the estimated effect of health shocks and its interaction term with transnational family links did not differ strongly between the matched and unmatched version of the data. This is not surprising, since imbalances between exposed and unexposed households were not huge. The slightly more conservative estimates from the matched data are, however, preferred over the unmatched model because they rely on a comparison of the most similar households.

Figure 2 graphically compares the effect of health shocks on a change in debt burdens for households with and without nuclear family members in the US, fixing all other covariates at their median values. Estimates are graphed both for the estimations based on the complete dataset (upper graphs, based on specification III in Table 3a) as well as on the matched dataset (lower graphs, based on specification III in Table 3b). In order to picture uncertainties around the estimate, 100 random simulation draws from the

estimation have been added to the plot (grey lines). Despite considerable uncertainty reflected in a large range of simulated values (especially for the intercept that is estimated from the matched data with fewer observations), the picture shows clearly distinct patterns for the slope in households with and without nuclear family members in the US.

Results were robust to different specifications, matching procedures, and data definitions. Alternative matching procedures gave similar results (with some variation on the significance levels of health shocks; and on their interaction with transnational status). In general, excluding the most extreme outliers in the dependent variables made the results more robust across different types of specifications and matching procedures. Results were also robust to different definitions of the dependent variable. Alternative specifications included measuring the debt burden in absolute amounts without adjusting for household income, measuring debt burden in per capita units, or measuring the debt burden in units of monthly food consumption instead of total consumption in order to avoid distortions that could arise through large one-time purchases during the observed period. The effect of health shocks was least robust for the indicator on the absolute (unscaled) amount of debt. The specifications shown in Tables 3a and 3b reflect the best fits, evaluated via the significance of the variables and the R^2 value.

Table 3a: Estimated Effect of Health Shocks on a Household's Change in Debt Burden (Unmatched Data)

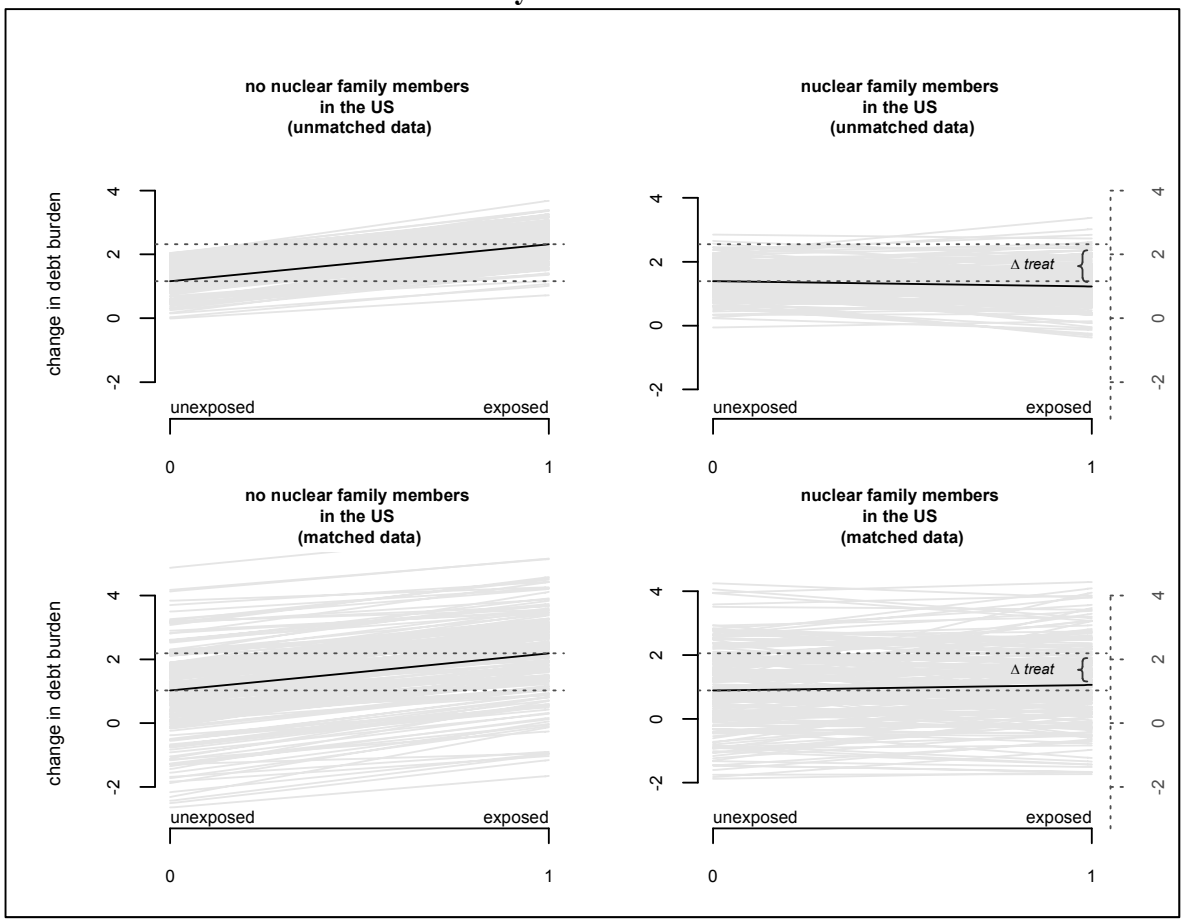
		no controls	*pre-treatment controls*		
				interaction on transnational links	
				nuclear family	*any relatives*
		I	*II*	*III*	*V*
	(Intercept)	-0.11	1.061**	1.042**	0.918**
		[0.076]	*[0.432]*	*[0.434]*	*[0.446]*
	transnational family link			0.136	0.307**
				[0.142]	*[0.124]*
treatment	health shock	1.202***	1.025***	1.259***	1.34***
		[0.316]	*[0.285]*	*[0.343]*	*[0.466]*
	health shock* transnational link			-1.246***	-0.651
				[0.449]	*[0.571]*
pre-treatment (2002) control variables	log of per capita consumption		0.185**	0.184**	0.181**
			[0.086]	*[0.086]*	*[0.086]*
	shock history		-0.145	-0.144	-0.146
			[0.118]	*[0.118]*	*[0.117]*
	initial debt burden		-0.871***	-0.87***	-0.871***
			[0.062]	*[0.062]*	*[0.062]*
	initital debt burden ^2		-0.001	-0.001	-0.001
			[0.001]	*[0.001]*	*[0.001]*
	age of household head		-0.011***	-0.012***	-0.011***
			[0.004]	*[0.004]*	*[0.004]*
	working household head		0.207	0.207	0.207
			[0.133]	*[0.133]*	*[0.133]*
	borrowing options		0.239**	0.239**	0.225*
			[0.115]	*[0.115]*	*[0.116]*
	rural		-0.479***	-0.484***	-0.488***
			[0.112]	*[0.111]*	*[0.112]*
	state fixed effects	*(no)*	*(yes)*	*(yes)*	*(yes)*
	R^2	*0.003*	*0.394*	*0.395*	*0.395*
	adj. R^2	*0.003*	*0.392*	*0.392*	*0.393*
	degrees of freedom	*7270*	*7247*	*7245*	*7245*

Table 3b: Estimated Effect of Health Shocks on a Household's Change in Debt Burden (Matched Data)

		no controls	*pre-treatment controls*		
				Interaction on transnational links	
				nuclear family	*any relatives*
		I	*II*	*III*	*V*
	(Intercept)	-0.042	0.33	0.113	0.437
		[0.195]	*[1]*	*[1.024]*	*[0.992]*
	transnational family link			-0.131	-0.524
				[0.279]	*[0.347]*
treatment	health shock	1.116***	0.994***	1.168***	1.02**
		[0.355]	*[0.28]*	*[0.333]*	*[0.439]*
	health shock* transnational link			-0.989**	0.011
				[0.496]	*[0.605]*
pre-treatment (2002) control variables	log of per capita consumption		0.511***	0.507***	0.532***
			[0.167]	*[0.167]*	*[0.168]*
	initial debt burden		-0.671***	-0.67***	-0.669***
			[0.156]	*[0.156]*	*[0.155]*
	initital debt burden ^2		-0.005**	-0.005**	-0.005**
			[0.003]	*[0.003]*	*[0.003]*
	age of household head		-0.025***	-0.023***	-0.026***
			[0.008]	*[0.008]*	*[0.008]*
	household size		0.172*	0.18*	0.187**
			[0.093]	*[0.093]*	*[0.095]*
	rural		-0.707**	-0.677**	-0.692**
			[0.307]	*[0.303]*	*[0.304]*
	state fixed effects	*(no)*	*(yes)*	*(yes)*	*(yes)*
	R^2	*0.008*	*0.279*	*0.281*	*0.28*
	adj. R^2	*0.007*	*0.266*	*0.267*	*0.266*
	degrees of freedom	*1290*	*1269*	*1267*	*1267*

Table 3a gives the estimation results for the complete dataset and Table 3b gives the estimation results for the dataset containing matched households only. Heteroscedastic robust White standard errors are given in squared brackets. Stars denote significance at 1% (***), 5% (**) and 10% (*). For the definition of transnational links, see Table 1.

Figure 2: Estimated Effect of Health Shocks on a Household's Change in Debt Burden with or without nuclear family members in the US



The plots graphically compare the effect of health shocks on a change in debt burden for households with and without nuclear family members (a parent, child, or spouse) in the US. Estimates are given for the complete and matched data based on specifications III in Tables 3a and 3b, fixing all pre-treatment covariates at their median values. Grey lines represent uncertainty around the coefficient on health shocks and the intercept by randomly drawing 100 simulations from the model predictions, using the function 'sim' from the package 'arm' (Gelman et al. 2010, written for the statistical software R). Vertical axes (change in debt burdens) have (slightly) different scales due to different intercepts for households with and without transnational linkages. Dotted horizontal lines have been added to the graph in order to highlight the difference of the estimated average treatment effect for households with and without nuclear family members in the US, corresponding to the distance Δ treat*. In spite of considerable uncertainty in the estimates as reflected in the random simulation draws, the graphs clearly show different patterns for the slopes in households with and without nuclear family members in the US.*

IV. CONCLUSIONS

The empirical results from this study add evidence to previous research that debt is an important mechanism to cope with health-related shocks. Households having experienced serious health shocks that required hospital treatment reported, on average, a doubling of their debt burden compared to households from the control group, controlling for pre-treatment differences across households. The findings are robust for the matching of households with the most similar households from the control group and for different definitions of the dependent variable. The large size of the effect suggests that health shocks affected household economies not only through the direct costs of health care like medication and treatment, but also through other direct and indirect costs, such as the loss of work or long-term care for the affected.

At the same time, health shocks had no effect on the debt burden of households with access to remittances via transnational family support networks (a child, parent, or spouse in the US). The observation that these households resorted less to incurring debt to finance the costs of health shocks confirms the assumption often made in the literature that remittances alleviate liquidity constraints and may therefore function as a substitute for taking up formal or informal loans. Next to many channels through which migration and remittances have an impact on receiving countries, they also reduce the dangers of indebtedness among receiving households and make them less vulnerable to the financial effects of negative shocks. This finding supports the view that remittances are driven by health shocks and help households to finance unanticipated health-related spending. This does not put into doubt that remittances also have an impact on health spending as found in previous studies, but it stresses the necessity of taking reverse causality from unexpected health costs to remittances seriously when correlations between remittances and health spending are observed. While this paper has focused on

a substitution of remittances and credit to cover household emergencies, future research has to confirm whether remittances and credit are substitutes in a more general way, including, for example, entrepreneurial ('productive') credit (the argument made by Giuliano and Ruiz-Arranz 2009; Woodruff and Zenteno 2007).

Several lessons for policy makers can be drawn from this study. First, financial services designed for transnational households should be aware of the existence of informal insurance arrangements among transnational households that may compete with or substitute formal schemes. While policy reports have frequently pointed to the benefits of providing remittance-receivers with access to formal financial services (GCIM 2005; International Organization for Migration (IOM) 2006; Orozco and Fedewa 2006; Terry and Wilson 2005; World Bank 2006), the findings presented here would imply that transnational households have more demand for savings options compared to credit, a statement that is in line with empirical research on remittances and financial sector development (Aggarwal, Demirgüç-Kunt, and Martinez Peria 2010; Demirgüç-Kunt et al. 2011). Second, the findings underline a household's vulnerability to negative shocks and the importance of insurance schemes. Both the taking up of debt and the sending of family members abroad are second-best options for coping with the consequences of health shocks. Covering the financial burden of health shocks with loans bears the danger of over indebtedness and unsustainable debt spirals. On the other hand, international migration as an ex-ante coping strategy implies high economic and social costs for families in the face of stricter immigration rules in the destination countries and increased border enforcement, besides the inherent dangers of often undocumented migration. Extending formal insurance schemes could reduce both the perils of unsustainable debt burdens and the necessity of relying on migration as a strategy to cope with catastrophic health spending.

V. APPENDIX

Appendix 1: Logit Regression on the Occurrence of Health Shocks

(Intercept)	-2.908***
	[0.144]
borrowing options	0.209**
	[0.086]
debt burden	-0.004
	[0.021]
debt burden ^2	-1.07e-04
	[4.64e-04]
household size	0.051**
	[0.02]
shock history	0.14
	[0.088]
working household head	0.186*
	[0.112]
credit opportunities in locality	0.272***
	[0.098]
health facilities in locality	-0.283***
	[0.096]
residual deviance	*4378*
degrees of freedom	*7544*
AIC	*4396*

*The logistic regression on health shocks was used for matching households who suffered a health shocks during the previous three years with households from the control group. Evaluation of model fit was based on the balance achieved from matching exposed and unexposed households (see Figure 1). Standard errors are given in square brackets. Stars denote significance at 1% ("***"), 5% ("**") and 10% ("*").*

2. Are Remittances a 'Catalyst' for Financial Access? Evidence from Mexican Household Data

Abstract

In policy discussions, it has frequently been claimed that migrants' remittances could function as a 'catalyst' for financial access among receiving households. This paper provides empirical evidence on this hypothesis from Mexico, a major receiver of remittances worldwide. Using the Mexican Family Life Survey panel (MxFLS) for 2002 and 2005, the results from the fixed effects logit model show that receiving remittances is strongly correlated with the ownership of savings accounts and, to some degree, with the availability of borrowing options. These effects are more important for rural households than for urban households and are more important for microfinance institutions, than for traditional banks.

Keywords: Remittances, Mexico, Financial Access, Microfinance

JEL Classification: G21, O16, F24

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I. INTRODUCTION

The strong increase in remittances – the money sent by migrants to their families remaining in their home country – has given rise to a major debate on the impact of these financial flows on receiving countries. This article turns around a question that – although popular in policy discussions – has received relatively little attention in the academic literature: Remittances and access to financial services among the receivers of remittances. Looking at the direct effects of remittances on households and the use of these funds alone ignores important aspects of how remittances influence receiving countries. This paper draws attention to some of the indirect effects of remittances on the economies of receiving countries via its linkages to the financial sector. Moreover, it aims to improve the understanding of financial markets in developing countries and how they relate to financial management of migrant households.

A large part of the population in developing countries lack access to financial services. In most Latin American countries, for example, only one-fourth of the population owns savings accounts, compared to more than 90 percent for most Western European countries (Honohan 2008). This lack of access to financial services among poor households limits their strategies for risk management and asset accumulation as poor households often hold onto cash or invest it in the form of fixed assets like land and cattle. Furthermore, they have limited opportunities to attain credit from formal financial institutions in order to cope with unforeseen shocks, finance larger purchases, or invest in small businesses (for a general discussion, see Armendáriz de Aghion & Murdoch (2005); for a literature review focusing on rural markets, see Conning & Udry (2005)). In this context, linking remittances with additional financial services can have positive effects not only on remittance-receiving households but also on receiving countries more generally, and has therefore become an important issue on the policy

agenda (see, for example, Orozco 2004, Terry & Wilson 2005, and Orozco & Fedewa 2006). First, receivers themselves may benefit from more efficient asset-building strategies through monetary savings options and eventually by gaining access to other financial services like credit and insurance products. Beyond these direct benefits to receivers, linking remittances with financial services has potentially wider economic effects. Savings from remittances can be channelled to their most productive use and be matched with the demand for credit elsewhere, therefore also benefiting those who do not directly receive remittances themselves. To this effect, there is a wide consensus among development economists that financial institutions play a crucial role in the process of economic development (see Levine 1997 for an overview). For example, cross-country studies have shown that a relative increase in savings and credit is associated with an increase in both growth and per capita income (Goldsmith 1969; R. G. King and Levine 1993; Thorsten Beck, Levine, and Loayza 2000a; Thorsten Beck, Levine, and Loayza 2000b). Access to financial services is a key dimension of financial development because a more inclusive financial sector is capable of generating higher absolute levels of savings and investment, reduces dependence on foreign capital, and leads to more equitable development (Jalilian and Kirkpatrik 2002; Thomas Beck, Demirgüç-Kunt, and Levine 2007).

Mexico provides an interesting case for studying the impact of remittances on financial access because more than 10 percent of Mexico's population of circa 110 million people live outside their country of birth, forming the largest group of immigrants in the US (Pew 2009). With more than 22 billion USD of remittances transferred by Mexican migrants to their home country in 2009, Mexico is one of the main receivers of remittances worldwide, after India and China (World Bank 2011b). Despite a 16 percent decrease in the sending of remittances following the 2008 US financial crisis,

remittances still play an important role in the Mexican economy, as remittances were about the same size as foreign direct investment (FDI) to Mexico in 2008, contributing 2.4 percent to Mexico's GDP (World Bank 2011a). At the regional level, remittances are even more important: Michoacán und Zacatecas, the states with the highest emigration rates, had remittance-based income totalling 13.2 percent and 9.2 percent of GDP in 2006, respectively (Banco de México 2007). In Mexico, as in many other countries, remittances are usually sent and received in cash, and many remittance-receivers belong to lower-income groups, which are excluded from the (mainstream) financial system.

This paper is organized as follows: Section II summarizes the state of current research on remittances and financial intermediation, while section III introduces the Mexican Family Life Survey (MxFLS), a nationally representative panel data set at the individual and household level that allows researchers to combine information on remittances with access to and the usage of financial services. Section IV specifies the estimation strategy of a conditional fixed effects logit model and section V discusses the results. Remittances are strongly correlated with the ownership of savings accounts and, to some degree, with the availability of borrowing options. These effects are more important for rural households compared to urban households and more important for microfinance institutions than for commercial banks. The final section summarizes these findings and presents conclusions.

II. REMITTANCES AND FINANCIAL ACCESS: STATE OF CURRENT RESEARCH

In recent years, much research has been done on the manifold impacts of remittances on receiving countries.[7] This paper focuses on the effects that remittances have on access to financial services, a debate strongly dominated by policy papers and practitioners' perspectives presenting case studies on financial institutions that have included remittances in their product portfolio and offer additional financial services to remittance receivers. Most of these case studies refer to institutions from the

[7] Research on the impact of remittances on the receiving countries has focused on reducing poverty (R. Adams and Page 2005), the creation of growth through multiplier effects (Durand, Parrado, and Massey 1996; Glytsos 2005), and their ambiguous effects on inequality in remittance-receiving countries (Jones 1998; Koechlin and León 2006; P. Acosta et al. 2008). More pessimistic authors have criticized remittances for reducing incentives for productive investment of resources in the countries of origin (Chami, Fullenkamp, and Jahjah 2003), possibly leading to a loss in international competitiveness through the appreciation of the exchange rate (Amuedo-Dorantes and Pozo 2004a; P. A. Acosta, Lartey, and Mandelman 2009), and the fact that money acquired from remittances may be spent on luxury goods with few benefits for the local economy (Lipton 1980; Lazaar 1987; Binford 2003). Recently, more optimistic positions have dominated research. A number of studies have found empirical evidence that receivers of remittances spend a larger share of their income on education (Cox Edwards and Ureta 2003; R. Adams and Cuecuecha 2010), health (Amuedo-Dorantes, Pozo, and Sainz 2007; R. Adams and Cuecuecha 2010), and entrepreneurship (Massey and Parrado 1998; Woodruff and Zenteno 2007). Other studies have addressed the impact of remittances on the balance of payments of remittance-receiving countries (Bugamelli and Paterno 2009; Singer 2010; Buch and Kuckulenz 2010). As a-cyclical source of external finance, they help to stabilize the balance of payments and can play a strategic role in the prevention of financial crises. In the wake of the recent global financial crises, remittances have also proven to be more stable than other private capital flows like private lending, foreign direct investment, or portfolio investment (Chami, Hakura, and Montiel 2009; Dillip Ratha and Mohapatra 2009).

microfinance sector that focus on lower income clients (Orozco and Hamilton 2005; Hastings 2006; Orozco 2008). Their conclusion is that receivers of remittances often match the profile of the typical clients of microfinance institutions better than those of commercial banks, and linking remittances with microfinance institutions therefore has important positive effects. While providing insights into the possibilities and the potential of linking remittances with additional financial services, these studies allow for few generalization of findings, do not systematically assess the remittance-receivers' demand for financial services or the success of such initiatives, and do not quantify the linkages between remittances and financial intermediation.

In spite of figuring so prominently in development policy, academia has remained relatively silent on the issue, with few studies having systematically approached the impact of remittances on the financial sector. Using cross-country panel data, Aggarwal et al. (2010) provide global-level evidence that remittances are correlated with deeper financial sectors in receiving countries, measured as savings and, to a lesser degree, credit in relation to GDP. Following a similar methodology, Gupta et al. (2009) study the impact of remittances on financial development specifically for Sub-Saharan Africa and find a correlation of remittances with deposits in relation to GDP and money supply M2 in relation to GDP. Several arguments explaining why remittances could be beneficial to financial development are brought forward by these authors. First, banks may 'get to know' remittance receivers who did not previously have bank accounts through remittances, paving the way for further financial services. Second, remittances may create a demand for financial services from receivers because remittances are sent periodically and receivers need a safe place to store their savings. Finally, banks can earn income from remittance fees, creating an incentive to locate bank branches near remittance-receivers (Aggarwal, Demirgüç-Kunt, and Martinez Peria 2010; Demirgüç-

Kunt et al. 2011). Other authors stress cases where remittances might be accepted by financial institutions as a substitute for the lack of formal income (Orozco and Fedewa 2006). Cuecuecha & Da Rocha (2011), for example, argue that changes in remittances not only affect income and poverty rates directly, but also indirectly by facilitating access to credit among receivers. Financial institutions paying remittances are able to build a financial history based on remittances for receivers who otherwise lack a formal income – remittances could then be included as an additional source of income to a client's evaluation when requesting credit. Moreover, remittances are sent out of altruistic motives and tend to increase and stabilize a household's income (Bugamelli and Paterno 2009; Buch and Kuckulenz 2010), reducing the risk of default because remittance receivers have additional 'insurance', making them less risky debtors from a bank's point of view.

Yet, remittances may also function as a substitute for credit and insurance from formal financial institutions.< Several studies have underlined that a large part of remittances are spent on health and other 'emergency' spending (Amuedo-Dorantes and Pozo 2004b; Amuedo-Dorantes, Pozo, and Sainz 2007; Yang and Choi 2007). Remittance-receivers who demand financing – due to a loss of work, illness, or other sudden income shocks – are able to rely on an additional and relatively stable source of income that is not present to non-receivers. Woodruff & Zenteno (2007) and Giuliano & Ruiz-Arranz (2009) explicitly argue that remittances function as a substitute for a lack of access to productive credit and play an important role in financing investment by micro-entrepreneurs, meaning that remittances compete with formal financial services, possibly reducing the demand for credits and other financial products like insurance.

Studies on remittances' impact on the financial sector – similar to other research on remittances that rely on time series central bank data – are constrained by the quality of

macro data. First, reducing transfer costs for formal money transfers shifted transfers away from unregistered informal channels (friends, families, couriers, others) towards formal transfers (money transfer operators and banks). Second, central banks follow different methodologies of data collection and have changed their methodologies over time; part of the strong rise in remittances is therefore due to a formalization of remittance flows and changes in data registration (Luna Martinez 2005; for a discussion of the Mexican case, see Tuirán, Santibanez, and Corona 2006; and Canales 2008b). Empirical research conducted with central bank data must therefore be interpreted with caution, especially for time series data.

Demirgüç-Kunt et al. (2011) take an alternative approach to studying the impact of remittances on financial development on a meso-level in their case study on Mexico, as they cross financial data with remittance data at the level of municipalities and find that the share of households receiving remittances in a municipality is positively correlated with deposits to GDP and, to a minor degree, with credits to GDP at the municipal level.

This paper contributes to the research questions and findings pioneered by Demirgüç-Kunt et al. and Aggarwal et al., and includes important additional issues. First, the MxFLS provides a data source at the individual and household levels, including information on the migration history, monetary transfers, and the financial service usage of households, which allows me to take into account a broader set of socioeconomic variables correlated with financial service usage and remittances, and to differentiate the impact of remittances according to the socioeconomic status of receiving households. Moreover, unlike Demirgüç-Kunt et al., I do not lose information by aggregating data to the municipal level. Second, most research on the impact of remittances on the financial sector has been restricted to the impact of remittances on the commercial banking sector

because, generally speaking, only institutions under national banking regulation report data to the national financial authorities. The MxFLS data includes financial service usage both on commercial banks and (often informal or semi-formal) institutions from the microfinance sector. This allows me to include the non-traditional banking sector in the analyses and to differentiate the impact of remittances on the financial sector by different kinds of institutions. For poorer households in rural areas, where much of the Mexican migration originates (more than half of all remittance-receiving households lived in rural communities with less than 2,000 inhabitants, see below), non-traditional banking institutions are especially important, whereas commercial banks rarely open branches in rural communities. Third, from an aggregated macro-level (cross-country) or meso-level (municipal) analysis, it is not possible to distinguish between the direct effects of remittances from indirect effects: For example, is the correlation of remittances with indicators of financial sector development due to a different use of financial services among receiving households or due to externalities in the local economy that translate to the financial sector? Fourth, the same households in MxFLS are followed over time, allowing me to exploit the panel structure of the data and to control for time-constant heterogeneity between households, making my analysis less vulnerable to endogeneity concerns.

III. DATA DESCRIPTION

The Mexican Family Life Survey (MxFLS) is a panel data survey carried out jointly by the *Centro de Investigación y Docencia Económica* (Center for Research and Teaching in Economics, CIDE) and the *Universidad Iberoamericana* in Mexico City. As a multi-thematic database, it combines information on financial service usage, migration histories, monetary transfers, and a large number of additional socioeconomic characteristics of households and individuals. The raw data is organised in several

thematic books. The present study relies on information from Book 1 (household consumption), Book 2 (information on type and value of assets owned by the household), Book 3a (employment situation), Book 3b (migration history of household members, transfers, use of financial services), and Book C (general household characteristics like the geographic location of the households, housing conditions and the number, education levels and age of households members). MxFLS is a nationally representative sample of households that were selected under criteria of national, urban-rural, and regional representations on pre-established demographic and economic variables undertaken by the National Institute of Geography Statistics and Information (*Instituto Nacional de Estadística, Geografía e Informática*, INEGI). The approximate sampling size is 8,440 households with approximately 35,000 individual interviews in 150 communities throughout the Mexican Republic. Out of a total of four survey rounds that are planned through 2012, survey results for 2002 and 2005 were available at the time of writing. The same households in the MxFLS are followed over time so that changes across time can be observed for each household. Some households fell out of the sample because they could not be located during the second time period for various reasons (they migrated, were deceased, etc). New households entered the sample when households from 2002 split into different households in 2005 (when household members left the household e.g. in the case of marriage or when household members moved away for other reasons). In order to exploit changes during time, I use a balanced data set where I only include the 7,572 households that were observed in both time periods (868 households of the 2002 sample were not included in the 2005 sample, an attrition rate of 11.5 percent). Although not explicitly designed for studying the relationships between remittances and the financial sector, several sections contain information that can be exploited for the purpose of this study.

While households were not directly asked about receiving international remittances, this information can be constructed indirectly by combining questions on whether households received monetary transfers during the last year (and from whom) and whether they have family members that live abroad. Households are classified as remittance-receiving households if at least one household member received monetary transfers from a family member living in the US during the last year. On average between 2002 and 2005, six percent of all households received remittances.[8] In rural communities with less than 2,000 habitants (the definition applied by the national statistics office, INEGI, for rural households), 7.8% of all households received remittances, compared to 4.8 percent of households in urban areas.

Access to financial services can be understood and measured in different ways. For example, a household might have access to (often unregulated and semi-formal) credit

[8] In some cases, households could not be clearly classified into remittance-receiving households. Respondents only replied if they received transfers from a sibling, an uncle/aunt, parents, etc. For example, if a respondent has two brothers, one living in the US and another living in a different household in Mexico, it is not possible to know from the survey data whether the respondent received the transfer from the brother living in Mexico, or a different brother living in the US. I classify these households as remittance-receiving households although there is some uncertainty in this classification and some of these transfers might actually be national remittances. Even so, I consider this variable to be a good proxy for international remittances. The estimates for the share of remittance-receiving households based on this procedure are very similar to the estimates on remittances from other sources. According to Esquivel & Huerta-Pineda (2007), estimations based on ENIGH 2002 (*Encuesta Nacional de Ingreso y Gasto de los Hogares*, a biannual household survey carried out by the Mexican Statistics Institute INEGI) indicate that 5.7 percent of Mexican households received remittances in 2002. This was 5.9 percent of households in 2008, with 41.1 percent of remittances going to rural households (based on ENIGH 2008, according to Sánchez Ruiz 2010).

unions or savings banks, but not to commercial banks; or might have access to credit, but not to savings options. Here, I use two alternative indicators to measure financial access: First, whether at least one household member owns a savings account with a financial institution, a measurement frequently used in literature on financial access (for example Honohan 2008). Alternatively, I use access to borrowing options from financial institutions as an indicator for financial access – where households can ask for credit without owning a savings account. Many institutions in microfinance, such as the most important player in the Mexican Microfinance sector – 'Compartamos' –, focus on lending and do not offer savings accounts. In the case of credit, I ask for the theoretical availability of credit rather than its actual use because I want to measure access – it is more interesting to know whether households are able to receive credit if they wanted to, not if they really did: Households simply may not have demand for credit. In the case of savings, I am not able to measure the availability of savings options and instead measure the actual use (ownership) of savings accounts.[9] Using two alternative indicators for financial access allows me to draw a more nuanced picture on the impact of remittances on different dimensions of financial access.

Questions regarding the use of financial services were asked individually to all adult household members. Based on this information, I create a dummy variable that takes the value '1' when at least one household member owns a savings account with a financial institution (commercial banks, credit unions, savings banks, or other formal or semi-

[9] Of course, households with borrowing options can still be denied credit. Even so, I prefer an indicator on the availability of credit to an indicator on the use of credit in order to distinguish financial access from the demand for financial services. I also tested the impact of a change in remittance status on the actual use of credit from financial institutions, see footnote 9.

formal institutions from the microfinance sector). Concerning credits, I proceed in the same way and create dummies for each household based on whether at least one household member knows a financial institution where he/she would be able to obtain a credit. On average, over 2002 and 2005, at least one household member owned a savings account in 17 percent of all Mexican households; in around 30 percent of households, at least one member had borrowing options with a financial institution. These data refer to different types of financial institutions and, next to the traditional banking sector, also include credit unions, savings banks, and other deposit-taking or lending institutions that offer financial services to lower-income segments of the population. Many of these institutions have a local focus only and, in some cases, are not formally regulated. Eight percent of households had a savings account with a non-traditional banking institution from the heterogeneous microfinance sector (compared to 11 percent with commercial banks) and 21 percent of households had borrowing options with a microfinance lending institution (compared to 17 percent that had borrowing options with a commercial bank).[10] Among rural households, financial access is more restricted: Only nine percent of rural households owned a savings account compared to 22 percent among urban households; and 22 percent of rural households had borrowing options with a financial institution compared to 36 percent among urban households. Among rural households, financial access is particularly limited with respect to commercial banks, which rarely open branches in rural communities. While financial services offered by microfinance institutions play an important role both for households

[10] A relatively large number of interviewees did not answer the questions on financial service usage and borrowing options, which reduces the number of observations available for the regression analysis (see Table 1 on the number of available observations for each of the variables).

from urban and for households from rural communities, their importance relative to commercial banks is stronger among rural households (see Table 1).

In order to control for differences between households, additional variables were taken into account. I first created a poverty score for each household describing the probability of the household falling below a certain poverty line, valued 0 (lowest probability) to 100 (highest probability); this index is based on Schreiner (2009) and combines information on the number of children in the household, education levels, employment situation, housing conditions, and household assets (see Annex 1 for a more detailed description). The score is used as a proxy for the socioeconomic status of a household through a one-score summary, which allows for the controlling of a number of household characteristics and several dimensions of poverty without including them separately in the regression. Next to this non-monetary poverty indicator, I also included the monthly per capita spending of households as a proxy for income levels. The regression additionally takes into account the size of households, whether the household's head earned income from work or business, and whether households benefitted from cash-transfer programs. Table 1 provides a summary of the variables used and some descriptive statistics, with a separate description for the rural and urban subsets.

Table 1: Description of Variables and Summary Statistics

var.	description		pooled	rural	urban
REM	binary variable that takes the value '1' for households that receive remittances	*mean*	6.1%	7.8%	4.8%
		# obs.	*14,862*	*6,166*	*8,696*
SAV	binary variable that takes the value '1' for households where at least one household member owns a savings account with a financial institution	*mean*	16.7%	9.0%	22.4%
		# obs.	*13,374*	*5,697*	*7,677*
	… with a non-traditional banking institution from the microfinance sector (savings banks, credit unions, etc.)	*mean*	7.6%	3.5%	1.8%
		# obs.	*12,055*	*5,372*	*6,683*
	… with a commercial bank	*mean*	11.3%	6.2%	15.4%
		# obs.	*12,566*	*5,525*	*7,041*
BOR	binary variable that takes the value '1' for households where at least one household member knows a financial institution where they could obtain credit	*mean*	30.2%	21.6%	36.4%
		# obs.	*14,572*	*6,100*	*8,472*
	… from a microfinance institution	*mean*	21.1%	15.8%	24.9%
		# obs.	*14,572*	*6,100*	*8,472*
	… from a commercial bank	*mean*	17.6%	1.2%	23.0%
		# obs.	*14,572*	*6,100*	*8,472*
CON	monthly per capita spending, in Mexican pesos	*mean*	1,186	767	1,478
		s.e.	*[1,612]*	*[1,039]*	*[1,857]*
		#obs	*15,144*	*6,208*	*8,936*
POV	One-score summary for the probability that the household falls below a certain poverty line, from 0 (highest probability) to 100 (lowest probability). The index is adapted from Schreiner (2009) and combines information on the number of children, education levels, employment situation, housing conditions, and household assets (see Annex 1)	*mean*	58	50	63
		s.e.	*[17]*	*[18]*	*[15]*
		#obs	*15,144*	*6,208*	*8,936*
SIZ	number of household members	*mean*	4.5	4.7	4.4
		s.e.	*[2.2]*	*[2.4]*	*[2.1]*
		#obs	*15,144*	*6,208*	*8,936*
GOV	binary variable that takes the value '1' for households that benefitted from cash-transfer programs during the previous 12 months	*mean*	16.6%	33.5%	4.9%
		# obs.	*15,144*	*6,208*	*8,936*
WRK	binary variable that takes the value '1' for households where the household's head earned income during the previous 12 months	*mean*	77.9%	76.0%	79.2%
		# obs.	*15,144*	*6,208*	*8,936*
RUR	binary variable that takes the value '1' for households that live in locations with less than 2,000 inhabitants	*mean*	41.0%		
		# obs.	*15,144*	*6,208*	*8,936*

Source: MxFLS 2005 and 2002. Missing values for household size, household consumption, government transfers, whether household heads earned income, and for the creation of the poverty score have been imputed using the 'mice' package (Buuren and Groothuis-Oudshoorn 2010) in the statistical software R (R Development Core Team 2009).

Table 2 compares the ownership of savings accounts and the availability of borrowing options among remittance-receiving and non-receiving households separately for rural and for urban households and for different types of financial institutions. On average, receiving households have better access to financial services, both with respect to the ownership of savings accounts and with respect to the availability of borrowing options. Differences between the two groups are stronger for savings accounts than for borrowing options and more striking when the comparison is restricted to rural households only; the table also shows that differences between remittance-receiving and non-receiving households are stronger for microfinance institutions (MFI) than for commercial banks.

Table 2: Share of Households (%) with Financial Access, for Remittances-Receiving and Non-Receiving Households from Rural and from Urban Communities

		rural		**urban**	
		non-receivers	*receivers*	*non-receivers*	*receivers*
	# obs.	*5,683*	*483*	*8,278*	*418*
savings account	*any financial institution*	8.0	12.0	19.6	23.2
	MFI	*2.9*	*5.2*	*8.2*	*11.5*
	commercial banks	*5.4*	*6.8*	*12.4*	*13.6*
borrowing options	*any financial institution*	20.5	31.1	35.4	38.3
	MFI	*14.8*	*24.6*	*24.0*	*29.7*
	commercial banks	*9.8*	*13.5*	*22.5*	*19.1*

Source: Own calculation based on MxFLS 2002, 2005. Data is given as average for the pooled data from 2002 and 2005. Percentage shares for MFI and commercial banks do not sum up to the shares for any financial institution because households can have savings accounts and borrowing options with both types of financial institutions.

Table 2 only provides a static picture on access to financial services among Mexican households and should not be interpreted causally. The econometric strategy belwo exploits the panel structure of the data by observing how changes in remittances-

receiving status are correlated with changes in financial access over time. A summary of the time variation for the variables on remittances and on financial access is given in Table 3. Many of the households who received remittances changed their status between 2002 and 2005. While 1.3 percent of all households received remittances in both years, almost ten percent received remittances in only one of the two years. This large variation in the remittance-receiving status of households occurred within a period of intense migratory movements between Mexico and the US, and a strong increase in registered remittances. Corona & Tuirán (2008) estimate that 400,000 emigrants left Mexico every year in the early 2000s, corresponding to a yearly net emigration rate of roughly 0.4 percent of Mexico's population of 100 million. In addition, the number of temporary migrants who regularly moved between Mexico and the US was estimated to lie at around 600-800,000 (ibid). These migratory processes influenced remittances to Mexican households in several ways. On the one hand, households turned into remittance-receiving households through the emigration of family members. Between 2000 and 2006, registered remittances to Mexico grew by an average of more than 26 percent on a yearly basis (World Bank 2011b). On the other hand, households that received remittances in 2002 may not have received remittances in 2005, either because family members returned to Mexico, because monetary support was not given permanently but only for specific one-time purposes, or because transnational links became weaker with time ("remittances-decay-hypotheses", e.g. Merkle and Zimmermann 1992). Changes in remittance-receiving status may also have been a result of changes in household composition, for example when household members who

formerly received remittances emigrated themselves or left the household for other reasons (such as death, marriage, national migration, or others).[11]

Table 3: Time Variation in Remittance-Receiving Status and Financial Access

	no. of households observed	**both years (%)**	**2002 only (%)**	**2005 only (%)**	***households with variation in t (%)***
receiving remittances	*7,290*	1.3	4.5	5.2	*9.7*
savings account	*5,973*	7.0	10.6	8.0	*18.6*
borrowing options	*7,043*	12.2	13.4	22.7	*36.1*

Source: Own calculation based on MxFLS 2002, 2005

With respect to the ownership of savings accounts and the availability of borrowing options, many households also reported a change in their status between 2002 and 2005: Almost 19 percent of households reported a change of status with respect to savings account, and more than 36 percent with respect to borrowing options. Reasons for changes in financial access may be due to changes in the socioeconomic status of households (including the reception of remittances) or changes occurring within the financial sector (e.g. the appearance of new and different institutions or changes in their policy and/or the supply of financial services). As with remittances, time variation in access to financial services may also reflect changes in household compositions. While more households in 2005 had borrowing options compared to 2002, such a positive tendency is not visible for the ownership of savings accounts.

[11] While the large variation in remittance-receiving status allows for the exploitation of the time variation of the data, the short time dimension and a relatively small number of households who did not change their status during the time frame limits the possibility of studying the lagged effect of remittances on financial access, in addition to their contemporaneous effect.

IV. MODEL SPECIFICATION

I am interested in the effect of receiving remittances on access to financial services. The alternative indicators for measuring financial access - the ownership of savings accounts and the availability of borrowing options - are measured as dummy variables that take the value '1' for households with financial access in a specific time period. The effect of receiving remittances on this binary access variable can be estimated with a panel logit model of the following general form:

$$\Pr\left(ACC_{it} = 1\right) = \frac{\exp(\beta_1 REM_{\mathrm{it}} + \beta_2 \mathrm{X}_{\mathrm{it}} + v_i)}{1 + \exp(\beta_1 REM_{\mathrm{it}} + \beta_2 \mathrm{X}_{\mathrm{it}} + v_i)},$$

where the probability of having financial access ACC depends on whether household i received remittances (REM) in time period t, a Matrix of time-variant explanatory variables X_{it} and household fixed effects v_i. Here, β are the estimated coefficients. The time-variant variables in X_{it} include household size, the log of per capita consumption, a multi-dimensional poverty score, whether households benefitted from cash-transfer programs, and whether the household head earned income from work or business (see Table 1 for a description). Next to these time-variant variables, v_i contains all time-constant variables that determine access and may also be correlated with receiving status of households, such as their geographic location, cultural variables, and generally different propensities to use financial services.[12]

As an alternative to the fixed effects model, estimation can be done using random effects where the unobserved values v_i are themselves given a probability distribution

[12] The household fixed effects v_i also additionally control for selection bias due to households dropping out of the sample because the propensity to drop out of the sample can be seen as part of v_i.

(cp. Wooldridge 2002, p.474f). Estimations from the random effects model are, however, biased if v_i is not independent across observations, as it would be expected in most applications. The main advantage of panel data is precisely to get rid of the unobserved effect and therefore to reduce the danger of biased estimates. Remittance-receiving households may differ from non-receiving households on dimensions that are difficult to control for directly with cross-sectional data, such as cultural differences, or other latent differences in motivation and skills, etc. Using a Hausman-type test, the assumption that the coefficients from the random effects model are unbiased can formally be tested by comparing them to the unbiased estimates from the fixed effect model.

As shown by Chamberlain (1980; 1984), the fixed effects logit model can be estimated by conditional maximum likelihood, where the constant household fixed effects v_i are conditioned out of the likelihood function.[13] However, getting unbiased estimates from the conditional fixed effects logit model has several trade-offs: First, the coefficients β are estimated from households only with a variation on the response variable (all those households with variation in financial access as shown in Table 3), whereas households without variation in this variable drop out of the likelihood function. The number of observations from which to estimate an effect of remittances on financial access is therefore lower than the total number of households in the sample. Consequently, the

[13] The strategy consists in finding the joint distribution of the response variable ACC_i conditional on X_i, v_i, and $n_i = \sum_{t=2002}^{T} ACC_{it}$, where n_i can take the values {0,1,2} in the case of two time periods (T=2). It turns out that this conditional distribution does not depend on v_i, so that it is also the distribution of ACC_i given X_i and n_i. Therefore, standard conditional maximum likelihood methods can be used to estimate β (see Wooldridge 2002, 492 for details).

standard errors from the estimation can be expected to be larger, especially with short time periods as in this case. Second, partial effects on the response probabilities cannot be estimated unless values are plugged in for the unknown parameter v_i. Estimation results therefore have to be interpreted as odds ratios. Finally, no coefficients can be estimated for the constant variables; this is, however, not a serious concern since the main interest lies on the correlation of remittances with access to financial service, while constant variables such as the location of households act as control variables.

V. REGRESSION RESULTS

After evaluating different fits to the data, alternative specifications for the logit model are presented in Table 4a (for the ownership of savings accounts) and 4b (for the availability of borrowing options). Specifications I and II give results for all households and for all kinds of financial institutions, alternatively estimated with a random effects model (spec. I) and with household fixed effects, using conditional maximum likelihood (spec. II). Coefficients for the two indicators for financial access in Table 4a and 4b follow, in general, similar tendencies in the random effects and the fixed effects version of the model. In specification I without households fixed effects, additional time-invariant variables are included for the location of households. The coefficients for 'rural' are negative and significant in both Tables 4a and 4b, confirming that rural households had a lower probability of having access to financial services. In addition, state dummies for 16 of the 32 Mexican states from which households were sampled are included in order to control for regional differences that are not captured by variables at the household level. The models with household fixed effects are preferred over the random effects models because they allow controlling for all time-invariant characteristics of households. The Hausman test statistics of 110 (Table 4a) and 40

(Table 4b) on 7 degrees of freedom lead to a rejection of the model without fixed effects.

In addition to the pooled model in specification II, specifications III to VIII show results from the fixed effects model for different subsets and for alternative definitions of the dependent variable. The pooled fixed effects regressions on all financial institution (spec. II) show that the probability of having financial access, measured either as the ownership of a savings account or as the availability of borrowing options, is lower for poor households. This is true for the monetary poverty indicator (log of monthly per capita spending) as well as for the non-monetary poverty indicator (poverty score). This correlation is as expected, because poor households face more obstacles in gaining access to financial services. The probability of having access to financial services is also higher for households where the household head gained income from work or business. The larger the household size, the higher the probability that at least one household member has access to financial services. Having benefitted from cash transfer programs is also positively correlated with financial access. Government support programs may have a positive effect on the socioeconomic status of households and could also have a positive influence on access to financial services when paid through financial institutions. This correlation is, however, weak and statistically significant (at a 10% level) only for the ownership of a savings account.

The main interest lies on the correlation between remittances and financial access. With respect to the ownership of savings accounts, the coefficient for remittances is large and significant. The coefficient is larger in the fixed effects model (spec. II), compared to the random effects model (spec. I), indicating that the estimation from the cross-sectional variation across households underestimates the correlation between remittances and financial access.

The correlation between remittances and the ownership of savings accounts differs across different groups and for different types of institutions. The pooled models on all households (specs. I and II) include an interaction term for remittance-receiving status with the poverty score of households. The negative and statistically significant interaction term between receiving status and poverty score implies that the effect of remittances on the ownership of savings accounts is larger for poor households. For them, receiving remittances increases the probability of owning a savings account in a sizeable manner, while for richer households the probability of owning a savings account increases much less (or does not increase) with remittances.

These differences in the effect of receiving remittances on financial access between households from different socioeconomic backgrounds are also reflected in different patterns among urban compared to rural households, which are generally characterized by higher poverty rates. Dividing the sample into an urban and a rural subset shows a large and statistically significant effect of remittances on the ownership of savings accounts for rural households (specs. VI to VIII), while the coefficient is smaller for urban households and statistically significant at a 10%-level only in spec. III. Taking a closer look at different types of institutions shows that the positive correlation between remittances and the ownership of savings accounts within rural households is dominated by non-traditional institutions from the microfinance sector (spec. VIII) because the size and statistical significance of the coefficient is lower for commercial banks (spec. VI).

As mentioned above, partial effects on the response probabilities cannot be estimated from the conditional fixed effects logit model because of the unknown fixed effects

parameter v_i; probabilities must therefore be interpreted as odds ratios.[14] For example, in the case of ownership of savings accounts among rural households (spec. III in Table 4a), the odds for receivers ($REM = 1$) over the odds of non-receivers ($REM = 1$) is $\exp(1.9) \approx 4$, or 300% higher, holding other variables at a fixed value. Especially among rural households, the effect of remittances on the ownership of savings account is large in size and highly significant compared to other predictors related to the socioeconomic status of households.

With respect to the availability of borrowing options (Table 4b), the effect of remittances is less clear than in the case of savings accounts and the hypothesis that remittances may be accepted as collateral by financial institutions and therefore facilitate access to credit is only supported to some degree by the data. Whereas the coefficient for remittances and its interaction with the poverty score is statistically significant in the random effects specification (spec. I), the pooled fixed effects specification (spec. II) does not point to a statistically significant relationship when an interaction term is included. In the alternative subsets (spec. III – VIII), a statistically significant effect at a 10% confidence level is found for rural households, where the effect is significant for microfinance institutions, but not for commercial banks. A

[14] Probabilities can be expressed in terms of 'odds', which are defined as the ratio of the probability of a positive outcome of an event (in this case, the probability that the indicator for financial access ACC takes the value '1') over the probability of a negative outcome (the probability that ACC takes the value '0'). The 'odds ratios' for a predictor variable (in this case, remittance-receiving status of households) are calculated as the odds of receiving households against the odds of non-receiving households and can be obtained through exponentiation of the logistic regression coefficients. While less intuitive than an interpretation of probabilities on the original scale, the advantage of odds ratios in logistic regression is that they can be scaled up without running into boundary problems for probabilities between 0 and 1.

higher significance of this coefficient for microfinance institutions is plausible because, in general, commercial banks would not be expected to accept income from non-formal income like remittances as collateral for loans.[15]

[15] As mentioned above, the availability of borrowing options does not mean that households actually obtain loans. I also tested the effect of receiving remittances on actual borrowing and did not find a significant effect. This could point to the possibility that, as discussed above, remittances function as a substitute for credit from formal financial services and that the demand for credit is therefore lower among receiving households.

Table 4a: Logit Regression on the Likelihood of Owning a Savings Account

	Random Effects	Conditional Maximum Likelihood (Household Fixed Effects)						
subset	*pooled*		*urban*			*rural*		
Dep. Variable	*any inst.*	*any inst.*	*any inst.*	*banks*	*mfi*	*any inst.*	*banks*	*mfi*
	I	*II*	*III*	*IV*	*V*	*VI*	*VII*	*VIII*
(Intercept)	-11.29***							
	[.443]							
RUR	-.460***							
	[.085]							
REM	1.371***	2.577***	.532*	.504	.477	1.392***	.929**	2.767***
	[.512]	*[.877]*	*[.272]*	*[.350]*	*[.406]*	*[.388]*	*[.459]*	*[1.044]*
REM*POV	-.017**	-.028**						
	[.008]	*[.014]*						
CON	.711***	.345***	.314***	.357***	.286**	.448***	.682***	.13
	[.043]	*[.070]*	*[.083]*	*[.104]*	*[.134]*	*[.142]*	*[.19]*	*[.242]*
GOV	.108	.293*	.442	.586	.416	.297	.322	.329
	[.105]	*[.169]*	*[.323]*	*[.441]*	*[.465]*	*[.213]*	*[.274]*	*[.353]*
POV	.049***	.016**	.013*	.004	.027**	.018	.031**	.013
	[.003]	*[.006]*	*[.007]*	*[.009]*	*[.012]*	*[.011]*	*[.015]*	*[.018]*
WRK	.313***	.439***	.423**	.194	.843***	.458	.473	.611
	[.082]	*[.162]*	*[.200]*	*[.254]*	*[.320]*	*[.290]*	*[.380]*	*[.498]*
SIZ	.297***	.105*	.092	.152	.079	.205	.274	.108
	[.019]	*[.059]*	*[.068]*	*[.096]*	*[.096]*	*[.131]*	*[.182]*	*[.202]*
state fixed effects	*(yes)*	*(no)*	*(no)*	*(no)*	*(no)*	*(no)*	*(no)*	*(no)*
log likelihood	*-5058*	*-771*	*-560*	*-346*	*-237*	*-199*	*-128*	*-76*
# obs.	*13,374*	*2,233*	*1,719*	*1,083*	*725*	*514*	*342*	*189*
# parameters	*25*	*7*	*6*	*6*	*6*	*6*	*6*	*6*
Hausman Chi^2 (dof)		*110.4 (7)*						

Stars denote significance at 1 percent (***), 5 percent (**) and 10 percent (*). Results are reported for different subsets and definitions of the dependent variable. See Table 1 for the definition of variables. Hausman test statistics are given for spec. II (with household fixed effects) against spec. I (random effects).

Table 4b: Logit Regression on the Likelihood of Having Borrowing Options

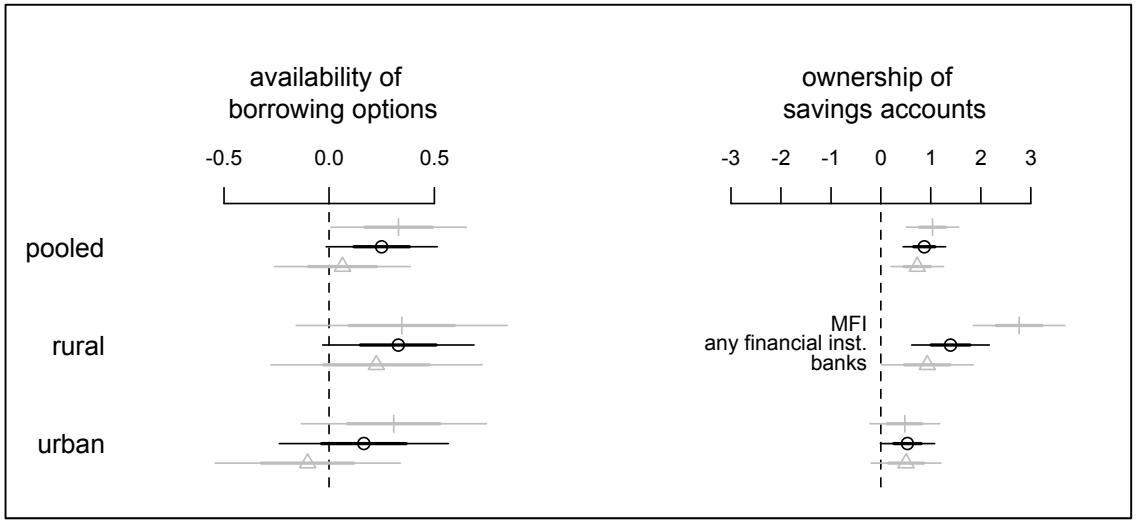
	Random Effects	Conditional Maximum Likelihood (Household Fixed Effects)						
subset	*pooled*		*urban*			*rural*		
Dep. Variable	*any inst.*	*any inst.*	*any inst.*	*banks*	*mfi*	*any inst.*	*banks*	*mfi*
	I	*II*	*III*	*IV*	*V*	*VI*	*VII*	*VIII*
(Intercept)	-6.97***							
	[.263]							
RUR	-.344***							
	[.051]							
REM	.729**	.375	.165	-.103	.307	.329*	.224	.346*
	[.318]	*[.476]*	*[.201]*	*[.22]*	*[.216]*	*[.18]*	*[.251]*	*[.193]*
REM*POV	-.009*	-.002						
	[.005]	*[.008]*						
CON	.349***	.228***	.220***	.200***	.254***	.243***	.357***	.19**
	[.026]	*[.044]*	*[.057]*	*[.061]*	*[.066]*	*[.073]*	*[.102]*	*[.084]*
GOV	.056	.049	.367*	.158	.445*	-.079	-.076	-.063
	[.063]	*[.101]*	*[.214]*	*[.258]*	*[.231]*	*[.118]*	*[.163]*	*[.134]*
POV	.032***	.019***	.019***	.016***	.018***	.017***	.023***	.012*
	[.002]	*[.004]*	*[.005]*	*[.006]*	*[.006]*	*[.006]*	*[.008]*	*[.007]*
WRK	.274***	.113	-.041	-.357**	.008	.351**	-.008	.362*
	[.053]	*[.109]*	*[.146]*	*[.162]*	*[.159]*	*[.173]*	*[.222]*	*[.202]*
SIZ	.257***	.347***	.437***	.610***	.305***	.200***	.268***	.144*
	[.012]	*[.045]*	*[.062]*	*[.082]*	*[.061]*	*[.070]*	*[.091]*	*[.079]*
state fixed effects	*(yes)*	*(no)*	*(no)*	*(no)*	*(no)*	*(no)*	*(no)*	*(no)*
log likelihood	*-8110*	*-1761*	*-1122*	*-902*	*-891*	*-598*	*-353*	*-457*
# obs.	*14,572*	*4,402*	*3,088*	*1,945*	*2,108*	*1,314*	*623*	*961*
# parameters	*25*	*7*	*6*	*6*	*6*	*6*	*6*	*6*
Hausman Chi^2 (dof)		*40.2 (7)*						

Stars denote significance at 1 percent (***), 5 percent (**) and 10 percent (*). Results are reported for different subsets and definitions of the dependent variable. See Table 1 for the definition of variables. Hausman test statistics are given for spec. II (with household fixed effects) against spec. I (random effects).

In addition to the regression outputs in Tables 4a and 4b, Figure 1 plots coefficients and 95% confidence intervals for remittance-receiving status in order to graphically summarize how remittances affect the availability of borrowing options (left graph) and the ownership of savings accounts (right graph) for different subgroups and for different outcome variables. Coefficients are given for the pooled model (at the top, as spec. II without the interaction term on poverty), for the rural subset (at the center, as spec. III to V), and the urban subset (at the bottom, as spec. VI to VIII). Black lines within each set of coefficient lines are based on a regression on all financial institutions. Upper grey lines show regression results on non-traditional banking institutions only (credit unions, savings banks, and other institutions from the microfinance sector), and lower grey lines refer to commercial banks only.

As discussed, Figure 1 reveals a stronger effect for savings accounts than for borrowing options, and a stronger and more significant effect for the rural subset and for the specifications based on microfinance institutions only. Linkages between remittances and the financial sector are more important for non-traditional financial institutions from the microfinance sector than for the commercial banking sector. These results support the argument made by Orozco & Hamilton (2005), Hastings (2006), and Orozco (2008), among others, that institutions from the microfinance sector are often 'closer' to remittance-receivers, both socially and geographically, and are therefore better positioned to link remittances with further financial services. It seems that remittances function as a 'catalyst' for financial access, especially for rural households from lower income groups, who tend to use non-traditional financial institutions from the microfinance sector more than commercial banks. This confirms the first impression from the simple data description in section III (Table 2) after a more thorough statistical analysis.

Figure 1: Estimated Coefficients for Remittance-Receiving Status, for Different Access Indicators and Subgroups



The graph plots the estimated coefficients for remittance-receiving status on the ownership of savings accounts and the availability of borrowing options with 50 percent and 95 percent confidence intervals for all (upper plotted lines), rural (middle) and urban (lower plotted lines) households. The black lines in the middle of each set of plotted lines show estimates and confidence intervals for the regression on all types of financial institutions. Alternatively, I also provide estimates for a regression on microfinance institutions only (upper grey lines) and on commercial banks only (lower grey lines). Estimates are given in logit scale.

The model has been estimated from variation within households, controlling for time-constant heterogeneity. Results should therefore not be biased due to unobserved differences across households, such as motivations and skills, which is a common concern in migration research. Two arguments could still be brought forward against a causal interpretation of the results. Fist, migration might be financed through loans from financial institutions and therefore be correlated with remittances. However, financial institutions are not only an improbable source of financing largely informal migration, where repayment is difficult to enforce. Also, the conditional fixed effects logit uses information from households only with variation on the dependent variable. Households

with financial access prior to receiving remittances do not report changes on this variable and therefore drop out of the likelihood function.

A second possible objection to a causal interpretation of the findings is that access to financial services makes receiving remittances easier. This is not a very strong concern because transfers are in most cases cash-based and do not require bank accounts. Moreover, the strongest effect is found for microfinance institutions, which are usually not integrated into global payment systems. The assumption that remittances are not driven by changes in financial access can be tested empirically, taking the existence of close family relationships across borders, which have been identified as a good predictor for sending remittances in a large number of studies (Carling 2008, 588) as a proxy for remittances. Table 5 shows results for the likelihood of owning a savings accounts or of having borrowing options with a financial institution, replacing remittances with a variable on the existence of close relatives (either a parent, child, spouse, or sibling) in the US. Again, results from the fixed effects specification are given for the urban and the rural subset next to a pooled specification on all households, and alternatively for the ownership of savings accounts and for the availability of borrowing options. Results using a proxy variable for remittances confirm the general findings. Also, in this case, the correlation is more relevant for savings accounts and stronger for rural households compared to urban households. Coefficients are smaller than in the direct regression on remittances, which is plausible considering that the number of observations with close relatives in the US (around 34 percent) is considerably larger than the number of remittance-receiving households (around six percent).

Table 5: Logit Regression on the Likelihood of Having Financial Access, Using the Existence of Close Relatives in the US as a Proxy for Remittances

	Conditional Maximum Likelihood (Household Fixed Effects)					
Dep. Variable	*ownership of savings accounts*			*availability of borrowing options*		
subset	*pooled*	*urban*	*rural*	*pooled*	*urban*	*rural*
	I	*II*	*III*	*IV*	*V*	*VI*
MIG	.549***	.464***	.899***	.088	-.102	.43***
	[.131]	*[.153]*	*[.282]*	*[.084]*	*[.104]*	*[.148]*
CON	.353***	.312***	.479***	.233***	.225***	.254***
	[.070]	*[.083]*	*[.140]*	*[.044]*	*[.057]*	*[.073]*
GOV	.364**	.513	.421**	.053	.365*	-.074
	[.169]	*[.325]*	*[.215]*	*[.101]*	*[.214]*	*[.118]*
POV	.013**	.011	.020*	.018***	.019***	.016***
	[.006]	*[.007]*	*[.011]*	*[.004]*	*[.005]*	*[.006]*
WRK	.355**	.406**	.189	.111	-.042	.342**
	[.161]	*[.199]*	*[.291]*	*[.109]*	*[.146]*	*[.173]*
SIZ	.069	.069	.121	.346***	.444***	.200***
	[.058]	*[.068]*	*[.122]*	*[.045]*	*[.062]*	*[.070]*
log likelihood	*-771*	*-560*	*-199*	*-1761*	*-1122*	*-599*
# obs.	*2,233*	*1,719*	*514*	*4,403*	*3,088*	*1,315*
# parameters	*6*	*6*	*6*	*6*	*6*	*6*

The variable 'MIG' is a binary variable that takes the value '1' for households where at least one member had a close relative in the US. The dependent variables 'ownership of savings accounts' and 'availability of borrowing options' refer to any kind of financial institution (commercial banks or MFI). Stars denote significance at 1 percent (***), 5 percent (**) and 10 percent (*).

VI. CONCLUSION

This study contributes to the understanding of how remittances influence economic development in receiving countries by focusing on a relatively neglected research topic, the impact of remittances on access to financial services. The results are important because they underline some of the indirect effects of remittances on receiving countries, while focusing solely on the spending of remittances misses an important part of the picture.

As the results show, remittances have an important effect on the ownership of savings accounts among receiving households in Mexico and, to some degree, on the availability of borrowing options. The presented evidence based on household data confirms that previously found correlations between remittances and financial development using either municipal level bank data (Demirgüç-Kunt et al. 2011) or cross-country central bank data (Aggarwal, Demirgüç-Kunt, and Martinez Peria 2010; Gupta, Pattillo, and Wagh 2009) are not (or not only) due to externality effects in the local economy, but that remittances affect the financial sector directly through better access among receiving households. Remittances are the most important as a 'catalyst' for financial access for poorer households from rural areas, while they make little difference to wealthier households from urban areas.

Previous studies from aggregated data could not differentiate the impact of remittances according to different types of institutions because non-traditional financial institutions from the microfinance sector usually fall outside banking regulations and are therefore not captured by official data. Nevertheless, they are the most important financial service providers for low-income households in developing countries. At least in the case of Mexico, traditional banks do not seem to be the most adequate institutions for linking remittances with further financial services, though technically better prepared for

including remittances into their product portfolio. Many banks in Mexico do pay remittances: 'Bancomer' alone has an estimated share of 60 percent in the Mexican remittance market (Hernández-Coss 2005). However, in most cases, remittances are sent and received in cash, with bank branches functioning as paying agents to US-based money transfer operators. Commercial banks apparently use their market power only to a limited degree for gaining new clients among remittance-receivers.

Findings support the argument that microfinance institutions are particularly well suited for linking remittances with further financial services, although they face several obstacles in doing so (see Orozco and Hamilton 2005; Hastings 2006; Orozco 2008). These institutions typically have a local focus and are usually not integrated into national, and even less into global, payment systems. They may not often have the institutional capacities for complex cross-border transfers in terms of liquidity management and information management systems, among others, either. Additionally, regulatory constraints regarding activities in foreign currencies or restrictions in offering certain financial services can be an obstacle for MFIs to enter remittance markets (Sander 2008). From a policy perspective, the challenge lies in providing adequate regulatory frameworks for microfinance institutions and implementing policies that help them bridge their local and pro-poor focus with access to global payment systems.

The lack of access to financial services and the concentration of commercial banks on urban centers and high-income neighbourhoods are typical features of many developing countries. Findings from the case study on Mexico may therefore bear lessons for other countries as well, where receiving households belong to rural and/or lower income segments that are typically not attended by the banking sector. Remittances are private income of transnational households – institutional frameworks that open monetary

savings and borrowing options and provide more efficient use of remittances for families are therefore more promising than a paternalistic debate on the 'correct' use of these incomes.

VII. ANNEX

Annex 1: Creation of a Poverty Score for Mexican Households, adapted from Schreiner (2009)

	scoring indicator	book	answers	points
1	number of household members aged 0 to 17	C	four or more	0
			three	7
			two	15
			one	22
			none	29
2	highest educational grade among household members	C	college preparatory or less	0
			normal/technical/commercial	4
			professional or graduate	10
3	number of household members with a written employment contract	3a	none	0
			one	7
			two or more	14
4	main flooring type used in residence	C	dirt	0
			cement/concrete	8
			other	12
5	tap water inside the house	C	yes	3
			no	0
6	fuel usually used to cook or heat food	C	firewood	0
			other	5
7	household has domestic appliances (blender, iron, microwave, toaster, etc.)	2	yes	7
			no	0
8	electric appliances used in the household (radio, TV, VCR, computer, etc.)	2	yes	7
			no	0
9	household has other assets like dryer, washing machine, stove, or refrigerator	2	yes	13
			no	0
			maximum value	100

Creation of a 'poverty score' for each household from MxFLS 2002 and 2005: A score of '100' indicates the lowest probability of belonging to a poor household and a score of '0' indicates the highest probability of belonging to a poor household. The scoring is based on Schreiner (2009) and was developed in order to allow a quick and easy assessment of the socioeconomic conditions of households. Questions 7 to 9 have been adapted to the availability of data. Incomplete data on some variables have been imputed using the 'mice' package (Buuren and Groothuis-Oudshoorn 2010) in the statistical software R (R Development Core Team 2009).

3. Remittances and Financial Sector Development. Lessons from the Salvadoran Case

Abstract

The paper takes a closer look at the benefits and limitations of "banking" remittances in the case of El Salvador, where state-owned banks followed an active policy of reaching out to the diaspora. The first part analyzes the role of different financial institutions in the Salvadoran remittance market. The second part crosses financial data with remittance data across Salvadoran municipalities. Although coverage of the banking sector is limited to larger municipalities and those with better-than-average socioeconomic indicators, empirical results show that the banking sector is more developed in terms of per capita savings and number of accounts in remittance-intensive municipalities.

Keywords: Remittances, Banking, Microfinance, El Salvador

JEL Classification: G21, O16, F24

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I. INTRODUCTION

El Salvador heavily depends on remittances, the money that migrants working abroad send home, usually to their families staying behind. With a share of 17% of GDP, almost five times the value of foreign direct investment and more than 16 times the value of official development assistance (2008, World Bank 2011a), the country ranks among the world's top ten receivers of remittances in relative terms, with remittances being El Salvador's most important source of external revenue. The first important waves of out-migration from El Salvador, mainly to the US, took place in the 1980s when the country was suffering from a civil war, and increased strongly during the 1990s and the 2000s. Today, 1.6 million Salvadorans live in the US; of these, one million were born in El Salvador, representing 16% of the population of El Salvador's roughly six million (US Census 2008, Pew Hispanics Center 2010). Salvadorans in the US are often referred to as the 15th political department (next to the 14 departments of El Salvador), expressing the social, political and economic importance of Salvadoran migrants for their home country. Remittances were also one of the main transmission channels of the US financial crisis to El Salvador. Many Salvadoran immigrants work in sectors that were strongly affected by the US recession in 2009, such as construction. However, the 8.5% decline in remittances in 2009, although strong, was less severe than was feared by some and recovered in 2010.

In contrast to a large number of works that have focused on the use of these flows by receiving households, my interest is to analyze the access of senders and receivers of remittances to financial services and the contribution of remittances to the liquidity of the banking sector. At both the sending and receiving end, access to financial institutions for migrants and their families is limited. In developing countries, access to banking services is often a privilege of higher and middle income groups from urban areas. The share of

households in developing countries that own bank accounts can be as low as 5% (Tanzania), typically lying between 20 and 30% for most Latin American countries and is estimated at 25% in El Salvador, compared to shares between 90 and 100% for Western European households (Honohan 2008). Small and micro enterprises, often from the informal sector, as well as households with low and irregular income and populations from rural areas, typically remain excluded from access to credit, insurance or saving accounts due to high transaction costs for small sums and information asymmetries that prevent banks from distinguishing good borrowers from bad borrowers (Armendáriz de Aghion and Murdoch 2005) see also Beck/Torre 2007, Beck et al. 2008 and Conning/Udry 2005 specifically for rural financial markets). Also on the sending side, undocumented migrants face difficulties in getting access to financial institutions that require legal documents for opening bank accounts.[1] Many migrants have a cash-based household economy: They earn, consume and save in cash, and remittances are also mostly sent and received in cash, via Money Transfer Operators (MTO) or other (partly informal) transfer mechanisms. A study by the federal reserve bank of Chicago showed that the demand for cash is considerably higher in areas that are populated predominantly by Latin American immigrants than the national average (Jankowski, Porter, and Rice 2007). Varsanyi (2007, 305) refers to concerns of police departments that have become alarmed at the number of undocumented residents of the city who store large amounts of cash at home and frequently become victims of robbery.

[1] Mexican consulates hand out "Matrículas Consulares" as a "substitute" for official documents to undocumented migrants in the US, which are also accepted by many banks for opening accounts. See, for example, Varsanyi (2007) on this case.

From the point of view of migrants and their families, access to banking services may improve the living conditions of migrant households by providing monetary saving options as alternatives to other asset accumulation strategies (cash saving or saving in fixed assets like land and cattle), and possibly by opening access to other financial services like credit and insurances that enhance their capabilities in the understanding of Sen (1999). Beyond this direct benefit to users, savings from remittances provides liquidity to the financial sector of the receiving countries that may reduce internal saving constraints and dependence on foreign capital inflows to finance local investment. Furthermore, matching savings from remittances with a demand for credit elsewhere allows a more productive use of remittances. In this way, providing migrant savings to the financial sector potentially contributes to a more equal distribution of the benefits of remittances and allows households and enterprises to benefit from remittances via financial intermediation and access to credit even if they do not receive remittances themselves. "Banking" remittance receivers has become an important topic on the policy agenda (among others OECD 2005; Terry and Wilson 2005; World Bank 2006), next to other remittance policies like transfer cost reduction or public-private partnerships that promote the use of remittances for community-oriented projects[2].

A number of countries that have or had state-owned banking systems followed an explicit policy of providing banking services to migrants, at a time when money transfer operators did not yet have the global distributional networks that they have today and long before banking

[2] The Mexican 3*1 program is an example for such an approach, where public entities at the regional, state and federal level top the spending of migrant associations with equal shares each (Garcia Zamora 2005). While this example is probably the best known and most studied, similar experiences of public-private cooperation can be found in other countries as well

remittances became a topic on the policy agenda. Examples of such an "outreach" of national banks towards their diaspora are Moroccan banks in France or Turkish banks in Germany. In Latin America, El Salvador is one of the few countries that explicitly targeted migrants and had a presence of national banks in both the sending and the receiving country since the 1980s.

My research questions are: First, how have different kinds of financial institutions responded to the demand of remittance-receivers for financial services in the Salvadoran context? Second, to what degree did banking remittances through commercial banks improve access for receivers and increase the liquidity of the banking sector? I use both quantitative and qualitative methods to answer these questions and start the following section with a summary of the state of the art on remittances and its links to the financial sector. In section III I provide a description of the Salvadoran context and analyze the role of different financial institutions in remittance markets and their potential for providing financial access to remittance receivers. Next to traditional banks, institutions from the microfinance sector that are socially and geographically closer to remittance-receivers are also engaged in paying remittances in El Salvador. Section III is mainly based on interviews conducted in 2008 and 2009 with experts from financial and government institutions. In section IV and V I apply regression techniques to a cross-sectional dataset of 262 Salvadoran municipalities, where I cross financial sector data with remittance data in order to show benefits and limitations of banking remittances through commercial banks. Selection bias that arises from a large number of municipalities without presence of banks is controlled for by a Heckman two-step estimation procedure. I conclude with a summary of the main findings and open questions.

II. STATE-OF-THE ART: LINKS BETWEEN REMITTANCES AND THE FINANCIAL SECTOR

Whether and in what way remittances have been beneficial to economic development in receiving countries has been the subject of controversial debate. Much of this debate has centered on the question of how remittances are used, e.g. whether remittances are spent on "productive" investment or consumed (for recent works on remittances and household spending see for example Adams/Cuecuecha (2010), Amuedo-Dorantes et al. (2007), Edwards/Ureta (2003), Görlich et al. (2007), Hanson/Woodruff (2003), Massey/Parrado (1998), Woodruff/Zenteno (2007), Yang (2005) and Yang/Choi (2007).

Here, I move away from the debate on the use of remittances, as remittances are private income and the allocation of income towards saving, consumption or investment reflects preferences of households. In this respect, remittances are not different from any other household income (E. J. Taylor 1999). Receiving remittances will not turn households into entrepreneurs nor is the consumption of remittances necessarily a bad thing, because the spending of remittances may generate investment elsewhere through multiplier effects (Durand, Parrado, and Massey 1996; Glytsos 1993; Glytsos 2005). Instead, this article focuses on the relations between remittances and the financial sector. This nexus has been approached from distinct perspectives in the literature. On a macro-level, several studies have shown that remittances contribute to the macroeconomic stability of receiving countries. Remittances do not follow the herd-like behavior of other private-sector flows like loans and portfolio investments that amplify the boom and bust-cycle of many emerging markets. Although some authors question that remittances are only driven by altruism but respond positively to investment conditions and political climate in the home country (Lueth and Ruiz-Arranz 2008), most studies have found that, contrary to other private-sector flows,

remittances are counter-cyclical and provide a stabilizing element during periods of financial instability (Buch and Kuckulenz 2010; Bugamelli and Paterno 2009; Sayan 2004). Even under the most recent financial crisis – which originated in the US as the most important remittance-sending country – remittances have proven to be more stable than other private capital flows, despite a decline in 2009 (Chami, Hakura, and Montiel 2009; Dillip Ratha and Mohapatra 2009). As such, they help buffer fluctuations in foreign exchange reserves and can also help to maintain regimes of fixed exchange rates (Singer 2010). Less beneficial though, strong currency inflows can have an appreciating effect on the local currency and harm the competitiveness of exporting sectors. This "dutch-disease" effect on exchange rates, usually associated with natural resource booms, has also been diagnosed for remittance-receiving countries (P. A. Acosta, Lartey, and Mandelman 2009; Amuedo-Dorantes and Pozo 2004a).

On a micro level, a different line of research has underlined that remittances function as a substitute for credit and insurance from formal financial institutions. Remittance-receivers that have a demand for finance – for example because of a loss of work, sickness or other sudden income shocks – are able to rely on an additional and relatively stable source of income, which is not available to non-receivers. The fact that a large part of remittances is spent on health and other "emergency" spending (Afsar, Yunus, and Islam 2002; Amuedo-Dorantes and Pozo 2004b; Amuedo-Dorantes, Pozo, and Sainz 2007; Yang and Choi 2007) point to this insurance function of remittances. Woodruff/Zenteno (2007) and Giuliano/Ruíz-Arranz (2009) have argued that remittances also function as a substitute for a lack of access to productive credits and play an important role in financing investment of micro enterprises. In this respect, remittances compete with formal financial services, possibly reducing demand for credits and other financial products like insurance. Guliano/Ruíz-Arranz (2009) have therefore claimed that growth is lower in countries with developed financial markets, because

remittances tend to finance more investment in countries with weakly developed financial markets where they substitute the lack of access to credit. Bettin/Zazzaro (2011) have challenged this view, showing that remittances and financial development can be complements to each other, provided the banking system is sufficiently sound. This is because remittances not only substitute credits, but saving from remittances and their intermediation through the financial sector leads to a more efficient allocation of resources.

Recent research has asked whether and to what degree remittances improve access to financial services and therefore function as 'catalyst' for financial development. This issue has been treated, most of all, in policy papers and country studies (see for example Orozco 2004a; Orozco and Fedewa 2006; Terry and Wilson 2005). However, despite a repeated call for "banking" migrants in policy circles and international organizations, the relationship between remittances and financial sector development has so far received relatively little attention in academia. Exceptions include Aggarwal et al. (2010), who find that remittances have contributed to deeper financial sectors measured in domestic savings and, albeit at a minor degree, to domestic credit relative to GDP in a cross-country panel of 99 developing countries. These results are also confirmed by Martínez Pería et al. (2008) for Latin America and by Gupta et al. (2009) for Sub-Saharan Africa. In a case study on Mexico, Demirgüç-Kunt et al. (2011) add further evidence to the overall picture of a positive impact of remittances on deposits (and partly to credits) on a micro level, and, additionally, also find a positive impact on the number of accounts per household. The mentioned studies' explanation for a positive impact of remittances on the financial sector is that, through remittances, banks operate as transfer providers and previously unbanked remittance-receivers "get to know each other". In some cases, remittances might be accepted by banks as a substitute for the otherwise lack of formal incomes, paving the way for further financial

services. This point is also made by Cuecuecha/de la Rosa (2011), who underline that changes in remittances have, additionally to the direct effect on income, also an indirect effect on poverty rates by facilitating access to credit among receivers.

The present article adds to this latter line of research and extends it to a new country setting. El Salvador constitutes an interesting case study because of an explicit policy of reaching out to the Diaspora through state-owned banks in the past. In contrast to Demirgüç-Kunt et al. (2011) and Aggarwal et al. (2010), I point towards the limitations of banking remittances through commercial banks for low-income and geographically isolated groups and address selection bias that results from the concentration of banks in larger and more developed municipalities. In addition, I include a qualitative analysis of the financial markets in El Salvador, taking into account the experience of financial cooperatives and credit unions, which, in many cases, match the typical profile of remittance-receiving households better than commercial banks.

III. REMITTANCES AND FINANCIAL ACCESS – THE SALVADORAN CASE

The Salvadoran remittance market is strongly dominated by commercial banks on the paying side: About 74% of remittances today are channeled through the four major commercial banks (CEMLA, 2009), a share much higher than in other Latin American or Caribbean countries, and a result of the role of the state in promoting the internationalization of Salvadoran banks in the 1980s at a time when remittances were largely sent in foreign currency through informal channels. The opening of bank branches of the then-state-owned Salvadoran banks in the US was a deliberate strategy of the government to curb informal remittance flows, fight the rising black market in foreign currency and capture US dollars for the financial system. The government followed an active policy of "banking" migrants,

dividing the US market among the four major state-owned banks, which opened branches in California (Banco Agrícola), Texas (Banco Salvadoreño), Washington D.C. (Banco de Comercio) and New York (Banco Cuscatlán) (Magaña 2006). Although El Salvador uses the US Dollar as the official currency since 2001 and black markets in foreign currency have become obsolete, savings from remittances still contributes to macroeconomic stability by providing a counter-cyclical source of external finance and partly compensates for the loss of exchange rates as an adjustment mechanism in the case of negative shocks that hit the remittance-receiving, not the sending country (a criteria not met by the US financial crisis in 2008).

With a share of 49% of private credit to GDP, El Salvador has a relatively low level of financial intermediation by global standards, less than the average of all middle- and low-income countries (77%) and also less than the average of Latin America (62%) (data for 2008, World Bank 2011a). In light of the relatively low absolute size of financial intermediation in El Salvador, remittances are an important factor for providing liquidity to the banking sector. However, the dominant role of banks in remittance markets does not necessarily mean that money is saved at financial institutions; access to financial services is relatively limited in El Salvador, with only one in four Salvadoran households owning a bank account (Honohan 2008). In many cases, commercial banks cooperate with money transfer operators on the sending side, which means that remittances are mostly received and paid in cash. According to CEMLA (2008), only 15% of the transfers channeled through banks are directly paid on account.[1]

[1] We do not know, however, whether remittances that are received in cash are then deposited in an account.

The unsatisfied demand for financial services among poor and geographically isolated households is partly met by different institutions from the heterogeneous microfinance sector, which embraces a diversity of institutions ranging from private financial institutions specialized towards small clients, to non-governmental organizations, credit unions and financial cooperatives.[2] Next to traditional banks, some commercial microfinance banks as well as financial cooperatives and credit unions in El Salvador pay remittances in cooperation with MTO. Most of these are channeled through one of the two main federations of microfinance institutions: FEDECACES, the Federation of Associations of Savings and Credit Cooperatives (*Federación de Asociaciones Cooperativas de Ahorro y Crédito de El Salvador*) and FEDECREDITO, a federation of credit unions and worker's banks (*Federación de Cajas de Crédito y de Bancos de los Trabajadores*). The two federations allow the transfer of funds between members and the channeling of remittances through the network. Both enter in negotiation with MTO and conclude agreements with the MTOs as a representative for all its member institutions. FEDECACES offers remittance services to its clients since 1998. At present, the federation has 32 affiliated cooperatives with 58 points of service covering all 14 departments of the country. Remittance receivers have the option to join one of the cooperatives by opening an account, where they can also receive their remittances directly, though this is not a requisite for receiving the money, and they can get access to other financial products like loans or insurance. El Salvador's largest microfinance-network (in terms of borrowers), FEDECREDITO, has channelled remittances since

[2] I use the term microfinance for all financial institutions that cater to low-income groups. In Latin America, the term "microfinanzas" is used for institutions that only give credit, while the term "finanzas populares" is usually used when referring to deposit-taking institutions like cooperatives and credit unions.

2003/2004. The network contains 55 members with over 115 points of service in the whole country, which are all able to pay out remittances. Growth rates of remittances channeled through either of these two federations started from low values, but have increased strongly since they entered the remittance market, pointing to the high demand for these services and a still-uncovered potential that exists for linking remittances with micro-financial services. Between 2007 and 2009, the common market share of FEDECACES and FEDECREDITO in remittance payments increased from 5.6% to 8.5% (data provided by institutions to the author).

The interest of financial intermediaries in remittance markets does not lie in the transfer as such; in most cases, financial intermediaries on the paying side cooperate with MTO and only receive a minor share of the transfer commission charged to clients. They see remittances primarily as an instrument for approaching new customers and providing additional financial services to remittance-receivers. As a representative of one of the major commercial banks stated:

"Our approach is 100% banking, the remittance business is a banking business, it is not a business of gaining from the transaction as such, the transaction does not leave absolutely nothing ... but the more people we have whose transfers are directed to saving accounts, in this sense for the bank it is an instrument of very cheap funds that also allow placing credits at preferential rates" [3]

[3] translated by the author from an interview in march 2008

In spite of their institutional differences, non-traditional banking institutions also see their role in remittance markets not only as paying agent to an MTO, but as an instrument for the cross-selling of other financial services, as expressed by the director of the federation of cooperatives:

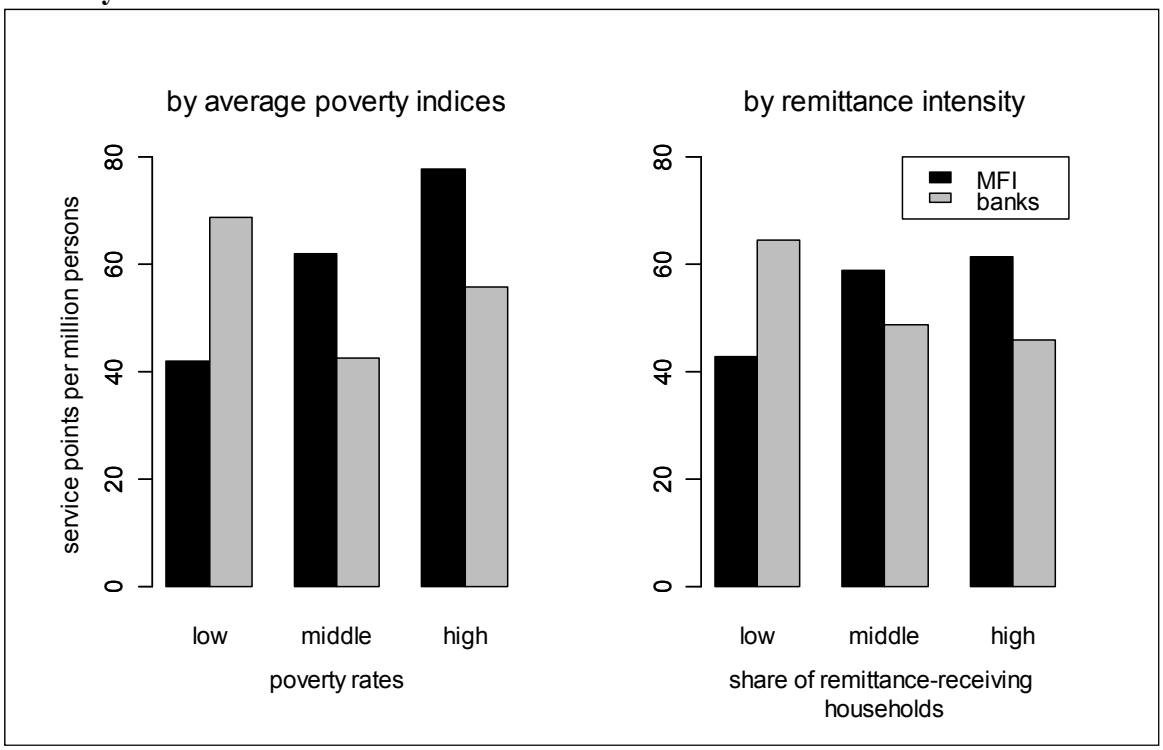
"Remittances are no business [...] it has to be a concept of financial inclusion with cross-selling products where one sees much more complex things and this can only be done by an entity that is not only dedicated to this [...] if they would just sell remittances, really they could not".[4]

Both traditional banks and microfinance institutions (MFI) use remittances as a tool for approaching new clients. However, the institutional responses of microfinance institutions, on the one hand, and traditional banks, on the other hand, differ. MFI are "closer" to receivers both socially and geographically. Graph 2 plots the distribution of service points of commercial banks against institutions from the microfinance sector, grouped by departments with high, middle and low poverty levels and high, middle and low shares of remittance-receiving households. Taking the number of service points as an indicator for their geographic coverage, institutions from the microfinance sector have a stronger presence in low-income and high-remittance departments. Their clients match the typical profile of remittance-receivers better than commercial banks. Their main challenges consist in technical and institutional upgrading in order to be able to offer remittance payments and in combining

[4] translated by the author from an interview in march 2008

their regional focus on rural and low-income populations with access to global payment systems (for a general discussion and experiences from other countries see Orozco 2008; Orozco and Fedewa 2006; Orozco and Hamilton 2005; Sander 2008). Banks, on the other hand, in many cases have their own networks on both the receiving and the sending side and are therefore generally in a better position to offer specialized products such as account-to-account transfers or other targeted products to migrants and their families. Also, they can enter into direct negotiation with MTO as a single corporation and generate economies of scale through larger distributional networks. However, other than in the case of MFI, their traditional focus lies on urban centers and on higher income groups. For them, entering remittance markets requires them to downscale their product portfolio and reach out to remittance-receivers, which are not part of their "typical" clientele.

Graph 1: Geographical distribution of service points by poverty rates and remittance intensity: Banks vs. microfinance institutions



Grouping is based on the distribution of poverty rates (measured as poverty gap, see FISDL-FLACSO 2005) and remittance-receiving households in each of the 14 departments of El Salvador. The middle value refers to departments with values at the average 50% for each indicator; the low and high groups refer to departments with values at the lowest 25% and highest 25%. Data for the distribution of service points of banks per capita comes from the financial superintendence (SSF) and from Centro de Gestión de la Micro y Pequena Empresa (2008) for microfinance institutions.

The following section takes a closer look at the downscaling of traditional banks towards remittance-receivers and asks to what degree they have been reaching out to remittance-receivers in El Salvador. The quantitative analysis focuses on the commercial sector only, which covers 75% of the remittance market on the paying side. Because data on cooperatives and credit unions is not covered by financial statistics, I am not able to include institutions from the microfinance sector in the regression analysis.

IV. TESTING THE OUTREACH OF COMMERCIAL BANKS TO REMITTANCE RECEIVERS: METHODOLOGICAL APPROACH

A difficulty in studying relations between remittances and the financial sector is the fact that there are hardly datasets available at the household level that include both data on migration and on financial sector usage. In El Salvador, data on the financial sector comes from the financial superintendence (*Superintendencia del Sistema Financiero*), which provides disaggregated quarterly information for the 262 municipalities of the country. My empirical strategy consists of aggregating socioeconomic census data from the household level to the municipal level and crossing these data with data from the financial superintendence. The basic regression model (which has been used similarly by Aggarwal et al. and Demirgüç-Kunt et al) is

$$FinSer_i = \beta_1 Rem_i + \beta_2 X_i + u_i ,$$

where *FinSer* stands for financial service indicators in municipality *i*, *Rem* refers to remittance intensity, *X* is a vector of covariates, β are the estimated regression coefficients and *u* stands for the usual error term.

FinSer refers alternatively the total amount of savings or the total number of accounts per capita in observation i. All financial data are given as averages for the years 2007 to 2010 to smoothen statistical outliers and year-specific effects. Commercial banks are present in only 60 (23%) of all municipalities. In many cases, the outcome variable therefore takes a value of zero. Demirgüç-Kunt et al. (2011) deal with the absence of financial institutions in a large number of municipalities by choosing a tobit maximum likelihood estimation, which allows

them to treat municipalities without bank presence as left-censored variable and to interpret their results across all municipalities, including those without bank presence. Different to them, I prefer the OLS regression on municipalities with bank presence only and interpret results conditional on financial sector presence, because the interpretation how remittances influence the number of accounts and total deposits is more meaningful when it is restricted to municipalities with a financial sector. Even if a municipality receives high amounts of remittances, this will not necessarily lead to an opening of bank branches and an increase in accounts and deposits when the size of the population is small and municipalities are geographically isolated.

A simple OLS regression on a subset of municipalities with bank presence gives biased estimates, because municipalities with banks are systematically different from municipalities without banks. Following a Heckman selection model (Heckman 1979, also referred to as tobit type II selection model; see Amemiya 1984) selection bias is treated as an omitted variable that has to be estimated together with the other variables in the model. The estimation therefore proceeds in two steps. In a first step, municipality characteristics are regressed on a binary variable of bank presence using a probit model. The predictions from this first-step model are then included as additional predictors in a regression on the 60 municipalities with bank presence.

The explanatory variable of interest is *Rem*, which will be measured either as the average amount of remittances per capita (taken over the whole population including receivers and non-receivers) or the share of households receiving remittances. I run the regression with both data alternatively. In measuring the impact of remittances on the financial sector, I exploit regional variation of remittances between municipalities. Migration rates and remittances are usually not equally distributed across a country because of historical path

dependency of migration and the importance of migration networks (Bauer and Zimmermann 1985; Boyd 1989). The vector of control variables *Xi* is composed of several indicators that are expected to be correlated with the level of financial intermediation and access to financial services. The literature has shown that poverty and low income are the main determinants for a lack of access to finance in developing countries (cp. Thorsten Beck and Demirgüç-Kunt 2008). I am not able to control for income directly, but I include poverty rates and education levels as proxies for income levels. I measure poverty by an integrated poverty index created for each municipality in a national poverty map. As a measure of the education level, I use the share of the population that received any further specialization (professional or university education) in addition to high school. Population density is also expected to be correlated with access to financial services because transaction costs for banks are higher in remote areas with low population density. I additionally control for the population size of the observations because centralized accounts tend to be in the most populated areas, mainly the capital. An alternative way of controlling for centralized accounts would be to include dummies for the capital, which, however, proved to be insignificant when also controlling for population size. Finally, I control for the share of persons working in agriculture because the literature has pointed out that rural financial markets are especially prone to market failures and often lack access to commercial finance (see Conning and Udry 2005 for a review of the literature on rural financial markets). At the municipal level, this data is separated for those working in either crop production or cattle-raising, the data used referring to the share of the population working in crop production only. Before settling on these final variables, I tried different kinds of specifications where I took different kinds of accounts (savings accounts, current accounts or total accounts) as outcome variables and measured remittances differently, either as total sums per household (persons) or as the average share of households

(persons) receiving remittances in each municipality. I also experimented with different covariates, such as different kinds of poverty indicators, different kinds of education measurements and indicators on housing quality as a proxy for socioeconomic status and income. I tried different kinds of data transformations and excluded outliers from the model in terms of savings, which proved to be unnecessary as long as I controlled for the size of the observations. (See table 1 for a list of variables, their sources and some descriptive statistics).

The chosen approach suffers from several shortcomings. First, I lose information on the household level by aggregating data. Second, data on remittance and other socioeconomic indicators rely on the census, which only took place in 2007 and 1992, while financial data has been collected on a municipal level since 2005 (and is used as average over 2007 to 2010 to match the years following the census). This prevents me from implementing a panel data design that would allow me to control for unobserved omitted variable bias. Third, financial information on the municipal level is only available for the number of accounts as well as for the amount of savings, while information on credits is only available for the 14 departments – too few to run a meaningful regression. Given the data, I am therefore only able to show a correlation of remittances with savings and the number of accounts. Fourth, the financial superintendence only provides data for the commercial banking sector, while cooperatives and credit unions fall under different regulations and are therefore not covered by the data.

In spite of its limitations, this seems to be the best way of regressing remittances on financial sector indicators in El Salvador. The purpose of the present paper is to show how remittances and financial institutions are linked in the special case of El Salvador and point out deficiencies in terms of coverage and access. Therefore I make use of regression techniques in order to give a descriptive picture, while a more demanding causality test is difficult to realize with the data at hand. Also, I am not able to discuss the impact of remittances on the

household level nor do I ask whether and to what degree having access to financial services allows for more efficient asset accumulation strategies and increases the well-being of households. This would require different kinds of information on the household level and much more detailed datasets. Here I limit myself to showing the degree to which banks have been reaching out to migrants and their families, not the indirect effects of this fact on the lives of receivers. The restriction of the quantitative analysis to the commercial sector is justified by its larger size and dominant role in remittance transfers, compared to institutions from the microfinance sector.

Table 1: Overview and descriptive statistics of variables at municipal level

Variable	Description	Obs.	Mean	St. Dev.	Min	Max	Time Period	Source
number of accounts per capita	total number of accounts per 10,000 habitants	262 *[60]*[3]	156 *[682]*	484 *[821]*	0 *[3]*	3,992 *[3,992]*	2007 - 2010 (mean)	SSF[1]
amount of deposits per capita	total amount of per capita deposits in US Dollars	262 *[60]*	332 *[1,452]*	1,397 *[2,642]*	0 *[0.3]*	13,952 *[13,952]*	2007 - 2010 (mean)	SSF
remittances per capita	monthly amount of remittances per capita, in US Dollars	262 *[60]*	7.9 *[9.0]*	6.3 *[5.3]*	0.1 *[1.7]*	37.4 *[22.3]*	2005	UNDP (2005)
share of remittance receivers	share of households receiving remittances	262 *[60]*	12.2 *[11.4]*	7.2 *[5.3]*	1.9 *[3.6]*	43.9 [*24.6]*	2007	Censo[2]
agricultural activity	share of households with income from crop production	262 *[60]*	29.1 *[17.4]*	19.2 *[13.9]*	0.3 *[0.4]*	78.0 *[53.9]*	2007	Censo
population density	number of persons per m^2	262 *[60]*	0.05 *[0.08]*	0.12 *[0.16]*	0 *[0]*	1.32 *[0.80]*	2007	Censo
education	share of persons that received further specialisation (professional	262 *[60]*	2.6 *[5.1]*	3.4 *[5.81]*	0.1 *[0.6]*	34.1 *[34.1]*	2007	Censo
unemployment rate	share of unemployed persons among the working population	262 *[60]*	12,1 *[11.9]*	7.9 *[4.0]*	0.7 *[5.4]*	65.4 *[31.7]*	2007	Censo
size	total number of inhabitants of the municipality	262 *[60]*	21,924 *[59,173]*	37,655 *[62,969]*	637 *[7,567]*	316,090 *[316,090]*	2007	Censo
poverty	integrated poverty index on municipal level, combining the poverty gap, housing conditions and educational characteristics	262 *[60]*	27.6 *[21.8]*	9.3 *[7.0]*	4.0 *[4.0]*	53.5 *[38.2]*	2005	FISDL/ FLACSO (2005)

[1]Superintendencia del Sistema Financiero de El Salvador, [2]Censo de Población y Vivienda de El Salvador 2007
[3]in brackets: Observations used in the second step regression

V. EMPIRICAL RESULTS

Table 2 gives the fist-stage estimation results for the presence of banks in a municipality, using probit regression. The most important predictors for the presence of banks are the log of population size and density of population: Small municipalities and those with low population density had a lower probability of having a bank branch. The share of persons with a higher education and the share of female-headed households are positively correlated with banking presence. The share of remittance-receiving households and the unemployment rate are not individually significant, but improved the overall fit of the regression.

Table 2: Heckman First Step probit estimation on the presence of banks in municipality

	estimate	std. error
(Intercept)	-35.57***	5.42
population density	-9.3***	3.44
log of population size	2.92***	0.44
female headed households	11.48*	6.39
higher eduaction	0.26**	0.13
unemployment rate	-0.02	0.04
log of share of households	0.77	0.5
residual deviance	*129*	
degrees of freedom	*255*	
Akaike Information Criteria	*143*	

*Stars denote significance at 1%("***"), 5%("**") and 10% ("*")*

Predictions from this first step estimation are included as Inverse Mills Ratio (see Greene 2003, 784 for its calculation) in the second step estimation on the 60 municipalities with bank presence in 2010 (outputs I to IV). Table 3 shows the results of the final specification for two alternative outcome variables, the number of accounts as well as for the amount of savings per capita, and for two alternative remittance indicators, the share of households receiving

remittances and per capita remittances. For comparison, results from the simple OLS regression on a subset of 60 municipalities with bank presence are also reported (Output V to VIII). In order to achieve a better fit, I converted the outcome variables into logs as well as the per capita amount of remittances received and the share of households receiving remittances.

In the second-stage estimation on municipalities with bank presence (Outputs I to IV in Table 3), the size of the municipality is correlated positively with financial indicatory, but not individually significant when controlling for selection bias. Population density enters negatively in the regression, but is also not statistically significant when controlling for selection bias. The share of agricultural activity has a negative sign and is significant in specification III and IV on the log of the number of accounts. This correlation is as expected, because households with a large share of agriculture are on average poorer and the financial sector tends to have an urban bias. Poverty and the share of households with higher education are significant in all specifications (I to IV).

The comparison of the regression that controls for selection bias (Outputs I to IV) with the (biased) regression on a subset without correcting for selection (Output V to VIII) shows important differences in size and significance of coefficients. When selection bias is not controlled for, coefficients for the variables population size and density (that were important predictors in the first-stage estimation on the presence of banks in a municipality, see Table 2) are larger and have high significance values, while average socioeconomic indices (poverty and education) are less important. In general, the two-step estimation procedure improved the overall fit of the model compared to a simple OLS regression without control for selection bias.

My primary interest is on the correlation between remittances and financial sector indicators. The estimations show an important correlation of remittances with the number of accounts as well as with the amount of savings. As specifications I,II, IV and V in table 2 show, both the log of the number of accounts as well as the log of the total amount of deposits per capita are significantly correlated with the log of remittances per capita and with the log of the share of remittance-receiving households, controlling for other municipality characteristics. This means that, interpreting the regression coefficients as elasticity measures and holding other covariates constant, a one percentage increase in average per capita remittances in a given municipality is associated with a change of approximately 1.5 percent of deposits and a roughly one percent increase in the number of accounts per person, and an increase of one percent of remittance-receiving households in the municipality is associated with an increase of approximately 2.1 percent of deposits and of roughly 1.3 percent in the number of accounts per person. This could partly be an income effect, since I am not able to control for income directly, but only for proxies that are expected to be correlated with average income of the municipality (average poverty rates and education levels at the municipal level). In the regression without control for selection bias (output V to VIII), the effect of remittances on financial sector indicators tends to be overestimated. As stated at the beginning, we do not know from this analysis how non-traditional financial institutions that are not covered by the data have responded to remittances.

Retransforming the log variables gives an idea of the importance of the estimated correlation on the original scale. Comparing municipalities at the highest quintile of remittance-receiving households (a municipality where 14.7% of households receive remittances) with a municipality at the lowest quintile (a municipality where 7.2 % of households receive remittances), the predicted difference in per capita saving would be 645 USD. With an

average per capita saving of 1450 USD in municipalities covered by the banking sector (averaged over 2007 to 2010), this is a positive difference of 44%. Although the estimate is quite high, such a strong correlation is not implausible considering the importance of remittances in El Salvador, which amounted to 17% of GDP and more than 40% of total credit to the private sector in 2008 (World Bank 2011). Given the strong correlation between remittances and deposits, the financial sector of El Salvador has indeed been "flooded" with remittances, as Rodrik/Hausmann (2004) say.

These correlations should however be interpreted with caution. As mentioned above, the model is not designed as a causality test and there is no observable counterfactual of the Salvadoran economy without remittances. Several sources of bias and reverse causation are theoretically possible: First, coefficients could be upward biased because of underreporting of remittances (and therefore an underestimation of the amount of per capita remittances). The amount of remittances as estimated from household surveys is usually much lower than those registered by Central Banks and often amount to only around 30% of those registered at Central Banks (see Tuirán et al. (2006) and Canales (2008b) for a discussion with respect to the Mexican case). This is a general concern referring to income data, arising, among other, from a lack of confidence towards interviewers or fear of taxation (Hurst, Li, and Pugsley 2010). This could partly explain the high coefficient on per capita remittances in column II and IV. Therefore, the estimations from column I and III (based on the share of households receiving remittances) are preferred over the estimations that rely on the amount of per capita remittances.

Second, a causal interpretation could be questioned when households receive remittances because the financial sector is more developed and not vice versa. This could be the case when a more developed financial sector makes the sending of remittances easier and cheaper.

A more general concern about reverse causation would be a situation where more migrants come from financially developed municipalities, either because financial development reflects average incomes and migrants self-select from wealthier municipalities, or because migration is financed through bank credit. Although I am not able to reject these concerns of reverse causation with the available data, I consider them not to be very strong. Concerning the first concern, remittance data comes from household surveys that also include remittances that are sent through non-formal channels (friends, relatives, cash couriers, etc.) and also because municipalities without the presence of banks show large average sums of remittances. With respect to the second concern, many poor municipalities without the presence of banks show strong rates of out-migration, and there is no evident sign of self-selection from wealthier municipalities in the case of El Salvador: The share of remittance-receivers in a municipality and banking presence are not significantly correlated (see Table 1) and many of the poorest municipalities are not attended by commercial banks (compare Figures 1 and 2). Also, commercial banks are not a probable source for financing emigration, even less in the case of El Salvador where migration to the US is to a large degree undocumented. Exploring concerns about reverse causation further would require more detailed datasets, preferably panel data, including remittances together with financial data. Such data is rarely available. The point I make here is that remittances have been an important source of liquidity to the banking sector without intending to give a precise estimate of its causal impact.

Table 3: Regression output (Second Step Heckman Selection Model and simple OLS)

	Heckman Sample Selection Model (2nd Step)				OLS on subset (without sample correction)			
	I	II	III	IV	V	VI	VII	VIII
	log of total deposits	log of total deposits	log of number of accounts	log of number of accounts	log of total deposits	log of total deposits	log of number of accounts	log of number of accounts
(Intercept)	-5.336	-1.176	-0.587	1.742	-11.325 **	-8.563 **	-8.451 **	-6.46 **
	[7.96]	*[6.97]*	*[6.2]*	*[5.41]*	*[4.542]*	*[4.173]*	*[3.408]*	*[3.136]*
log of share of households receiving remittances	2.081 ***		1.33 **		2.37 ***		1.709 ***	
	[0.72]		*[0.54]*		*[0.694]*		*[0.521]*	
log of per capita remittances		1.479 ***		1.003 ***		1.645 ***		1.187 ***
		[0.42]		*[0.31]*		*[0.434]*		*[0.326]*
population density	-3.766	-4.15 *	-2.517	-2.832	-4.708 **	-5.485 ***	-3.753 **	-4.314 ***
	[2.29]	*[2.3]*	*[1.8]*	*[1.8]*	*[2.117]*	*[2.088]*	*[1.588]*	*[1.569]*
agriculture	-0.041	-0.036	-0.042 **	-0.04 **	-0.043	-0.035	-0.045 **	-0.039 **
	[0.03]	*[0.02]*	*[0.02]*	*[0.02]*	*[0.029]*	*[0.026]*	*[0.022]*	*[0.02]*
poverty	0.096 **	0.093 **	0.073 **	0.072 **	0.094 *	0.087 *	0.07 *	0.065 *
	[0.05]	*[0.05]*	*[0.03]*	*[0.03]*	*[0.051]*	*[0.049]*	*[0.038]*	*[0.037]*
population size	0.471	0.296	0.25	0.158	0.939 **	0.92 **	0.865 ***	0.852 ***
	[0.63]	*[0.6]*	*[0.49]*	*[0.46]*	*[0.37]*	*[0.362]*	*[0.277]*	*[0.272]*
higher education	0.156 ***	0.106 *	0.089 **	0.056	0.169 ***	0.118 **	0.107 ***	0.07 *
	[0.05]	*[0.05]*	*[0.04]*	*[0.04]*	*[0.055]*	*[0.055]*	*[0.041]*	*[0.041]*
Inverse Mills Ratio	-0.775	-1.043	-1.017	-1.158 *				
	[0.85]	*[0.78]*	*[0.65]*	*[0.59]*				
R^2	*0.353*	*0.39*	*0.388*	*0.425*	*0.344*	*0.371*	*0.361*	*0.385*
adj. R^2	*0.266*	*0.307*	*0.305*	*0.347*	*0.27*	*0.3*	*0.288*	*0.315*
degrees of freedom	*246*	*246*	*246*	*246*	*53*	*53*	*53*	*53*

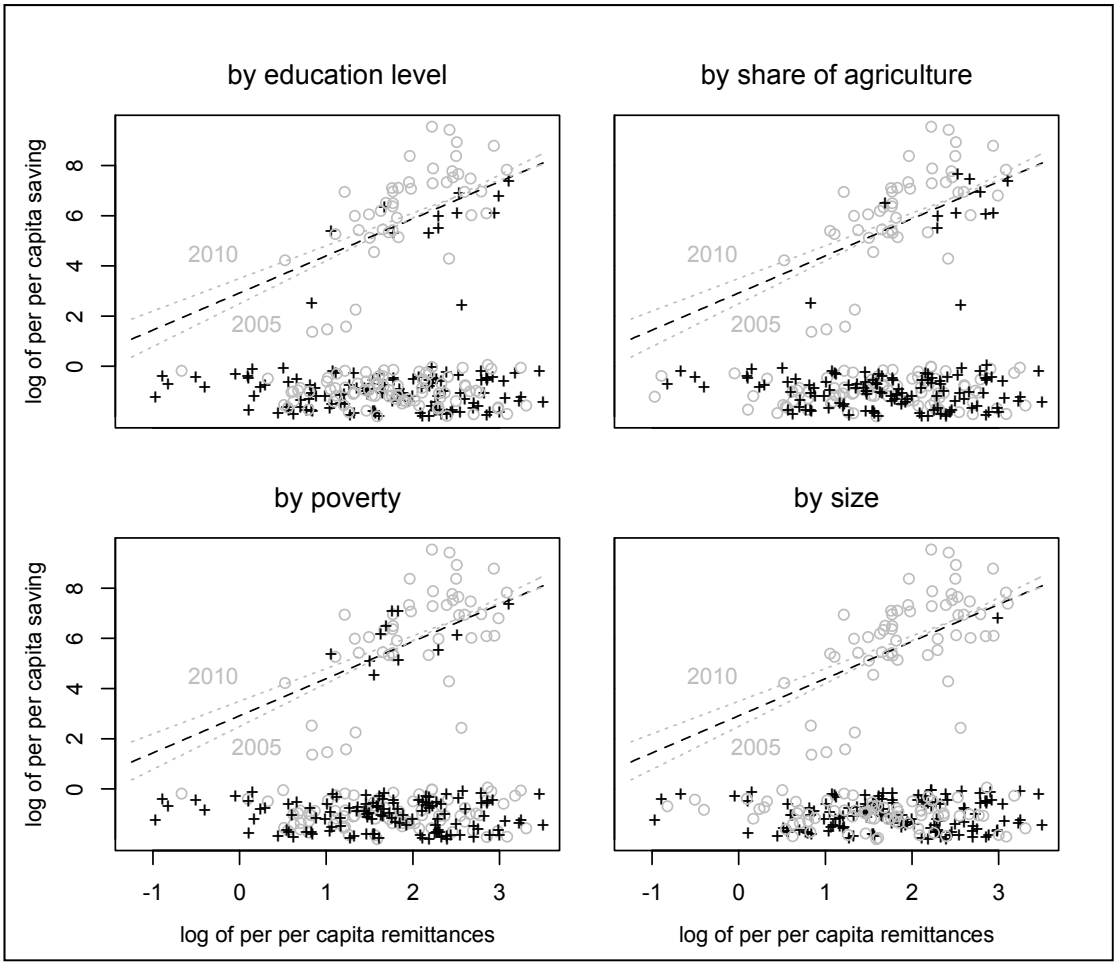
*standard errors in brackets; stars denote significance at 1%("***"), 5%("**") and 10% ("*"). Using a Breusch-Pagan test, the Null-Hypothesis of homoscedastic standard errors could not be rejected in any of the specification (at a 5% value).*

Although 74% of remittances to El Salvador are paid through banks, only a part of these are directly paid on accounts, and 62% of the population lives in municipalities without the presence of commercial banks. This points to the fact that, even if El Salvador has followed a policy of banking migrants in the past and the access to financial institutions by migrants and their families might be better in El Salvador than in other Central or Latin American countries, a large amount of remittances are sent and received in cash and are held outside financial institutions. Banks are concentrated in those municipalities that have a minimum size and that show, on average, more favorable socioeconomic conditions. Graph 1 plots the log of the average amount of saving per capita against the average amount of remittances per capita, highlighting municipalities that lie above or below the median for four indicators: Education levels, poverty, population size and farming activity as a proxy for the importance of agricultural income (see table 1 for their definitions). The graph shows that a large number of municipalities that receive important amounts of remittances are not attended by the commercial banking sector. Only a few municipalities that lie above the median of education levels, size, poverty and agricultural activity are attended by banks, as indicated by the few black crosses along the estimated regression line from specification II in table 3 – even when they show a high intensity in remittances. This shows that the benefits of the downscaling approach are not equally distributed among the population; many municipalities are not attended by commercial banks – especially in those municipalities with high poverty rates, a high share of agriculture, low population density and small size, banks are rarely present. Many households have to travel far to reach the next bank branch (and sometimes also to

receive remittances), which can be a risky undertaking in a country such as El Salvador that ranks among those with the highest homicide rates worldwide[22]. Even in municipalities where commercial banks have bank branches, they typically cater to high and middle income groups and do not focus on low-income households.

[22] According to UNODC (2010), El Salvador had a homicide rate of 52 per 100,000 habitants in 2008, more than, for example, the USA (5), Mexico (12) or South Africa (37).

Graph 2: Regression of savings on remittances, with municipalities highlighted by socioeconomic indicators



Different shaped observations refer to observations above/below the median for each of the four indicators. Zero-values on the y-axis (log of per capita saving) have been jittered and values below "-1" on the x-axis (log of per capita remittances) have been cut off for better graphical representation. The black regression line (specification I in table 2) is based on the per capita saving stock averaged over 2007 to 2010, while the grey regression lines are based on per capita saving in 2005 and 2010, respectively.

The choice of the year for the outcome variable could be important for two reasons. First, the financial crisis in the US had an effect on remittances, which could be transmitted to the financial sector via reduced savings and/or credits after 2008. Secondly, today, almost all Salvadoran banks have been privatized and sold to international banking corporations.

This has raised the concern by some that the internationalization of banks leads to a retreat of banks from attending migrants and their families. As one interviewee stated:

"… all banks had special credit lines for Salvadorans abroad. […]. But after the sale of banks, banks start to follow corporate rules that are not thought of by Salvadorans for Salvadorans, but by some good executive sitting there in New York, and a Colombian there who does not know. And they see it at a level of risk just like any other bank". [23]

This expresses the concern that international private banks would not stick to the "downscaling approach" of banks towards remittance-receivers. In order to see changes in time, I also estimated the regression with financial indicators from the first and last available years (2005 and 2010, see grey estimated regression lines added in graph 1), next to the averaged indicators over 2007 to 2010. A comparison of the slopes shows a declining tendency from 2005 to 2010. This could be due to the effects of the 2008 financial crisis that had a negative effect on remittances to El Salvador, or to the privatization of banks, or to both. However, from the available data it is difficult to assess the statistical significance of this decline and whether it reflects a longer-term tendency.

[23] translated by the author from an interview at the General Directorate within the Ministry of Foreign Affairs in march 2009

VI. CONCLUSION

The growing research on migrant remittances has analyzed the impacts of these financial flows on receiving countries from manifold perspectives. Beyond its direct effect on families, the aim of this article was a discussion of its indirect economic effects via financial intermediation.

The regression results indicate that the banking system is more developed in terms of per capita savings and number of accounts in those municipalities that have a large number of remittance-receiving households. Salvadoran banks strongly cater to remittance-receivers, who have, on average, better access to bank accounts and higher monetary savings compared to non-receivers. These findings also underline that remittances are not only spent on daily consumption, but that receiving households do have a demand for monetary savings options and asset-building strategies. However, in spite of the reaching out of banks to remittance-receivers, existing inequalities have also been reproduced through the traditional banking sector. Poor and geographically isolated households are largely excluded from banking services and hardly benefit from banking remittances. In this context, institutions from the microfinance sector in El Salvador have also responded to a demand for remittance services among their clients and included remittance payments into their product portfolio. Challenges for the micro-finance sector in remittance markets differ from those of commercial banks: While commercial banks have to downscale their supply to reach low income households and those living in rural areas, the typical clients of pro-poor financial institutions match the socioeconomic profile of remittance-receivers better. Their challenge lies in linking their rural and low-income focus with access to global payment systems.

In many senses, El Salvador constitutes a special case, not only because of the high magnitude of remittances in relation to its financial sector, but also because reaching out to migrants has not been a purely market-led process and governments have played a decisive role in promoting the internationalization of Salvadoran banks in the past. It is an open question whether and under what conditions commercial banks also provide financial services to remittance-receivers under pure market conditions and how governments can support links between remittances and financial services. Also, I do not know in what way increased bank saving from remittances has translated into an increase in credits and economic growth and I am not able to do quantitative tests of the response of microfinance institutions to remittances. Finally, the empirical test whether and to what degree access to financial services among remittance-receivers improves well-being and asset accumulation strategies among migrant households lies beyond the scope of the paper and is left for future research.

4. Remittances for Financial Access: Emerging Forms of Governance in Latin America

with Barbara Fritz and Ursula Stiegler

Abstract

The potential impact of remittances on poverty reduction in receiving countries has been much debated. Hardly addressed in this context, however, is the potential of remittances to foster access to financial services for low-income households. Comparing respective initiatives in three Latin American countries – the Dominican Republic, El Salvador, and Mexico – this inter-disciplinary study links research on remittances and microfinance from the discipline of economics with political science insights on multi-actor governance. While the context of high remittance-dependency provides similar challenges in all cases, the emerging forms of governance in the field of study show remarkable variety. Our research finds that this is neither explained by agency nor structure alone, but rather by the interplay of for-profit, non-profit, and state actors embedded in the specific structures of the remittances markets and micro-finance sectors of each case. This underscores the usefulness of a governance approach that helps overcome the antagonistic state versus market dichotomy in addressing financial development.

Keywords: Remittances, Financial Access, Microfinance, Governance

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I. INTRODUCTION

The worldwide growth of remittances – the money migrants send home, usually to family members who have stayed behind – has raised interest in the impact of remittances on economic development by academics and policy-makers alike. Migrants are increasingly conceived as development actors who contribute to the economy of their countries of origin among others through the sending of remittances. While most of the research in this field has addressed questions on macroeconomic issues, or questions linked to poverty reduction and the use of these transfers, the present article takes a different approach and focuses on an aspect that only recently gained salience: the efforts to use remittances to foster access to finance for low-income households. These households are not only often excluded from the use of (formal) financial services in developing countries (Honohan 2008) as, to a large degree, Latin American migrants to the US come from low- to middle-income groups. Efforts to improve financial access for remittance receivers build on the assumption that linking remittances with financial services potentially increases their developmental impact. Access to adequate financial services can improve the living conditions of migrant families by expanding their capacities to manage household budgets. Moreover, savings from remittances can be channelled towards demand for credit elsewhere and thus benefit those who do not receive remittances themselves, potentially contributing to a more equal distribution of their benefits (Aggarwal, Demirgüç-Kunt, and Martinez Peria 2010; Demirgüç-Kunt et al. 2011). While a number of policy papers and reports have highlighted remittances' development potential linking them with additional financial services (i.e. Carling 2004; Carling 2005; GCIM 2005; Terry and Wilson 2005; Orozco 2006; World Bank 2006; Orozco and Fedewa 2006; IOM 2006; GMG and IOM 2010),

including policy recommendations at the highest global level,[1] scholarly research on this topic has been scant.

The present paper seeks to contribute to this debate by analyzing initiatives that link remittances and microfinance in the Latin American context. Remittance transfers pose specific challenges to financial intermediaries due to their small-scale and cross-border nature. Moreover, on the sending side, a lack of legal resident status and other access barriers prevent many immigrants from using formal financial services. Thus, most migrants use cash-based transfer systems of money transfer operators (MTOs) that do not require bank accounts. On the receiving end, to a large degree, households belong to lower-income groups that are not attended by mainstream financial institutions. Moreover, receivers often live in rural areas that are not covered by the commercial banking sector. Savings from remittances are therefore often kept outside financial institutions while income from remittances is, in general, not taken into account in the evaluation of creditworthiness or as a means to access other financial services.

Microfinance institutions (MFIs) are, in many cases, seen as being both socially and geographically "closer" to receivers than traditional banks (Armendáriz de Aghion and Murdoch 2005); they are also often located in areas where traditional banks are not present because serving poor clients may not seem to be a financially viable option for them. MFIs, moreover, have considerable experience serving low-income clients that

[1] See L'Aquila's G8 summit declaration 2009 (http://www.g8italia2009.it/static/G8_Allegato/G8_Declaration_08_07_09_final%2c0.pdf) and the respective activities of the Global Remittances Working Group coordinated by the World Bank: http://www.esteri.it /mae/approfondimenti/20091230 _Rome_Road_Map_for_Remittances_fin.pdf , 15.7.2011.

share similar characteristics as remittance receivers. Policy reports and recommendations therefore highlight linking remittances with microfinance services and products as being especially promising (Orozco and Hamilton 2005; Hastings 2006; Orozco 2008).

In spite of their potential, microfinance institutions face several obstacles in linking remittances with financial services. They typically have a local focus and are usually not integrated into national, let alone global, payment systems. Although MFIs match the socioeconomic profile of remittance-receivers better than traditional banks, they often do not have the institutional capacities for complex cross-border transfers in terms of liquidity management and information management systems, among others. Additionally, there can be regulatory constraints regarding activities in foreign currencies or restrictions in offering certain financial services (Sander 2008). Linking remittance transfers with financial services in developing countries thus requires connecting microfinance institutions in the receiving country with collecting institutions on the sending side, creating access to global networks for MFIs that typically have a local focus. Therefore, in order to include remittances into their product portfolio, MFIs usually have to create strategic alliances and enter into cooperation and partnerships with a variety of profit, non-profit, and state actors. In order to capture this institutional variety, we build on a second strand of literature, namely that on new forms of governance as it has emerged primarily in political science (Börzel and Risse 2010; Risse 2011a).

Departing from these premises, we ask which different kinds of initiatives potentially create access to financial services for remittance-receivers that do not belong to the "typical" clients of commercial banks? We are therefore interested in their actor

constellations, the role of different actors, and the initiatives' respective efforts to link remittances with additional financial services. We also ask what factors may explain the variety of initiatives emerging in different countries?[2]

To address these questions we selected three cases of Latin American countries, the Dominican Republic, El Salvador, and Mexico, all marked by high out-migration and remittance-dependency, for in-depth empirical studies of those emerging governance structures that seek to link remittances with micro-finance approaches. In addition to reviewing documents, statistics, reports, and secondary literature, this empirical study relies on about 125 interviews with staff from the various initiatives, relevant actors in the respective remittance and microfinance markets, as well as experts from academia and international cooperation agencies conducted in the course of field trips to the three countries in 2008 and 2009.

The findings show that, while these countries share similar migration contexts, they show a remarkable variety both in structural aspects – the structure of the remittance transfer market and the microfinance sector – and in agency, that is, in the initiatives and actor constellations involved in efforts to capitalize on remittances for financial

[2] Of course, neither remittances nor microfinance are a panacea for development. Migration creates dependencies and social fragmentation of families, among other things, and microfinance bears – as other financial services – risks of indebtedness of households, especially when financial institutions are not supervised and regulated accordingly. Without praising remittances and microfinance as the end-all solution to poverty and underdevelopment, we still believe that providing receivers of remittances with access to adequate financial services can have direct positive effects for households and for the local economy in general.

inclusion. The latter in particular shows the need to overcome the state vs. market dichotomy with regard to fostering financial access and instead focus on varying governance forms involving profit, non-profit, and state actors.

The rest of the paper proceeds as follows: in the second section we discuss the two key strands of scholarly debate joined in this paper, the research on remittances and their impact on the financial sector of receiving countries and research on the provision of microfinance that we address from a governance perspective. In the third section we first map in each country case the financial and remittance market structures and, second, initiatives undertaken to link remittances with microfinance, while in the fourth section we compare the three country experiences and highlight factors that shape the emergent governance structures in the field under scrutiny. The fifth and final section summarizes the main findings and draws conclusions.

II. REMITTANCES AND GOVERNANCE OF MICROFINANCE: LINKING TWO RESEARCH FIELDS

In order to analyze the link between remittances and financial access for remittance-receiving households as well as respective governance aspects, this article builds on two strands of literature that have hardly been linked so far: research on the impact of remittances on receiving countries and research on the provision of microfinance that we approach from a governance perspective.

Whether and in what way remittances have been beneficial to economic development in the receiving countries has been subject to controversial debate. Much of this debate has centred either on its macroeconomic effects or on the question how remittances are

used.[3] In contrast, we focus on links between remittances and microfinance as a means to foster financial access. Only a few recent contributions have asked whether remittances improve financial access or the financial sector development of the receiving countries. According to Aggarwal et al. (2010), remittances have contributed to deeper financial sectors measured in domestic savings and, albeit to a minor degree, of domestic credit relative to GDP in a cross-country panel of 99 developing countries. These results are also confirmed by Martínez Peria et al. (2008) for Latin America and

[3] Research on the impact of remittances on the receiving countries has, among others, focused on reducing poverty (R. Adams and Page 2005), the creation of growth through multiplier effects (Durand, Massey, and Parrado 1999; Glytsos 2005), and their ambiguous effects on inequality in remittance-receiving countries (Jones 1998; Koechlin and León 2006; P. Acosta et al. 2008). More pessimist authors have criticized remittances as reducing incentives for productive investment of resources in the countries of origin (Chami, Fullenkamp, and Jahjah 2003), that they may lead to a loss in international competitiveness through the appreciation of the exchange rate (Amuedo-Dorantes and Pozo 2004a; P. A. Acosta, Lartey, and Mandelman 2009), and that remittances are spent on luxury goods with few benefits for the local economy (Lipton 1980; Reichert 1981; Lazaar 1987; Binford 2003). Recently, more optimistic positions have dominated. A number of studies have found empirical evidence that receivers of remittances spend a larger share of their income on education (Cox Edwards and Ureta 2003; Yang 2005; Görlich, Mahmoud, and Trebesch 2007), health (Amuedo-Dorantes, Pozo, and Sainz 2007), and entrepreneurship (Massey and Parrado 1998; Yang 2005; Woodruff and Zenteno 2007). Other studies have addressed the impact of remittances on the balance of payments of remittance-receiving countries (Buch and Kuckulenz 2010; Sayan 2004; Bugamelli and Paterno 2009). As a cyclical source of external finance, they help to stabilize the balance of payments and can play a strategic role in the prevention of financial crises. In the wake of the recent global financial crises, remittances have proven to be more stable than other private capital flows like private lending, foreign direct investment, or portfolio investment (Chami, Hakura, and Montiel 2009; Dillip Ratha and Mohapatra 2009).

by Gupta et al. (2009) for Sub-Saharan Africa. In a case study on Mexico, Demirgüç-Kunt et al. (2011) add evidence to the picture of remittances having a positive impact on deposits (and partly to credits) on a micro level and, additionally, also find a positive impact on financial access. Their explanation for the positive impact of remittances on the financial sector is that banks operating as transfer providers and previously unbanked remittance-receivers "get to know each other" through remittances. Moreover, the authors claim that remittances create a demand for financial services on the side of the receivers because the transfers are sent periodically and receivers need a safe place to store their savings. Finally, banks can earn income from remittance fees, which creates an incentive for locating bank branches near remittance-receivers . Other authors have claimed that, in some cases, remittances might be accepted by financial institutions as a substitute for lack of formal income, paving the way for further financial services and enabling households to build a credit history on remittances (Orozco and Fedewa 2006). In another vein, research on remittances has shown that a large part of this money is spent on health and other "emergencies" (Amuedo-Dorantes and Pozo 2004b; Amuedo-Dorantes, Pozo, and Sainz 2007; Yang and Choi 2007), suggesting that remittances could also partly function as a substitute for credit and insurance from formal financial institutions. Remittance-receivers that have a demand for finance – for example because of loss of work, sickness, or other sudden income shocks – are able to rely on an additional and relatively stable source of income, which is not available to non-receivers. Woodruff/Zenteno (2007) and Giuliano/Ruíz-Arranz (2009) have explicitly argued that migrant transfers function as a substitute for the lack of access to productive credits and play an important role for financing investment of micro-enterprises. In this way, remittances could compete with formal financial

services, possibly reducing the demand for credits and other financial products like insurance. This would suggest that the demand for savings among remittance-receivers is more relevant than the demand for credit.

The second relevant strand of literature relevant for our research concerns the provision of microfinance. We address the question of how to enhance access among the poor to financial services from a governance perspective and understand governance as the variety of modes to regulate social matters and to provide collective goods, which implies also taking into account governance actors beyond the sovereign state (e.g. Börzel and Risse 2010; Kooiman 1993; Mayntz 2009; Pierre and Peters 2000; Risse 2011a). In our case, we conceive general access to (pro-poor) financial services a public good, as it is assumed to contribute to the wider aim of poverty reduction and economic growth. Conceiving of governance as forms of interaction between state and non-state actors of various types, cooperating in diverse, usually non-hierarchical modes allows us to overcome the dichotomy of states vs. market that used to dominate thinking on financial markets during the past few decades.

Although the exclusion of low-income households from financial services has been widely acknowledged as an empirical fact of developing countries,[4] conclusions with respect to financial market governance aiming at financial access have been diverse and followed changing paradigms to finance and development. In most developing countries, the post-war period was characterized by state-led development strategies where subsidizing credits and directing finance to strategic groups and sectors via public development banks were the prevailing policy paradigm (see, among others, D. W. Adams and Vogel 1986; Vogel and Adams 1997). The state-led paradigm in financial markets was challenged in the context of a general turn towards more market-oriented policies and the implementation of structural adjustment programmes in the 1980s and 90s following the critique of "financial repression" (McKinnon 1973; Shaw 1973; see also World Bank 2001).

Both the state-led paradigm as well as the market-led paradigm toward finance had limited success in providing low-income households with access to reliable and affordable financial services. Market distortions through state interventions did not always benefit the poor either (D. W. Adams, Graham, and Von Pischke 1984; Gonzalez-Vega 1984), nor have policies of financial liberalization, privatization, and

[4] The share of households that use formal financial services lies between 20 and 30% in most Latin American countries, compared to more than 90% in most Western European countries (Honohan 2008). Small and micro enterprises, often from the informal sector, as well as households with low and irregular income and populations from rural areas, typically stay excluded from access to credit, insurance, or saving accounts. Enterprises therefore operate with low capital intensity and low productivity, and households have limited access to risk-management instruments (insurance and credit) and save in cash or fixed assets.

internationalization of banks had the expected positive effect on financial access through the abolition of market distortions that were made responsible for misallocations (Thorsten Beck and Demirgüç-Kunt 2008; Detragiache, Tressel, and Gupta 2008).

As a consequence, states, rather than providing direct credit under the state-led paradigm, now often take indirect and supportive roles via development banks and/or through the design of regulatory frameworks for institutions that, in many cases, operate outside financial supervision, a tendency which could be described as the third stage of the financial market paradigm in the post-liberalization period (cp. de la Torre, Gozzi, and Schmukler 2006; Richter, Boucher, and Woodruff 2006).

In this context, microfinance has experienced a rise on the agenda since the 1990s, pushed, among other things, by the success of Yunus' Grameen Bank in Bangladesh.[5] The "discovery" of microfinance raises new questions with respect to the governance of financial markets and puts an analytical framework that builds on a clear distinction between public and private for-profit actors into doubt.

[5] By applying lending techniques that take into account the lack of collateral and low individual sums, specific microfinance institutions are often better prepared than commercial banks to overcome the high transaction costs and information asymmetries (Stiglitz and Weiss 1981) that prevent the access of the poor to financial services (Armendáriz de Aghion and Murdoch 2005). Recognizing that poor households have a demand for a wider range of financial services including saving accounts and insurance, the focus has shifted away from providing credit to a more integral approach to microfinance (Rutherford 2000; Collins et al. 2009).

First, an increasing number of commercial institutions that focus on low-income segments have often been subsidized with public funds from official development cooperation at least during their "start-up" phase. In addition, we find a large variety of non-commercial or at least not profit-maximizing financial institutions in developing countries offering micro-financial services to low-income groups (Ambrosius and Stiegler 2011). Some institutions developed out of NGOs and in many cases are owned by shareholders with a social mission after transforming from an NGO into regulated banks. Credit unions, although with a need to be financially sustainable in the long-run, are owned by their members that receive the income generated by the association.[6] States follow political or social objectives in financial markets that are not provided by private institutions via development banks, such as (directly) targeting poor households or (indirectly) by supporting microfinance institutions. Not being not oriented toward profit maximization, these institutions can therefore be understood as state or non-state

[6] The heterogeneity of institutions that offer financial services to poor people is also reflected in the very different and sometimes confusing terms used to describe them. The Anglo-Saxon term "microfinance institution" is generally used to describe all institutions that offer financial services to poor households, including profit-oriented institutions. We use the term in that sense. In Mexico, though, i.e., "microfinanzas" refers to lending institutions only, while "finanzas populares" refer more generally to the non-traditional banking sector that also offers saving options and other financial services. These are further sub-classified into either financial cooperatives ("cooperativas") or "cajas populares". The difference between both lies in the ownership, which are the members themselves in the former and public or other institutions with a social or public commitment in the latter. These would be translated as "savings bank" or "mutual savings bank" in English and "Sparkassen" in German, while "credit unions" is the usual English term for institutions that are based on the cooperative idea ("Genossenschaftsbanken" in German, where the idea evolved in the 19th century).

governance actors that contribute to the "collective good" (Risse 2011b) of "financial access".

Several open questions remain from the literature on remittances and the provision of microfinance. First, studies that have discussed the impact of remittances on the financial sector focus on the commercial banking sector only because data on the microfinance sector is often not included in national statistics. Literature on microfinance and remittances, on the other hand, has been dominated by policy reports and case studies, and there is relatively little systematic research on their linkages.

We contribute to the closing of this research gap by asking what type of governance initiatives combined with what types of actor constellations can improve access to financial services among low-income households via remittances. In the following section we will address these questions through an empirical analysis of governance initiatives in three Latin American countries that seek to link remittances with financial access.

III. REMITTANCE-MARKETS, MICROFINANCE SECTORS, AND GOVERNANCE INITIATIVES IN THREE LATIN AMERICAN CASE STUDIES

In the following section we empirically focus on three Latin American countries characterized by high levels of remittances: the Dominican Republic, El Salvador, and Mexico. In all three countries, considerable parts of the population emigrated during the past few decades. Approximately ten percent of the Dominican and the Mexican population, and 20% of the Salvadorian population live outside their national territories,

mainly in the United States,[7] where these three nationalities rank among the largest Hispanic groups.[8] All three countries are strongly dependent on remittances, in varying degrees, though, as their absolute sums and relative weight differ (see table 1). Whereas, in absolute terms, Mexico is one of the world's leading receivers with more than 22 billion US-$ in 2009, the picture changes looking at the relative weight: in El Salvador, remittances account for more than 16 per cent of GDP, in the Dominican Republic for more than seven percent, and in Mexico for 2.5 percent. However, while remittances in Mexico are less significant in relative terms at the national level compared to the Dominican Republic and El Salvador, it is worth noting that the relative size of remittances is considerably higher for the main Mexican emigration states. The federal states with the highest emigration rates, Michoacán und Zacatecas, have an income of remittances to GDP of 13.2 percent and 9.2 percent, respectively (Banco de México 2007, for 2006). Another point of similarity between the three countries is their low level of financial access by OECD standards. In all three cases, less than a third of the adult population has access to formal financial services (Honohan 2008).

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[7] See the respective country profiles of the World Bank's Migration and Remittance Fact Book 2011 in: http://go.worldbank.org/U1S23A9QR0 (29.11.2010).

[8] The respective numbers are: Mexican origin 30.7 million, 11.4 born in Mexico; Salvadoran origin 1.6 mio. (1 mio. foreign-born) and Dominican origin 1.3 mio (760,000 born in the DR). See "Statistical Portrait of Hispanics in the United States, 2008": http://pewhispanic.org/files/factsheets/hispanics2008/Table%207.pdf, 29.11.2010. However, data presented by the national governments sometimes are much higher. In the Salvadorian case, the ministry of foreign affairs estimates its diaspora at 2.5 million. The Dominican Ministry of Foreign Affairs calculates that around 1.2 mio. Dominicans live in the US (CEMLA 2010: 8).

Table 1: Remittances and financial access in selected countries

	El Salvador	Dominican Republic	Mexico
Remittances (bi. US$, 2009, World Bank 2011a)	3.5	3.5	22
Remittances/GDP (2009, World Bank 2011a)	16.5%	7.4%	2.5%
Financial access (share of adults using formal financial services, Honohan 2008)	26%	29%	25%

In spite of their common characteristics, such as having large diasporas, a strong dependence on remittances, and a relatively low level of financial access, the financial and remittance markets' structures differ across the country sample. In the following section we will therefore give a brief overview for each case of the involvement of financial intermediaries in remittance markets[9] and the structure of the microfinance markets[10] before discussing existing initiatives to link remittances with microfinance.

[9] Indications about market shares suffer from a scarcity of data. The most recent and comparable information for El Salvador and the Dominican Republic have been provided by CEMLA (2008, 2010). These two recent documents about remittances in the Dominican Republic and El Salvador seem to offer the most reliable and comparable information in that respect. However, such an overview does not exist for Mexico, to our knowledge. For Mexico, we therefore rely on different sources like Bendixen and BID (2007), Orozco (2006), and partly upon Hernández-Coss (2005). The differences in the data sources can, among others, be explained by the fact that transfers cannot always be clearly classified as "MTO" or as "banking-transfer", such as when banks and MFIs act as paying agents for an MTO. However, even if exact numbers from different data sources are partly contradictory, all sources point towards similar patterns.

[10] If not indicated otherwise, the data on market participants in the respective microfinance markets are from the MIX database (http://www.mixmarket.org/) and the websites of the countries' financial regulatory agencies.

On this basis, we will then highlight the main differences across the three countries and point out factors that seem to be relevant for linking remittances with pro-poor financial services.

a) El Salvador: the strong role of banks and pioneering credit unions

Remittance transfer and microfinance market structures

In El Salvador, financial intermediaries and especially banks play a remarkably prominent role in the transfer business. According to CEMLA (2009), about 74% of all formal remittance-transfers are today paid through the four major commercial banks. These banks now have either their own transfer institutions or cooperate with US-MTOs, as only one MTO acts as a paying agent in El Salvador; other players in the market are credit unions and couriers. Another particularity of the Salvadoran remittance market is the presence of Salvadoran banks in both the sending and the receiving country since the 1980s. The then-state-owned Salvadorian banks opened branches in the US in order to fight the black market in foreign currency and to capture remittances for the local banking system (Magaña 2006). Even today, El Salvadoran financial institutions have a strong interest in banking both remittance senders and receivers (CEMLA 2009). However, even if banks as well as financial intermediaries from the microfinance sector offer direct payment of remittances on accounts, the few available data from some institutions indicate that the share of remittances directly deposited into accounts, instead of through cash transfers, still lies only around 15% (ibid.).

According to the estimation of a study published by the Inter-American Development Bank (IDB), 36% of the potential clients in El Salvador have access to microfinance

services (Pedroza and Navajas 2010), considerably more than in the other two countries presented below.[11] The largest institutions concerning the credit portfolio are FEDECRÉDITO (a federation of workers' banks and credit unions), ProCredit (a commercial microfinance bank), FEDECACES (a federation of credit unions) and Apoyo Integral (a former NGO upgraded to a commercial MFI). All of these are also active in the remittance-market. In the following paragraphs we present two initiatives from the cooperative sector that are not profit-maximizing and can therefore be conceived as governance initiatives.

Initiatives linking remittances and microfinance

With regard to linking remittances with additional financial services, El Salvador can be considered a pioneering country. One early mover in the field, the federation of credit unions, FEDECACES (*Federación de Asociaciones Cooperativas de Ahorro y Crédito de El Salvador*), has offered remittance services to its clients since 1998. FEDECACES' idea to channel remittances in order to foster financial access had already began in 1992, that is, long before the topic emerged on the international cooperation agenda. In the meantime, the initiative has established considerable outreach: in 2010 the federation cooperated with 18 MTOs, banks, and credit unions abroad in order to

[11] The Inter-American Development Bank calculates the so-called "penetration rate" of a microfinance sector relating the number of microfinance clients to the working population ("*número de clientes de microcrédito/ trabajadores-categoría ocupacional: patrón y cuenta propia (proxy de clientes potenciales*"). The highest rate is achieved by Nicaragua with 58.7%, whereas Argentina ranks last with 1.3% (Pedroza/Navajas 2010: 7).

channel money transfers[12] and covered all 14 departments of the country with 32 affiliated cooperatives (and almost 60 points of service) that all offer remittances. In order to push the development of the remittance-service and its contribution to financial access, FEDECACES was supported by the Inter-American Development Bank through its Multilateral Investment Fund (IDB/MIF) between 2002 and 2009 (Keil 2009).[13]

This support was reflected in FEDECACES' remittance transfers, which permanently grew from the beginning, although with more intensity since 2002, up to channelling more than three percent of the remittance flows to El Salvador in 2009.[14] Concerning the link of remittances to financial services, the initiative has been very ambitious. For instance, remittance receivers that join one of the cooperatives – though this is not a requisite for receiving the money – can have their remittances directly transferred to their account.[15] Furthermore, some of the cooperatives accept remittances as additional income and part of the financial history in the evaluation of the creditworthiness of their

[12] Information per e-mail from FEDECACES, 11.10.2010.

[13] Also see the information about the project on the IDB website: http://www.IDB.org/projects/project.cfm?lang=en&project=tc0202014&query=&id=tc0202014, 29.07.2010.

[14] The data about market shares of the initiatives presented here have been calculated with information from the respective institutions and remittance data from the World Bank: http://siteresources.worldbank.org/INTPROSPECTS/Resources/334934-1110315015165/RemittancesData_Inflows_Apr10(Public).xls, 18.10.2010.

[15] Interview FEDECACES 1, 29.02.2008, San Salvador.

clients.[16] FEDECACES has also developed products especially for migrant families, for example, the so-called "remittance and repatriation insurance", which covers the repatriation of a deceased family member and secures remittance payments during a certain time period to the family after the death of the relative. A peculiarity of FEDECACES among the microfinance initiatives is that, according to its strong identification with the aim of financial access, this institution has been the first – and one of the few – systematically keeping record of the conversion rate of remittance recipients (Orozco 2008).[17] According to the institution's data, this rate lies constantly at almost ten percent (Córdova 2010). The other Salvadorian initiative, El Salvador's largest MFI-network (in terms of borrowers and credit portfolio), FEDECRÉDITO, has been channelling remittances since 2003/2004. Cooperating with 12 Money Transfer Operators (MTOs), the network had 55 members with over 115 points of service in 2010 across the whole country, with all being able to pay out remittances. Even if FEDECRÉDITO was not supported with a specific remittance-project, it has received

[16] Interview FEDECACES 2, 26.02.2009, San Salvador.

[17] The conversion rate indicates how many of the remittance recipients transform into clients or members of the financial institution, for instance, by opening a bank account (Orozco/Hamilton 2005 und Orozco 2008). This rate would be one suitable indicator to "measure" the contribution of remittance-channelling initiatives to financial inclusion. However, only very few institutions keep record of these data and/or often do not link information about their remittance receivers and clients demanding other services. Moreover, the methodologies applied differ considerably between institutions so that they are hardly comparable.

support through a loan and technical cooperation to strengthen its institutional development by the IDB/MIF between 2006 and 2008.[18]

Whereas the amount and growth rate of channelled remittances is larger than in the case of FEDECACES – between 2007 and 2009 it expanded its market share from under three to over five percent – the linking of remittances and other financial services is in an earlier stage in the case of FEDECRÉDITO. Even if it offers special financial products for remittances recipients, like a remittance account and a housing product, these are not yet available in all of the member institutions. Remittances are also taken into account for credit scoring, and, depending on the MTO, the money can be transferred directly to bank accounts. Likewise, FEDECRÉDITO started to register the conversion rate of remittance clients; as FEDECRÉDITO is not yet fully automatized for all of the member entities, however, no data is available yet.[19]

b) Dominican Republic: powerful MTOs and nascent initiatives in the MF-sector

Remittance transfer and microfinance market structures

In contrast to El Salvador, the striking characteristic of the remittance market in the Dominican Republic is the strong dominance of (national) MTOs and a limited role for commercial banks and microfinance institutions (Suki 2004; Gutierrez 2006).

[18] See the information on the website of the IDB/MIF: http://www.iadb.org/en/projects/project,1303.html?id=ES-M1015, 18.10.2010.

[19] Interview FEDECRÉDITO 1, 10.3.2009, San Salvador, and information per e-mail from FEDECRÉDITO, 20.07.2010.

According to CEMLA (2010), 73% percent of all transfers to the Dominican Republic are transferred by MTOs, of which six cover almost the whole market (93%) (CEMLA 2010); only 11% of remittances are transferred and paid off by banks. The rest – an estimated 16% – is carried personally by Dominicans travelling to their country (ibid.). Remittances therefore hardly generate direct contact between receivers and deposit-taking financial institutions. Other than in El Salvador or Mexico, MTOs in the Dominican Republic are mostly national companies (Remesas Vimenca, Caribe Express, Remesas Dominicanas (ReD), Quisqueyana, etc.).[20] The strong role of MTOs is also manifested in their own representation of interests (*Asociación Dominicana de Empresas Remesadoras de Divisas*, ADEREDI). Setting reference exchange rates for its members that are widely adopted by the different MTOs, their action can also be interpreted as a quasi price cartel (Suki 2004). Another particularity of the Dominican case is that MTOs offer home delivery of remittances,[21] optionally in US dollars, a factor that possibly reduces the demand for savings accounts among remittance-recipients. In fact, according to CEMLA (2010: 33), only an estimated 6% of all

[20] The largest player in the field, Remesas Vimenca, was explicitly founded as an exclusive agent for Western Union, who does not operate its own branches in the Dominican Republic. See the information on Vimenca's homepage: http://www.vimenca.com/remesas.aspx?id=10, and: http://www.vimenca.com/grupo.aspx?id=3, 8.12.2010.

[21] As home delivery of remittances implies increasingly high costs for the MTOs, especially due to security risks during the cash delivery, they currently intend to reduce this service and are even interested in cooperating more with credit unions (Bocchio 2010a: 30; also see interview MTO 2, 9.02.2009, Santo Domingo), so that this obstacle to financial inclusion through remittances in the Dominican Republic could be of minor importance in the future.

remittances to the Dominican Republic are not paid in cash (i.e. partly transferred to bank accounts), 12% are paid in cash at financial institutions, and 80% are home delivered.

As far as the Dominican microfinance sector is concerned, the cited IDB-study indicates the penetration rate at 15.6%, measured by the rate of potential clients (Pedroza/Navajas 2010: 7). The largest players in the market, considering the credit portfolio, are some savings and credit associations (Popular, Cibao, La Nacional), ADEMI (a private development bank with a focus on small clients), AIRAC (the largest national association of credit unions), and ADOPEM (a micro bank with a special focus on women that was born out of an NGO). Among these, only the latter two, whose initiatives we present in the following few paragraphs, offer remittance services.

Initiatives linking remittances and microfinance

In the Dominican Republic, efforts to link remittances with financial services can be considered to still be in their initial stage and have only recently gained more dynamic. One initiative is from the cooperative sector: the association of credit unions AIRAC (*Asociación de Instituciones Rurales de Ahorro y Crédito*), some of whose member institutions started channelling remittances in 2000 (Bocchio 2010). In 2010 though, even if AIRACs network, covering almost all (27 of 32) of the country's provinces with their almost ninety branches,[22], is strategically well located for remittance transfer services, only four offered remittance pay-out services in 26 branches (ibid.).

[22] Information from the website of AIRAC: http://www.airac.org/Informaciones%20Estadisticas/cooperativas%20por%20regiones.htm, 12.10.2010.

In contrast to El Salvador or Mexico, where local MFI-networks directly cooperate with US-MTOs, AIRAC's cooperatives offer remittances as subagents for two Dominican MTOs that in turn work as agents for a variety of US money transfer firms.[23] Also in contrast to the case of FEDECACES, for example, AIRAC does not negotiate agreements with MTOs centrally for all cooperatives, but seek individual treaties with the money transfer companies. This, however, reduces AIRAC's ability to profit from its negotiation potential as a large network and achieve better deals in terms of transfer prices (Bocchio 2010). Like the Salvadorian federation of cooperatives, AIRAC received support from an IDB/MIF-project between 2004 and 2010 with the specific objective of facilitating access to financial services for the population in areas with a high migration density.[24]

Concerning the coverage and the volume of transfers, the development of AIRAC's remittance service was comparably slow because of the failure of the first MTO-partner and, according to the management, due to regulation constraints that do not permit cooperatives to participate directly in the remittance business (Bocchio 2010).[25] Thus, despite the network's potential, the overall volume of remittance transfers has been rather limited and AIRAC's participation in the Dominican remittance-market still lies below one percent (0.27%).[26] As far as the supply of financial services is concerned, the

[23] Information per e-mail from AIRAC, 11.10.2010.

[24] See also the information about the project on the IDB website: http://www.IDB.org/projects/project.cfm?id=TC0304042&lang=en, 22.06.2010.

[25] Interview AIRAC 1, 21.1.2009 and AIRAC 2, 3.2.2009, Santo Domingo.

[26] See the calculation of transfer market shares footnote 14.

initiative has been less active than the Salvadorians and has not developed any specific products linked to remittances. If remittance receivers join one of the cooperatives though, they have access to the institution's general product portfolio. In some cooperatives it is also possible to have the remittances directly transferred to a savings account.[27] In terms of converting remittance-receivers into new members of the cooperatives, the efforts have been limited to some affiliated cooperatives and implemented in a rather intuitive and unsystematic way so that general conclusions about conversion rates are not feasible (Bocchio 2010).

The second Dominican initiative is the remittance service from the credit and savings Bank ADOPEM (*Banco de Ahorro y Crédito ADOPEM*), an upgraded NGO that has been operating since 2004 as a regulated micro finance institution and is owned by an NGO with the same name, national banks, and international donors. ADOPEM had over 30 branches in 2009, located in roughly two thirds of the country's provinces (ADOPEM 2009), all of which offered remittance services. The MFI started to pay out remittances in 2006 as a subagent of a Dominican MTO.[28] Between 2006 and 2010 ADOPEM's remittance initiative was also supported by an IDB/MIF project aiming at deepening the Dominican financial system and bringing remittance recipients into the formal banking system.[29]

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[27] Interview AIRAC 1, 21.1.2009 and AIRAC 2, 3.2.2009, Santo Domingo.

[28] Interview ADOPEM 1, 14.03.2008, Santo Domingo.

[29] See the IDB-MIF donor memorandum on the website of the IDB/MIF: http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=951891 and the information about the project: http://www.IDB.org/projects/project.cfm?id=DR-M1006&lang=en, 29.06.2010.

In terms of remittance transfers, while ADOPEM has seen high growth in its three years of operation, its market participation is lower than AIRAC's and still amounts to only 0.08% in 2009.[30] However, it has been quite active in the promotion of linking remittances with additional financial services: the microfinance bank offers a range of financial services to its clients that are also available for remittance receivers. In the context of the IDB/MIF remittance project, additional products have been developed such as a micro life insurance and a credit-programme for the start of new businesses (Bocchio 2010). The project's final report also indicates a "bancarization rate" of remittances between six and nine percent at the end of the project; it does not indicate the applied methodology though (ibid.).

c) Mexico: a segmented microfinance sector and an active state-owned development bank

Remittance transfer and microfinance market structure

In Mexico, the remittance transfer market shows a more mixed picture compared to the other two countries, with MTOs and banks both playing important roles in the transfer business. The market share of banks on the paying side is estimated to be between 33% (Bendixen 2007) and 55% (Orozco 2006). Most of the rest, according to these sources, is paid via MTO agents (estimated at 47% by Bendixen 2007, 40% by Orozco 2006) or other transfer channels (microfinance institutions, personal transfers, or the postal

[30] See the calculation of transfer market shares footnote 14.

service).[31] As opposed to this data, the largest paying institution, Bank BBVA Bancomer, which operates its own transfer service company – Bancomer Transfer Services – (BTS) in the United States, has stated that it covers almost 60% of the remittances paid in the Mexican market.[32] Other important players in the market are Banamex/Citibank and Banco Azteca, which is also a relevant actor in the microfinance market, with around 10% each according to (Hernández-Coss 2005).[33]

The Mexican microfinance sector is with around 17% coverage of the potential clients comparable to the Dominican Republic's, taking the estimations of the IDB as a reference (Pedroza and Navajas 2010). The institutional diversity of the Mexican microfinance sector, though, is larger than in the other two countries and the sector is far more regionally segregated. Banco Azteca is the largest player in terms of credit portfolio, followed by Caja Popular Mexicana (CPM). The third according to this criterion, Banco Compartamos, however, serves (one of) the largest number of active borrowers. These three institutions have branches almost all over the country; in addition, there are a lot of smaller regional and local institutions.

[31] There is a data problem concerning the paying side in Mexico. Up to now, there has been no study about the remittance market from CEMLA; as for the other two countries, the Mexican Central Bank does not collect remittance data according to the type of the paying institution

[32] See the press notice: "BBVA Bancomer sigue incrementando su participación en el pago de remesas en México" from July 14th, 2009, in: http://www.bancomer.com.mx/salaprensa/cornu_comup_140709.html, 13.12.2010.

[33] See also Román Pineda, Romina, 17.1.2006, El Universal: "Amplía Elektra negocio de remesas en México" in: http://www2.eluniversal.com.mx/pls/impreso/noticia.html?id_nota=49446&tabla=finanzas, 13.12.2010.

Initiatives linking remittances and microfinance

As far as microfinance-initiatives in the remittance-market are concerned, the range of participating and supporting actors is also broader in Mexico than in the other analyzed countries. Accordingly, the three most important governance-initiatives identified and presented in the following are an NGO, a financial cooperative, and a national development bank. The first case is the NGO AMUCSS (*Asociación Mexicana de Uniones de Crédito del Sector Social*), a civil society actor with long experience in the field of rural microfinance. AMUCSS created its own networks of so called "*microbancos*" with the aim of offering financial services in (very) marginalized rural areas and special orientation towards indigenous communities and other traditionally excluded groups from the financial system. The first *microbanco* started to offer remittance services in 2001, while others joined in 2004 on the basis of an agreement with a Mexican MTO. After participating temporarily in the "*Red de la Gente*", a government supported MFI-network offering remittances (see below), in 2008 AMUCSS founded a socially-oriented company with its own distribution platform, called "*Envíos Confianza*", which now transfers remittances through a variety of different MFIs, even those that are not microbanks. In terms of coverage, at the end of 2010, "*Envíos Confianza*" had negotiated agreements with ten US-money transfer providers(AMUCSS and Envíos Confianza 2010), while in Mexico it had over 140 service points in ten federal states, although with a focus on five in the center-south of the country (Guerrero, Morelos, Oaxaca, Puebla, and Veracruz).[34] For the strengthening

[34] Information per e-mail from AMUCSS, 26.7.2010.

of its remittance-service, AMUCSS also received support from an IDB-MIF project between 2006 and 2009 and from various international foundations.[35]

AMUCSS explicitly stresses the social mission of its remittance service and is especially present in rural and marginalized areas. It has also faced severe difficulties, however, with cases of robbery and the financial sustainability of its institutions due to high transaction costs in rural areas, so that some of the *microbancos* even had to be closed down.[36] These problems, together with the smaller geographical coverage, may explain the comparably small participation of AMUCSS/*Envíos Confianza* in the Mexican remittance market, which services around 0.03% of the market in 2008.[37] However, the initiative has been ambitious, linking remittances with additional financial services; it has developed a range of financial products partly related to remittances in addition to general financial products (savings for education, credits for agriculture, housing and productive investments, and micro life insurances for migrants). The supply of these products, however, varies between the different institutions and some are (still) in a pilot phase (Ramírez Martínez 2009).[38] MFIs take remittances into

[35] See the information about the project on the IDB website: http://www.IDB.org/projects/Project.cfm?project=ME-M1015&Language=English, 31.07.2010 and interview AMUCSS 1, 1.12.2008, México D.F.

[36] Interviews AMUCSS 1, 1.12.2008, AMUCSS 2, 3.12.2008, México D.F, and AMUCSS 4, 16.04.2009 Washington D.C.

[37] No data from 2009 were available from the institution.

[38] And information per e-mail from AMUCSS, 26.7.2010, and various Interviews AMUCSS.

account for credit scoring, at least partly, even if not in a systematic way.[39] Even though both a staff member and a final IDB-MIF project evaluation confirm the remittance initiative's contribution to attracting new members, there is no systematic methodology to register the conversion rate and no respective processed data is available (cf. ibid.: 26).[40]

A second interesting case of an MFI channelling remittances in Mexico is, due to its potential for outreach, Caja Popular Mexicana (CPM), the country's largest credit union in terms of financial assets, branches, and members.[41] CPM started paying remittances in 2003 and has delivered its service offers to members and non-members with the declared aim of amplifying services to existing members and attracting new clients for the cooperative.[42] Working as a direct agent with only one money transfer operator in the beginning in 2010, Caja Popular Mexicana offered remittance transfers with three MTOs. The network of the cooperative contained over 400 branches and covered 22 Mexican federal states.[43] CPM was supported by an international development agency's grant through WOCCU (World Council of Credit Unions), which helped to strengthen the financial institution, improve its software, and to purchase the technical equipment used for the money transfers (Orozco 2008, 8).

[39] Interview AMUCSS 4, 16.04.2009, Washington D.C.

[40] Interview AMUCSS 3, 22.12.2008, México DF.

[41] Statistical information from the regulating institution CNBV (Comisión Nacional Bancaria y de Valores): http://www.cnbv.gob.mx, 13.12.2010.

[42] Interview Caja Popular Mexicana 1, León, 18.12.2008.

[43] Information per Email from Caja Popular Mexicana, 25.06.2010.

As far as remittance transfers and fostering financial access are concerned, considering its large network and client base, Caja Popular Mexicana seems to remain behind its potential, as the institution channels only around half a percent of Mexican remittances. In terms of linking remittances with other financial services, at the present, transfer and payment are the only remittance-related services offered. However, the staff in charge of CPM's remittance service state that, in the future, other financial services based on migrants transfers shall also be available. On becoming members of the credit union, remittance receivers have access to all of the products offered by CPM. Up to now though, the institution does not keep record of how many remittance receivers become members.[44]

The last Mexican case presented here, the governmental initiative, is interesting not only because of its potential outreach, but also because of its innovative approach towards linking remittances with microfinance. The so-called "*L@Red de la Gente*"(The Network of the People, RdG) was initiated by the Mexican state development bank BANSEFI (*Banco de Ahorro Nacional y Servicios Financieros*) in 2002 and integrates different kinds of microfinance institutions (credit unions, savings banks, specialized MFIs, etc.) that are partly branches of BANSEFI itself. An explicit goal of *L@Red de la Gente* is to provide financial services for people without access, especially in areas that are not covered by commercial banks.[45] The network offers remittance transfer services cooperating with more than 50 US-based money transfer operators and two banks, and is the only initiative operating nationwide, being present

[44] Interview Caja Popular Mexicana 1, León, 18.12.2008.

[45] Interviews BANSEFI 2, 22.12.2009 and BANSEFI 6, 11.02.2008, México D.F.

in all of the 32 Federal States with over 2,000 paying points. With this size, RdG is the largest banking network in Mexico in terms of branches and presence in municipalities, clearly outnumbering even the largest commercial bank network. Even if *L@Red de la Gente* was not supported by a specific remittance project, BANSEFI cooperated with the IDB and MIF as well in an overall project called "Strengthening Savings and Credit Unions". One special focus of that project was the development of a network for remittance transfers by supporting BANSEFI with the implementation of a technological platform that is also used by the network.[46]

In terms of remittance transfers, BANSEFI channels the largest amount of the three Mexican cases. In light of its larger negotiation potential, its huge network both in Mexico and the United States, its ability to promote the service through the Mexican consular network in the USA, as well as its larger financial scope, with little more of two percent of the market, its participation in the remittance market also seems to lag behind the potential of the initiative. Linking remittances and microfinance, the initiative has experimented with new services besides offering various regular financial services.[47] With the aim of fostering the banking of the remittances senders and receivers, the network offers account-to-account transfers through the government's "*Directo a México*" service. A related initiative is the so called "Beneficiary Account Registration" mechanism, through which a remittance sender in the United States can open a bank account in the name of a recipient family member in a branch of *L@Red de*

[46] See the information about the project on the IDB website: http://www.iadb.org/projects/project.cfm?id=TC0109002&lang=en, 31.07.2010.

[47] Interview BANSEFI 2, 22.12.2008, México D.F..

la Gente in Mexico. The receiver then formalizes the account personally when receiving the remittances.[48] One particularity in this network is that only members that are not branches of BANSEFI offer credits because the governmental development bank is not authorized to do so due to its statutes.[49] In general, the financial services offered are not the same in all of RdG's member MFIs, as they represent a variety of different independent institutions. This fact also complicates the endeavour of measuring the conversion rate in the case of BANSEFI's initiative, as data about financial service provision are administered by the affiliated MFIs autonomously.[50]

d) Comparing country experiences: What shapes governance in the remittances- microfinance link?

A common characteristic of the presented initiatives is that diverse microfinance institutions create strategic networks with other market and non-market actors in order to get access to global remittance transfers. Even if these initiatives can be considered functional equivalents in terms of their preparedness of linking remittances with additional financial services for the receivers, their forms of governance and actor constellations vary considerably, as do their degree of market participation and their supply of financial services.

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[48] See 'L@ Red de la Gente' http://www.directoamexico.com/en/lared.html, 31.07.2010.

[49] Interview BANSEFI 3, 30.03.2009, México D.F..

[50] Interview BANSEFI 1, 15.12.2008, BANSEFI 2, 22.12.2008, and BANSEFI 3, 30.03.2009, Mexico D.F..

All of the cases under scrutiny are characterized by one key actor that organizes its member institutions, leads negotiation with MTOs, channels remittances via its networks, and receives external support/funding, and this role was taken by a variety of microfinance institutions and further actors. Nascent initiatives in the Dominican Republic are implemented by an association of credit unions (AIRAC) and an NGO that turned into a microfinance bank (ADOPEM). In El Salvador, two federations of credit unions (and of workers' banks) were the key actors in negotiations with the sending side and in channelling remittances through their networks. Of the three countries, Mexico shows the greatest institutional diversity of initiatives: in one case, the role of leading negotiations with the MTO on the sending side and of channelling remittances to local institutions is taken by the largest credit union with national coverage (Caja Popular Méxicana CPM). In the case of AMUCSS, it is an NGO that functions as a "bridge" between a number of small and rural institutions and institutions on the sending side. Finally, we also find a governmental initiative where a development bank (BANSEFI) unifies local institutions under one umbrella, the "*Red de la Gente*" and organizes transfers to members of the network.

The observed variation, we argue, can neither be explained alone by structural factors like market characteristics, nor solely with the respective engagement of respective actors in the initiatives; we believe that it would be rather fruitful to consider the interplay of structures and actors. Accordingly, we identify two factors that vary across the three counties and which we hypothesize play a role for the existence and evolution of different forms of governance-initiatives and potentially for their contribution to financial access: a) structure-related factors, such as the involvement of different financial actors like MTOs or commercial banks in remittance markets, as well as the

size and composition of the microfinance sector; and b) actor-related factors, such as the ability of the initiatives' main actors to create strategic networks and their efforts towards fostering financial access as well as the role that national governments and external actors have taken in financial and/or remittance markets.

Remittance and microfinance market structures

The involvement of financial intermediaries in remittance transfer markets, which we consider as relevant as it shapes the scope of action for microfinance institutions to engage in this field, varies considerably between the Dominican Republic, El Salvador and Mexico.

In El Salvador, commercial banks are heavily involved in remittance payments. Even though in El Salvador there is a strong dominance of commercial banks, paying three quarters of remittances, MFIs also have gained considerable involvement in the transfer market. In El Salvador, MFIs traditionally have had a stronger role in general and also participate more actively in the remittance market, showing the largest market shares among the sample of the three countries. A factor potentially enhancing financial access through remittances in El Salvador is the fact that all of the largest players in the microfinance sector are also active in the remittance business.

In the Dominican Republic, we find, above all, that MTOs act as transferring and paying agents. Together with the rather oligopolistic market presence and the practice of the home delivery of remittances, this seems to pose a serious challenge to the aim of linking remittances with microfinance, as in this case of remittance-receivers not even getting in contact with a financial institution. As in the Dominican Republic, the

microfinance sector is relatively small, with the scope of action of MFIs in the remittance market being rather limited.

Mexico shows a mixed picture with both MTO and banks playing important roles in transfer markets and with a greater variety of MFIs playing a role in the remittance markets. Thus, the Mexican panorama concerning remittances and microfinance is more fragmented and diversified than is the case in the other two countries. Some of the most important commercial microfinance actors, like Compartamos, do not channel remittances. Other relatively recent commercial institutions that focus on (urban) low-income households like Banco Azteca have entered remittance markets and have registered strongly rising market shares. Strong players in non-commercial microfinance are Mexico's largest credit union and a governmental development bank with the largest branch network of the country; however, they do not (yet) reach the market shares of banks and other commercial players by far.

The role of governance actors: MFIs, governments, and external support

We see a second group of factors explaining the variance of existing initiatives and their performance linking remittances and microfinance in the roles of the actors involved: this concerns both the MFIs themselves, and the role of governments and external supporting actors.

First, concerning the microfinance institutions, one differing aspect is their ability to create strategic cross-border transfer networks. That is, the Salvadoran and Mexican institutions, in contrast to MFIs in the Dominican Republic, negotiate directly with MTOs in the USA and are themselves able to influence the partnerships at the other side of the border. In the Dominican case, MFIs do not cooperate directly with MTOs in the

US, but only work as subagents for Dominican money transfer operators, which again cooperate with MTOs in the US. This limits their negotiation potential and adds additional costs to the service.

Another factor that varies between the different initiatives is the MFIs engagement in terms of actively promoting the link of remittances and financial services. The initiatives with larger market shares, like FEDECRÉDITO in the Salvadorian case, AIRAC in the Dominican Republic, and Caja Popular Mexicana, that admittedly has a larger potential in reaching out to clients in quantitative terms, often are less active in the offering of additional financial services. In that respect, the "smaller" initiatives like FEDECACES, ADOPEM, and AMUCSS have shown a greater ambition towards capitalizing on remittances for financial access, contributing arguably more in qualitative terms.

Second, governments have taken different roles in each of the three countries. In El Salvador, the government, decades ago, used to play a decisive role in the country's remittance-sector. Opening branches of Salvadoran banks in the US in the 1980s was a deliberate government strategy to fight the rising black market in foreign currency and to curb informal remittance flows. With the privatization of these banks, the role of the government in the financial sector was reduced to one mainly consisting of regulation and supervision. In recent years, the Salvadoran state has not taken an active role in linking remittances with microfinance.[51] The Dominican government does not, to our knowledge, play an active role in financial and remittances markets beyond the

[51] Interviews DGACE 1, 3.03.2008 and DGACE 2, 6.03.2009, San Salvador.

supervision and regulation of a privately owned system of banks and MTOs. Accordingly, there are no relevant governmental initiatives related to remittances and financial access in the Dominican Republic.[52] In Mexico, the state today is more active in the financial and remittance markets than in the other two countries. In this case, development banks have traditionally played a strong role in allocating credits to strategic sectors and in channelling credits to rural areas without access to commercial finance. After their downsizing during the liberalization period in the 1980s and 1990s, the function of development banks in Mexico from the year 2000 onwards has partly changed from directly providing credits to one of regulating, supervising, and supporting the growing sector of microfinance (Richter, Boucher, and Woodruff 2006). The development bank BANSEFI has taken an active role in promoting remittance payments through microfinance institutions and has facilitated access to financial services for population sectors that otherwise might have been left unattended. Other programs in the context of remittances and financial development have also grown: in the last decade, the Mexican state has launched a variety of initiatives in cooperation with diverse state and non-state actors such as the coordination of international payment systems (the so called "*Directo a México*" program, in cooperation with the US Federal Bank), increasing transparency in remittances markets (the *"Calculadora de Remesas",* in cooperation with diverse commercial players on the sending side), and improving Mexicans' access to the financial sector on the sending side (through the promotion of the *"Matrícula Consular"*, in cooperation with the consular red and banks).

[52] Interview Microfinance Expert 2, 7.3.2008, Santo Domingo.

Third, all of the initiatives aimed at linking remittances with financial access for poor migrant family households have received external support from international donors, albeit to a varying degree. In El Salvador, external support in the two cases presented above consisted mainly of initial technical assistance through IADB's Multilateral Investment Fund to establish trans-border payments; today, both of them operate largely without external support. In the Dominican Republic, the association of credit unions, AIRAC, and the microfinance bank, ADOPEM, had to enter into cooperation with the national MTO and received important support through international donors for setting up networks. In Mexico, *Caja Popular Mexicana* (CPM) received initial support from the World Council of Credit Unions, WOCCU, but today implements its remittance service without external support. The NGO AMUCSS receives financial support from international donors in order to maintain its network that is not (at the moment) operating in a financially sustainable way. In the case of BANSEFI, setting up the national network was financed with public funds and, additionally, received support through the IADB's Multilateral Investment Fund.

The fact that all initiatives have received some kind of external support suggests that financial or technical support at least in the kick-off phase seems to be a *conditio sine qua non* for linking remittances and microfinance. While in some cases this support was substantial and the initiatives are still unable to work in a financially sustainable manner without support, in others it was limited to the setting up of remittance payments in the initial stages.

Table 2: Market Structures, Size of Initiatives Linking Remittances and Microfinance, Main Actors Involved

	El Salvador	Dominican Republic	Mexico
Structure of remittance market	Dominated by Salvadoran banks	Strongly dominated by MTOs	Mixed
Participation of non-profit-maximizing MFIs in the R-market	~ 9%	< 1%	~ 3%
Microfinance-market penetration	36%	16%	17%
Main actors of the MFI-networks	Non-state actors	Non-state actors	State and non-state actors
The role of governments in remittance markets	State banks with the explicit objective of channelling remittances through the financial sector (until 1990s)	State as regulator and supervisor of privately owned institutions	State as coordinator, facilitator, and active participant in remittance markets

IV. CONCLUSION

This article addressed the question of the forms of governance that emerge in order to link remittances and microfinance. This builds on the assumption that linking remittances with further financial services increases their development impact because access to saving accounts and borrowing options enables receiving households to follow more efficient asset accumulation strategies. Beyond this direct benefit for receivers, financial intermediation may allow for the matching of savings with the credit demand elsewhere. On this premise, and based on a large number of interviews with actors involved, we compared the experience of linking remittances with microfinance in three Latin American countries, all characterized by longstanding emigration, especially to the United States, and respectively high remittance inflows.

Considering the limitations of both the state-led approach and the market-led approach in providing poor households with access to adequate and affordable financial services, we departed from a third paradigm of financial market development that goes beyond a strict dichotomy of states and markets. This view allowed us to take into account the multitude of public, non-profit, and for-profit actors in financial markets and to capture the institutional diversity of governance arrangements for linking remittances with microfinance, which are embedded in the institutional contexts of each country.

Remittance markets, the size and composition of microfinance sectors, as well as the role of actors within the initiatives and beyond vary in each case and, accordingly, also the institutional forms of linking MFI and remittances. First, we find that in transfer markets that are heavily dominated by MTOs such as in the Dominican Republic, it can be difficult for deposit-taking financial institutions to break into existing monopolies. A high level of institutional development of MFI facilitates the establishment of strategic networks between MFIs and institutions on the sending side. In El Salvador, the country with the largest microfinance sector of the three countries in relative terms and a strong tradition of credit unions, we observe the largest shares of MFIs in remittance markets. Second, the role of the various participating actors seems crucial for linking remittances with microfinance for financial access. The microfinance initiatives vary in their potential to create strategic cross-border networks but also in their concrete results channeling remittances and offering linked financial services. Governments have been crucial in shaping financial and remittance markets, taking indirect roles through regulation and rule-setting, but also intervening directly in remittance markets. In El Salvador, the strong role of the former state-owned banks in transfer markets is the result of an active role of the government in “banking” migrants in the past, with the

aim of capturing liquidity for the domestic banking system. In Mexico, the state has taken an active role in linking remittances and microfinance institutions via the development bank BANSEFI that unifies local institutions under one umbrella, the "*Red de la Gente*", and organizes transfers to members of the network. Finally, all of the initiatives we observed have benefited from external support through international donors, although to varying degrees and during different stages of their existence.

We are not able to give an assessment of which type of governance arrangement may be the most effective in fostering access to financial services for remittance-receivers. The phenomenon is still very young and such an endeavour would not only require a different methodological approach, but is confronted with a scarcity of data to verify their *de facto* contribution. We did show, however, that MFI-initiatives of various governance forms have the potential of fostering financial access via remittances and that the realization of that potential depends on specific contexts and roles of actors. It also showed that their actual contribution to fostering financial access has remained relatively small up to now, concerning the comparably small market coverage rates. Although the empirical case studies obviously do not allow for generalization, this paper aimed at generating hypotheses and adding empirical insights to a field that has been under-researched. Linking remittances with microfinance is a new issue on the development policy agenda and much more so on the agenda of systematic and multi-disciplinary research.

5. Literature

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6. Annex: List of Publications and Conference Presentations

PUBLISHED ARTICLES

Remittances and Financial Development: Lessons from the Salvadoran Case. *Savings and Development* (forthcoming).

With Barbara Fritz and Ursula Stiegler: Remittances and the Financial Sector. Insights from Latin America. *Forum for Interamerican Research,* Special Edition „Migrations Between Spaces in the Americas“ (forthcoming).

With Ursula Stiegler, 2011: Finanzmärkte in Räumen begrenzter Staatlichkeit: Makroökonomische Stabilität und Finanzielle Inklusion aus Governance-Perspektive. In M. Beisheim et al., eds. *Was vom Staate übrig bleibt. Governance in Räumen konsolidierter und begrenzter Staatlichkeit*. Baden Baden: Nomos, pp. 221–250.

With Barbara Fritz and Ursula Stiegler, 2011: Arbeitsmigration als Entwicklungsschance? Remittances und die Rolle des Finanzsektors im lateinamerikanischen Kontext. *Leviathan*, Special Edition „Globalisierung Süd“, pp. 267–292.

With Barbara Fritz and Ursula Stiegler, 2011: Potencial das remessas dos migrantes para a governação e o desenvolvimento financeiro no contexto EUA-México. In A. Malamud and F. Carrillo, eds. *Migraciones, Cohesión Social y Gobernabilidad: Perspectivas Euro-Latino-Americanas*. Imprensa de Ciências Sociais, Lisbon: ICS-Lisboa.

WORKING PAPERS AND MANUSCRIPTS

Are Remittances a Substitute for Credit? Carrying the Financial Burden of Health Shocks in National and Transnational Households. Discussion Paper 2012/9, School of Business & Economics, Freie Universität Berlin (under review).

Are Remittances a ‘Catalyst’ for Financial Access? Evidence from Mexican Household Data. Discussion Paper 2012/8, School of Business & Economics, Freie Universität Berlin (under review).

With Barbara Fritz and Ursula Stiegler: Remittances for Financial Access: Emerging Forms of Governance in Latin America (manuscript, under review).

POLICY-PAPERS AND OTHER NON-ACADEMIC PUBLICATIONS

with Barbara Fritz and Ursula Stiegler, 2012a. Remittances. *Online Dictonary Social and Political Key Terms of the Americas: Politics, Inequalities, and North-South Relations, Version 1.0 (2012)*. Available at: http://elearning.uni-bielefeld.de/wikifarm/fields/ges_cias/field.php/Main/Unterkapitel182.

With Matthias Zeeb, 2009. Remittances und Soziale Sicherheit. Discussion Paper prepared for the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ).

With Barbara Fritz and Ursula Stiegler, 2008. Geldsendungen von Migranten in ihre Heimatländer – ein 'Manna' für wirtschaftliche Entwicklung? In: *GIGA Focus Global* Nr. 10.

CONFERENCE PRESENTATIONS

Banking Remittances: What is the Benefit and for Whom? Lessons from the Salvadorian Case. Paper presented at the conference *Migration: Economic Change, Social Challenge*, organised by the NORFACE Research Programme on Migration and the Centre for Research and Analysis of Migration (CReAM). London, 6th - 9th of April 2011.

Are Remittances a 'Catalyst' for Financial Access? Paper presented at the *Annual Conference of the Research Committee on Development Economics*, German Economics Association (Poster). Berlin, 24th – 25th of June 2011.

Las remesas y el desarrollo financiero: Posibles contribuciones y Governance en el contexto latinoamericano. Paper presented at the *Annual Conference of the Arbeitsgemeinschaft Deutsche Lateinamerikaforschung* (ADLAF). Eschborn, 27th – 29th of May 2010 .

How do Migrant Remittances affect the Financial Sector of Receiving Countries? Evidence from Mexico, El Salvador and the Dominican Republic, Paper presented at the *Annual Congress of the Latin American Studies Association*. Rio de Janeiro, 11th -14th of June 2009.

Financial Development through Remittances? Potential Benefits and Forms of Governance, Paper presented at the Sixth *Annual Meeting of the Euro-Latin American Network of Governability for Development* (REDGOB). Lisbon, 9th – 10th of December 2008.

Financial Development and Macroeconomic Stabilization trough Remittance? Potential Benefits and Forms of Governance, Paper presented at the 12th *General Conference of the European Association of Development Research and Training Institutes* (EADI). Geneva, 24th – 28th of June 2008.

Financial Stabilization through Remittances? Remarks on the Macroeconomic Effects of Migrant Remittances, at the Conference *Finance-led Capitalism? Macroeconomic Effects of Changes in the Financial Sector* of the Research Network Macroeconomic Policies. Berlin, 25th -27th of October 2007.