



Immigrant remittances and the venture investment environment of developing countries

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Abstract

Despite the increasing importance of financial and social remittances to developing countries, their impact on home-country venture-investing environments has been largely overlooked. I develop a framework grounded in transaction costs economics and social knowledge theories to investigate relationships between remittances and home-country (1) capital availability, (2) new business creation, and (3) economic internationalization. My framework also accounts for individual and collective immigrant attributes that may moderate the impact of remittances on these alternative indicators of the venture investment environment. Analyses of immigrant remittances to 61 developing countries from 2002–2007 indicate that they increase general and more narrowly defined venture capital availability as well as broader openness to international trade. Remittances also increase new business start-up rates when the developing country's public sector is sufficiently small. Positive venture-funding effects of remittances are magnified when coming from immigrants living in highly concentrated communities, but are diminished when coming from highly educated immigrants. Overall, results suggest that developing-country immigrants of varying backgrounds play an important role in venture funding, founding and integration with the world economy.

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INTRODUCTION

In this paper, I develop and test aspects of a theoretical framework explaining whether and how developing-country immigrants significantly enhance the venture investment environment in their home countries through remittances of money and ideas. Research in international business (IB) and entrepreneurship has largely ignored this possibility, even though immigrants from many developing countries number in the millions, and remit billions of US dollars annually. It may be that IB and entrepreneurship researchers assume this money is merely for home-country subsistence needs such as food, shelter, education and healthcare for family members. If so, then this assumption runs counter to recent speculation among development economists (e.g., Woodruff & Zenteno, 2007), public policy scholars (e.g., de Haas, 2005) and international organizations (e.g., IFAD, 2007) that immigrants

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abroad are increasingly important for financing new businesses in their home countries. Immigrant ideas developed abroad may also constitute “social” remittances guiding the use of venture capital to fund, found and grow new firms internationally (Levitt, 1998; Williams, 2007). If this is true, then developing-country immigrants could be vital players in entrepreneurship and broader economic internationalization trends. IB and entrepreneurship researchers should contribute theoretical insights and investigate empirical evidence related to immigrants and the role their transnational money and ideas may play in enhancing the venture investment environment of developing countries.

In response, I contribute a theoretical framework to explain developing-country immigrants, remittances and home-country venture investment based on transaction cost economics (TCE) (Coase, 1937; Henisz, 2000; Williamson, 1985) and social knowledge (Kogut & Zander, 1993; Polanyi, 1966) logic. Potential investors in developing countries face substantial transaction costs when moving money and ideas across borders. TCE scholars from Coase (1937) to Williamson (1985) and Henisz (2000) have pointed out that these costs relate to coordination – that is, the costs of negotiating, implementing, overseeing and, in the breach, coercing transfers through formal legal and regulatory enforcement mechanisms. Guler and Guillén (2010) provide recent evidence that such transaction costs deter venture investment activity in many developing countries with less-established formal institutions to coordinate the transfer of money and ideas.

But their findings might not apply with substantial weight to developing-country immigrants mulling over venture investment opportunities back home. Webb, Tihanyi, Ireland, and Sirmon (2009) recently highlighted the potential of informal relationships, often grounded in shared membership in a geographic community, or in a family, ethnic or cultural group I describe collectively as a *clan* (Ouchi, 1980). Informal clan and community arrangements can complement if not completely replace the formal arrangements that investors typically rely on to safeguard the prudent transfer and use of scarce venture capital and ideas, and the formal arrangements that they rely on to inform and guide business partners about the effective use of scarce venture capital and ideas. I build on this logic to propose that informal, cross-country relationships can serve as bases for immigrants to identify business opportunities and business partners

back home, and transfer venture capital and ideas through remittances where other investors with more “conventional” venture capital might not.

My TCE- and social-knowledge-based framework motivates five hypotheses about the direct and indirect positive impact of developing-country immigrant remittances on new-venture funding, founding and growth through internationalization in their home countries. My empirical investigation of these hypotheses also contributes to IB and entrepreneurship research with the first broad sample statistical evidence assessing remittance effects on home-country venture investing trends.

Multivariate panel analyses of data on remittances to 61 developing countries from 2002 to 2007 yield substantial evidentiary support for all hypotheses about the direct impact of remittances on home-country venture investment indicators. I find that remittances are positively related to greater general access to capital, as well as more narrowly defined venture capital access in immigrants’ home countries. Remittances are also positively related to increased home-country import and export activity, a trend I describe as *economic internationalization*. I find that remittances are also positively related to rates of new business creation in immigrants’ home countries, but this relationship is more nuanced. They increase the new business start-up rate in a developing country, but only when that same developing country’s government does not constitute too large a share of the national economy and perhaps “crowd out” private economic players and activities related to remittances. These direct relationships are more substantial in some of the world’s least developed countries, thus suggesting an especially important role for remittances in sparking economic growth led by entrepreneurs in the private sector.

I also document significant moderator effects, at times magnifying and at other times diminishing the impact of remittances on the home-country venture investment environment. I predict that individual immigrant educational attainment will magnify the venture investment impact of remittances, but find just the opposite. Positive remittance effects on venture capital access diminish among better-educated immigrants. Similarly, I expect that remittances from immigrants living in more concentrated communities abroad will have a stronger impact on the home-country venture investment environment. Venture capital access effects are magnified but business start-up and trade effects are diminished for remittances from



immigrants living in more concentrated communities abroad. These results document support for key aspects of my theoretical framework, but also suggest the need for additional theoretical refinements and empirical analyses about whether and how immigrants of diverse backgrounds materially affect the home-country venture investment environment. These results and their implications compel future research by IB and entrepreneurship scholars, who should play a greater role in debates about whether and how immigrants can help build more open, vibrant economies in the developing world.

BACKGROUND CONCEPTS AND LITERATURE

Background Concepts, Practices and Trends

Additional explanation of immigrant and remittance concepts, practices and trends provides helpful context for my theoretical framework and follow-on empirical investigation. Immigrants coming to a country, emigrants leaving a country and migrants in transit between countries share in common the experience of living outside their country of origin, most often defined by their country of birth. They may be legal or illegal residents, temporary workers, displaced persons or hold some other status in the host country, short of citizen by birth. For the purposes of this study I define individuals in any of these non-citizen host-country classifications as “immigrants”. In the 2000s this group grew to more than 200 million, which would make immigrants the fifth largest “country” in the world (United Nations, 2008).

Remittances are commonly defined as money transfers by immigrants in host countries to individuals in their home countries. Remittances comprise three components: workers’ remittances, compensation of employees, and migrant transfers.¹ Remittances flow from individuals in host countries to home countries through either standard commercial or alternative conduits. Standard commercial conduits include money transfer organizations such as Western Union, banks and post offices (IFAD, 2009). There are alternative conduits, as simple as individuals carrying cash across borders, as well as more sophisticated debt-transfer practices based on *hawala* principles in classical Islamic law (Qorchi, Munzele-Maimbo, & Wilson, 2003). Such alternative conduits are important, although better monitoring of remittance flows for taxation and anti-terrorism purposes has increased the percentage flowing

through standard commercial conduits since 2001 to approximately 60% of estimated total remittances in 2009 (Moneygram, 2010).

By 2007 remittances exceeded \$300 billion, triple an estimated \$100 billion total in 2000. During those same years remittances became the second largest type of foreign capital flow to developing countries after foreign direct investment (FDI). In Mexico, India and China, annual recorded remittances in the mid-2000s exceeded \$20 billion. In other less-developed countries the absolute value of annual recorded remittances is generally lower, but their relative importance could be even greater. For example, their value to Moldova in the mid-2000s was equal to more than 30% of its GDP (Moneygram, 2010; United Nations, 2008).

At least three factors favor remittances as a source of venture investment in the developing world. First, compared with FDI or portfolio flows, remittances are a more stable and reliable source of potential capital (Ratha, 2003). After a slight downturn in 2008, remittances increased to \$316 billion in 2009, and are estimated to reach \$335 billion by the end of 2010 (Moneygram, 2010). Second, remittances tend to be lower-value, person-to-person (not person-to-firm or person-to-government) transfers suited well to smaller, lower-technology business start-ups in the developing world. Third, immigrant remittances tend to carry with them a substantial “social” component. Levitt (1998) points out that remittances include new ideas and underlying relationships with people, who may have suggested a new business initiative to an immigrant in his or her host country, or who may have helped get the initiative up and running in his or her home country. Indeed, immigrants may have a comparative advantage at transferring such money and ideas across borders compared with other potential investors. As nationals who have “made it” abroad, they have greater legitimacy with peers in their home countries. Their proposals are likely to be perceived as “new” and worthy of closer review (Williams, 2007). Thus remittances are more stable flows, geared to smaller-scale investments and benefitting from a substantial social component that includes internationally tested ideas and relationships for investment guidance.²

Given this profile of immigrants, and given the sheer size, it might seem self-evident to conclude that immigrant money and ideas are significant and substantial inputs in the funding, founding and growth of new businesses back home. Yet researchers often assume, like Brown (2006: 61),



that “as a rule, the predominant share of remittances goes to the immediate consumption of foodstuffs and basic services, with health care expenditure often featuring prominently”.

Again, at least three factors help explain why business-related remittances in developing countries have attracted little attention in previous research. First, the evidentiary basis for understanding remittance uses rests substantially on the reported experience of US-based immigrants in the 1990s.³ The composition of remittance uses might be different outside the North American experience, particularly the composition of uses for increasingly large remittance flows between developing countries – so-called “South–South” remittances.⁴ Second, this survey evidence from the 1990s precedes substantial growth in remittances since 2000.⁵ This trend could also signal a change in the composition of remittance uses, so that the 2000s could see that “a significant portion is also available for savings, credit mobilization and other forms of investment” (IFAD, 2007). Third, research attention on migration has focused more often on the moral, legal and political issues affecting developing-country immigrants (e.g., Trachtman, 2009). Tracking business-related activities among these individuals is often a second-order issue for such researchers and policymakers.

Relevant Literature on Immigrants, Remittances and Home-country Venture Investment

This research and policy context might explain why IB and related entrepreneurship scholars have not to date paid greater attention to remittances as a source of venture capital, new business ideas and increased economic internationalization for developing economies. Guler and Guillén’s (2010) recent study on the internationalization of US venture capital firms is illustrative. They test several hypotheses regarding institutional determinants affecting the likelihood that US venture capital firms with marquee names such as Warburg Pincus will enter a new country. That likelihood decreases in countries with weaker policy stability, legal protection (for investors) and financial liquidity. One might easily conclude that new-venture funding, founding and growth depends substantially on the decisions of established investment firms (not individuals) that will be attracted to more (not less) developed countries with stronger (not weaker) formal political, legal and financial institutions.

But perhaps it is more than just prominent venture capital firms playing important roles in

guiding capital. From 1990 to 2003 it is estimated that approximately 55 million Chinese immigrants remitted close to \$60 billion to Taiwan and mainland China. One beneficiary of these remittances was the Hsinchu (or Hsinchu) Science-Based Industrial Park in Taiwan, where both venture firms and individuals helped fund computer and related information technology firms, and where 40% of these ventures were established by Chinese immigrants (Ghosh, 2006; Saxenian & Hsu, 2001). The entrepreneurial activities of Indian nationals living abroad almost certainly contributed substantially to the growth and internationalization of the Indian software industry, which grew 40% in the 1990s (Kuznetsov & Sabel, 2006). These examples suggest the importance of transnational technical communities for directing venture finance and ideas from host to home countries (Madhavan & Iriyama, 2009).

But, in other developing countries, transnational entrepreneurs may lack technical training or higher education, yet still serve the same purpose of transferring valuable capital and ideas. Turkish nationals moving to and from Germany since the 1960s account for a substantial increase in new business start-ups, economic growth and exports in regions surrounding the ancient city of Çorum on the Black Sea. These nationals exhibit no distinctive educational or technical training advantages. Rather, their success appears to follow from how they learn basic business skills abroad and bring them back with the help of family and community ties (Dişbudak, 2004). International linkages based on family, ethnicity, culture and community may matter as much as (or more than) educational advantages.

Single-country statistical studies in the 2000s convey a similar notion. Woodruff and Zenteno (2007) report that remittances from Mexican immigrants in the US since the 1990s account for 20–33% of invested capital in small firms from their home Mexican states. Increasing remittance shares of overall invested capital are also associated with higher firm sales and profits, suggesting that remittances represent “smart” venture capital. A follow-on study by Demirgüç-Kunt, López Córdova, Martínez Pería, and Woodruff (2011) finds that remittances to Mexico have also increased the depth and breadth of the Mexican banking system.⁶ Dustmann and Kirkchamp (2002) report that approximately half of all immigrants returning to Turkey from Germany in the 1990s started new businesses within four years of their



return. McCormick and Wahba (2003) find that proceeds from return migrants to Egypt promote investment in small household enterprises, particularly in urban areas. Kilic, Carletto, Davis, and Zezza (2007) correlate the length of stay abroad among Albanian migrant workers in the 1990s with a greater likelihood of starting a household enterprise. That likelihood is greater as the stay abroad increases in a country with a larger economy, presumably because the enterprise they start back home is connected to a larger market abroad.

This brief review of relevant concepts and literature paints an interesting background for my study. The sheer size of remittances suggests their importance for study by IB and entrepreneurship scholars. There is mounting case study and single-country statistical evidence suggesting the significance and practical substantiality of remittances for new business funding, founding and growth through internationalization. Yet there has been little, if any, IB or entrepreneurship research touching on remittances, and none addressing the possibility that remittances might enhance capital availability, new business starts and other indicators of the home-country venture investment environment. Given this background, it is timely to develop broad sample cross-country evidence grounded in a theoretical framework familiar to IB and entrepreneurship scholars.

THEORY AND HYPOTHESES

Theoretical Grounding and Key Assumptions

TCE and social knowledge theories motivate my framework for understanding whether and how developing-country immigrant remittances enhance the home-country venture investment environment. My framework rests on two assumptions. First, and consistent with TCE theory (Coase, 1937; Henisz, 2000; Williamson, 1985), I assume that capital and knowledge flows to developing countries from “standard” sources such as MNEs, including venture firms, are stifled by high international communication and coordination costs. These high costs are tied to the less-established and fluid nature of formal legal, political and financial institutions and practices in developing countries. Second, and consistent with social knowledge theory (Kogut & Zander, 1993, 1996; Polanyi, 1966), I assume that immigrants have access to informal relationships, principally tied to clan and community memberships that span host and home countries. These relationships compensate for formal institutional

weaknesses, and permit transactions involving remittances for venture investment to go forward. I elaborate on theoretical bases for these two assumptions, on the resulting theoretical framework they motivate, and on specific predictions that the framework generates for empirical testing.

Developing TCE Aspects of the Theoretical Framework

Entrepreneurial activities tend to foster prosperity and growth in developing- and developed-country contexts. As Shane and Venkataraman (2000) note, these practices introduce new products, processes and ways of organizing businesses. They open up new markets, new supply chains and new labor sources. They lead to economic growth through the private sector rather than through state planning and policy interventions. In the more resource-constrained developing countries of the 2000s, the desirability of entrepreneur-led economic growth is magnified. Yet for reasons familiar to IB and international entrepreneurship scholars, developing countries garner but a fraction of venture funding, founding and growth worldwide. Compared with most industrialized democracies, developing countries have fewer entrepreneurs willing and able to exploit new business opportunities. This could follow from emigration of more ambitious, creative, educated nationals – the so-called “brain drain” (Adams, 2003). Even when there are new business opportunities, and motivated individuals willing to exploit the opportunities, venture capital is scarce, credit markets are turbulent, and start-up as well as growth funding is more challenging to obtain on reasonable terms – if any (Paulson & Townsend, 2004). At a higher institutional level, basic assumptions about the nature of contracts, property rights and public regulation of businesses are more vulnerable to being overturned in developing countries (Hoskisson, Eden, & Wright, 2000).

These and other detriments to the venture-investing environment of developing countries are summarized well in TCE terms. Costs associated with coordinating the transfer of venture funds and ideas to developing countries deter many potential venture investors, particularly foreign-domiciled venture investors. From a Coasean (1937) TCE perspective, the benefits of investing in many developing countries may not exceed the high costs of negotiating, implementing, overseeing and, in the breach, coercing through legal enforcement terms of a given new business investment. From a Williamsonian (1985) TCE perspective, the greater

prospect of opportunistic contractual breach and costly contractual renegotiation with developing-country entrepreneurs deters many potential venture investors. Henisz (2000) adds to this TCE perspective with insight into the more volatile investment environment that developing countries present. Developing countries with fewer policy-making “veto points” also see more frequent changes in public investment policies over time. Policy instability about the rules of the investment game deters investment, particularly new business investment (Guler & Guillén, 2010).

Developing Social Knowledge Aspects of the Theoretical Framework

In this context, it is fair to ask why remitting immigrants might behave differently from so many others reluctant to fund, found and guide the growth of new firms in developing countries. The summary of background literature above has already noted case studies and single-country statistical analyses documenting the quantity and quality of venture investing by immigrants from Albania (Kilic et al., 2007), China (Ghosh, 2006), Egypt (McCormick & Wahba, 2003), India (Kuznetsov & Sabel, 2006), Mexico (Demirgüç-Kunt, López Córdova, Martínez Pería & Woodruff, 2011; Woodruff & Zenteno, 2007), and Turkey (Dişbudak, 2004; Dustmann & Kirkcham, 2002). One recurring theme in this research is immigrant interest in going abroad to accrue business capital, experience and ideas (e.g., Dustmann & Kirkcham, 2002). Another recurring theme is immigrant advantage in venture-investing activities compared with others. Education and (business) experience lead to more new venture discovery back home, while personal wealth makes those new ventures easier to fund (e.g., Ghosh, 2006). But those advantages are more exploitable because of dyadic host-home-country relationships grounded in common family, ethnicity, culture and/or community membership (e.g., Dişbudak, 2004). Together, these themes suggest that immigrants may be a special case of Kirzner’s (1997) entrepreneurs with superior (to other investor types) means to discover and exploit new business opportunities back home.

That special case may be related to the concept of transnational entrepreneurs. Since at least the 1990s, scholars explaining the location and growth of industry clusters around the world have noted the important role of immigrants as technological and business innovators. Saxenian (1999, 2002) highlighted the important role of immigrants in

building computer industry clusters in the US and Greater China. Portes, Haller, and Guarnizo (2002: 287) may have been first to use the term and describe transnational entrepreneurs as “self-employed immigrants whose business activities require frequent travel abroad and who depend for the success of their firms on their contacts and associates in another country, primarily their country of origin”. Drori, Honig, and Wright (2009: 1001–1002) elaborate on the concept from a resource-based perspective. The ability and willingness of transnational entrepreneurs to move frequently between host and home countries lets them “creatively, dynamically and logistically maximize their resources base” of valuable business ideas and contacts.

Such transnational entrepreneurs almost certainly possess knowledge helpful in overcoming barriers to funding, founding and promoting the growth of new businesses through remittances. Their valuable cross-country relationships could follow from some of the network factors that Madhavan and Iriyama (2009) cite in defining and measuring the strength of transnational technical communities with advanced education, professional or technical training. Yet such elites constitute only a fraction of all developing-country immigrants, and their remittances constitute but a fraction of total flows. Any theoretical framework to explain how and why immigrant remittances may be better positioned for venture investment in developing countries requires grounding in social knowledge elements with a broader application.

The clan concept helps broaden that application. The immigrant experience may engender clan-like relationships distinguished by norms of reciprocity, social solidarity, trust, mutual support and loyalty. If so, then clans become governance mechanisms where “common values and beliefs provide the harmony of interests that erase the possibility of opportunistic behavior” (Ouchi, 1980: 138). When opportunistic behavior decreases, so too do the transaction costs of negotiating and overseeing the transfer of money and ideas for funding, founding and growing new firms back home. Ahlstrom and Bruton (2006) posit a similar notion from a network perspective. According to them, entrepreneurs operating in countries with less-established formal institutions build personal networks with more trustworthy exchange partners. McMillan and Woodruff (1999) explain the allocation of credit in Vietnam during the 1990s in similar terms. In the absence of enforceable contracts, lenders use



informal relationships based on kinship to decide whether and how much credit to extend a business.

Informal relationships facilitating entrepreneurial flows can follow not only from clan but also from geographic community links. Webb et al. (2009) develop a comprehensive theoretical framework for understanding new business funding, founding and growth based on informal, perhaps at times even illegal, but still legitimate community practices. Their framework explains, for instance, the creation and growth of ethnic “business enclaves” where lending and investment are often initiated and enforced in the breach without recourse to contracts and courts. Threats of reputational loss, community ostracism, even coercion may be legitimate alternative means for ensuring the flow of new business capital and ideas in such communities (Portes & Sensenbrenner, 1993).⁷

With notions of clan and community linking immigrants, I can now explain the flow of entrepreneurial money and ideas from host to home countries for a range of immigrants, not just immigrant elites. That flow follows from immigrant experience, skill development and insight gained in the host country, generating capital and ideas transferred to the home country through informal relationships related to immigrant clan and community membership. As part of this flow, immigrants are able to identify suitable business partners to fund, found and grow new ventures back home. Shared clan and community membership subjects these partners to informal oversight, decreasing the likelihood of any opportunistic misuse of immigrant funds and ideas. Even if TCE assumptions of opportunism are changed – treat local partners as completely trustworthy – shared clan and community membership still increases the likelihood of effective transmission of knowledge from the immigrant, particularly tacit knowledge based on immigrant experience and insight. This view is analogous to Kogut and Zander’s (1993) knowledge theory of the MNC, which they explain as a response to difficulties in the cross-country articulation and transfer of complex, often tacit, knowledge. Just as shared corporate membership within the MNC enhances cross-country understanding between individuals, so shared clan and community membership enhances cross-country understanding about new venture ideas immigrants and business partners implement. These cross-country relationships become valuable resources that immigrants maintain through periodic transnational communication and travel.

Derived Hypotheses for Testing

My theoretical framework implies several testable predictions about the attributes of developing-country immigrants, their informal cross-country relationships, their interest in and opportunity to use remittances for entrepreneurial purposes, and the prospective impact of their remittances on the home-country venture investment environment. I leave many such predictions to future studies, but focus in this study on five specific predictions related to the direct and indirect impact of remittances on venture investment funding, founding and growth through internationalization.

I turn first to three hypotheses about the direct effects of immigrant remittances on the venture investment environment in developing countries. Consistent with my framework, I first predict that remittances from developing-country immigrants are “smart” money, capable of enhancing the quantity and quality of scarce venture capital in their home countries. This prediction competes with a plausible null hypothesis that remittances in developing countries are dominated by non-business subsistence priorities. An alternative null hypothesis could follow from home-country intermediaries, such as developing-country governments, reducing intended entrepreneurial flows to insignificant levels through taxation or other policy diversion. Hypothesis 1 rejects these alternatives in predicting that:

Hypothesis 1: There is a positive relationship between immigrant remittances and venture capital availability in developing countries.

My framework also suggests that remittances represent more than just money for venture investing. They also include actionable ideas for founding new businesses. Again, this prediction competes with plausible null hypotheses about the subsistence rather than the entrepreneurial nature of remittances, and with the neutralizing effects of government intermediaries. Yet another competing null hypothesis admits the impact of remittances on venture capital funding but not on founding. It could be that the cross-country clan- and community-based relationships I have articulated limit immigrant participation to that of a passive investor or lender rather than a material player in founding new businesses. Alternatively, state policy could encourage the accumulation of venture funds to create fewer but larger enterprises, perhaps with state involvement as a co-investor. Such a scenario

could see increasing access to capital without substantial increase in rates of new business starts. Hypothesis 2 rejects these alternatives in predicting that:

Hypothesis 2: There is a positive relationship between immigrant remittances and new business founding rates in developing countries.

My framework also suggests that remittances do more than connect immigrants to their home countries as venture funders and founders. These connections engender a broader openness to trade between countries. Leblang (2010) documents greater FDI and portfolio investment between countries with stronger immigrant diaspora network links. Gould (1994) has shown that immigrant business relationships based on common ethnicity and cultural heritage are associated with an increase in bilateral international trade between US and immigrants' home countries. Tung and Chung (2010) document similar trends for Chinese immigrant businesses in Australasia. Chung (2004) and Chung, Enderwick, and Jinda-Naruemitmongkonsuk (2010) record that immigrant business executives with knowledge straddling home and host countries are vital for successful entry and adaptation strategies in international markets. Consistent with these papers and my framework, I predict that immigrant remittances will engender other economic flows, increasing the international engagement of developing-country businesses. Hypothesis 3 thus connects micro individual activities to broader country-wide trends in predicting that:

Hypothesis 3: There is a positive relationship between immigrant remittances and the level of economic internationalization in developing countries.

These direct effects could be moderated by TCE and/or social knowledge characteristics of the immigrant investor or investor group. My framework highlights two such moderators. I have already noted Madhavan and Iriyama's (2009) network-related theory and evidence suggesting that better-educated immigrants are also more capable of conveying entrepreneurial money and ideas internationally. Their evidence contributes to a longer-running research stream on the mobility of better-skilled immigrants, and what their departure from the home country does to induce a brain drain

detracting from economic growth (Docquier & Marfouk, 2006). If remittances constitute partial compensation for that brain drain, then that partial compensation is greater to the extent that the remittances come from immigrants with better education. Hypothesis 4 does not reject the importance of shared clan and community membership. It assumes that shared educational background strengthens these more broadly based connections in predicting that:

Hypothesis 4: The positive impact of immigrant remittances on the developing-country venture investment environment is greater for developing countries with better-educated immigrants.

Collective immigrant characteristics may also moderate the venture investment impact of remittances. One such characteristic relates to the concentration of an immigrant community. Business enclaves analyzed by Webb et al. (2009) often develop around facilities and conventions that have public good attributes. Use by one enclave member does not exclude another's use, and often decreases the cost and increases the effectiveness of use by both. The creation and growth of major financial institutions in immigrant communities of the US follows this logic. The Bank of America originated in the Italian immigrant community of San Francisco in the early 1900s, and Thrivent Financial for Lutherans began life as a fraternal organization in the early 1900s serving the financial services needs of Scandinavian immigrant communities in Minnesota and Wisconsin. Both served concentrated immigrant communities. Remittance services figured in the early growth of both firms.

Well-defined and geographically proximate immigrant communities also promote the development of public conventions decreasing remittance transaction costs and diffusing more readily knowledge about prospective remittance uses. Remittance transactions in Muslim communities of North Africa and the Middle East are still guided by informal debt-transfer practices based on *hawala* principles in classical Islamic law (Qorchi et al., 2003). Like Hypothesis 4, Hypothesis 5 builds on basic framework assumptions, and emphasizes the venture investment advantages of immigrant concentration in predicting that:

Hypothesis 5: The positive impact of immigrant remittances on the developing-country venture investment environment is greater for developing

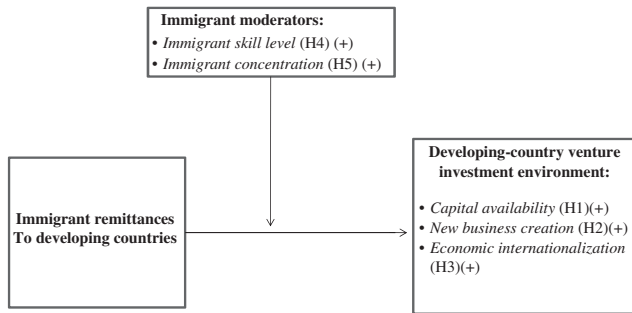


Figure 1 Hypotheses derived from theoretical framework.

countries with more concentrated immigrant communities abroad.

These five predictions are summarized in Figure 1. Informal cross-country relationships decreasing transaction costs and increasing transaction knowledge permit developing-country immigrants to remit money and ideas directly, enhancing the overall venture-investing environment back home. The direct impact of remittances is, in turn, moderated positively by individual and collective factors related to immigrants in host countries.

EMPIRICAL METHODOLOGY

Empirical Equation Terms

To assess empirical support for these five predictions I define the equation below:

$$\begin{aligned}
 Y_{ijt} = & \alpha + \sum_{k=1}^{k=9} \lambda_{ijt,t-1} \text{Controls} + \beta_1 \text{Remittances}_{ijt,t-1} \\
 & + \sum_{m=1}^{m=q} \phi_m \text{Moderators}_{ij} + \sum_{t=2004}^{t=2007} \xi_t \text{Years} \\
 & + \sum_{j=1}^{j=5} \gamma_j \text{Regions} + \varepsilon_{ijt} \quad (1)
 \end{aligned}$$

Details regarding all individual terms of Eq. (1) are provided in Table 1. The dependent variable, Y_{ijt} , is measured differently depending on which hypothesis I am testing, but subscripts for country i , geographic region j and year t remain the same. The dependent variable is regressed on an intercept (α), a series of country i controls (*Controls*), country i remittances (*Remittances*), moderators to assess differences in remittance effects (*Moderators*), and fixed effects related to

the year t (*Years*) and geographic region j (*Regions*) of a given observation.

I exclude moderators from Eq. (1) for initial testing of Hypotheses 1–3 concerning the direct impact of remittances on alternative indicators of the home-country venture investment environment. Hypothesis 1 predicts a positive relationship between remittances and capital available to entrepreneurs back home. I measure Y_{ijt} as capital availability in two ways. One measure, *General Capital Access*, is a 0–10 (0=low, 10=high) composite index number for country i in region j in year t based on annual assessments of seven components by researchers at the Michael Milken Institute (Apinard et al., 2002–2008): macroeconomic environment, institutional environment, financial industry development, equity market development, bond market development, international funding and “alternative sources of capital”. In the sample described below, *General Access to Capital* ranges from 2.09 (Haiti in 2007) to 7.22 (Malaysia in 2004).

A second measure, *Venture Capital Access*, is based solely on the alternative sources of capital component of *General Capital Access*. It again comes from researchers at the Milken Institute (Apinard et al., 2002–2008), and is once more measured as a 0–10 index. *Venture Capital Access* index numbers are based on evaluation of three factors: venture capital, private placements and credit cards. Values range from 0 (Mozambique in 2006) to 6.26 (India in 2004). Thus there are both broadly and narrowly defined indicators of capital availability to evaluate Hypothesis 1’s prediction that remittances enhance home-country venture funding.

To evaluate support for Hypothesis 2’s prediction that remittances enhance home-country venture foundings, I measure Y_{ijt} as the annual count of newly registered corporations for country i in region j in year t . This *New Business Creation* count includes businesses that are incorporated as a legal entity and registered in a public registry, but does not include other unregistered business starts (World Bank, 2010). Annual new business counts range from 2 (Haiti in 2002) to 529,416 (Brazil in 2007) in my sample. This count likely understates actual new business starts in less-developed countries with fewer regulatory resources or greater government corruption. I explore the implications of such understatement in analyses below.

To evaluate Hypothesis 3’s prediction that remittances enhance broader country openness to trade, I also measure Y_{ijt} as the sum of imports and exports divided by GDP for country i in region j in year t .

Table 1 Variables list for analyses of remittances and the developing-country venture investment environment, 2002–2007

Variable name	Variable description	Source	Expected sign
<i>General Capital Access</i> (Y_{ijt})	0–10 integral measure of the breadth, depth and vitality of capital markets, and openness in providing access without discrimination to entrepreneurs for country i in region j averaged over years t and $t-1$. 0=low, 10=high	Milken Institute Capital Access Index (Apinard et al., 2002–2008)	H1, H4, H5: dependent variable (DV)
<i>Venture Capital Access</i> (Y_{ijt})	0–10 integral measure depth, breadth and vitality of specific capital market sources such as venture capital, private placements and credit cards for country i in region j averaged over years t and $t-1$. 0=low, 10=high	Milken Institute Capital Access Index (Apinard et al., 2002–2008)	H2, H4, H5: DV
<i>New Firm Creation</i> (Y_{ijt})	The number of newly registered corporations for country i in region j in year t	World Bank, Doing Business Database (World Bank, 2010)	H2, H4, H5: DV
<i>Economic Internationalization</i> (Y_{ijt})	Sum of exports and imports divided by gross national income in US dollars for country i in region j in year t	World Bank, World Development Indicators (World Bank, 2010)	H3, H4, H5: DV
<i>Economic Size</i> (λ_1)	Natural log of GDP in US dollars for country i in region j averaged over years t and $t-1$	World Bank, World Development Indicators (World Bank, 2010)	+except when DV is <i>Economic Internationalization</i> , –
<i>Economic Growth</i> (λ_2)	Real annual percentage growth in GDP for country i in region j averaged over years t and $t-1$	World Bank, World Development Indicators (World Bank, 2010)	+
<i>Inflation</i> (λ_3)	Consumer price inflation percentage for country i in region j averaged over years t and $t-1$	World Bank, World Development Indicators (World Bank, 2010)	–
<i>Per Capita Income</i> (λ_4)	Per capita gross national income for country i in region j averaged over years t and $t-1$	World Bank, World Development Indicators (World Bank, 2010)	+
<i>Common Law</i> (λ_5)	0–1 dummy, where 1=common law origin. 0=otherwise for country i in region j (fixed over all years t)	CIA World Fact Book (CIA, 2005)	+
<i>Rule of Law</i> (λ_6)	–2.5 to +2.5 measure of the extent of quality of contract enforcement, property rights, the police, and the courts, crime and violence for country i in region j averaged over years t and $t-1$. –2.5=weak rule of law; 2.5=strong rule of law	Kaufmann et al. (2008)	+
<i>Political Rights (Lack of)</i> (λ_7)	1–7 integral measure of the level of political rights (e.g., right of citizens to vote for national executive) for country i in region j averaged over years t and $t-1$. 1=strong political rights, and 7=weak political rights	Freedom House (2010)	–
<i>FDI Inflow</i> (λ_8)	Inward foreign direct investment (i.e., foreign equity capital, foreign reinvested earnings and foreign intra-company loans) in billions of US dollars for country i in region j averaged over years t and $t-1$	World Bank, World Development Indicators (World Bank, 2010)	+
<i>State Share of Economy</i> (λ_9)	Percentage of GDP accounted for by government and state-owned enterprises	World Bank, World Development Indicators (World Bank, 2010)	–
<i>Remittances</i> (β_1)	Per capita sum of workers' remittances, compensation of employees, and migrant transfers in US dollars for country i in region j averaged over years t and $t-1$	World Bank, Development Prospects Database (World Bank, 2010)	+
<i>Immigrant Skill Level</i> (ϕ_{1a})	0–1 dummy, where 1=country i from region j with more than 50% of immigrants living in North America, Europe and Asia-Oceania in 2000 (fixed over all years t).	Docquier & Marfouk (2006)	+
<i>Immigrant Concentration</i> (ϕ_{1b})	0–1 dummy, where 1=country i from region j with a Herfindahl, Hirschman Index greater than 0.34, indicating high concentration of immigrants in all possible host countries in 2000 (fixed over all years t)	United Nations (2004); Parsons et al. (2007)	+

This measure of *Economic Internationalization* reflects the extent to which economic activity within a country depends on international trade (Yanikkaya, 2003). In the sample, trade openness ranges from 0.26 or 26% of GDP (Brazil in 2002) to 2.13 or 213% of GDP (Malaysia in 2002).

The key right-hand side term of Eq. (1) for Hypotheses 1–3 is *Remittances*, which is measured as the per capita sum of workers' remittances, compensation of employees and migrant transfers in thousands of US dollars for country i in region j averaged over years t and $t-1$. As with other control terms on the right-hand side of Eq. (1), I measure *Remittances* as a two-year moving average to capture both contemporaneous and lagged effects on the dependent variables. In the sample, values of *Remittances* range from nil (Malawi in 2007) to 1.32 or \$1320 per home-country resident (Lebanon in 2005). Consistent with Hypotheses 1–5, I expect the coefficient on *Remittances* to be positive.

To account for other factors explaining variation in dependent variables, Y_{ijt} , I also include nine country controls ($Controls_{\lambda 1-9}$) used in recent management research (e.g., Vaaler, 2008) and in related political economy research (e.g., Henisz, 2000) to explain overall country attractiveness for lending, investment and new business project establishment: economic size, economic growth, per capita income, inflation, common law legal system, rule of law quality, lack of political rights, FDI inflow, and the share of GDP accounted for by government and state-owned enterprises. Table 1 describes these controls, including their measurement, data sources and expected sign in estimations. They are measured as two-year moving averages to capture both contemporaneous and lagged effects.

To capture other unspecified effects, I also include 0–1 year (*Years*) and geographic region (*Regions*) dummies. The first year observed for the dependent variable in the sample, 2002, is omitted, and five 0–1 year dummies for years 2003–2007 are included. I also define a scheme of six geographic regions (1=East Asia & Pacific, 2=Europe & Central Asia, 3=Latin America & Caribbean, 4=Middle East & North Africa, 5=South Asia, 6=sub-Saharan Africa), omit the final region, sub-Saharan Africa, and include five 0–1 dummies for others.

To test Hypotheses 4–5 regarding individual and collective immigrant factors possibly magnifying the effect of remittances on venture investment indicators back home, I include additional moderator terms, most importantly interaction terms combining *Remittances* with one of two terms

corresponding to proposed moderator effects. The interaction terms capture differences in the impact of *Remittances* on the home-country venture investment environment. These moderators vary across countries i but are fixed rather than varying across years t .

To test Hypothesis 4's prediction that immigrant skill level magnifies the impact of remittances on various indicators of the home-country venture investment environment, I include an interaction term combining *Remittances* with *Immigrant Skill* ($IS \times Remittances$). *Immigrant Skill* is based on the fraction of immigrants from country i of region j living abroad in 2000 with tertiary (+13 years) education (Docquier & Marfouk, 2006). Measures vary from 0.09 or 9% of immigrants (Turkey) to 0.67 or 67% of immigrants (Philippines), with a mean of 0.41 (41%) and a standard deviation of 0.15. I define *Immigrant Skill* as a 0–1 dummy, where 1 indicates a country with more than 0.50 (top quartile of education for immigrants from all countries sampled) of immigrants in 2000 with tertiary education. Consistent with Hypothesis 4, I expect the $IS \times Remittances$ interaction term to be positive.

To test Hypothesis 5's prediction that immigrant community concentration magnifies remittance impact on venture investment back home, I include an interaction term combining *Remittances* with *Immigrant Concentration* ($IC \times Remittances$). *Immigrant Concentration* is based on a Herfindahl–Hirschman Index (HHI) number running from 0 to 1, with values near 1 indicating greater immigrant community concentration across all host countries, and values near 0 indicating greater immigrant community diffuseness across all host countries. *Immigrant Concentration* is derived by first squaring and then summing fractions of immigrants from country i of region j living in each host country in 2000 (Parsons, Skeldon, Walmsley, & Winters, 2007; United Nations, 2004). The resulting HHI numbers range from 0.075 (India) to 0.85 (Mexico), with a mean of 0.26 and a standard deviation of 0.18. I define *Immigrant Concentration* as a 0–1 dummy, where 1 indicates a country with an HHI number greater than 0.35 (top quartile of concentration for immigrants from all countries sampled) in 2000. Consistent with Hypothesis 5, I expect the $IC \times Remittances$ interaction term to be positive.

Estimation Strategy

I use Stata Version 11.0 (StataCorp, 2009) for all analyses. For an initial understanding of cross-country

trends related to Hypotheses 1–3, I present results from non-parametric, locally weighted, scatter-plot smoothed (“Lowess” or “lowsess” command in Stata) analyses with *Remittances* on the x -axis and one of four different measures of the dependent variable, Y_{ijt} , on the y -axis. Lowess analyses compute linear regressions around each observation of $Remittances_{ijt}$, with neighborhood observations chosen within some sampling bandwidth and weighted by a tri-cubic function. Based on the estimated regression parameters, Y_{ijt} values are computed. Combinations of $Remittances_{ijt}$ and Y_{ijt} are then connected, yielding a Lowess curve. A higher bandwidth results in a smoother Lowess curve. I use the default bandwidth, sampling 40% of the observations to the left and right of each pair of $Remittances_{ijt}$ and Y_{ijt} values.

I then turn to multivariate estimations of Eq. (1) to test Hypotheses 1–5. I have unbalanced panel data with missing data for certain countries i (in regions j) and years t . When the dependent variable, Y_{ijt} , is *General Capital Access*, *Venture Capital Access* or *Economic Internationalization*, I use linear estimators. I start with ordinary least-squares regression (“OLS” or “reg” command in Stata) and the nine country controls. These OLS estimations provide an overall sense of equation explanation. I then implement several panel-feasible generalized least squares estimations (“GLS” or “xtgls” command in Stata) with robust (to panel heteroskedasticity) standard errors and panel-specific first-order autoregressive processes. To assess the robustness of these findings to possible endogeneity issues, I also present results based on a third generalized method of moments (GMM) dynamic panel estimator based on research by Arellano and Bover (1995) and Blundell and Bond (1998) (“DPDSYS” or “xtdpdpsys” command in Stata). The dynamic panel estimator includes plausibly exogenous instruments based on lags of left-hand-side dependent and possibly endogenous or predetermined right-hand-side variables. The lagged dependent variable also acts as a “catch-all” control capturing past effects on venture investment indicators not otherwise covered in Eq. (1).

When Y_{ijt} is *New Business Creation* I am using annual count measures, thus a nonlinear estimator is appropriate. Preliminary investigation of the sample suggests over-dispersion, so I use negative binomial estimation (“NBR” or “nbreg” command in Stata), again with robust standards. For each set of regressions based on Eq. (1), I begin with the nine controls, then add *Remittances*, and then add

year and region dummies. For examination of moderator effects, I add moderators to Eq. (1). I then report results for each of the four venture investment indicators after estimation with other right-hand-side controls and dummies. I use a simulation approach to assess the practical impact of these interactions.

Sampling and Data Sources

I sample from 61 non-OECD countries and countries comprising popular developing-country investment indices (e.g., J.P. Morgan Emerging Market Bond Index) for which remittance and venture investment environment data are available from 2002 to 2007.⁸ This period saw steady growth in remittances between global economic shocks tied to the terrorist attacks of 2001 and US and European financial crises in 2008. These years also saw better monitoring of remittance flows for taxation and anti-terrorism purposes, as well as better harmonization of remittance accounting and compilation, thanks in part to work by the International Monetary Fund and World Bank (IMF, 2009; Reinke, 2007; World Bank, 2006). These attributes probably decrease potential measurement error of this key variable compared with other empirical studies using remittance data from the 1990s and earlier (e.g., Aggarwal, Demirgüç-Kunt, & Martínez Pería, 2010).

Data availability varies for the four dependent variable measures, thus sample size and scope of developing-country coverage also vary. In testing Hypotheses 1–3, sample scope and size decrease as the dependent variable switches from *General Capital Access* and *Economic Internationalization* (61 countries and 348 country-year observations), to *Venture Capital Access* (59 countries and 304 country-year observations), to *New Business Creation* (45 countries and 209 country-year observations).

Data for the study come from several sources. Annual data on *General Capital Access* and *Venture Capital Access* come from Milken Institute Capital Access indices, which have gained usage in recent cross-country finance research (e.g., Doidge, Karolyi, & Stulz, 2004). These indices are measured from 0 to 7 up to 2002, and then from 0 to 10 through 2007. I convert all *General Capital Access* and *Venture Capital Access* measures to the 0–10 scale. Data on *New Business Creation* come from the World Bank Doing Business Database available as part of the World Bank’s World Development Indicators (WDI) (World Bank, 2010). Annual data on *Economic Internationalization* also come from the WDI. Annual data for the nine country controls in



Eq. (1) come from the WDI (*Economic Size, Economic Growth, Inflation, Per Capita Income, FDI Inflow, State Share of Economy*), the CIA *World Factbook* (CIA, 2005) (*Common Law*), Freedom House (2010) (*Political Rights (Lack of)*), and Kaufmann, Kraay, and Mastruzzi (2008) (*Rule of Law*). Annual data on *Remittances* come from the World Bank Development Prospects Database and the IMF's *Balance of Payments Statistics Yearbook*. These data are again available through the WDI (World Bank, 2010).

Data on *Immigrant Skill* come from study of mobility among skilled immigrants in 2000 generated by Docquier and Marfouk (2006). The United Nations (2004) and Parsons et al. (2007) provide bilateral country data on immigrants in 2000 to permit generation of *Immigrant Concentration* values. Both data sources merit additional explanation. Parsons et al. (2007) draw on 2000 or near-2000 year census data primarily from the United Nations (2004) covering 226 countries and territories, including those countries sampled in this study. The definition of a "migrant" is often based on place of birth vs residence, but some countries use different criteria. Parsons et al. describe how such differences are harmonized and adjusted to permit better comparability of resulting figures for research and policymaking purposes. I use Version 4a (United Nations, 2004) of the bilateral migration data, generally considered the most comparable source for research purposes.

Docquier and Marfouk (2006) draw on a less sweeping range of census and registration data to estimate immigrant education levels in 2000 for 195 countries, including those I analyze below. They work with census and registration data from all OECD countries and six non-OECD countries. Census and registration data on immigrant education for 2000 are less reliable or non-existent in many non-OECD countries. Docquier and Marfouk work on the assumption that the education level of immigrants living in non-OECD countries is, with few exceptions, quite low. Thus it is possible that they underestimate immigrant education levels for a few developing countries with more "South-South" rather than "South-North" migration patterns. That said, I know of no better source for standardized cross-country data on immigrant education and training levels.⁹

The sample reveals substantial variation across developing countries. Average remittances from 2002 to 2007 are equal to at least 10% of GDP for 12 of 61 countries sampled. Average remittances over that same period for less-developed countries

such as Haiti (\$897 million), Jordan (\$2.428 billion), Lebanon (\$4.399 billion) and Moldova (\$723 million) are equal to or more than 20% of each country's GDP. Average remittances over that same period for more prominent emerging-market countries such as Brazil (\$3.274 billion), Russia (\$2.388 billion), India (\$20.497 billion), China (\$18.266 billion) and Mexico (\$17.984 billion) are generally much higher absolutely, but never reach even 3% of each country's GDP. Such sample characteristics suggest greater potential for enhancement of the venture investment environment in less-developed countries. I investigate this possibility in analyses below.

RESULTS

Descriptive Statistics, Pairwise Correlations and Non-parametric Analyses

Table 2 reports descriptive statistics and pairwise correlations for all variables used in our analyses. *Remittances* are, on average, approximately \$100 per person (0.10) annually, with two thirds of the countries lying between \$0 and almost \$250. El Salvador (\$350), Jordan (\$435), Jamaica (\$440) and Lebanon (\$1320) exhibit the highest average annual per capita remittances in the sample. As yet another indication of their practical impact, these per capita remittance figures comprise from about one sixth (for El Salvador and Jamaica) to nearly one fourth (for Jordan and Lebanon) of total per capita income.

Most means and standard deviations for the right-hand-side terms of Eq. (1) indicate trends consistent with commonly held assumptions about the venture investment environment of developing countries. For example, sample means for *General Capital Access* (4.22) and *Venture Capital Access* (2.66) on a 0–10 scale are consistent with assumptions of relative capital scarcity in developing countries compared with mean levels of *General Capital Access* (7.01) and *Venture Capital Access* (5.20) for developed (OECD) countries during the same years. Other mean values follow developing-country assumptions of higher (than industrialized country) economic growth rates (5.24%) and inflation rates (8.18%), and lower per capita annual income (2.45 or \$2450) and rule of law (−0.40), indicating less than average respect for law, legal processes and legal officialdom.

Pairwise correlations indicate that *Remittances* is positively related (as expected) to *General Capital Access*, *Economic Internationalization* and *Venture*

Table 2 Descriptive statistics and pairwise correlations of remittances and venture investment environment indicators, 2002–2007^a

Variables	Mean	Std	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. General Capital Access	4.22	1.00																		
2. Venture Capital Access	2.62	1.59	0.63**																	
3. New Business Creation	33.27	88.62	0.10	0.13 [†]																
4. Economic Internationalization	0.81	0.36	0.25**	0.17**	-0.23**															
5. Remittances	0.10	0.18	0.18**	0.04	-0.13*	0.29**														
6. Economic Size	24.03	1.65	0.50**	0.44**	-0.28**	-0.10*														
7. Economic Growth	5.24	2.93	0.07	-0.08	0.02	-0.10*	0.11*													
8. Income Per Capita	2.45	2.36	0.60**	0.34**	0.20	0.17**	0.38**	0.02												
9. Inflation	8.18	7.13	-0.27**	-0.17**	0.20	-0.14**	-0.15**	-0.04	-0.13**											
10. Common Law	0.28	0.45	0.02	-0.10 [†]	-0.17**	-0.06	-0.15**	-0.01	-0.00	-0.22**	0.09 [†]									
11. Rule of Law	-0.40	0.56	0.60**	0.30**	-0.10	0.32**	0.03	0.08	0.11*	0.51**	-0.20**	0.04								
12. Political Rights (Lack)	3.52	1.73	-0.27**	-0.27**	0.00	0.01	0.04	-0.01	0.04	-0.29**	-0.09 [†]	-0.04	-0.36**							
13. FDI Inflow	3.13	8.61	0.29**	0.21**	0.81**	-0.15**	-0.07	0.60**	0.19**	0.16**	-0.05	-0.10*	0.04	0.16**						
14. State Share of Economy	13.37	4.32	0.32**	0.19**	0.16*	0.08	0.10*	-0.00	-0.05	0.37**	-0.15**	0.06	0.41**	-0.11*	0.08					
15. Immigrant Skill	0.25	0.43	0.24**	0.09 [†]	0.13*	0.15**	-0.11*	0.14**	0.08	0.16**	0.06	0.13**	0.21**	0.08	-0.03	0.29**				
16. Immigrant Concentration	0.26	0.44	-0.11*	-0.10 [†]	-0.14*	0.03	0.20**	-0.17**	-0.10*	-0.04	-0.00	-0.13**	-0.24**	-0.08	-0.09 [†]	-0.20**	-0.18**			
17. IS × Remittances	0.02	0.06	0.19**	0.07	-0.05	0.27**	0.22**	-0.03	-0.14**	0.05	-0.09 [†]	-0.11*	-0.24**	0.04	-0.04	0.24**	0.46**	-0.11*		
18. IC × Remittances	0.04	0.11	0.02	0.01	-0.09	0.02	0.48**	-0.13**	-0.11**	0.05	-0.01	-0.02	-0.13**	-0.12**	-0.06	-0.17**	-0.20**	0.66**	-0.09 [†]	
19. SSE × Remittances	1.44	2.80	0.20**	0.06	-0.14*	0.31**	0.97**	-0.11*	-0.08	0.25**	-0.16**	-0.13**	0.09 [†]	0.07	-0.07	0.23	-0.05	0.09 [†]	0.34**	0.33**

^aThe number of observations used to compute sample means, standard deviations and pairwise correlations varies from 209 to 348. Specific numbers of observations for each variable are available on request. IS in IS × Remittances refers to Immigrant Skill. IC in IC × Remittances refers to Immigrant Concentration.

** $p < 0.01$, [†] $p < 0.05$, [†] $p < 0.10$.

Capital Access, with the first two correlations significant at the 1% level. Remittances exhibits a negative correlation with New Business Creation, although the correlation is not significant at commonly accepted levels. Aside from interaction terms, Remittances exhibits no high pairwise correlations with other independent variables, thus indicating that severe multicollinearity affecting multivariate estimates is unlikely.

Non-parametric, bivariate Lowess analyses in Figures 2(a)–(d) expand on these initial insights, and provide preliminary evidence related Hypotheses 1–3. Below the sample average (0.10 or \$100 per capita annual remittances), an increase in Remittances leads to steeply increasing General Capital Access, Venture Capital Access and Economic Internationalization in Figures 2(a), (b) and (d). The positive trend line is consistent at different corresponding values of Remittances and General Capital Access or Economic Internationalization in Figures 2(a)–(d). Indeed, the trend line starts sharply positive for corresponding values of Remittances and Venture Capital Access, but then levels off and even turns down slightly at high levels of Remittances. The trend line for corresponding values of Remittances and New Business Creation in Figure 2(c) presents an anomaly. I convert the count of new businesses into a percentage rate of new business starts to yield more intuitive linear estimates. Generally, increasing levels of Remittances lead to lower (not higher) new business start rates. Thus I observe preliminary evidence supporting Hypotheses 1 and 3. Immigrant remittances are positively related to the availability of venture capital, whether broadly or narrowly assessed. Remittances are also positively related to broader economic internationalization. But rates of new business creation exhibit trends contrary to Hypothesis 2's prediction of increased venture foundings as immigrants remit money and ideas.

Multivariate Regression Results: Direct Effects (Hypotheses 1–3)

Results from multivariate regression analyses of direct effects related to Hypotheses 1–3 are presented in Tables 3–5. Table 3 presents results from multivariate regression analyses where the dependent variables are General Capital Access (columns 1–4) or Venture Capital Access (columns 5 and 6).¹⁰ They permit formal tests of Hypothesis 1 and the predicted positive relationship between developing-country remittances and home-country capital availability. OLS results in column 1 largely follow

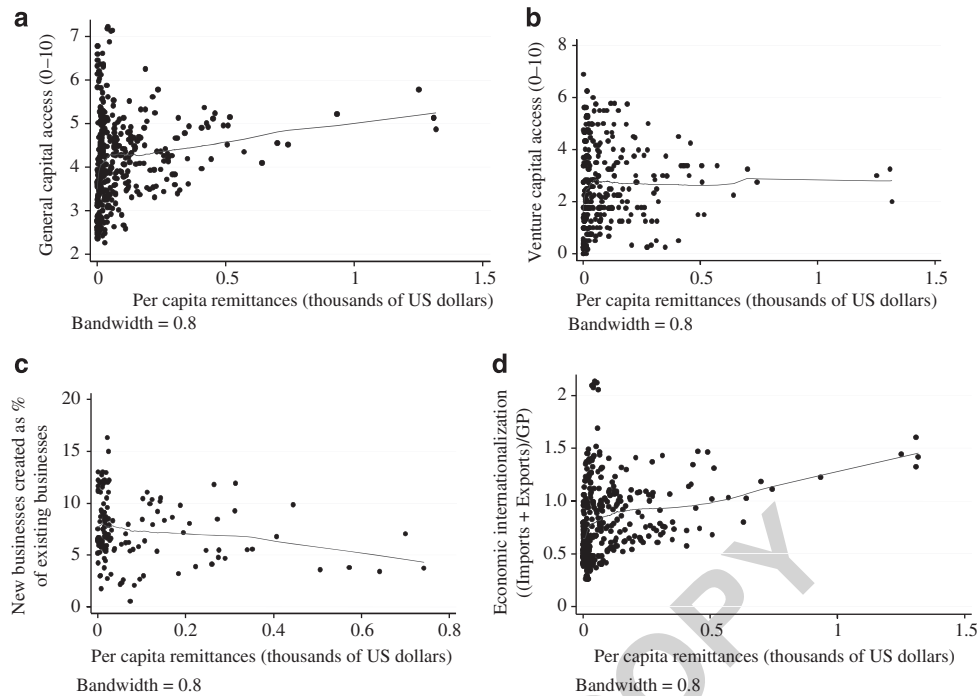


Figure 2 Locally weighted scatter-plot smoothed (Lowess) results for venture investment environment indicators, 2002–2007.

Table 3 Regression analyses of remittances and general capital access (columns 1–4) and venture capital access (columns 5–6), 2002–2007^a

Variables	Estimators					
	Controls only		Controls, remittances			
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS, GCA	FGLS, GCA	FGLS, GCA	FGLS, GCA	FGLS, VCA	FGLS, VCA
Constant (α)	-0.95 (0.69)	-0.01 (0.57)	-0.74 (0.57)	-1.54** (0.55)	-6.49** (1.19)	-4.76** (1.22)
Economic Size (λ_1)	0.22** (0.03)	0.16** (0.02)	0.21** (0.02)	0.20** (0.02)	0.40** (0.05)	0.26** (0.05)
Economic Growth (λ_2)	-0.01 (0.01)	-0.02** (0.01)	-0.01 [†] (0.00)	-0.02** (0.01)	-0.06** (0.01)	-0.07** (0.02)
Per Capita Income (λ_3)	0.11** (0.02)	0.15** (0.01)	0.08** (0.01)	0.05** (0.01)	-0.01 (0.01)	0.09 [†] (0.04)
Inflation (λ_4)	-0.03** (0.00)	-0.01** (0.00)	-0.01** (0.00)	-0.02** (0.00)	-0.01 [†] (0.00)	-0.01 (0.01)
Common Law (λ_5)	0.26** (0.08)	0.28** (0.06)	0.14** (0.06)	0.87** (0.08)	-0.17 (0.12)	0.38** (0.12)
Rule of Law (λ_6)	0.63** (0.08)	0.62** (0.06)	0.67** (0.06)	0.53** (0.09)	0.54** (0.17)	0.17 (0.16)
Political Rights (Lack of) (λ_7)	-0.05* (0.02)	0.02 (0.02)	-0.03* (0.02)	-0.03 (0.02)	-0.23** (0.05)	-0.26** (0.05)
FDI Inflow (λ_8)	0.00 (0.00)	0.01** (0.00)	0.01* (0.00)	0.00 (0.00)	0.00 (0.01)	-0.00 (0.00)
State Share of Economy (λ_9)	0.01 (0.01)	0.02* (0.00)	0.01 [†] (0.01)	0.02** (0.01)	0.04** (0.01)	0.10** (0.02)
Remittances (β_1)			0.81** (0.11)	0.77** (0.16)	0.62* (0.30)	-0.11 (0.33)
Years (ξ_{1-5}) and Regions (γ_{1-5})	No	No	No	Yes	No	Yes
N	349	348	348	348	304	304
Wald χ^2 (Adj. R^2)	(0.63)	1959.58**	1227.90**	2409.02**	1107.17**	2000.43**

^aColumns 1–6 report regression coefficients and robust standard errors (in parentheses). OLS refers to ordinary least-squares estimation. FGLS refers to panel-feasible generalized least-square estimation with robust Huber–White sandwich standard errors and panel (country) specific first-order autoregressive processes. GCA refers to *General Capital Access* as the dependent variable. VCA refers to *Venture Capital Access* as the dependent variable. Regression results for region and year dummies are available on request.

** $p < 0.01$, * $p < 0.05$, [†] $p < 0.10$.

expectations. In regressing *General Capital Access* on an intercept and nine country controls only, I find that seven *Controls* exhibit the expected signs and six do so at 5% or 1% levels of statistical significance. OLS estimation explains almost two thirds ($R^2=0.63$) of variation in this broad indicator of capital availability. Thus I move to more refined estimators and equation specifications with substantial assurance of a well-specified base equation. In column 2, OLS is replaced with panel GLS including robust (to panel heteroskedasticity) standard errors and panel-specific corrections for first-order auto-correlation. Six of nine *Controls* exhibit the expected sign, with all six statistically significant at the 1% level.

Columns 3 and 4 of Table 3 report panel GLS results with the addition of *Remittances*. In column 3, *Remittances* (0.81) enters with a positive sign statistically significant at the 1% level. It remains so after the addition of year and region dummies in column 4 (0.77). Both results support Hypothesis 1. Although integral in nature, *General Capital Access* and *Venture Capital Access* measures are often used in practice by researchers and analysts to rank countries and assess changes in ranking over time. Given results in columns 3 and 4, an increase of one standard deviation ($0.18=\$180$) above the mean per capita remittance level ($0.10=\$100$) raises a country's *General Capital Access* score from the mean of 4.22 to 4.36, based on results in column 4 ($4.22 + (0.18 \times 0.77)=4.36$) and 4.37 based on results in column 3 ($4.22 + (0.18 \times 0.81)=4.37$). Such an increase translates into a rank increase of about four levels on the Milken Institute index. From 2004 to 2005, 33 of 99 developing countries ranked by the Milken Institute moved up or down fewer than three levels, and 56 of 99 developing countries moved up or down fewer than five levels. Thus a move of four levels has practical importance for ranking purposes.

When I replace *General Capital Access* with the more narrowly defined measure *Venture Capital Access*, results are mixed. Consistent with Hypothesis 1, I find in column 5 that *Remittances* (0.62) enters with a positive sign statistically significant at the 5% level. An increase of one standard deviation above the mean per capita remittance level raises a country's *Venture Capital Access* score from the mean of 2.63 to 2.74 ($2.76 + (0.18 \times 0.62)=2.74$). That increase in score would move a country up three rank levels on the Milken Institute index in a given year. But this supporting evidence is not confirmed in column 6, where I add year and

region dummies to Eq. (1). After these additions, the coefficient for *Remittances* exhibits the wrong (negative) sign, and is not significant at commonly accepted levels.

Together with the bivariate Lowess analyses, these multivariate analyses indicate substantial but not complete support for Hypothesis 1, and the claim that immigrant remittances materially enhance home-country capital availability. The evidence is strong for general capital availability. For more narrowly focused venture capital availability, there is also supporting evidence, but additional confirmation is warranted.

Columns 1–5 of Table 4 report results for *New Business Creation* as the dependent variable.¹¹ Column 1's NBR estimation of count data yields five of nine control terms with predicted signs statistically significant at 5% or 1% levels. These country-level controls are jointly significant in explaining annual counts of newly registered businesses (Wald $\chi^2=1134.21$, $p<0.01$). They also have substantial practical impact, as I demonstrate by transforming NBR coefficients into more readily interpretable terms indicating impact on the rate of new business creation. For example, I transform the column 1 NBR estimate for *Economic Growth* (0.10) using the following formula: $100\% \times [\exp(0.10) - 1] = 10.5\%$. Increasing annual economic growth by one percentage point increases the rate of new business creation by 10.5%, holding other factors at their mean levels. Increasing the (lack of) *Political Rights* in a country by one unit ($100\% \times [\exp(-0.10) - 1] = -9.5\%$) decreases the rate of new business creation by 9.5%, again with other factors held at their mean levels.

Columns 2 and 3 then add *Remittances* to the base equation. In neither column does the coefficient for *Remittances* enter with significance at commonly accepted levels of statistical significance. Reviewed with the Lowess analyses exhibited in Figure 2(c) above, these multivariate results do not support Hypothesis 2, and raise additional doubt about any direct relationship between immigrant remittances and new business founding rates in developing countries.

But perhaps that relationship is more nuanced. In developing my framework and formulating Hypothesis 2, I noted plausible alternative arguments that could neutralize business start-up enhancement that immigrant money and ideas could promote. One such argument related to country-level policy choices, such as the choice between lower or higher taxation, and public-sector-led or private-sector-led

Table 4 Regression analyses of remittances and new business creation (columns 1–5) and economic internationalization (columns 6–9), 2002–2007^a

Variables	Estimators									
	Controls only		Controls, remittances			Controls only		Controls, remittances		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
	NBR, NBC	NBR, NBC	NBR, NBC	NBR, NBC	NBR, NBC	OLS, EI	FGLS, EI	FGLS, EI	FGLS, EI	
Constant (α)	-9.21** (1.41)	-8.72** (1.58)	-12.72** (1.50)	-9.31** (1.54)	-12.87** (1.51)	3.02** (0.35)	3.04** (0.22)	2.67** (0.19)	2.86** (0.19)	
Economic Size (λ_1)	0.70** (0.06)	0.68** (0.07)	0.87** (0.07)	0.69** (0.06)	0.87** (0.07)	-0.10** (0.01)	-0.10** (0.01)	-0.09** (0.01)	-0.10** (0.01)	
Economic Growth (λ_2)	0.10** (0.02)	0.09** (0.02)	0.03 [†] (0.02)	0.09** (0.02)	0.03 [†] (0.02)	0.01* (0.01)	0.01** (0.00)	0.01** (0.00)	0.00** (0.00)	
Per Capita Income (λ_3)	-0.08** (0.03)	-0.06 (0.04)	-0.19** (0.03)	-0.07 [†] (0.04)	-0.19** (0.03)	0.04** (0.01)	0.03** (0.00)	0.02** (0.00)	0.02** (0.00)	
Inflation (λ_4)	0.04** (0.02)	0.04** (0.01)	0.01 (0.01)	0.04** (0.01)	0.01 (0.01)	-0.00 (0.00)	0.00** (0.00)	0.00** (0.00)	0.00** (0.00)	
Common Law (λ_5)	-0.05 (0.11)	-0.06 (0.11)	0.63* (0.28)	-0.10 (0.11)	0.60** (0.26)	-0.02 (0.04)	-0.10** (0.03)	-0.08** (0.02)	0.08** (0.03)	
Rule of Law (λ_6)	0.18 (0.13)	0.14 (0.14)	0.67** (0.18)	0.23 [†] (0.13)	0.67** (0.17)	0.21** (0.04)	0.17** (0.02)	0.17** (0.02)	0.13** (0.02)	
Political Rights (Lack of) (λ_7)	-0.10* (0.05)	-0.10* (0.05)	0.02 (0.06)	-0.08 (0.05)	0.01 (0.05)	0.04** (0.01)	0.01 (0.01)	0.00 (0.01)	0.00 (0.00)	
FDI Inflow (λ_8)	0.10** (0.02)	0.09** (0.02)	0.07** (0.02)	0.09** (0.02)	0.07** (0.01)	0.00 (0.00)	0.00** (0.00)	0.00** (0.00)	-0.00** (0.00)	
State Share of Economy (λ_9)	0.07** (0.01)	0.07** (0.02)	0.04** (0.01)	0.10** (0.02)	0.05** (0.02)	-0.01 [†] (0.00)	0.00 [†] (0.00)	0.01* (0.00)	0.01** (0.00)	
Remittances (β_1)		-0.30 (0.27)	0.32 (0.30)	4.39** (1.68)	2.66 [†] (1.65)			0.51** (0.05)	0.32** (0.07)	
SSE × Remittances (β_2)				-0.31** (0.11)	-0.15 (0.10)					
Years (ξ_{1-5}) and Regions (γ_{1-5})	No	No	Yes	No	Yes	No	No	No	Yes	
N	209	209	209	209	209	349	348	348	348	
Wald χ^2 (Adj. R^2)	1134.21**	1292.05***	1578.39**	1416.06**	1626.02***	(0.26)	483.67***	637.02**	1515.51**	

^aColumns 1–9 report regression coefficients and robust standard errors (in parentheses). In columns 1–5, NBR refers to negative binomial regression estimation with robust Huber–White sandwich standard errors. NBC refers to *New Business Creation* as the dependent variable. SSE refers to *State Share of Economy*. Significant NBR two-way interaction term signs confirmed at the 1% and 10% levels, respectively, following Zelter (2009). In columns 6–9, OLS refers to ordinary least-squares estimation and FGLS refers to panel-feasible generalized least-square estimation with robust Huber–White sandwich standard errors and panel (country) specific first-order autoregressive process. EI refers to *Economic Internationalization* as the dependent variable. Regression results for region and year dummies are available on request.

** $p < 0.01$; * $p < 0.05$; [†] $p < 0.10$.

economic growth. Countries preferring higher state taxation rates or more involvement by state agencies or enterprises in economic development could “crowd out” private players, including would-be venture investors living abroad. If so, then the impact of remittances on new business starts might still be positive, but only when state economic involvement is low enough to create space for cross-country immigrant ventures. I investigate empirical support for that possibility in columns 4–5 of Table 4. There, I interact the country-level variable *State Share of the Economy* with *Remittances*. Consistent with the conjecture above, I expect a negative sign on this interaction term. Second, I expect a positive sign on *Remittances* alone, thus indicating that immigrant money and ideas do stimulate home-country business creation, but only when the public sector is sufficiently small.

Results in columns 4–5 indicate support for both expectations, consistent with Hypothesis 2. In column 4, *Remittances* (4.39) enters positively at the 1% level of statistical significance. The new interaction term ($SSE \times Remittances$) (−0.31) enters negatively also at the 1% level of statistical significance. After including year and region dummies in column 5, the signs on *Remittances* (2.66) and the interaction term, $SSE \times Remittances$ (−0.23), remain as predicted, although statistical significance levels have dropped.

I confirm these results with an alternative analytical approach proposed by Zelner (2009). He and others (e.g., Vaaler, 2008) note that interaction terms can yield less informative estimates when derived from nonlinear models such as NBR. An alternative approach investigates the moderator effects based on simulation methods developed by King, Tomz, and Wittenberg (2000). Their Clarify Version 2.1 software, an add-on to Stata, permits Monte Carlo simulation of remittance impact on new business start-up counts, given different percentages of state involvement in the economy. I run 1000 NBR-based simulations, and then set variables at their mean values and the *Common Law* dummy variable at its modal value, except for *Remittances*, *State Share of the Economy* and $SSE \times Remittances$ terms. I increase *Remittances* by one standard deviation, and then graph expected changes in new business counts, given increasing levels of *State Share of the Economy*.

Results are presented in Figure 3 using Zelner's (2009) “intgph” software, also an add-on to Stata. The trend line plots expected change in annual new

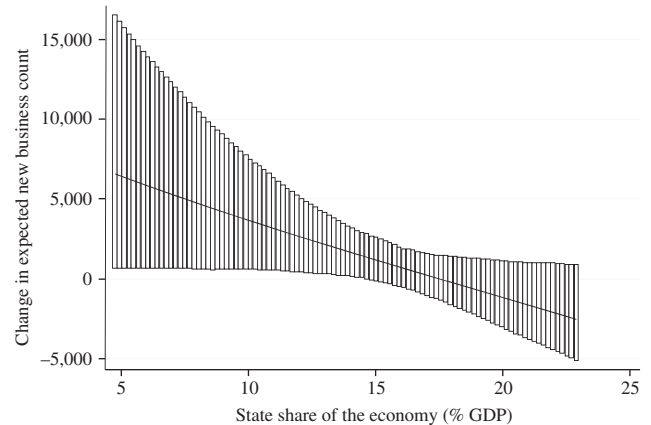


Figure 3 Simulation results given one standard deviation increase in remittances, 2002–2007.

business counts in response to a one standard deviation increase in *Remittances* as *State Share of the Economy* increases from 5% to 23%. Upper and lower bands are placed around that trend line, based on a 10% level of statistical significance. The trend line and non-negative lower bound of the confidence interval in Figure 3 confirm NBR-based trends indicated in columns 4–5 of Table 4. At one standard deviation lower than the sample mean of 13.37 for *State Share of Economy* (9.05) I expect new business starts to increase by almost 5000 annually, given a one standard deviation increase in *Remittances*. At the sample mean for *State Share of Economy* (13.37) the expected increase is about 2000 annually. At one standard deviation higher than that sample mean (17.69) there is no longer any expectation of increased new business starts. Such a contrast in simulated new business founding effects again indicates conditional support for Hypothesis 2.¹²

Columns 6–9 of Table 4 present results for *Economic Internationalization* as the dependent variable.¹³ OLS results in column 6 again indicate some explanation provided by the nine *Controls* (adj. $R^2=0.27$), with seven terms showing the expected sign – recall that economic size is expected to be negative, as larger countries have less need for trade openness – and five terms with expected signs at the 10%, 5% or 1% levels of statistical significance. When I shift to panel GLS estimation in column 7 there are five of nine *Controls* with the expected sign, all statistically significant at the 1% level. I then add *Remittances*, which enters in column 8 (0.51) and column 9 (0.32) with the expected



positive sign at the 1% level of statistical significance, consistent with Hypothesis 3.

Recall that *Economic Internationalization* is measured as the sum of a country's annual exports and imports divided by GDP. A sample mean for *Economic Internationalization* of 0.81 implies that imports and exports sum to about 81% of a developing country's GDP. Based on results in column 8, a one standard deviation increase (0.18) in *Remittances* increases that sample mean by 9.18 percentage points ($100\% \times [(0.28 \times 0.51) - (0.10 \times 0.51)] = 9.18\%$). In column 4, the same increase implies a 5.76 percentage point increase in trade openness ($100\% \times [(0.28 \times 0.32) - (0.10 \times 0.32)] = 5.76\%$). Immigrant remittances are linked not only to venture funding and founding, but also to broader trends opening their developing economies to the world.

Robustness Analyses of Direct Effects (Hypotheses 1–3)

Two follow-up analyses assess the robustness of results related to Hypotheses 1 and 3, and address concerns of possible model misidentification. To be specific, it may be that remittances are not so much a driver as an effect of a venture investment environment back home that has benefitted from other factors, such as domestic wealth or FDI. Various methodological strategies address the possibility of reverse causation: think, for example, of the right-hand-side *Controls* averaged with both contemporaneous and lagged values. Yet it is difficult to dismiss the possibility of reverse causation based on these strategies alone.

Thus, as further assurance that the model is properly identified, I first re-estimate Eq. (1) using a GMM dynamic panel estimator (Arellano & Bover, 1995; Blundell & Bond, 1998). As a linear estimator, I can use it for three of the four venture investment environment indicators related to Hypotheses 1 and 3: *General Capital Access*, *Venture Capital Access* and *Economic Internationalization*. This dynamic panel estimator is particularly well suited to my panel data with broad cross-section (45–61 countries) but relatively short time-series (2002–2007). I continue to treat the *Common Law* dummy as well as the year (*Years*) and region (*Regions*) dummies as exogenous, but treat other right-hand-side terms as endogenously determined. The estimator adds to Eq. (1) a lagged dependent variable (Y_{ijt-1}) that acts as a “catch-all” control for past effects of whatever venture investment indicator I am analyzing. This new control is particularly relevant for estimations of *Venture Capital Access*

that may be yielding anomalous results due to model under-specification. The estimator generates plausibly exogenous instruments in the form of additional lags in levels and in differences in levels for both the lagged dependent variable and *Controls* treated as endogenously determined.

Results from such estimations are presented in columns 1–3 of Table 5.¹⁴ Sargan tests do not reject the null hypothesis that the generated instruments are exogenous as a group. Arellano–Bond tests do not reject the null hypothesis of no second-order autocorrelation in first-differenced errors. These diagnostics suggest sensible estimates of all relevant right-hand-side equation terms. Estimates for *Remittances* are uniformly positive and significant at commonly accepted levels, consistent with Hypotheses 1 and 3. These results are especially relevant for confirming the positive and significant impact of immigrant remittances on more narrowly defined venture capital availability. Substantial coefficients for *Remittances* with *Venture Capital Access* in column 2 (2.80) and *General Capital Access* in column 1 (1.23) suggest that earlier panel GLS estimates may be conservative.

Another approach to dealing with possible reverse causation takes advantage of properties in a subsample of countries I analyze. In columns 4–7 of Table 5 I implement panel GLS and NBR estimations with a subsample comprising less-developed countries with lower per capita income (< \$1500), less inward FDI (< \$1.5 billion), no extraordinarily high levels of per capita remittances (< \$200), and below average *Rule of Law* (< 0.00).¹⁵ Such subsampling criteria yield a list of countries with substantial representation from Africa. For these less-developed countries it is less likely that factors other than immigrant remittances are substantially shaping the venture investment environment.

Subsample size decreases substantially, thus Eq. (1) cannot be estimated with year and region dummies. In columns 4–7, estimates for *Remittances* affecting *General Capital Access* (6.11), *Venture Capital Access* (16.30), *New Business Creation* (20.45) and *Economic Internationalization* (2.73) again exhibit positive signs statistically significant at the 5% or 1% levels, consistent with Hypotheses 1–3. Indeed, the estimates increase by five to ten times full-sample estimates in Tables 3–4. When, for example, *Remittances* is set at the subsample mean (0.04) for the 24 countries analyzed in column 5, the index score for *Venture Capital Access* jumps from the subsample mean of 1.53 to 2.35

Table 5 Regression analyses of remittances and venture investment environment indicators with dynamic panel estimator (columns 1–3) and less-developed country subsample (columns 4–7), 2002–2007^a

Variables	Estimators													
	Controls, remittances													
	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
	DPDSYS, GCA		DPDSYS, VCA		DPDSYS, EI		FGLS, GCA		FGLS, VCA		NBR, NBC		FGLS, EI	
Constant (α)	0.01	(1.07)	-9.30**	(2.08)	0.02	(0.24)	-0.96	(1.40)	-14.88**	(1.90)	-12.74	(4.27)	1.70**	(0.52)
Economic Size (λ_1)	0.08 [†]	(0.05)	0.36**	(0.09)	-0.00	(0.00)	0.20**	(0.06)	0.73**	(0.09)	0.81**	(0.21)	-0.04*	(0.02)
Economic Growth (λ_2)	0.00	(0.00)	0.07**	(0.02)	-0.00	(0.00)	-0.01	(0.01)	-0.06**	(0.02)	0.10	(0.06)	0.01**	(0.00)
Per Capita Income (λ_3)	0.08**	(0.02)	0.25**	(0.08)	0.01**	(0.00)	-0.13	(0.19)	-0.85	(0.36)	0.34	(1.69)	-0.13	(0.86)
Inflation (λ_4)	-0.00	(0.00)	0.01 [†]	(0.00)	-0.00**	(0.00)	-0.01**	(0.01)	0.00	(0.01)	-0.00	(0.01)	0.01**	(0.00)
Common Law (λ_5)	0.89**	(0.18)	-1.22	(0.82)	0.08**	(0.02)	0.19	(0.14)	-0.83**	(0.18)	0.23	(0.49)	-0.19**	(0.04)
Rule of Law (λ_6)	0.64**	(0.22)	-0.02	(0.28)	-0.01	(0.03)	0.24 [†]	(0.13)	0.18	(0.18)	3.13**	(0.47)	0.06	(0.05)
Political Rights (Lack of) (λ_7)	0.01	(0.05)	0.07	(0.12)	0.01 [†]	(0.01)	-0.06	(0.04)	-0.09 [†]	(0.05)	-0.08	(0.13)	-0.03**	(0.01)
FDI Inflow (λ_8)	0.01**	(0.00)	-0.03**	(0.01)	-0.00**	(0.00)	0.03	(0.06)	-0.77**	(0.18)	0.70**	(0.18)	0.01	(0.03)
State Share of Economy (λ_9)	-0.02**	(0.01)	0.11**	(0.03)	0.01**	(0.00)	0.02	(0.01)	0.07**	(0.03)	0.31**	(0.05)	0.01**	(0.00)
Remittances (β_1)	1.23*	(0.51)	2.80**	(0.72)	0.34**	(0.08)	6.11**	(1.63)	16.30**	(3.27)	20.45*	(9.79)	2.73**	(0.51)
SSE \times Remittances (β_2)											-1.79**	(0.75)		
One-Year Lagged DV (Y_{ijt-1})	0.43**	(0.06)	0.16**	(0.09)	0.74**	(0.04)								
Years (ζ_{1-5}) and Regions (γ_{1-5})	Yes		Yes		Yes		No		No		No		No	
N	327		276		349		126		93		42		123	
Wald χ^2 (Adj. R^2)	18,488.53**		99,255.33**		104,000**		82.42**		402.68**		1353.93**		230.64**	

^aColumns 1–7 report regression coefficients and robust standard errors (in parentheses). In columns 1–3, DPDSYS refers to dynamic panel data system two-step estimator with conventionally derived variance estimator for generalized method of moments estimation. GCA, VCA and EI refer to *General Capital Access*, *Venture Capital Access* and *Economic Internationalization* as dependent variables. DPDSYS generates plausibly exogenous instruments for estimation of effects in the presence of both fixed time (year) effects and lagged dependent variable. Post-estimation assessment of instrument exogeneity is based on a Sargan test rejecting the null hypothesis of instrument exogeneity as a group. Post-estimation assessment of second-order autocorrelation is based on the Arellano–Bond (AB) test rejecting the null hypothesis of no second-order autocorrelation. I do not reject the Sargan test null hypothesis of group exogeneity for instruments generated, nor do I reject the null hypothesis of second-order autocorrelation for any of these three DPDSYS estimations. In columns 4–7, FGLS refers to panel-feasible generalized least squares estimation with robust Huber–White sandwich standard errors and panel (country) specific first-order autoregressive process. NBR refers to negative binomial regression estimation with robust Huber–White sandwich standard errors. Significant NBR two-way interaction term sign confirmed at 1% levels following Zelter (2009). GCA, VCA and EI have the same meaning as in columns 1–3. NBC refers to *New Business Creation* as a dependent variable. SSE refers to *State Share of Economy*. Regression results for region and year dummies are available on request.

** $p < 0.01$; * $p < 0.05$ level; [†] $p < 0.10$.



$(1.53 + (0.04 \times 20.45) = 2.35)$. This increase raises a country's rank about eight levels in this group.

The NBR estimate of *Remittances* for *New Business Creation* in column 6 (20.45) is interesting not merely because it supports Hypothesis 2's prediction that immigrant money and ideas abroad enhance home-country business creation. Recall that this subsample comprises countries with official business registries that almost certainly undercount the actual number of new business starts. Thus even an estimate of this magnitude still understates the actual impact of immigrant money and ideas on rates of new business creation. Along with results in columns 4–5, these column 6 results suggest that immigrant remittances may have an even more pronounced positive impact on the venture investment environment of some of the least developed countries. And results across Table 5 add confidence to a critical framework assumption that immigrant remittances are causing rather than reflecting enhancement of the venture investment environment.

Multivariate Regression Results: Moderator Effects (Hypotheses 4–5)

Results from multivariate regression analyses of moderator effects related to Hypotheses 4–5 are presented in Table 6. Columns 1–4 of Table 6 presents results from estimating the impact of *Remittances* on different indicators of the venture investment environment after inclusion of individual and interaction terms related to immigrant skill level. Consistent with Hypothesis 4 and recent research findings in this journal (Madhavan & Iriyama, 2009), I expect the $IS \times Remittances$ interaction term to enter positively, thus indicating that remittances from better-educated immigrants have a stronger positive impact on the venture investment environment back home. $IS \times Remittances$ does not enter at commonly accepted levels of statistical significance for *New Business Creation* and *Economic Internationalization* in columns 3–4.¹⁶ Consistent with Hypothesis 1, however, I find that $IS \times Remittances$ is positive and statistically significant at the 1% level for *General Capital Access* column 1 (1.34). Highly educated immigrants remit money and ideas that have a more positive impact on general home-country capital availability.

To understand the practical impact of this result, I simulate the net effects of remittances from immigrant communities that are and are not highly educated. I set *Remittances* at its sample mean (0.10) and then multiply it by its coefficient

in column 1 (-0.76) ($-0.76 \times 0.10 = -0.08$). When $IS \times Remittances$ is set to 0 – immigrants from country i and region j are not highly educated – the net effect is a slightly lower index score and a decrease of approximately one rank. If the immigrants are highly educated then I add the $IS \times Remittances$ coefficient ($-0.08 + 1.34 = 1.26$) and change the net effect from a slight decrease to substantial increase of 25 ranks.

For *Venture Capital Access* in column 2 the individual and interaction terms yield just the opposite set of effects, contrary to Hypothesis 4. *Remittances* exhibits a positive sign, implying slightly enhanced venture capital availability in immigrants' home countries. But the interaction term, $IS \times Remittances$, enters negatively (-2.76) at commonly accepted levels of statistical significance. For countries with highly educated immigrants, the net effects turn sharply negative ($0.06 - 2.76 = -2.70$). The decrease in index score implies a drop of 35 ranks. These results not only contradict Hypothesis 4 but also challenge the notion that transnational technical communities (Madhavan & Iriyama, 2009) or other educated elites enjoy broad-based advantages in transferring money and ideas home for entrepreneurial purposes. Alternative cross-country connections based on clan or community may matter more.

Columns 5–8 of Table 6 present results related to one such community attribute, the concentration of that community across various host countries. Hypothesis 5 predicts a positive sign on the interaction term, $IC \times Remittances$. More concentrated immigrant communities are more likely to create institutions and conventions to decrease transaction costs and increase knowledge associated with cross-country transfers of venture funds and ideas back home. Results related to that prediction are mixed. The interaction term is not statistically significant at commonly accepted levels for *General Capital Access* in column 1 but, in line with Hypothesis 5, $IC \times Remittances$ is positive, statistically significant and practically substantial for *Venture Capital Access* in column 2 (2.75). Individually, *Remittances* enters without statistical significance at commonly accepted levels. This suggests that immigrants scattered about the globe are also remitters less able or willing to risk sending venture capital back home. But when that community is highly concentrated, *Venture Capital Access* index increases by 2.75, which takes a country at the bottom of the index to the mid-range and a mid-range country to the top ranks.

Table 6 Regression analyses of remittances and venture investment environment indicators with immigrant skill moderator (columns 1–4) and immigrant concentration moderator (columns 5–8), 2002–2007^a

Variables	Estimators							
	Controls, remittances							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	FGLS, GCA	FGLS, VCA	NBR, NBC	FGLS, EI	FGLS, GCA	FGLS, VCA	NBR, NBC	FGLS, EI
Constant (α)	-1.70** (0.50)	-5.27** (1.26)	-13.22** (1.48)	3.08** (0.20)	-1.76** (0.56)	-6.43** (0.54)	-11.89** (1.51)	2.64** (0.21)
Economic Size (λ_1)	0.20** (0.02)	0.25** (0.06)	0.88** (0.06)	-0.11* (0.01)	0.20** (0.02)	0.30** (0.06)	0.82** (0.07)	-0.09** (0.01)
Economic Growth (λ_2)	-0.01 (0.01)	-0.02 (0.02)	0.04* (0.02)	0.00* (0.00)	-0.01 (0.01)	-0.02 (0.02)	0.03 [†] (0.02)	0.00 [†] (0.00)
Per Capita Income (λ_3)	0.11** (0.02)	0.09** (0.04)	-0.19** (0.03)	0.03** (0.00)	0.07** (0.02)	0.14** (0.05)	-0.19** (0.03)	0.03** (0.00)
Inflation (λ_4)	-0.01** (0.00)	-0.00 (0.00)	0.01 (0.01)	0.00** (0.00)	-0.02** (0.00)	-0.00 (0.00)	0.01 (0.01)	0.00** (0.00)
Common Law (λ_5)	0.87** (0.10)	0.18 (0.14)	0.53* (0.27)	0.10** (0.03)	0.83** (0.08)	-0.13 (0.21)	0.97** (0.31)	0.13** (0.03)
Rule of Law (λ_6)	0.40** (0.10)	0.18 (0.16)	0.69** (0.18)	0.11** (0.02)	0.52** (0.10)	0.10 (0.17)	0.60** (0.18)	0.12** (0.02)
Political Rights (Lack of) (λ_7)	-0.03 (0.02)	-0.26** (0.04)	0.02 (0.06)	0.01 (0.01)	-0.03 (0.02)	-0.26** (0.05)	-0.01 (0.06)	0.00 (0.01)
FDI Inflow (λ_8)	0.00 (0.00)	-0.00 (0.00)	0.07** (0.02)	-0.00** (0.00)	0.00 (0.00)	-0.01* (0.01)	0.07** (0.02)	-0.00** (0.00)
State Share of Economy (λ_9)	0.03** (0.01)	0.10** (0.02)	0.06** (0.02)	0.01** (0.00)	0.03** (0.01)	0.11** (0.02)	0.04** (0.02)	0.00* (0.00)
Remittances (β_1)	-0.76** (0.18)	0.58* (0.30)	2.28 [†] (1.36)	0.31** (0.08)	0.93** (0.14)	-1.38 (0.92)	5.89** (1.59)	0.45** (0.06)
SSE \times Remittances (β_2)			-0.13 (0.09)				-0.36** (0.10)	
Immigrant Skill/Immigrant Concentration (ϕ_1)	-0.13 [†] (0.07)	0.38** (0.18)	-0.20 (0.13)	0.06** (0.02)	0.22 [†] (0.13)	-0.03 (0.22)	-0.17 (0.15)	0.19** (0.03)
IS/IC \times Remittances (ϕ_2)	1.34** (0.30)	-2.76** (1.20)	-0.76 (0.86)	0.24 (0.18)	-1.12 (0.47)	2.75** (1.09)	-1.87** (0.75)	-0.53** (0.12)
Years (ξ_{1-5}) and Regions (γ_{1-5})	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	348	304	209	348	348	304	209	348
Wald χ^2	3190.07**	3315.24**	1755.24**	1814.45**	2588.38**	2202.71**	1735.65**	2724.58**

^aColumns 1–8 report regression coefficients and robust standard errors (in parentheses). FGLS refers to panel-feasible generalized least squares estimation with robust Huber–White sandwich standard errors and panel (country) specific first-order autoregressive process. NBR refers to negative binomial regression estimation with robust Huber–White sandwich standard errors. Significant NBR two-way interaction term sign confirmed at the 1% level following Zelter (2009). GCA, VCA, NBC and EI refer to *General Capital Access*, *Venture Capital Access*, *New Business Creation* and *Economic Internationalization* as dependent variables. SSE, IS and IC refer to *State Share of Economy*, *Immigrant Skill* and *Immigrant Concentration*. Columns 1–4 report results with *Immigrant Skill* terms while columns 5–8 report results with *Immigrant Concentration* terms. Regression results for region and year dummies are available on request.

** $p < 0.01$; * $p < 0.05$; [†] $p < 0.10$.



Interestingly, the magnifying effect of concentration extends neither to business starts nor to trade openness. The net effects of *Remittances* and $IC \times Remittances$ for *Economic Internationalization* in column 8 are more intuitively grasped than more complex simulation required for *New Business Creation* in column 7.¹⁷ In column 8, a positively signed and statistically significant *Remittances* term alone (0.45) captures net effects for countries with immigrant communities that are not highly concentrated. With *Remittances* set at its sample mean, the coefficient implies increased trade openness of 4.5 percentage points ($100\% \times (0.10 \times 0.45) = 4.50\%$). In a highly concentrated immigrant community, however, the net effect is reversed from modest gain to sharp drop in trade openness of 48.5 percentage points ($100\% \times [(0.10 \times 0.45) - 0.53] = -48.5\%$). Geographic concentration of immigrant communities apparently increases the positive impact of their remittances for venture funding only, begging questions about why the same community attribute does not magnify the positive impact of remittances on venture founding and growth through internationalization. Answers to these questions are beyond the scope of this particular study, but they suggest the need for more refined theorizing about how and why immigrant remittances shape the home-country venture investment environment.

DISCUSSION

Key Results and Implications

If the basic questions motivating this study are whether and how remittances from developing-country immigrants might alter the home-country venture investment environment, then the results above suggest some novel, theoretically grounded and empirically supported answers. Perhaps most importantly, my results suggest that immigrants and their remittances enhance the development of vital entrepreneurial building blocks in immigrants' home countries. Remittances are directly associated with enhanced availability of capital to invest in new businesses, with enhanced rates of new business start-ups (unless crowded out by the state), and with enhanced internationalization of the broader economy. Far from remittances serving merely as subsistence assistance to desperately poor, sick and/or uneducated family and friends, I find evidence that they serve as a critical source of money and ideas for developing-country entrepreneurs. If this is true, then developing-country immigrants also

play roles as transnational venture investors, firm founders and agents of business expansion in a context where other players are reluctant to act.

These core findings have important implications for IB and entrepreneurship research (Guler & Guillén, 2010; Madhavan & Iriyama, 2009) that has recently reminded us that venture capital money and ideas flow more easily overseas when recipient countries cultivate stronger property rights protections and more stable investment policies, and when educated immigrant networks connect donor and recipient countries. This view complements other IB and entrepreneurship research (Ahlstrom & Bruton, 2006; Bruton, Ahlstrom, & Obloj, 2008; Wright, Westhead, & Ucbasarana, 2007; Zahra, 2005) noting that a dearth of new venture financing and know-how undermines business development, economic growth and broader institutional modernization of many developing countries. Indeed, these countries face a "Catch 22" problem, where institutional shortcomings deter standard (to IB and entrepreneurship research) venture investment flows, which are, in turn, vital to upgrading institutions necessary for faster economic growth.

The theoretical framework and empirical results presented here suggest a way to deal with this Catch 22 problem. TCE and social knowledge theories suggest that developing-country immigrants are well positioned to risk the transfer of money and ideas, given informal ties related to shared clan and community membership. The lack of advanced education or technical training does not appear to undermine this positioning for venture funding purposes. Indeed, greater concentration of immigrants abroad may very well strengthen that positioning. Immigrants and their remittances can play important roles in early-stage venture funding in less-developed countries with scarce capital.

Along with the framework and these basic findings, I highlight the research contribution of this study's scope. I examine support for aspects of my theoretical framework across several countries and years. Most previous studies on immigrant remittances and entrepreneurship have focused on a single country. My study broadens that scope using novel panel data analytics, thus permitting closer control of specific country and time effects, and thus permitting broader inference from results.

My study also contributes to research in economic development and public policy. While understanding the impact of immigrant remittances on

home-country venture investing may be a new line of inquiry for IB and entrepreneurship scholars, investigation of immigrant remittances and their impact on economic development is not new elsewhere in the Academy. Brown (2006) surveys evidence both consistent with and contrary to the proposition that remittances contribute positively to economic development. He concludes that remittances do contribute positively when recipient countries have in place other prudent macro-economic policies designed to prevent local currency over-appreciation and promote easier financial transfers and communication. In this broader research context, my theoretical framework and empirical findings detail a likely path by which remittances lead to such positive development outcomes. The path is circular. Money and ideas from immigrants abroad find their way home for use in new business development that then often reaches back overseas. It is part of a transnational entrepreneurship (Drori et al., 2009; Portes et al., 2002) process apparently affecting immigrants of varied backgrounds.

Finally, findings reported here have practical implications for entrepreneurs in developing countries searching for appropriate partners to fund, found and grow new ventures. These entrepreneurs can look abroad for investors with the same passport and home town, as well as a similar ethnic and family background. They represent a growing source of “smart” money ready to flow back home with less concern about possible misuse. Governments seeking to promote more entrepreneurial activities at home will likely benefit from developing the capacity to engage immigrant communities abroad. As Gamlen (2008) and others (World Bank, 2006) have pointed out, strategic investments in engagement capacity such as consular facilities and services might help increasingly large, wealthy and investment-oriented immigrant communities re-connect with their home countries.

Limitations and Future Research

This study has strengths, but also limitations. Theoretically, it provides substantial grounding in TCE and social knowledge perspectives, but this grounding could benefit from closer integration with existing concepts and theories explaining why entrepreneurs go abroad to fund, found and expand new ventures in their home countries. I see value in closer integration of my research with transnational entrepreneurship concepts (Drori et al.,

2009; Portes et al., 2002). Perhaps the conceptual and then empirical challenge here will be to articulate and then operationalize different classes of transnational entrepreneurs based on differing levels of wealth, education and home-country connection to specific clans and communities. Certain theories show promise for this closer integration. Zahra (2005) highlights the importance of networks for understanding why certain new international ventures succeed and others fail. The success of remittance-based ventures in an immigrant’s home country may be explained similarly. Perhaps future research should articulate a “remittance network” theory of informal entrepreneurship. That theory could map the path of money and ideas, the frequency with which they pass through certain individuals and institutions in host and home countries, and then their effectiveness in funding and founding new ventures in an immigrant’s home country.

I analyzed associations between immigrant remittances and different indicators of the home-country venture investment environment for 61 developing countries from 2002 to 2007. Yet it is a single study awaiting confirmation or disconfirmation by others in the future. I chose not to sample prior to 2001. That was driven in part by the expectation of better-quality data with less measurement error in more recent (post-2000) years. As such data increase in the future, researchers will also have more estimation power. This advantage may be particularly helpful with dynamic panel estimations, where short time-series with high inter-temporal correlations may lead to underestimates of standard errors. Future researchers will also have other opportunities to improve on estimation strategies I used. One way I addressed the possibility of reverse causality between remittances and venture investing outcomes was to use dynamic panel estimation generating plausibly exogenous instruments based on lagged values of different variables (Arellano & Bover, 1995; Blundell & Bond, 1998). While diagnostic (Sargan) tests do not reject the presumption of instrument exogeneity as a whole, I cannot conclude that these instruments are the best available. Future work should search for alternative instrument sets correlated with remittances but not the venture-investing outcomes that I propose remittances affect.

I analyzed differences in the venture investment impact of remittances linked to individual and collective characteristics of immigrants. These analyses could start a broader research project aimed



at understanding individual, group and broader institutional factors in the home and host countries of immigrants. The impact of remittances on the venture investment environment might be enhanced when developing countries invest more resources in immigrant community engagement policies: passing dual citizenship laws; liberalizing expatriate investment regulations; building and staffing more consulates abroad. Remittances could also have a greater impact as the prevalence of financial institutions important to remittance payout increases in home countries. This second conjecture might seem trivial, since Guler and Guillén (2010) have already recorded that venture investment business activity decreases in countries with poor financial infrastructure. As I noted earlier, however, remittance-based venture investment is almost certainly less sensitive to poor institutional development. A rather low threshold of home-country bank access may permit remittances to be paid out in quantities sufficient to enhance venture investment activities substantially.

Future research can look more closely at broader patterns revealed in my study. Remittances can be disaggregated into components related to resident workers' remittances, compensation of non-resident employees and migrant asset transfers. Established residents overseas may be in a better position to generate capital to fund new ventures back home, whereas more transient non-residents may be better positioned to transfer venture ideas to the home country for implementation as business start-ups. This conjecture suggests that the workers' remittances component of overall remittances may have a greater impact on home-country venture funding availability. The remittance component related to compensation of non-resident employees may have greater impact on home-country new business starts. Future research might also disaggregate the types of venture capital derived from remittances. For example, I see value in understanding how remittances affect the availability of debt vs equity to fund new businesses in developing countries. Such follow-on research would complement public policy efforts to understand how remittances affect access to finance more generally (Beck & Demirgüç-Kunt, 2008; Desai, Kapur, & McHale, 2004).

Other limitations relate to the equation specification, which assumes that remittances have only direct individual and indirect moderator effects on various indicators of the home-country venture investment environment. It may be that the effects

of remittances on developing-country venture investing are not so much moderated as they are mediated by other factors. Inward FDI is a likely candidate for such mediation, particularly in more developed emerging-market countries with burgeoning investment inflows.

Later studies might develop and test other aspects of the theoretical framework proposed here. This study documented remittance trends consistent with attributes of developing-country immigrants assumed but not yet documented in broad sample studies. Future research should analyze directly immigrant attitudes toward risk and investment back home. Such research will benefit from taking an organizational behavior perspective on individual immigrant attributes, as well as from entrepreneurship scholars taking a larger organizational theory perspective on immigrant networks. These and other avenues of future research should provide further insight into the growing role of developing-country immigrants as venture investors.

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NOTES

¹The World Bank (World Bank, 2006: 106–107) IMF definitions for these three components. The first and usually largest component, workers' remittances, is current private transfers from migrant workers considered residents of the host country to recipients in their country of origin. If migrants live in the host country for a year or longer, they are considered residents, regardless of their immigration status. If migrants have lived in the host country for less than a year (and are not students, diplomats, military personnel, medical patients, tourists, etc.) their income becomes part of a second and usually smaller component, compensation of employees. The third component is also usually the smallest: migrant transfers are offset entries in the balance of payments to the provision of a resource such as grants and gifts in kind or financial form. For more on remittance accounting and compilation methods and issues, see IMF (2009), Nyberg-Sørensen (2004), Reinke (2007) and World Bank (2006).

²Measuring the flow of social remittances to developing countries is more difficult than measuring financial remittances, which organizations such as the World Bank have been measuring across countries since the late 1990s. For the purposes of this study I assume that social and financial remittances flow together, and often use the term "remittances" to refer to both flows. In measurement for empirical study, we use financial remittances to proxy for social remittances as well.

³For example, survey evidence reported by Amuedo-Dorantes, Bansak, and Pozo (2004) indicates that Mexican immigrants in the US use the largest share of remittances to defray health expenses (46.18%), followed by expenses for food and maintenance (29.79%), home construction and repair (7.47%), debt repayment (5.42%), and consumer purchases (4.46%). According to their survey, less than half a penny of every remittance dollar (0.46%) goes to starting or expanding a business.

⁴Despite the prominence given to remittances from developed countries, so-called "South–South" financial remittances make up from 30% to 45% of total financial remittances received by developing countries in the mid-2000s. The growing importance of South–South remittances reflects the fact that over half of migrants from developing countries now migrate to *other* developing countries (World Bank, 2006: xiii).

⁵World Bank data indicate a steady rise in recorded remittances worldwide, from approximately \$25 billion in 1990 to nearly \$100 billion in 2000. That

figure approximately tripled to \$300 billion by 2007. Recorded remittances flowing through standard commercial conduits capture from 50% to 60% of total (recorded and unrecorded) remittance estimates since the 2000s (Moneygram, 2010). For more on efforts to improve remittance accounting and compiling, see IMF (2009), Nyberg-Sørensen (2004), Reinke (2007) and World Bank (2006).

⁶Aggarwal et al. (2010) have recorded that remittances promote similar trends in banking system depth and breadth for Mexico and 106 other developing countries observed from 1975 to 2007.

⁷Fafchamps (2001) explains contracting patterns in sub-Saharan African countries without effective third-party (court) enforcement similarly. In these settings, informal relationships based on common clan or community membership can signal reliability as a trading partner. If the costs of cheating are high enough, then contracts are self-enforcing. Relationships serve as their own surety of contractual performance.

⁸These 61 countries are Argentina, Armenia, Bangladesh, Bolivia, Botswana, Brazil, Cambodia, Cameroon, Chile, China, Colombia, Costa Rica, Croatia, Dominican Republic, Ecuador, Egypt, El Salvador, Ethiopia, Ghana, Guatemala, Haiti, Honduras, India, Indonesia, Jamaica, Jordan, Kenya, Latvia, Lebanon, Lithuania, Macedonia, Madagascar, Malawi, Malaysia, Mali, Mexico, Moldova, Mongolia, Morocco, Mozambique, Nicaragua, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Romania, Russia, Senegal, South Africa, Sri Lanka, Thailand, Togo, Tunisia, Turkey, Uganda, Ukraine, Venezuela, Vietnam and Yemen.

⁹See Docquier and Marfouk (2006) for details of their data collection and compilation methods. Six non-OECD countries included in their analyses of census and registration data are the Czech Republic, Hungary, Mexico, Poland, Slovakia and South Korea. In my sample, developing countries more vulnerable to underestimation of immigrant skill level, given more pronounced South–South migration patterns, include Bangladesh, Botswana, Egypt, Jordan, Namibia, Pakistan and Yemen. Results including *Immigrant Skill* terms in Eq. (1) (Table 6) are robust to exclusion of these countries. Results excluding these countries are available from the author.

¹⁰All 61 countries are sampled and analyzed in columns 1–4 (*General Capital Access*) of Table 3. Two of these 61 countries, Togo and Yemen, are dropped from the sample analyzed in columns 5–6 (*Venture Capital Access*) of Table 3.

¹¹The 45 countries sampled and analyzed in columns 1–5 of Table 4 are Argentina, Armenia,



Bangladesh, Bolivia, Botswana, Brazil, Chile, Colombia, Croatia, Ecuador, Egypt, El Salvador, Ghana, Guatemala, Haiti, India, Indonesia, Jamaica, Jordan, Kenya, Latvia, Lebanon, Lithuania, Madagascar, Malawi, Malaysia, Mexico, Moldova, Morocco, Nicaragua, Oman, Pakistan, Philippines, Romania, Russia, Senegal, South Africa, Sri Lanka, Tanzania, Thailand, Tunisia, Turkey, Uganda, Ukraine and Yemen.

¹²A related slope test available in Zelner's (2009) intgph program confirms contrasts illustrated in Figure 3. Using his slope test, I confirm that the changes in new business counts one standard deviation below and above the sample mean for *State Share of the Economy* are significantly different at the 1% level. This result is available from the author.

¹³The 59 countries sampled and analyzed in columns 1–4 (*Economic Internationalization*) of Table 5 are Argentina, Armenia, Bangladesh, Bolivia, Botswana, Brazil, Cambodia, Chile, China, Colombia, Costa Rica, Croatia, Dominican Republic, Ecuador, Egypt, El Salvador, Ethiopia, Ghana, Guatemala, Haiti, Honduras, India, Indonesia, Jamaica, Jordan, Kenya, Latvia, Lebanon, Lithuania, Macedonia, Madagascar, Malaysia, Mali, Mexico, Moldova, Mongolia, Morocco, Mozambique, Nicaragua, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Romania, Russia, Senegal, South Africa, Sri Lanka, Thailand, Togo, Tunisia, Turkey, Uganda, Ukraine, Venezuela, Vietnam and Yemen.

¹⁴The 61 countries sampled and analyzed in columns 1 and 3 (*General Capital Access and Economic Internationalization*) of Table 5 are the same as previously analyzed in Tables 3 and 4. The 59 countries sampled and analyzed in column 2 (*Venture Capital Access*) of Table 5 are the same as previously analyzed in Table 3.

¹⁵The 29 countries sampled and analyzed in columns 4 and 7 (*General Capital Access and Economic Internationalization*) of Table 5 are Armenia, Bangladesh, Bolivia, Cambodia, Cameroon, Egypt, Ethiopia, Ghana, Haiti, Honduras, Indonesia, Kenya, Madagascar, Malawi, Mali, Moldova, Mongolia, Moldova, Mozambique, Nicaragua, Pakistan, Paraguay, Philippines, Senegal, Sri Lanka, Tanzania, Togo, Uganda, Ukraine and Yemen. The 24 countries sampled and analyzed in column 5 (*Venture Capital Access*) of Table 5 are Bangladesh, Bolivia, Cambodia, Egypt, Ethiopia, Ghana, Haiti, Honduras, Indonesia, Kenya, Madagascar, Malawi, Mali, Moldova, Mongolia, Mozambique, Nicaragua, Paraguay, Philippines, Senegal, Sri Lanka, Tanzania, Uganda and Ukraine. The 15 countries sampled and analyzed in column 6 (*New Business Creation*) of Table 5 are Armenia, Bangladesh, Ghana, Haiti, Indonesia, Kenya, Madagascar, Moldova, Pakistan, Philippines, Senegal, Tanzania, Uganda, Ukraine and Yemen.

¹⁶Results from simulation of different two-way interactions based on Zelner's (2009) intgph program confirm trends implied by the insignificant coefficient sign for $IS \times Remittances$ presented in column 3 of Table 6: increasing immigrant skill does not significantly increase new business creation effect of remittances as Hypothesis 4 holds. These simulation results are available from the author.

¹⁷Results from simulation of different two-way interactions based on Zelner's (2009) intgph program confirm trends implied by the significant ($p < 0.01$) coefficient sign for $IC \times Remittances$ presented in column 7 of Table 6: increasing geographic concentration of immigrants abroad decreases (not increases as Hypothesis 5 holds) the new business creation impact of remittances. These simulation results are available from the author.

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