Diaspora Concentration and the Venture Investment Impact of Remittances

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Abstract

International business ("IB") research has developed theory and preliminary evidence suggesting that remittances from overseas immigrant diasporas enhance home-country venture capital access, particularly in developing countries where a dearth of formal institutional protections deter other foreign investors. I extend this research with theory and evidence linking the geographic concentration of immigrant diasporas abroad to the magnified venture investment impact of their remittances back home. Analyses of remittances to 50 developing counties from 2002-2007 show that the venture investment impact of remittances may be completely nullified when coming from geographically-dispersed immigrant diasporas. Diaspora concentration abroad facilitates more effective discovery of venture opportunities back home.

Keywords: entrepreneurship, venture capital, immigrants, diaspora, transaction costs

Short Title: Disapora Concentration and Remittances

This study develops and tests a theoretical framework to explain whether and how one structural attribute of immigrant diasporas abroad –their geographic concentration— matters for understanding the importance of money immigrants send home to help start new businesses. Three trends highlight the timeliness of this study for research, policy and practice related to international business ("IB") and entrepreneurship. First, the last decade has seen an explosion of immigrants and remittances, particularly in developing countries.   From 2000-2010, the number of people living outside their country of birth or primary residence tripled from approximately 70 to more than 200 million, making these immigrants the fifth largest "country" in the world. The estimated value of their remittances also roughly tripled from $100 billion in 2000 to $330 billion in 2010 (Moneygram, 2010). In most non-industrialized countries, remittances are the second largest financial inflow after foreign direct investment. They have become the largest financial inflow in several less-developed countries.

Second, these remittances have arisen out of immigrant diasporas with contrasting geographic concentration. Some immigrant groups are concentrated within a specific country or geographic region: Mexicans in the US; Bangladeshis in the oil-producing countries of the Middle East. Other immigrants have more dispersed diasporas: Romanian and Polish immigrants spread across the EU in the 2000s; Lebanese and Armenian diasporas spread across the world for centuries (Botticini, 2003; Parsons, Skeldon, Walmsley & Winters, 2007). Recent research suggests that such contrasts are not coincidental, but reflect the cumulative decisions of immigrants, particularly unskilled immigrants, seeking lower-cost information and services affordable only in geographically-concentrated communities with similar ethnic heritage (Beine, Docquier & Özden, 2011).

Third, a growing stream of research suggests that remittances from immigrant diasporas substantial enhance entrepreneurial business activity in developing countries. A series of single-country studies in the 2000s document links between immigrant money on the one hand, and greater small business activity in countries from Albania (Kiliç, Carletto, Davis & Zezza, 2007), to Mexico (Woodruff & Zenteno, 2007) to Turkey (Dustmann & Kirkchamp, 2002). Cross-country study confirms and extends

these single-country findings with evidence indicating that immigrant remittances enhance capital access, new business starts and broader economic openness in developing countries (Vaaler, 2011).

These trends suggest the timeliness of studying links between the diaspora source and entrepreneurial use of immigrant remittances. Diaspora concentration may affect whether and how immigrants gain information about venture opportunities back home. If so, then IB, entrepreneurship and related research will benefit from development and broad-sample empirical testing of theory to explain the venture discovery process costs under alternative diaspora scenarios.

In response, I develop a theoretical framework grounded in transaction costs economics ("TCE") to explain two phenomena linking immigrant remittances to enhanced access to venture capital in developing countries. First, using TCE logic based on Williamson (1975, 1985), I explain why immigrants from developing countries are better-positioned than many other "conventional" investors abroad to transfer venture money and ideas home with less concern of loss due to local counterparty opportunism (Vaaler, 2011). Less predictable legal, political and other formal institutions in developing countries deter investment bank, hedge fund and venture capital professions (Guler & Guillén, 2010), but not immigrants, who can safeguard remittance transfers for venture investing purposes based on informal relationships derived from common clan and community membership. Thus, immigrants can identify more trustworthy local counterparties, decrease inherent tendencies toward opportunistic renegotiation of investment agreement terms, and thereby lower overall venture investment transaction costs (Ouchi, 1980; Williamson, 1975; 1985; Henisz, 2000).

Second, using TCE logic based on Coase (1937, 1960), I provide a complementary explanation for why certain immigrants abroad are better-positioned than others to discover information on venture investment opportunities back home. Research in IB (*e.g.*, Sonderegger & Täube, 2010), economic geography (*e.g.*, Krugman, 1991) and development economics (*e.g.*, Beine *et al*., 2011) suggests that geographically-concentrated diasporas promote lower-cost discovery of information on venture opportunities back home. Lower communication, transportation and transition costs within geographically-concentrated diasporas decrease TCE "sand" in the information discovery process and

bring venture opportunities more quickly to appropriate transnational immigrant entrepreneurs (Portes, Haller & Guanizo, 2002; Drori, Honig & Wright, 2009), particularly those with less individual advantage related to education, wealth or social position (Beine *et al.*, 2011). Processes within geographically-concentrated diasporas promote better information discovery related to venture opportunities back home and lead to more effective venture investment of immigrant remittances from abroad. In this way, I combine a TCE framework explaining remittance transfer to exploit venture investment opportunities back home with a novel, complementary TCE framework to explain how immigrants abroad explore for and discover these venture investment opportunities.

To evaluate this complementary TCE-grounded framework, I also contribute to IB research with the first broad-sample statistical evidence directly assessing whether and how diaspora concentration abroad moderates links between immigrant remittances and venture investment back home. Analyses of immigrant remittances to and venture capital access in 50 developing counties from 2002-2007 indicate that: 1) on average, immigrant remittances increase home-country venture capital access; 2) these direct effects on home-country venture capital access diminish to insignificance when remittances come from immigrants living abroad in dispersed diasporas; but 3) these direct effects are magnified in geographically-concentrated diasporas, particularly concentrated diasporas comprised of less-skilled (educated) immigrants. Immigrants in close geographic proximity abroad apparently enjoy transaction cost advantages in the venture discovery process compared to similarly-situated but dispersed immigrants. Diaspora dispersion matters significantly and substantially for understanding the effectiveness of immigrants as transnational venture investors in developing countries.

BACKGROUND CONCEPTS AND LITERATURE

Additional explanation of five terms provides helpful context to my theoretical framework and follow-on empirical investigation: 1) immigrants; 2) remittances; 3) venture investment; 4) transnational entrepreneurs; and 5) diasporas. To some extent, all five concepts defy intuitive definition among IB and entrepreneurship scholars. Transnational entrepreneurship, for example, refers to a quite specialized type of new business funder or founder with which many IB and entrepreneurship researchers may have little

familiarity. "Venture investment" may quickly prompt an illustrative response among IB and entrepreneurship researchers, but that illustration could be quite misleading for purposes of this study. To my knowledge, no management research aside from Vaaler (2011) has addressed the possible relevance of remittances to phenomena attracting IB and entrepreneurship research attention. For these reasons and others, additional explanation of these five concepts is helpful.

Immigrants

The first term, immigrants, defies easy definition, in part because states use different criteria to define the status of individuals living within their borders. The two most common criteria states use to define migrant individuals are whether they are native born or hold citizenship status (World Bank, 2006). Alternative state distinctions such as "resident" or "visitor" or "refugee" or "alien" put individuals in some migrant status. In this context, I use a broad net to define "immigrant" in this study. They may be legal or illegal residents, temporary workers, displaced persons, refugees or hold some other status in the host country short of native-born or naturalized citizen. I define individuals in any of these non-citizen host country classifications as immigrants with a focus on immigrants considered resident rather than "transient" –resident less than a year—in host countries.

Remittances

The second term of interest in this study is remittances, typically described as money or other valuables sent as payment for goods and services or as a gift. For purposes of this study, it will be useful to think of remittances and money synonymously. Remittances from immigrants resident in host countries comprise the largest component of total remittances tracked in the International Monetary Fund's Balance of Payments Statistics (World Bank, 2006: 106-107). What the IMF classifies as "workers' remittances" are current private transfers from migrant workers considered residents of the host country to recipients in their home country of origin. If migrants live in the host country for a year or longer, they are considered residents, regardless of their immigration status. Since the 2000s, workers remittances have comprised about 70% of total remittances. Two other components, "compensation of

employees" capturing remittances from non-resident immigrants, and "migrant transfers" capturing

offsets to the provision of resources such as gifts or grants, comprise the other 30%.

Workers' remittances worldwide are substantial by any measurement standard. Estimated at $70

billion in 2000, that total nearly tripled to $200 billion by 2007. After a decrease during the global

recession of 2008-2009, workers' remittances shot back to more than $200 billion in 2010. In the 2000s,

70% of these remittances went to non-OECD countries and nearly half of all remittances to developing

countries come from other developing countries, so-called "South-South" workers' remittances. In

Mexico and India, annual workers' remittances in the mid-2000s exceeded $20 billion. In other less

developed countries, the absolute value of workers' remittances was often lower but their relative

importance often higher.   For example, workers' remittances to Moldova in the mid-2000s were only a

fraction of India's in absolute terms, but equaled more than 20% of Moldova's GDP (Moneygram,

2010).[1]

Venture Investment

Researchers often assume, like Brown (2006: 61), that "[a]s a rule, the predominant share of

remittances goes to the immediate consumption of foodstuffs and basic services, with health care

expenditure often featuring prominently." But the last decade has seen mounting evidence in single-

country case-studies (Saxenian & Hsu, 2001; Saxenian, 2002; Dişbudak, 2004; Kuznetsov & Sabel, 2006;

IFAD, 2007), and single-country statistical studies (Dustmann & Kirkchamp, 2002; McCormick &

Wahba, 2003; Kiliç, Carletto, Davis & Zezza, 2007; Woodruff & Zenteno, 2007; Demirgüç-Kunt, Lopez-

Cordova, Martínez-Pería & Woodruff, 2011) suggesting that immigrant remittances may matter

substantially and increasingly in any explanation of venture investment in developing countries.

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[1] Remittance figures are based on estimates that have historically included some fairly wide confidence intervals. This follows from the fact that remittances flow from individuals in host to home countries either through standard commercial or alternative conduits. Standard commercial conduits include money transfer organizations like 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 were more important in the past and led some commentators (*e.g.*, Nyberg-Sørenson, 2004) to suggest that remittance figures were more "guesstimates" than estimates. In the 2000s, better monitoring of remittances for taxation and anti-terrorism purposes along with lower costs and greater availability of standard commercial conduits have increased estimation precision particularly in some of the biggest recipient countries (IMF, 2009).

That explanation requires a different conceptual view of what venture investment is and how it works. Simply put, venture investment is money used to start a new business or substantially expand an existing business into new markets (Gompers & Lerner, 2004). Whether seed money to incorporate and begin operations, or first-, second-, third- or more advanced-stage money to prepare a young company for public offering or acquisition, venture investment implies funding sources outside of more conventional public share offering or bond issuance. It implies funding through smaller, higher risk conduits such as private placements of debt and equity in advanced stages, and less conventional financing through venture firm investment, personal loans, family transfers, and other "angels."

Ahlstrom and Bruton (2006: 308) use data based on interviews with venture capitalists from the Pacific Rim to describe venture investing practices more closely related to developing rather than developed countries. In developing countries, money from family, particularly extended family, comprises a larger portion of venture investment at all stages. The venture investment allocation process is also different in developing countries. Formal protections for investors and lenders are less detailed in local law and less-frequently enforced in local courts. Informal processes play a more prominent role in vetting, transacting with and, when problems arise, compelling action in nascent firms in developing countries. Such firms are often linked to investors through blood, marriage or shared local community membership. Venture investment reinforces *guanxi* links between financier and entrepreneur in other life domains. Such informal linkages compensate for transactional barriers that would otherwise stifle the vital financial flows in developing countries.

Vaaler (2011) describes immigrant venture investment in similar terms. Immigrants rely on informal relationships with extended family or community members back home to safeguard their investments. For management researchers, Ouchi (1980) may have been first to analyze informal clan and community enforcement mechanisms and their impact on opportunistic re-negotiation and other TCE conundrums described by Williamson (1975, 1985). 30 years of subsequent management research reviewed by Webb, Tihanyi, Ireland and Sirmon (2009) highlights informal enforcement mechanisms such as reputational loss, community ostracism and physical coercion. Vaaler describes how these and

other informal clan and community mechanisms assure immigrant venture investors that host-to-home country transfers of venture capital and ideas will serve their intended entrepreneurial purpose. He documents evidence consistent with this description in the first multi-country, multi-year statistical study linking immigrant remittances to enhancement of venture funding access back home.

At least two other distinguishing characteristics are important to highlight in defining venture investment in a developing country *and* immigrant context. One distinguishing characteristic relates to venture investment size. While immigrant venture investment can be substantial –think, for example, of immigrant billionaires like George Soros from Hungary—immigrant venture through individual-to-individual or household-to-household remittances tends to be a small-scale affair more akin to micro-finance transactions. Case research on immigrant venture funding from Mexico (*e.g.*, Woodruff & Zenteno, 2004) and Turkey (*e.g.*, Dustmann & Kirkchamp, 2002) notes a much lower bar for effective venture investment. Tranches of $500-1,500 provide sufficient working capital to start a roadside *taqueria* in Northern Mexico or a folk-art sales business in Northern Turkey.

A distinguishing characteristic of immigrant venture investment may be their non-separability. Legendary US firms like Apple or Yahoo! may have started in the garages of their founders, but growth quickly led to their formal incorporation and re-location to dedicated facilities. By contrast, many small businesses in developing countries never remain informal, unregistered and never leave the home or local community where they were founded. As Kiliç, Carletto, Davis and Zezza (2007) point out in the context of Albanian immigrants and remittances, distinctions between residence and business, including their sources of financing, can become blurred. For these reasons survey evidence about the "investment" use of remittances almost certainly overlaps in some substantial part with real estate and home improvement uses (Yang, 2011).[2]

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[2] The author's own survey experience suggests this pattern. In a 2012 survey of 1500 migrants from 45 developing countries living in France, Germany, Spain and the UK, I first ask what the intended use of a migrant's remittances typically are (with a list including several uses). Later, I ask the extent of the migrant's agreement with the statement that "[r]emittances are a useful way to fund the creation or growth of a new business back home." Migrants exhibiting strong agreement with that statement tend to list either business-related or housing-related (e.g., home improvement) uses for remittances (Vaaler, 2012).

Thus, the concept of venture investment demands a shift in mindset to smaller, informally-supervised and often non-separable financial flows to fund new businesses. The validity of measures linked to this concept increases to the extent that such measures incorporate components related to family and other non-traditional, often smaller-scale funding sources.

Transnational Entrepreneurs

These findings suggest the need for closer examination of processes explaining not only how the host-to-home country transfer of immigrant venture capital is governed, but how at an earlier stage immigrants resident abroad generate information about venture opportunities back home to fund. For this explanation, I define a third term important to this study, transnational entrepreneur. Portes, Haller and Guarnizo (2002: 287) 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: 1006) emphasize the concurrent nature of host- and home- country business relationships that renew themselves through frequent communication and travel by transnational entrepreneurs "enhancing creatively and maximizing their resources base."[3] Transnational entrepreneurs adroit at this "balancing act" (Patel & Conklin, 2009) find in these cross-country relationships more venture ideas and better means to implement them.

This explanation works well when attributing to transnational entrepreneurs substantial wealth, education and or social privilege. These attributions give immigrants economic and social bases for creating and maintaining cross-country relationships critical to venture discovery. Consistent with this view, Madhaven and Iriyama (2009) describe "transnational technical communities" that permit entrepreneurs defined by advanced scientific training and work experience to transfer new business ideas from developed to developing countries. Saxenian and Hsu (2002) describe entrepreneurs working

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[3] Drori and his colleagues (2009) distinguish transnational entrepreneurs from at least two other international entrepreneurial sub-types also found among immigrants living abroad or recently returned home: 1) Ethnic entrepreneurs, who have membership within an immigrant community based on common cultural heritage, are known among "out-group" non-members by such heritage, and locate new businesses within and limit growth of new businesses to host-country immigrant enclaves (Light, 1972; Portes & Sensenbrenner, 1993); and 2) Returnee entrepreneurs, who are former immigrants and locate new businesses back in their home country to serve some market in the former host country (Kiliç, Carletto, Davis & Zezza, 2007).

between the US and Greater China in terms of both advantages in technical training and extended family wealth. For these researchers and others (*e.g.*, Kuznetsov & Sabel, 2006) advantages of venture discovery and implementation are limited to immigrant elites.

Yet, this view does not square with the most recent evidence. Vaaler's (2011) results suggest that remittances from better-educated immigrants in the 2000s have less (not more) impact on home-country venture capital access than remittances from other immigrants. Vaaler also finds that remittances to wealthier emerging-market countries have less impact on venture capital access than remittances to less-developed countries, particularly those from Sub-Saharan Africa. At least with regard to venture funding, transnational entrepreneurship among immigrants may not be limited to elites distinguished by educational achievements or wealth. Researchers seeking an explanation of venture discovery among transnational entrepreneurs may benefit from examination of other factors, including those related to diasporas, the fourth and final term important to this study.

Diasporas

Derived from Greek notions of sowing or scattering seeds, diasporas are "invisible nations that reside outside their origin countries" (Beine *et al.*, 2011). IB scholars like Gillespie, Riddle, Sayre and Sturges (1999: 624) emphasize identity dimensions when they define diasporas based on shared vision or myth about the immigrant homeland, shared commitment to maintain or restore host-to-home country links. Development scholars like Beine, Docquier and Özden (2011: 31) emphasize demographic characteristics, such as size and geographic proximity, when they describe diasporas as "migrants who gather in relatively significant numbers in a particular destination country or region."

Both dimensions matter, though recent IB research tends to emphasize demography while implying identity. Thus, for example, Zaheer, Lamin and Subramani (2009) explain the location of many US service off-shoring facilities in India based on links between the dominant ethnic group in the Indian locations and the ethnic background of executives in US firms making the off-shoring decision. Sonderegger and Täube (2010) highlight the importance of such links in "exploratory" and then "exploitive" phases of IT industry growth around Bangalore, India. A large group with the same passport issuer, ethnic background and

proximate residency in a host country implies shared culture, language, vision and values connecting

immigrants abroad to each other and the collective diaspora to their homeland.

Certain attributes of diasporas may affect processes of transnational entrepreneurship, including how

remittances from transnational immigrant entrepreneurs find their way to venture investments back home. In

addition to finding that diasporas comprised of better-educated immigrants are no more (and perhaps less)

able to affect venture capital availability with their remittances, Vaaler (2011) documents preliminary

evidence that remittances from immigrants located in one or a few host countries have greater positive

effects on home-country venture capital availability compared to remittances from immigrants dispersed

across many countries.

Yet, this evidence is only preliminary. It follows from analyses of total remittances, including

workers' remittances from residents in diasporas along with compensation of employees and migrant

transfers from less-connected transients.   It follows from analyses that do *not* control for other diaspora

attributes such as size, wealth and education of such immigrant communities. It lacks detailed theoretical

grounding. In sum, this preliminary evidence calls for more theorizing and empirical investigation into

links between transnational immigrant entrepreneurs, their diasporas abroad and the discovery of venture

investing opportunities for their remittances back home .

THEORY AND HYPOTHESES

In response, I develop a TCE-grounded theoretical framework explaining how the geographic

concentration (dispersion) of immigrant diasporas abroad decreases (increases) the cost of discovering

venture investment opportunities back home. According to Buchelli, Mahoney and Vaaler (2010), the

descriptive aim of the TCE theory is to compare the costs of producing and exchanging goods and services

over time between individuals in a market versus alternative regimes where individuals "internalize" aspects

of transactions by employing rather than contracting with individuals, by merging rather than selling at arm's

length to firms, and by otherwise replacing markets with bureaucratic hierarchies. The primary normative

aim of TCE is to define the circumstances when internalization is more cost efficient than leaving

transactions in the market. In my context, the apt cost comparison for immigrants is less between markets

and firms than between geographically-concentrated and geographically-dispersed diasporas. As I will demonstrate below, diaspora concentration likely decreases venture discovery costs, particularly for immigrants with little individual education, wealth or other social advantages. Analysis of diaspora concentration lends itself well to TCE reasoning as articulated by its two most prominent theorists, Coase (1937; 1960) and Williamson (1975; 1985).

For Coase (1937; 1960), choice between alternative regimes for completing a commercial transaction reduces to straightforward comparison of transaction costs, that is, the costs of producing and overseeing the exchange of goods and services. No matter how such costs are initially allocated, the so-called Coase theorem predicts their eventual re-allocation to individuals and firms able to minimize them (Coase, 1960). Transaction costs include those related to re-allocation. Such "sand" in the re-allocation machine could be related to information asymmetry between buyers and sellers of production assets, government regulation limiting when, where and how these assets are brought to market, or occasional shocks to the local economy rendering buyers or sellers illiquid and their assets frozen. Such sand slows but does not undermine the longer-term proposition that existing market-based and firm-based regimes represent the best comparison (Coase, 1937). I follow this reasoning in assuming that inputs affecting the cost of discovering venture investment opportunities in geographically-concentrated versus geographically-dispersed diasporas reflect the passage of whatever time and processes are necessary to re-allocate costs of discovery to whoever can bear them best.

Williamson (1975; 1985) highlights some specific TCE dimensions affecting transaction costs. There may constraints on the number of available producers under each regime. Producers may be reluctant to invest in specialized goods and services necessary to complete certain exchanges –what Williamson (1985) calls transaction "asset specificity." These TCE dimensions affect the likelihood that any one party involved in an exchange will seek a re-negotiation of initial terms. Vaaler (2011) emphasizes these Williamsonian dimensions when explaining in TCE terms why immigrants from developing countries are often better-positioned to transfer *venture* capital from abroad without concern of opportunistic re-negotiation by local counterparties. His analysis applies to remittances from any immigrant, including those

resident in concentrated diasporas. Accordingly, I first predict that workers' remittances from diaspora residents should have a direct and positive impact on home-country venture capital access:

Hypothesis 1: *There is a positive relationship between workers' remittances from resident immigrants abroad and venture capital availability back home.*

This first framework prediction highlights the importance of Williamsonian TCE dimensions of remittance transfer for venture investment purposes. My next framework component complements this with TCE logic to explain the venture discovery process for immigrants remitting to developing countries. The provenance of this TCE logic follows from Coase (1937, 1960) rather than Williamson. At its base, this explanation equates geographic-concentration of a diaspora abroad with lower-cost discovery of venture opportunities back home by remitting immigrants belonging to that same diaspora. Recent reviews of the diaspora literature in IB (*e.g*., Sonderegger & Täube, 2010) and economics *(e.g*., Botticini & Eckstein, 2008) highlight the role of education and occupational skills among early immigrants as determinants of subsequent diaspora growth and concentration. Once established abroad, the "success" of these pioneers signals others from the home country regarding the costs and benefits of following them abroad.

A dominant assumption in the economic geography research since the 1990s (*e.g*., Krugman, 1991; Arthur, 1994; Fujita, Krugman & Venables, 1999; Saxenian, 1994, 1999) as well as management and IB research since the 2000s (*e.g*., Shaver & Flyer, 2000; Nanda & Khanna, 2010; Sonderegger & Täube, 2010) has been that small increases in size and concentration can create economies of agglomeration benefitting all community members. [4] Lower transportation, communication and labor coordination costs figure prominently in an agglomeration process that can quickly feed on itself.

One popular research setting for observation and analyses of these trends since the 1990s has been Indian software and back-office processing industries, which both include substantial numbers of Indian immigrants (to the US and UK) as company venture funders and founders (Zaheer, Lamin & Subramani, 2009; Nanda & Khanna, 2010; Sonderegger & Täube, 2010). They fit a popular and

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[4] On the other hand, agglomeration economies are not necessary antecedents to the development of diaspora communities. Bowles and Gintis (2002) review models of diaspora growth reliant instead on parental wealth, education and or social standing transmitted to offspring. These alternative factors may well lead to more dispersed diasporas with implications for venture discovery that I analyze below.

decidedly elite perspective of the transnational entrepreneur description well. They come from families

with privileged access to better housing, healthcare and primary education. Their university and technical

training may be at top-ranked domestic institutions such as the Indian Institute of Technology or Indian

School of Management. A sizeable portion find their way to the US or UK where there are existing

ethnic communities and conveniences such as ethnic community associations, travel, telecommunications,

finance, grocery and household service providers to ease their transition.[5] On the other hand, these

preferences are not strong; Indian immigration since the 1990s exhibits substantial geographic diffusion

to other countries in the developed and developing world.

Abroad, they develop host-country business networks with other similarly-educated members of

the local Indian diaspora, often with the help of membership in local chapters of business-related

organizations like The Indus Entrepreneur. Once established and endowed with venture capital and ideas

derived from the host-country experience, they can re-connect to fund, found and or nurture their growth

through home-country industry associations such as the National Association of Software and Service

Companies ("NASSCOM").

This profile of transnational entrepreneur illustrates how collective attributes of a diaspora can

add to individual immigrant advantages that decrease the cost of information discovery about new venture

opportunities back home for transnational immigrant entrepreneurs. In the case of Indian immigrants,

collective attributes of the diaspora play a secondary role to individual attributes of transnational

entrepreneurship. For Sonderegger and Täube (2010), the diaspora becomes significant in explaining

growth in the Indian IT sector only after new business starts by individual entrepreneurs reach an initial

scale. For Zaheer and her colleagues (2009) and Nanda and Khanna (2010), accessing diaspora-based

people, money and information is a second-best substitute when conventional host-country sources prove

insufficient. This Indian immigrant experience comports with other recent studies involving privileged,

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[5] The lure of ethnic public conveniences is not unique to the experience of Indian immigrants to the US or UK in recent times. As Vaaler (*forthcoming*) notes, such conveniences also explain the growth of immigrant diasporas in the US during the late 19th and early 20th centuries. In banking, for example, the Bank of America originated in the Italian immigrant community of San Francisco in the early 1900s, while 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.

often scientifically-educated immigrant elites from Greater China (Saxenian & Hsu, 2001; Ghosh, 2006)

and Egypt (McCormick and Wahba, 2003).

From a Coasean TCE perspective, collective attributes of the diaspora, particularly geographic

concentration, plays a significant supporting role in discovering home-country venture opportunities that

remittances from transnational immigrant entrepreneurs can then fund. Agglomeration economies in

concentrated diasporas decrease the cost of venture discovery, thus magnifying the impact of immigrant

remittances on venture investment back home:

Hypothesis 2: *The positive relationship between workers' remittances from resident immigrants abroad and venture capital availability back home is magnified for workers remittances coming from resident immigrants living in concentrated diasporas.*

My second framework component highlights the importance of collective attributes in immigrant

diasporas, in particular their geographic concentration abroad. In the case of Indians as transnational

immigrant entrepreneurs, the diaspora is more geographically-dispersed and, thus, plays at best a

secondary enhancing role in venture discovery. Not all immigrants share this experience. Unlike Indian

immigrants, Mexicans show a clear host-country preference for North America, particularly the US. Also

unlike the Indian migrant profile, Mexicans living abroad tend to be less educated with only 14% since

the 1990s having tertiary (*i.e*., post-high school) education. By contrast, more than 33% of Indians living

abroad since the 1990s have tertiary education (Docquier & Marfouk, 2005). Such contrasts may affect

the mix of individual immigrant versus collective diaspora attributes affecting the venture investment

impact of remittances.

My third and final framework component addresses this possibility. It addresses whether and how

differences in immigrant background matter for understanding when immigrants will locate within

geographically-concentrated diasporas for venture discovery purposes. In development economics, recent

models of immigration developed by Grogger and Hanson (2008) and Beine and colleagues (2011)

highlight that larger, geographically-concentrated diasporas attract a greater share of immigrants with less

education, wealth and social standing in their home countries. Their immigration models treat the

decision to move as an exercise in comparative (home versus prospective host country) wage assessment.

Immigration is more likely when there are wider perceived wage differentials between host and home countries net of immigrant transition costs. Drawing on agglomeration economies logic, Beine and colleagues (2011) speculate that geographic concentration decreases individual immigrant costs related to pre-trip communication, regulation (*e.g*., visa), transportation, and re-settlement. All immigrants benefit from lower costs within geographically-concentrated diasporas, but those with fewer individual advantages benefit more.

Such differential cost advantages likely extend to venture discovery within diasporas. The immigrant's choice to settle within or outside an immigrant community for entrepreneurial purposes is not unlike the internationalizing firm's choice to locate within or outside industrial parks or other geographically-defined clusters offering agglomeration economies to all participants. Consistent again with agglomeration models noted earlier, management research has documented higher rates of innovation (Folta, Cooper & Baik, 2006), higher prices (Ghemewat & Thomas, 2008) and productivity (Li, 2004) as benefits from location within industry clusters.

On the other hand, Shaver and Flyer (2000) may have been first to note from a strategic management perspective that certain firms are less likely to opt for the cluster strategy because the overall benefits are potentially negative. Location within the cluster leads to lower costs related to sharing resources and agglomeration economies. But proximity also renders firms vulnerable to unintentional diffusion of proprietary resources, particularly valuable proprietary information about technologies and markets abroad. Shaver and Flyer (2000), as well as follow-on research by Chung and Alcácer (2002) and Forman, Goldfarb and Greenstein (2008) document evidence supporting the proposition that firms with greater proprietary knowledge may see net benefits from locating away from industry clusters.

Immigrant entrepreneurs with better individual (proprietary) social advantage, wealth and or education face a similar trade-off between the benefit of sharing with agglomeration economies and detriment of unintentional diffusion of valuable information related to venture discovery. Well-educated immigrants assess that trade-off and join a "country-of-origin" cluster (Tan & Meyer, 2011) when agglomeration economies drive down the costs of venture discovery more than cost increases related to

the protection of proprietary information about venture opportunities. Less-educated immigrants face no

trade-off between agglomeration advantages and proprietary disadvantages. They are always inclined to

re-locate within the immigrant cluster. Coasean TCE advantages from location within geographically-

concentrated diasporas tend to be more important for these immigrants:

Hypothesis 3: *The positive relationship between workers' remittances from resident immigrants abroad and venture capital availability back home is magnified more for workers remittances coming from less-skilled resident immigrants living in concentrated diasporas.*

I can graphically summarize these three predictions and the broader framework from which they

follow in Figure 1 below. Williamsonian TCE logic explains the venture capital transfer process and the

informal cross-country relationships that immigrants resident abroad can access to complete the transfer for

venture investment purposes. Hypothesis 1 predicts as a consequence that their workers' remittances have a

significant positive impact on the venture capital access back home. Coasean TCE logic explains the

concurrent venture investment discovery process. Individual attributes of the immigrant as well as

collective attributes of the diaspora both affect the cost of discovering venture opportunities back home for

the transnational entrepreneur to exploit. Geographically-concentrated diasporas have lower information

discovery costs. Hypothesis 2 predicts as a consequence that the venture investment impact of workers'

remittances from concentrated diasporas will be magnified when coming from concentrated diasporas.

Hypothesis 3 predicts more magnification in the case of geographically-concentrated diasporas comprised

of less-educated immigrants as these immigrants rely more on the collective attributes out of necessity.

Less-educated immigrants only benefit from location within geographically-concentrated diasporas. Their

better-educated counterparts face a trade-off that may not always create net benefits in discovering venture

opportunities back home.

[Place Figure 1 about here]

EMPIRICAL METHODOGOLY

Empirical Equation Terms

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

$$Y_{ijt} = \alpha + \sum_{k=1}^{k=9} \lambda_{ijt,t-1} \text{ Basic Controls} + \beta_1 \text{Diaspora Re} \mathit{mit} \tan ces_{ijt,t-1} + \sum_{k=1}^{k=2} \kappa_k \text{Diaspora Controls}_{ij}$$

$$+ \sum_{m=1}^{m=2} \phi_m \text{Diaspora Moderators}_{ij} + \sum_{t=2003}^{t=2007} \xi_t Years + \sum_{j=1}^{j=5} \gamma_j \text{Re} gions + \varepsilon_{ijt}$$

(1)

Details regarding all individual terms of Equation 1 are provided in Table 1. The dependent variable, Y_{ijt},

measures *Venture Capital Access* for country i in geographic region j during year t. *Venture Capital*

Access is regressed on an intercept (α), a series of country i controls (*Basic Controls*), country i

remittances (*Diaspora Remittances*), other controls related to diaspora attributes (*Diaspora Controls*),

moderators to assess differences in *Diaspora Remittances* effects (*Diaspora Moderators*), and fixed

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

I exclude moderators (*Diaspora Moderators*) from Equation 1 for initial evaluation of Hypothesis

1 and the direct impact of remittances on venture capital availability back home. Hypothesis 1 predicts a

positive relationship between *Diaspora Remittances* and *Venture Capital Access*. I measure *Venture*

Capital Access as a 0-10 (0 = low, 10 = high) composite index number for country i in region j in year t

based on annual assessments of "alternative sources of capital" by researchers at the Michael Milken

Institute (Apinard, Barth, Lee, Li, Lu, Malaiyandi, McCarthy, Phumiwasana, Sui, Trimbath & Yago,

2002-2008). This *Venture Capital Access* measure follows in part from evaluation of factors tied to

funding sources typically tied more closely to emerging-market and fully-developed country contexts:

private placements, and credit cards. On the other hand, the Milken Institute measure also draws on

"venture capital" components tied to money from family, friends and other relational sources. These

measurement components correspond to conceptual components of venture investment previously

discussed. Values range from 0 (Mozambique in 2006) to 6.26 (India in 2004).

The key right-hand side term of Equation 1 for Hypotheses 1-3 is *Diaspora Remittances*, which is

measured as the per capita sum of workers' (resident) remittances 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 Equation 1,

I measure *Diaspora Remittances* as a two-year moving average to capture both contemporaneous and

lagged effects on the dependent variables. In the sample, values of *Diaspora Remittances* range from nil

(Tanzania in 2002) to 1.226 or $1226 per home-country resident (Lebanon in 2007). Consistent with

Hypotheses 1, I expect the coefficient on *Diaspora Remittances* to be positive, indicating that workers'

remittances from transnational immigrant entrepreneurs resident abroad enhance the availability of venture

capital back home. Similarly, I expect the coefficient on *Diaspora Remittances* to remain positive once

two additional moderator terms related to the geographic concentration of the diaspora (*Diaspora*

Moderators) are added. This expectation assumes that diaspora concentration has only secondary additive

effects on the substantial direct impact of *Diaspora Remittances* on *Venture Capital Access*.

[Place Table 1 about here]

To account for other factors explaining variation in dependent variables, Y_{ijt}, I first include nine

country controls (*Basic Controls$_{\lambda 1-9}$*) used in recent management and IB research (*e.g*., Vaaler, 2008;

forthcoming) 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, foreign direct investment 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. Initially, I regress *Venture Capital Access* on these *Basic Controls*

alone.

To test Hypothesis 1, I then add to Equation 1, the *Diaspora Remittances* term. At that time, I

also add two other terms related to diaspora attributes (*Diaspora Controls*): *Diaspora Size* and *Diapora*

Skill Level. *Diaspora Size* is measured as the percentage of country *i*'s (in region *j*'s) population living

abroad in 2000 (UN , 2004; Parsons, Skeldon, Walmsley & Winters, 2007). Measures vary from 0.29%

(Mongolia) to 35.29% (Jamaica). *Diaspora Skill Level* is the measured as the fraction of immigrants (0-1)

from country *i* of region *j* living abroad in 2000 with tertiary (+13 years) education (Marfouk and

Docquier, 2006). Measures vary from 0.09 (9%) of immigrants (Turkey) to 0.67 (67%) of immigrants

(Philippines).

To test Hypotheses 2 regarding the possible magnifying the effect of diaspora concentration, I then add to Equation 1 two additional terms (*Diaspora Moderators*): an individual term, *Concentrated Diaspora* ("*CD*"); and a moderating interaction combining *Diaspora Remittances* ("*DR*") with *Concentrated Diaspora.* The resulting interaction term, *CD*DR*, captures differences in the impact of *Diaspora Remittances* on the home-country *Venture Capital Access*. These moderators vary across countries *i* but are fixed rather than varying across years *t*. *Concentrated Diaspora* is based on a Herfindahl-Hirschman Index ("Diaspora HHI") number running from 0-1 with values near 1 (0) indicating greater immigrant community concentration (diffuseness) across all host countries. *Concentrated Diaspora* is derived first by squaring and then summing fractions of immigrants from country *i* of region *j* living in each host country in 2000 (UN, 2004; Parsons, Skeldon, Walmsley & Winters, 2007). The resulting Diaspora HHI numbers range from 0.08 (India) to 0.85 (Mexico). I define *Immigrant Concentration* as a 0-1 dummy where 1 indicates a country with a Diaspora HHI number greater than approximately 0.48, roughly the top third of concentration for immigrants from all countries sampled in 2000. Consistent with Hypothesis 2, I expect the *CD*DR* interaction term to be positive.[6]

To evaluate Hypothesis 3, I partition the gross sample by the skill (education) level of home-country immigrants. I re-analyze moderator effects described immediately above with a sub-sample of countries with less-skilled (less-educated) immigrants, that is, countries where less than 47% (0.47) of immigrants have tertiary (university-level) education. This is roughly the bottom two thirds of countries sampled. Consistent with Hypothesis 3, I expect the coefficient on the *CD*DR* moderator term to be larger than the same coefficient estimated with the gross sample.

To capture other unspecified effects, I also include in Equation 1 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,

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[6] Results using the Diaspora HHI measure itself are consistent with those reported below and are available from the author.

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.

Estimation Strategy

I use Stata Version 11.0 (StataCorp, 2009) for all analyses. To test Hypotheses 1-3, I rely on estimations of Equation 1. I have unbalanced panel data with missing data for certain countries i (in regions j) and years t. I start with ordinary least squares regression ("OLS" or "reg" command in Stata) and the nine country controls to provide an overall sense of equation explanation. I then implement several panel-feasible generalized least squares estimations ("Panel GLS" or "xtgls" command in Stata) with robust (to panel heteroskedasticity) standard errors and panel-specific first-order autoregressive processes. For illustrative purposes, I also present results from bi-variate linear trend-line analyses of *Diaspora Remittances* and *Venture Capital Access* for developing countries with immigrants resident in concentrated diasporas (*Concentrated Diaspora* = 1) versus dispersed diasporas (*Concentrated Diaspora* =0).

I assess the robustness of these findings two ways. To assess sensitivity to possible endogeneity issues, I present estimations based on a third generalized method of moments dynamic panel estimator based on research by Arellano and Bover (1995) and Blundell and Bond (1998) ("Panel GMM" or "xtdpdsys" command in Stata). The panel GMM estimator includes plausibly exogenous instruments based on lags of left-hand side dependent and possibly endogenous or pre-determined right-hand side variables. The lagged dependent variable also acts as a "catch-all" control capturing past effects on venture capital access not otherwise covered in Equation 1. To assess sensitivity to measurement issues, I also present panel GLS estimations with an alternative measure of Venture Capital Access from the World Economic Forum (World Economic Forum, 2003-2008). My discussion of results below includes further detail about these robustness assessments.

Sampling and Data Sources

I sample from 50 non-OECD countries and countries comprising popular developing country investment indices (*e.g.*, J.P. Morgan Emerging Market Bond Index) for which relevant data from 2001-2007 are available. There are, on average 4.74 observations per country for a total of 237. Those 50

countries are listed in Table 2 along with their average (2002-2007) *Venture Capital Access* scores and

ranking. 2002-2007 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 IMF and World Bank (World Bank,

2006; Reinke, 2007; IMF, 2009). This sampling limitation probably decreases potential measurement

error of key variables compared to other empirical studies using remittance data from the 1990s and

earlier (*e.g.*, Aggarwal, Demirgüç-Kunt & Martínez-Pería, 2011).

[Place Table 2 about here]

Data for the study come from several sources. Annual data on *Venture Capital Access* come from

Milken Institute Capital Access indices, which have gained usage in recent cross-country finance research

(*e.g.*, Doidge, Karoliy & Stulz, 2004). These indices are measured from 0-7 up to 2002 and then from 0-

10 through 2007. I convert all *Venture Capital Access* measures to the 0-10 scale.   Annual data for the

nine country controls in Equation 1 (*Basic Controls*) 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

& Mastruzzi (2008) (*Rule of Law*). Annual data on workers' remittances (*Diaspora Remittances*) come

from the International Monetary Fund's *Balance of Payments Statistics Yearbook* (IMF, 2010).

Data for the *Diaspora Controls* and *Diaspora Moderators* come from two sources. Information

on *Diaspora Skill* comes from study of mobility among immigrants in 2000 generated by Docquier and

Marfouk (2006). The UN (2004) and Parsons, Skeldon, Walmsley and Winters (2007) provide bilateral

country data on immigrants in 2000 to permit generation of *Diaspora Size* and *Diaspora Concentration*

values. Both data sources merit additional explanation. Parsons and colleagues (2007) draw on 2000 or

near-2000 year census data primarily from the UN (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 versus residence, but some countries use different criteria. Parsons and colleagues describe how

such differences are harmonized and adjusted to permit better comparability of resulting figures for research and policy-making purposes. I use Version 4a (UN 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 is 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.[7]

RESULTS

Descriptive Statistics

Table 3 reports descriptive statistics and pair-wise correlations for all variables used in my analyses. *Diaspora Remittances* are, on average, approximately $110 per person (0.11) annually with two thirds of the countries lying between $0 and $280. Jordan ($523), El Salvador ($539), Jamaica ($734) and Lebanon ($1226) exhibit the highest annual per capita remittances in the sample. Workers remittances for these same countries amount to 15-20% of GDP. Means and standard deviations for the right-hand side terms of Equation 1 indicate trends consistent with commonly-held assumptions about the venture investment environment of developing countries. For example, the sample mean for *Venture Capital Access* (2.62) on a 0-10 scale is consistent with assumptions of relative capital scarcity in developing countries compared to mean levels of *Venture Capital Access* (5.20) for developed (OECD)

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[7] See Docquier and Marfouk (2006) for details on 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 and Pakistan. Results reported in this study are robust to exclusion of observations from these countries. These results are available from the author.

countries during the same years. Other mean values follow developing country assumptions of higher (than industrialized country) economic growth (5.61%) and inflation rates (8.74%) and lower per capita annual income (2.71 or $2,710) and rule of law (-0.42), indicating less than average respect for law, legal processes and legal officialdom.

[Place Table 3 about here]

Pair-Wise Correlations

Pair-wise correlations in Table 3 indicate that *Diaspora Remittances* is positively related (as expected) to *Venture Capital Access* but the correlation is not significant at commonly-accepted levels of statistical significance such as 1-10%. *Diaspora Remittances* does exhibit statistically-significant and insightful pair-wise correlations with other macroeconomic indicators. As might be expected, *Diaspora Remittances* is positively correlated with *Per Capita Income* (0.18, $p < 0.01$). On the other hand, *Diaspora Remittances* is negatively correlated with other indicators of macroeconomic health such *GDP* (-0.21, $p < 0.01$), *GDP Growth* (-0.31, $p < 0.01$) and *FDI Inflow* (-0.12, $p < 0.10$) and positively correlated with a frequent macroeconomic policy challenge, *Inflation* (-0.19, $p < 0.01$).

These relationships comport with previous research on remittances and economic development reviewed in the last decade by Ratha (2003), Brown (2006) and others (*e.g.*, Aggarwal *et al*., 2011). Remittances from immigrants living abroad provide substantial complementary income to home-country relatives and community members when other more conventional sources of domestic and foreign sources are not yet substantial and when the policy and institutional foundations for sustained economic growth are not yet laid. This description fits many of the less-developed countries of Sub-Saharan Africa and Eastern Europe. After laying these foundations, remittances decrease in proportion and impact. This description fits many emerging-market countries of Latin America and Asia.

Yet another set of interesting pair-wise correlations relates to key theoretical framework assumptions about how and why concentrated diaspora develop. Consistent with predictions from economic geography models highlighting the benefits of agglomeration (*e.g.*, Krugman, 1991), I find that *Diaspora Size* and *Diaspora Concentration* are positively correlated at commonly-accepted levels of

statistical significance (0.59, p < 0.01). A potentially self-sustaining process both attracts potential immigrants from the home country and brings them into closer geographic proximity abroad. Consistent recent models explaining the relative attractiveness of diasporas to immigrants of differing skill levels (*e.g.*, Beine *et al.*, 2011), I find that *Diaspora Skill* exhibits negative pair-wise correlation with both *Diaspora Size* (-0.22, p < 0.01) and *Diaspora Concentration* (-0.30, p < 0.01). It may be that diaspora growth and concentration are not reliant on the migration of skilled individuals. It may be that immigrants with individual advantages find the prospect of sharing them with others in an ethnic enclave less appealing much as firms with proprietary advantages are less likely to locate in industry clusters (*e.g.*, Shaver & Flyer, 2000). In any case, it appears that collective attributes of the diaspora become more important compared to individual attributes of any individual member.

One such collective attribute relates to the quantity of *Diaspora Remittances*, which exhibits positive pair-wise correlations with both *Diaspora Concentration* (0.24, p < 0.01) and *Diaspora Size* (0.57, p < 0.01) but negative pair-wise correlation with *Diaspora Skill* (-0.18, p < 0.01). These pair-wise correlations again provide preliminary support for my theoretical framework explaining the importance of diaspora structure abroad for guiding the flow of money and ideas back home. Greater geographic proximity among immigrants abroad is associated with more immigrant money going to households and individuals back home. In turning to multivariate analyses below, I can now investigate this trend more closely to evaluate theoretical framework hypotheses that connect diaspora geographic concentration and remittances to venture capital access back home.

Multivariate Analyses

Results from multivariate regression analyses are presented in Tables 4-5. Table 4 presents results from multivariate estimations of Equation 1 with *Basic Controls* only (Columns 1-3), then with the addition of *Diaspora Remittances* and *Diaspora Controls* (Columns 4-5), and then with the addition of *Diaspora Moderators* (Columns 6-7). These results permit close investigation of empirical support for Hypotheses 1's prediction that remittances from immigrants resident abroad matter for venture capital access back home. They also permit close investigation of Hypothesis 2's prediction that the venture

investment impact of such remittances is magnified when coming from geographically-concentrated diasporas. Results in Table 5 test the robustness of these results to changes in estimation (Columns 1-2) and key variable measurement (Column 3-4). Results in Columns 5-6 of Table 5 include a sub-sampling strategy that permits insight on Hypothesis 3's prediction that the venture investment magnification effect of diasporas is stronger when immigrant members are less educated.

Column 1 of Table 3 presents results from OLS regression of *Venture Capital Access* on an intercept and nine *Basic Controls*. Four of nine *Basic Controls* exhibit expected signs, all at the 10% or higher level of statistical significance. Countries with larger economies (*GDP*), state enterprises (State *Share of the Economy*), and better institutions and policies related to law (*Rule of Law*) and politics (*Political Rights*) also enjoy better access to venture capital. This simple OLS estimation explains more than a third ($R^2 = 0.36$) of variation in *Venture Capital Access*. 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. Again, four of nine *Basic Controls* exhibit the expected sign, this time all at the 1% level of statistical significance. Column 3 adds to this panel GLS estimation year (*Year*) and regional (*Region*) dummies. This addition gives eight of nine *Basic Controls* the predicted sign but still only four at the 1% level. Overall, these preliminary estimations provide assurance that the basic macroeconomic and institutional country controls explain substantial variation in my dependent variable, and that such explained variation is both across and within countries over time.

Columns 4-5 add *Diaspora Remittances*, *Diaspora Size* and *Diaspora Skill*. All three additional terms exhibit the expected positive sign with all three significant at commonly-accepted levels in Column 4 and two of three significant after the inclusion of year and regional dummies in Column 5. Consider the impact of one such diaspora term, *Diaspora Size*, on *Venture Capital Access*. Though integral in nature, the Milken Institute *Venture Capital Access* measures in Table 2 are often used by researchers and analysts to rank countries and assess changes in ranking over time. In the 2000s, annual country rankings would change from 3-5 levels, though these changes would occur among a larger list (+200 ranked countries and related sovereigns). Coefficients in Column 4 (0.034, p < 0.01) and Column 5 (0.037, p <

0.01) suggest that an increase of one standard deviation (6.49%) increase in the percentage of countrymen living abroad raises *Venture Capital Access* by 0.22, that is, about 2-4 rankings on Table 2.

[Place Table 4 about here]

With this in mind, I turn next to *Diaspora Remittances*. In both columns, the estimates are positive and significant as predicted in Hypothesis 1. Increasing workers remittances to the home country also increases venture capital there, notwithstanding substantial TCE-related barriers to other more conventional venture investors. The only question is how much these remittances matter. The coefficient in Column 4 (0.707, $p < 0.01$) implies that an increase of one standard deviation (0.17 = $170) in per capita workers' remittances raises *Venture Capital Access* by 0.12, that is, about 1-2 rankings in Table 2. After inclusion of year and region dummies in Column 5, the coefficient estimate for *Diaspora Remittances* doubles in magnitude (1.439, $p < 0.01$). The same increase of one standard deviation in workers' remittances now increases *Venture Capital Access* by 0.24 or 2-3 rankings. Change in the overall per capita value of remittances has approximately the same practical impact on home-country venture capital access as change in the number of immigrants sending remittances home. These results are similar to those reported by Vaaler (2011) when regressing the same dependent variable on per-capita total remittances (workers remittances, compensation of employees and migrant transfers).

In Columns 6-7, I add the two *Diaspora Moderators*: *Concentrated Diaspora*, and its interaction with *Diaspora Remittances*, *DR*CD*. The sign and significance on the interaction term indicates whether and how much the venture investment impact of workers' remittances differs if the remittances come from geographically-concentrated diasporas abroad. Interestingly, geographic concentration itself does not increase venture capital access back home. Coefficient signs on *Concentrated Diaspora* are negative and significant at the 5% level in Column 6 (-0.381, $p < 0.05$) and Column 7 (-0.466, $p < 0.05$), which adds year and regional dummies. These results may not be surprising given earlier conjecture that geographically-concentrated are more likely to comprised of less-educated, less-wealthy and or otherwise less-advantaged immigrants.

Even if that is the case generally, the more specific impact of geographic concentration is the opposite when it comes to remittances and their effect on venture capital access back home. Coefficient signs on the *DR*CD* interaction are positive and significant at the 1% level in Column 6 (3.117, $p < 0.01$) and Column 7 (4.904, $p < 0.01$), which adds year and regional dummies. By contrast, the coefficient for *Diaspora Remittances* is no longer significant at commonly-accepted levels in Columns 6 or 7. Essentially, the venture investment impact of remittances from diaspora residents abroad have no significant impact on venture capital access back home *unless* these remittances come from geographically-concentrated diasporas. On average, *Diaspora Remittances* have no significant impact on *Venture Capital Access* for two thirds of the developing countries in my sample not categorized as geographically concentrated (*Concentrated Diaspora* = 0). This group includes India with the lowest diaspora concentration measure (Diaspora HHI = 0.08) as well as countries with moderately concentrated diasporas like Russia (Diaspora HHI = 0.21) and Tunisia (Diaspora HHI = 0.37).

The top third of my sample have are considered geographically concentrated (Concentrated Diaspora = 1) and have a Diaspora HHI greater than 0.48. Most of these countries are from Latin America where transnational immigrant entrepreneurs since the 1990s are almost exclusively resident in the US and Canada. Costa Rica (Diaspora HHI = 0.49), El Salvador (Diaspora HHI = 0.68) and Mexico (Diaspora HHI = 0.85) represent ascending levels of geographic concentration in this top third. In this group, countries with *Diaspora Remittances* at the sample mean (0.11 = \$110) see increases see statistically significant and practically substantial increases in *Venture Capital Access* considerably. In Column 6, the implied increase is 0.34 or from 3-4 country rankings on Table 2. In Column 7, the implied increase is 0.44 or 4-5 country rankings.

These results support Hypothesis 2's prediction that the venture investment impact of remittances back home depends on the geographic concentration of the diaspora abroad. Diaspora concentration magnifies the venture investment impact of remittances. Indeed, results in Columns 6-7 suggest that diaspora concentration may be indispensable to such venture investment impact. It is not enough for transnational immigrant entrepreneurs to have extended family and community members to safeguard the

transfer of their remittances for venture investment purposes. In Coasean TCE terms, diaspora

concentration abroad is critical to decreasing the cost of information discovery about venture investment

opportunities back home. Without advantages derived from geographic proximity abroad, immigrant

remittances may still flow home but their transnational entrepreneurial usefulness is insignificant. This

interpretation undercuts earlier evidence offered in support for Hypothesis 1. Remittances alone may

have no statistically significant direct effects venture capital access back home. They only matter when

paired with diaspora attributes such as the geographic concentration measure used here.

This point is illustrated in Figure 2. There, I partition observations into those from countries with

immigrants living in concentrated diasporas (*Concentrated Diaspora* = 1) (•) and those from countries

with immigrants living in dispersed diasporas (*Concentrated Diaspora* = 0 (x). The bi-variate trend line

of *Diaspora Remittances* and *Venture Capital Access* varies markedly. The flat trend line for countries

with dispersed diasporas contrasts with the substantially positive trend line for countries with

concentrated diaspora. Again, geographic concentration among immigrants resident abroad apparently

enhances the venture investment impact of their remittances back home.

[Place Figure 2 about here]

Columns 1-4 of Table 4 assess the robustness of this basic result. One robustness concern relates

to model identification. It may be that workers' remittances are not so much a driver as they are an effect

of a venture investment environment back home that has benefitted from other factors such as domestic

wealth or foreign direct investment. Various methodological strategies address the possibility of reverse

causation –think, for example, of the right-hand side *Basic 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 re-estimate Equation 1 in Columns

1-2 using a panel GMM estimator (Arellano & Bover, 1995; Blundell & Bond, 1998). This dynamic panel

estimator is particularly well-suited to my panel data with broad cross-section (50 countries) but relatively

short time-series (2002-2007). I continue to treat the *Common Law* dummy as well as the year and regional

dummies as exogenous, but then treat other right-hand side terms as endogenously determined. The panel

GMM estimator adds to Equation 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. The estimator also generates

plausibly exogenous instruments in the form of additional lags in levels and in differences in levels for both

the lagged dependent variable and right-hand side terms treated as endogenously determined.

[Place Table 5 about here]

Panel GMM results in Columns 1-2 confirm previous support for Hypothesis 2. Sargan test

results do not reject the null hypothesis that the generated instruments are exogenous as a group.

Arellano-Bond test results 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 terms in

Equation 1. In Column 1, the coefficient estimate for *Diaspora Remittances* alone is negative (not

positive) and significant at the 5% level (-2.937, $p < 0.05$). The coefficient estimate for the *DR*CD*

interaction, however, is positive, significant at the 5% level, and substantial (4.548, $p < 0.05$). In Column

2, the inclusion of year and regional dummies renders the coefficient estimate for *Diaspora Remittances*

alone insignificant, but more than doubles the magnitude of the coefficient estimate for *DR*CD* (10.917,

$p < 0.01$), now significant at the 1% level. These panel GMM results provide additional assurance that

my model is properly identified and that causation runs from immigrant remittances abroad to venture

capital access back home with diaspora concentration as a critical moderator. Indeed, panel GMM results

suggest that earlier panel GLS estimates of that moderating effect may be conservative.

Yet another robustness concern relates to my dependent variable measure. So far, I have relied

on a single measure of *Venture Capital Access* to assess support for the theoretical framework and

hypotheses it generates. Columns 3-4 of Table 5 provide additional assurance that key results are not

driven by the idiosyncrasies of a single measure. In these columns I replace the Milken Institute

measurement with an alternative measure published annually from 2002-2007 by the World Economic

Forum as part of its Global Competitiveness Index ("GCI") (World Economic Forum, 2003-2008).

Published annually for 120 countries, the GCI *Venture Capital Access* measure is a seven-point Likert

scale response to an annual survey question given to executives around the world and asking "In your country, how easy is it for entrepreneurs with innovative but risky projects to find venture capital? [1 = very difficult; 7 = very easy]." I have GCI *Venture Capital Access* measures for all but one of the 50 countries in my sample, Lebanon. Some countries are missing GCI *Venture Capital Access* measures in early years such that the total sample size is reduced to 228 from 2002-2007. The sample mean is 2.82 with a standard deviation of 0.58 and a range from 1.7 (Ecuador in 2002) to 4.7 (Indonesia in 2006).

Panel GLS results in Columns 3-4 again confirm earlier trends. The coefficient for *Diaspora Remittances* individually is negative and significant at the 5% level in Column 3 (-0.747, $p < 0.05$) and at the 10% level after inclusion of year and regional dummies in Column 4 (-0.687, $p < 0.10$). By contrast, the coefficient on the *DR*CD* interaction term is positive and significant at the 1% level in both Column 3 (1.824, $p\ 0.01$) and Column 4 (2.731, $p < 0.01$). These results again indicate support for my framework and for Hypothesis 2 and the moderating effect of diaspora concentration. In the process, I also indicate the robustness of my results to reasonable changes in the way I measure my dependent variable.

The last two columns of Table 5 present results after sub-sampling. The sub-sampling permits insight on Hypothesis 3 predicting that the moderating effect of diaspora concentration will be greater in diasporas with less-skilled (educated) immigrants. Because they bring fewer individual relationships, less-skilled immigrants will rely on and contribute more to collective information discovery processes. The TCE impact of the diaspora concentration should be greater than in concentrated diasporas with more-skilled immigrants. To assess empirical support for this prediction, I partition the gross sample of 237 observations by the skill level of home-country immigrants. I create a sub-sample of countries with less-skilled immigrants, that is, countries where less than 47% (0.47) of immigrants have tertiary (university) education. This is roughly the bottom two thirds of the gross sample.[8] Consistent with Hypothesis 3, I expect the coefficients on the *CD*DR* moderator term in Columns 5-6 of Table 5 to be larger than the same coefficients estimated with the gross sample in Columns 6-7 of Table 4.

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[8] I drop the following countries from the gross sample: Argentina, Armenia, Bolivia, China, Egypt, Ethiopia, India, Jordan, Latvia, Mongolia, Panama, Peru, Philippines, Russia, Tanzania, Uganda, and Venezuela.

Results in Columns 5-6 of Table 5 are consistent with expectations and indicate support for

Hypothesis 3. The coefficients for *Diaspora Remittances* individually are not significantly different from

zero in either column, again indicating that remittances from geographically-dispersed diasporas have no

significant effect on home-country venture capital access. But coefficients on the *DR*CD* interaction

term in Column 5 (4.014, p < 0.01) are positive and significant at the 1% level. I observe the same result

in Column 6 (7.105, p < 0.01) after inclusion of year and regional dummies. More importantly, these two

estimates are substantially larger than their counterparts in Columns 6 (3.117, p < 0.01) and Column 7

(4.904, p 0.01) of Table 4. In supporting Hypothesis 3, these results again underscore the critical role of

diaspora concentration in providing immigrants of varying backgrounds with the opportunity to identify

venture investment opportunities back home to exploit through their remittances.[9]

DISCUSSION

Key Results and Implications

This study builds on recent research (Vaaler, 2011) indicating that immigrant remittances to

developing countries serve more than basic subsistence purposes such as money for poorer relations lacking

food, clothing, shelter, education and healthcare. Remittances in the 2000s also significantly and substantially

enhance the availability of venture capital in developing countries. In that context, it is logical to think more

deeply and investigate evidence about processes that explain this link. My study represents one step in that

direction theoretically and empirically. I sought a deeper understanding of diaspora demography, in particular

the geographic concentration of immigrants abroad, and how that demography might moderate the link

between remittances and venture capital access. I focused on diaspora concentration because of its

prominence in other research fields studying sources of cost reduction, information discovery and

productivity enhancement among migrating people and firms, particularly those with fewer individual

advantages (Shaver & Flyer, 2000; Beine *et al.*, 2011). From a Coasean (1937, 1960) TCE perspective, these

same benefits could well enhance an individual immigrant's capacity to discover venture opportunities back

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[9] I obtain similar results in sign and level of statistical significance when re-estimating with the full sample and adding to the equation several additional terms permitting estimation of a three-way interaction combining remittances with high-concentration diaspora with diaspora skill. These results are available from the author upon request.

home that his transnational relationships could then help him exploit. Geographic proximity and the information sharing it promotes almost certainly decrease the transaction costs of discovery and let venture opportunities find better-suited immigrant entrepreneurs more quickly.

This basic logic motivated my study as did a prior expectation that data analyses would uncover statistically significant but largely secondary and auxiliary moderator effect. Collective benefits of the immigrant's diaspora community would add marginally to individual benefits helpful to transnational entrepreneurship. That prior expectation proved wrong. Initial evidence suggested support for Hypothesis 1 and the significance of direct links between immigrant remittances abroad and enhanced venture capital access back home. But subsequent evidence based on a full account of moderator effects undercut this support. Perhaps the key result from my study is that diaspora concentration is more than a marginal magnifier of already significant and substantial direct effects of remittances on venture capital access. Without geographic proximity abroad, immigrant remittances have no significant impact on venture capital access back home. Consistent with Hypothesis 2, I found that diaspora concentration magnified the venture investment impact of remittances from immigrants resident abroad. Consistent with Hypothesis 3, I uncovered evidence that the magnifying effects of diaspora concentration were larger for diasporas with less-skilled immigrants. Unexpectedly, this moderating diaspora effect dominated over direct effects I had thought relatively more important when I began this study.

These results have important research implications. Remittances may yet serve other purposes related to family and home-community subsistence. While important, these direct relationships have limited importance to IB and entrepreneurship researchers interested in whether and how venture capital finds its way to developing countries with few domestic sources. To understand the potential of immigrants and their remittances as an alternative source of venture funding in developing countries, IB and entrepreneurship researchers will need to think more deeply about concentration and other collective attributes of developing-country diasporas.

The research pay-off from closer study of immigrant demography should be substantial. I uncover evidence that remittances from concentrated diasporas abroad enhance venture capital access at

home and even more so when concentrated diasporas are comprised of less-skilled immigrants. These findings contrast with an assumption held by some IB and entrepreneurship researchers that transnational entrepreneurs succeed when they have elite educational or technical training institutions and when they find similarly-advantaged counterparts back home (*e.g.*, Madhaven & Iriyama, 2009). My study suggests that transnational venture investing is not so exclusive. In concentrated diasporas, transnational venture investing through remittances is open to immigrants from a broad range of prior educational experience.

Similarly, my findings contrast with an assumption held by IB and entrepreneurship researchers that venture capital flows to developing countries are stifled by generally weak protections for investors and creditors (Guler & Guillén, 2010). Perhaps that assumption holds for conventional venture investors such as international banks and venture funds. Remitting immigrants seem less concerned by institutional short-comings back home. As Vaaler (2011) has already noted, the venture investment use of remittances probably depends less on formal and more on informal investor protections. Transnational immigrant entrepreneurs can draw on their extended family, members of their home-country community and others who are less-inclined to act opportunistically (Ouchi, 1980). My study adds to this insight about the benefits of community. Residence in a geographically-concentrated immigrant community abroad also apparently yields benefits regarding the discovery of venture opportunities available for them to exploit through friends and family back home. Public policy research to date (e.g., de Haas, 2005) has highlighted the importance of economic development and legal security for immigrants in host countries as determinants of whether and how their remittances find their way home for investment purposes. More concentrated, closely-knit immigrant communities may also enhance immigrant security and development as well as migrant opportunities for venture investment.

Do my results undercut other evidence from Vaaler (2011) indicating direct links between immigrant remittances and enhanced general capital availability, new business starts and economic openness in developing countries? My study did not investigate the impact of possible moderators such as diaspora concentration, so my answer is largely based on conjecture. And that answer is "maybe not." Results from previous study by Vaaler revealed no similar pattern of domination by moderator effects

linked to diaspora concentration. Diaspora concentration abroad has statistically significant effect on the way that remittances otherwise enhance general capital access back home. Diaspora concentration diminishes some but not all of the positive direct effect that remittances have on new business starts back home. There is something special about the way that diaspora concentration moderates the impact of remittances as venture investment. I have provided an explanation for that special moderating effect based on Coasean TCE logic. Future research will benefit from reviewing and refining such logic to explain the impact of diaspora attributes for other remittances uses.

Limitations and Future Research

I see other directions for future research on diasporas, remittances and venture investment in developing countries. Those directions follow in part from limitations in this study. Theoretically, this study provides substantial grounding in TCE theory as well as ideas from research on clusters and migration in economic geography and development. Yet, 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. 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. His view is echoed by economic development researchers such as Fafchamps (2001) and Woodruff and Zenteno (2007). 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 transnational entrepreneurship. That theory could articulate the network paths that venture ideas travel within immigrant diasporas abroad, the network paths that venture capital travels back home, and the nodal role that transnational immigrant entrepreneurs play in both.

I analyzed associations between immigrant remittances and different indicators of the home-country venture investment environment for 50 developing countries from 2002-2007. Yet, it is one of only a handful of studies 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 increases 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 capital access 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 exogeneity as a whole, I cannot conclude that these instruments are the best instruments available. Future work should search for alternative instrument sets correlated with remittances but not the venture capital access I propose that remittances affect.

I analyzed differences in the venture investment impact of remittances linked to attributes of individual immigrants as well as collective diaspora attributes. Future research could add other attributes missing here. For example, scholars and institutions addressing issues about migration and development have long advocated for implementation of immigrant community "engagement" policies (*e.g.*, World Bank, 2006; Gamlen, 2007). Modes of engagement for developing countries include passing dual citizenship laws, giving expatriates the right to vote and invest back home, and creating government ministries dedicated to immigrant issues. Prospective benefits include greater participation by citizens living abroad in the home-country society, polity and economy. For IB and entrepreneurship researchers, engagement policies raise questions about whether and how they might affect remittances and their venture investment impact. In addressing these questions, IB and entrepreneurship researchers can build on findings in this study, and contribute more forcefully to policy debates about how best to harness diasporas and their remittances for economic development at home and abroad.

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TABLE 1
List of Variable for Analyses Diaspora Dispersion and the
Venture Investment Impact of Remittances, 2002-2007

Variable Name	Variable description	Source	Expected Sign
Venture Capital Access (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.*, 2008)	Dependent Variable
GDP (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)	+
GDP Growth (λ_2)	Real annual percentage growth in GDP for county i in region j averaged over years t and t-1.	World Bank, World Development Indicators (World Bank 2010)	+
Per Capita Income (λ_3)	Per capita gross national income for county i in region j averaged over years t and t-1.	World Bank, World Development Indicators (World Bank, 2010)	+
Inflation (λ_4)	Consumer price inflation percentage for county i in region j averaged over years t and t-1.	World Bank, World Development Indicators (World Bank, 2010)	-
FDI Inflow (λ_5)	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)	+
State Share of Economy (λ_6)	Percentage of GDP accounted for by government and state-owned enterprises.	World Bank, World Development Indicators (World Bank, 2010)	+
Common Law (λ_7)	0-1 dummy where 1= Common law origin 0 = otherwise for county i in region j (fixed over all years t).	CIA World Fact Book (CIA, 2005)	+
Rule of Law (λ_8)	-2.5-2.5 measure of the extent of quality of contract enforcement, property rights, the police, and the courts, crime and violence for county i in region j averaged over years t and t-1. -2.5= weak rule of law, 2.5=strong rule of law.	Kaufmann, Kraay, Mastruzzi (2008)	+
Political Rights (Lack of) (λ_9)	1–7 integral measure of the level of political rights (*e.g.* right of citizens to vote for national executive) for county i in region j averaged over years t and t-1. 1= strong political rights, and 7 = weak political rights.	Freedom House (2009)	-
Diaspora Remittances (β_1)	Per capita sum of workers' remittances in US dollars from diaspora from country i in region j averaged over years t and t-1.	World Bank, Development Prospects Database (World Bank, 2010)	+
Diaspora Size (κ_1)	0-∞ measure indicating the size of immigrant diaspora as a percentage of total population for country i in region j in 2000 (fixed over all years t).	UN (2004); Parsons, Skeldon, Walmsley & Winters (2007)	+
Diaspora Skill (κ_2)	0-1 measure indicating the fraction of immigrant diaspora with tertiary (university) education for country i in region j in 2000 (fixed over all years t).	Docquier and Marfouk (2006)	+
Concentrated Diaspora (ϕ_1)	0-1 dummy where 1 = country i from region j with a Herfindahl, Hirschman Index greater than 0.48 indicating high concentration of immigrant diaspora in all possible host countries in 2000 (fixed over all years t)	UN (2004); Parsons, Skeldon, Walmsley & Winters (2007)	+

TABLE 2
List of Countries for Analyses of Diaspora Dispersion and the
Venture Investment Impact of Remittances, 2002-2007

Country	Region	Mean VC Index Score	Mean VC Index Rank
1. Argentina	Latin America/Caribbean	3.72	9
2. Armenia	Central & Eastern Europe	0.36	46
3. Bangladesh	South Asia	0.82	44
4. Bolivia	Latin America/Caribbean	0.39	45
5. Botswana	Sub-Saharan Africa	1.58	38
6. Brazil	Latin America/Caribbean	4.43	5
7. Cambodia	East Asia	0.86	43
8. Cameroon	Sub-Saharan Africa	1.25	41
9. China	East Asia	3.57	12
10. Colombia	Latin America/Caribbean	2.90	20
11. Costa Rica	Latin America/Caribbean	2.99	16
12. Croatia	Central & Eastern Europe	3.71	10
13. Dom Republic	Latin America/Caribbean	2.45	24
14. Ecuador	Latin America/Caribbean	1.66	36
15. Egypt	North Africa/Middle East	2.23	29
16. El Salvador	Latin America/Caribbean	2.97	17
17. Ethiopia	Sub-Saharan Africa	0.25	49
18. Ghana	Sub-Saharan Africa	1.48	39
19. Guatemala	Latin America/Caribbean	2.20	31
20. Honduras	Latin America/Caribbean	2.51	23
21. India	South Asia	5.11	1
22. Indonesia	East Asia	4.56	3
23. Jamaica	Latin America/Caribbean	3.07	14
24. Jordan	North Africa/Middle East	3.00	15
25. Kenya	Sub-Saharan Africa	1.79	34
26. Latvia	Central & Eastern Europe	3.77	8
27. Lebanon	North Africa/Middle East	2.75	21
28. Lithuania	Central & Eastern Europe	4.50	4
29. Macedonia, FYR	Central & Eastern Europe	2.42	26
30. Mali	Sub-Saharan Africa	0.33	47
31. Mexico	Latin America/Caribbean	3.66	11
32. Moldova	Central & Eastern Europe	2.93	18
33. Mongolia	East Asia	1.19	42
34. Morocco	North Africa/Middle East	2.28	28
35. Mozambique	Sub-Saharan Africa	0.19	50
36. Nicaragua	Latin America/Caribbean	2.20	30
37. Pakistan	South Asia	1.63	37
38. Panama	Latin America/Caribbean	4.59	2
39. Paraguay	Latin America/Caribbean	1.70	35
40. Peru	Latin America/Caribbean	2.43	25
41. Philippines	East Asia	4.01	6
42. Romania	Central & Eastern Europe	3.09	13
43. Russia	Central & Eastern Europe	2.29	27
44. Sri Lanka	South Asia	2.12	32
45. Tanzania	Sub-Saharan Africa	0.32	48
46. Tunisia	North Africa/Middle East	3.91	7
47. Turkey	North Africa/Middle East	2.92	19
48. Uganda	Sub-Saharan Africa	1.28	40
49. Ukraine	Central & Eastern Europe	1.92	33
50. Venezuela	Latin America/Caribbean	2.63	22

TABLE 3
Descriptive Statistics and Pair-Wise Correlations for Analyses of Diaspora Dispersion and the
Venture Investment Impact of Remittances, 2002-2007

Variables	Mean	St Dev	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Venture Capital Access (Y_{ijt})	2.62	1.51	0.00	6.26	1.00														
2. GDP (λ_1)	24.44	1.63	21.17	28.71	0.37	1.00													
3. GDP Growth (λ_2)	5.61	2.73	-7.50	14.00	-0.06	0.09	1.00												
4. Per Capita Income (λ_3)	2.71	2.26	0.18	10.61	0.32	0.28	0.03	1.00											
5. Inflation (λ_4)	8.74	6.84	-0.50	45.00	-0.11	0.04	-0.03	0.00	1.00										
6. FDI Inflow (λ_5)	4.34	10.69	-1.42	78.60	0.21	0.65	0.22	0.13	-0.08	1.00									
7. State Share of Economy (λ_6)	13.59	4.05	3.41	22.90	0.18	-0.06	0.01	0.28	-0.15	0.08	1.00								
8. Common Law System (λ_7)	0.19	0.39	0.00	1.00	-0.22	-0.10	0.05	-0.34	0.07	-0.13	-0.13	1.00							
9. Rule of Law (λ_8)	-0.42	0.47	-1.42	0.67	0.28	-0.06	0.11	0.36	-0.15	-0.00	0.42	0.03	1.00						
10. (Lack of) Political Rights (λ_9)	3.17	1.53	1.00	7.00	-0.25	0.20	0.15	-0.33	-0.10	0.35	0.03	-0.00	-0.25	1.00					
11. Diaspora Remittances (β_1)	0.11	0.17	0.00	1.18	0.07	-0.21	-0.31	0.18	-0.19	-0.12	0.05	-0.06	0.05	0.02	1.00				
12. Diaspora Size (κ_2)	6.60	6.49	0.29	35.29	0.04	-0.37	-0.14	0.19	-0.08	-0.18	0.19	-0.05	0.07	-0.14	0.57	1.00			
13. Diaspora Skill (κ_3)	0.39	0.15	0.09	0.67	0.06	0.04	0.20	-0.24	0.06	0.04	0.06	0.19	-0.03	0.04	-0.18	-0.22	1.00		
14. Concentrated Diaspora (ϕ_1)	0.33	0.47	0.00	1.00	-0.11	-0.27	-0.23	-0.03	-0.10	-0.13	-0.23	-0.11	-0.17	-0.16	0.24	0.59	-0.30	1.00	
15. DR*CD (ϕ_2)	0.05	0.12	0.00	0.70	0.06	-0.19	-0.30	0.06	-0.06	-0.09	-0.22	0.06	-0.13	-0.19	0.60	0.33	-0.26	0.63	1.00

$N = 237$
Correlations greater than approximately 0.11 or less than -0.11 are significant at 10% level ($p < 0.10$) (one-tailed test).
Correlations greater than approximately 0.13 or less than -0.13 are significant at 5% level ($p < 0.05$) (one-tailed test).
Correlations greater than approximately 0.16 or less than -0.16 are significant at 1% level ($p < 0.01$) (one-tailed test).

TABLE 4
Basic Results from Regression Analyses of Diaspora Dispersion and the
Venture Investment Impact of Remittances 2002-2007[a]

Empirical Models And Estimators→	(1) Controls	(2) Controls	(3) Controls	(4) Controls, Remittances	(5) Controls, Remittances	(6) Controls, Remittances, Interaction	(7) Controls, Remittances, Interaction
Variables ↓	**OLS**	**Panel GLS**	**Panel GLS**	**Panel GLS**	**Panel GLS**	**Panel GLS**	**Panel GLS**
Constant	-6.542** (1.757)	-5.040** (1.030)	-4.698** (1.361)	-7.940** (1.318)	-6.884** (1.249)	-6.167** (0.647)	-4.031** (1.516)
GDP (λ_1)	0.430** (0.071)	0.363** (0.047)	0.229** (0.056)	0.453** (0.057)	0.352** (0.053)	0.383** (0.055)	0.232** (0.061)
GDP Growth (λ_2)	-0.036 (0.031)	-0.047** (0.012)	0.029 (0.021)	-0.050** (0.014)	0.035† (0.020)	-0.037** (0.013)	-0.039† (0.023)
Per Capita Income (λ_3)	-0.056 (0.048)	-0.033 (0.041)	0.089** (0.033)	-0.068** (0.046)	0.025 (0.035)	-0.074† (0.044)	0.049 (0.043)
Inflation(λ_4)	-0.022† (0.012)	-0.011 (0.008)	-0.008 (0.007)	-0.013 (0.009)	-0.001 (0.007)	-0.012 (0.008)	0.001 (0.009)
FDI Inflow (λ_5)	-0.000 (0.011)	0.002 (0.010)	0.006 (0.006)	-0.003 (0.010)	-0.006 (0.005)	0.001 (0.008)	0.001 (0.005)
State Share of Economy (λ_6)	0.044† (0.023)	0.039** (0.012)	0.078** (0.018)	0.025† (0.013)	0.068** (0.017)	0.042** (0.011)	0.110** (0.020)
Common Law System (λ_7)	-0.717** (0.226)	-0.520* (0.127)	0.289 (0.212)	-0.793** (0.134)	-0.961** (0.382)	-0.984** (0.123)	-1.601** (0.397)
Rule of Law (λ_8)	0.650** (0.210)	0.599** (0.160)	-0.027 (0.205)	0.681** (0.186)	0.472* (0.207)	0.724** (0.186)	0.185 (0.249)
(Lack of) Pol Rights (λ_9)	-0.315** (0.064)	-0.309** (0.040)	-0.381** (0.052)	-0.267** (0.053)	-0.233** (0.055)	-0.285** (0.057)	-0.322** (0.058)
Diaspora Remittances (β_1)				0.707** (0.253)	1.439** (0.325)	-0.028 (0.647)	0.589 (0.895)
Diaspora Size (κ_1)				0.034** (0.010)	0.037* (0.015)	0.003 (0.012)	-0.012 (0.015)
Diaspora Skill (κ_2)				1.744** (0.435)	0.551 (0.418)	1.565** (0.404)	0.885* (0.449)
Concentrated Diaspora (ϕ_1)						-0.381* (0.159)	-0.466* (0.214)
DR*CD (ϕ_2)						3.117** (0.869)	4.904** (1.140)
Region and Year. Dummies	No	No	Yes	No	Yes	No	Yes
N	237	237	237	237	237	237	237
Wald χ^2 (Adj R^2)	(0.36)	1056**	3965**	348,223**	4907**	1672**	2006**

a. Columns 1-7 report regression coefficients and standard errors (in parentheses). Column 1 reports OLS results. OLS refers to ordinary least squares estimation. Columns 2-7 report panel GLS results. Panel GLS refers to panel feasible least squares regression with robust Huber-White standard errors and panel- (country-) specific first-order auto-regression adjustment. *Venture Capital Access* is the dependent variable in all estimations. Regression results for region and year dummies are available on request. † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

TABLE 5
Robustness Results from Regression Analyses of Diaspora Dispersion and the
Venture Investment Impact of Remittances 2002-2007[a]

Empirical Models And Estimators→	(1) Controls, Remittances, Interaction, Lagged DV & Instruments	(2) Controls, Remittances, Interaction, Lagged DV & Instruments	(3) Controls, Remittances, Interaction, GCI VCA Measure	(4) Controls, Remittances, Interaction, GCI VCA Measure	(5) Controls, Remittances, Interaction Less-Skilled Countries	(6) Controls, Remittances, Interaction Less-Skilled Countries
Variables ↓	Panel GMM	Panel GMM	Panel GLS	Panel GLS	Panel GLS	Panel GLS
Constant	-14.235** (1.530)	-12.543† (7.676)	0.241 (0.545)	0.362 (0.534)	-4.552** (1.438)	-2.386** (1.496)
GDP (λ_1)	0.583** (0.055)	0.384 (0.266)	0.093** (0.024)	0.068** (0.024)	0.259** (0.061)	0.101 (0.064)
GDP Growth (λ_2)	-0.055** (0.020)	0.079 (0.054)	0.037** (0.008)	0.020* (0.008)	-0.071** (0.027)	0.028 (0.029)
Per Capita Income (λ_3)	-0.044† (0.026)	0.211* (0.104)	0.019 (0.014)	0.017 (0.014)	0.008 (0.061)	-0.186** (0.054)
Inflation(λ_4)	0.009* (0.004)	0.041** (0.014)	-0.016** (0.003)	-0.014** (0.003)	0.006 (0.009)	0.013 (0.009)
FDI Inflow (λ_5)	-0.041** (0.004)	-0.019† (0.011)	0.009** (0.002)	-0.009** (0.002)	-0.002 (0.008)	-0.001 (0.006)
State Share of Economy (λ_6)	0.123** (0.022)	0.183** (0.063)	0.011 (0.010)	0.026** (0.007)	0.059** (0.018)	0.119** (0.020)
Common Law System (λ_7)	-0.856* (0.367)	1.605 (4.127)	0.294** (0.058)	0.761** (0.105)	-1.091** (0.210)	-1.565** (0.355)
Rule of Law (λ_8)	0.551† (0.292)	0.125 (0.924)	0.487** (0.063)	0.219** (0.065)	0.792** (0.251)	-0.429† (0.215)
(Lack of) Pol Rights (λ_9)	-0.056 (0.087)	-0.224 (0.336)	0.028 (0.020)	-0.032** (0.022)	0.032 (0.076)	-0.346** (0.070)
Diaspora Remittances (β_1)	-2.937* (1.403)	-0.478 (1.940)	-0.747** (0.294)	-0.687† (0.357)	-0.372 (0.477)	-0.596 (0.847)
Diaspora Size (κ_1)	0.055* (0.026)	-0.057 (0.066)	0.000 (0.004)	-0.019** (0.006)	-0.004 (0.014)	-0.047** (0.013)
Diaspora Skill (κ_2)	2.846* (0.804)	2.840 (3.598)	0.291† (0.172)	0.330 (0.211)	1.934** (0.684)	3.071** (0.751)
Concentrated Diaspora (ϕ_1)	-0.556 (0.558)	0.005 (1.150)	-0.146* (0.069)	-0.153 (0.097)	-0.402* (0.174)	-0.381† (0.201)
DR*CD (ϕ_2)	4.549* (2.160)	10.917** (4.383)	1.824** (0.473)	2.731** (0.550)	4.014** (0.906)	7.105** (1.428)
Lagged VC Access (Y_{ijt-1})	0.295** (0.024)	0.275** (0.053)				
Region and Year. Dummies	No	Yes	No	Yes	No	Yes
N	237	237	228	228	177 (37)	177 (37)
Wald χ^2 (Adj R^2)	4348**	3653**	1294**	870**	1587**	1604**

a. Columns 1-6 report regression coefficients and standard errors (in parentheses). Columns 1-2 report Panel GMM results. Panel GMM refers to dynamic panel data system two-step estimator with conventionally derived variance estimator for generalized method of moments estimation. *Venture Capital Access* is the dependent variables. The Panel GMM estimator 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. Sargan χ^2 tests do not reject the null hypothesis of group exogeneity of instruments generated in Columns 1-2. Similarly, Arellano-Bond Z tests do not reject the null hypothesis of no second order autocorrelation. Columns 3-6 report panel GLS results. Panel GLS refers to panel feasible least squares regression with robust Huber-White standard errors and panel- (country-) specific first-order auto-regression adjustment. *Venture Capital Access* is the dependent variable in Columns 1-2 and 5-6. An alternative measure of venture capital availability published as part of the World Economic Forum's Global Competitiveness Index ("GCI VCA") is the dependent variable in Columns 3-4. Columns 5-6 report panel GLS results with a sub-sample comprised of 33 countries with immigrant diasporas having skill level in the lower two thirds of all 50 countries sampled (*i.e.,* less than 47% of immigrants with tertiary education). Regression results for region and year dummies are available on request. † p < 0.10, * p < 0.05, ** p < 0.01

FIGURE 1
Theoretical Framework for Analyses of Diaspora Dispersion the
Venture Investment Impact of Remittances, 2002-2007

MODERATOR EFFECT
Immigrant Diaspora Concentration

• Coasean (1937, 1960) TCE Perspective

• Transaction Cost Assessment Under Alternative (Concentrated or Dispersed Demographic) Regimes

• Location in Concentrated Diaspora Creates Agglomeration Economies Increasing Public Information *and* Unintentional Diffusion of Individual (Proprietary) Information on Venture Investment Opportunities Back Home

• More- (Less-) Educated Immigrants Have More (Less) Individual Information on Venture Investment Opportunities

(+)

DIRECT EFFECT
Immigrant Diaspora Remittances

• Williamsonian (1975, 1985) TCE Perspective

• Relational (Venture Investing) Contracting Context

• Asset-Specific Investment Requirement: Home-Host Country Capital Transfer of Money and Idea by Overseas Venture Investor

• Absence of Formal Institutions Protecting Venture Investor in Diaspora from Opportunistic Renegotiation by Local (Home-Country) Counterparties

• Use of Informal Relationships Based on Common Clan or Community Membership to Choose More Trustworthy (Less Opportunistic) Local Counterparties as Transnational Venture Investees

(+)

OUTCOME
Developing Country Venture Capital Access

• Venture Capital Access Increases With More Workers' Remittances from Diaspora Residents (H1) (+)

• Positive Effects of Remittances Are Magnified When Received from Concentrated Diasporas (H2) (+)

• Magnifying Effects Matter More for Diasporas Comprised of Less-Educated Immigrants (H3) (+)
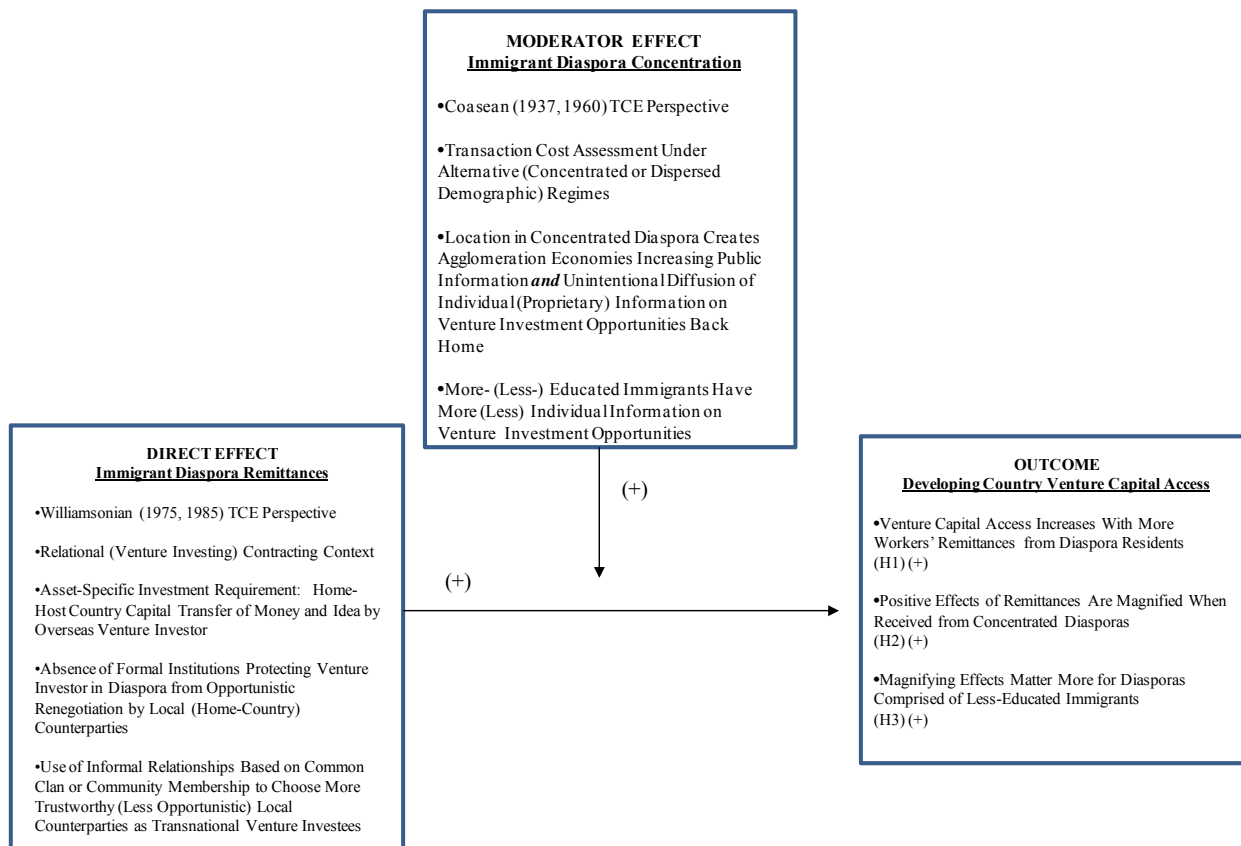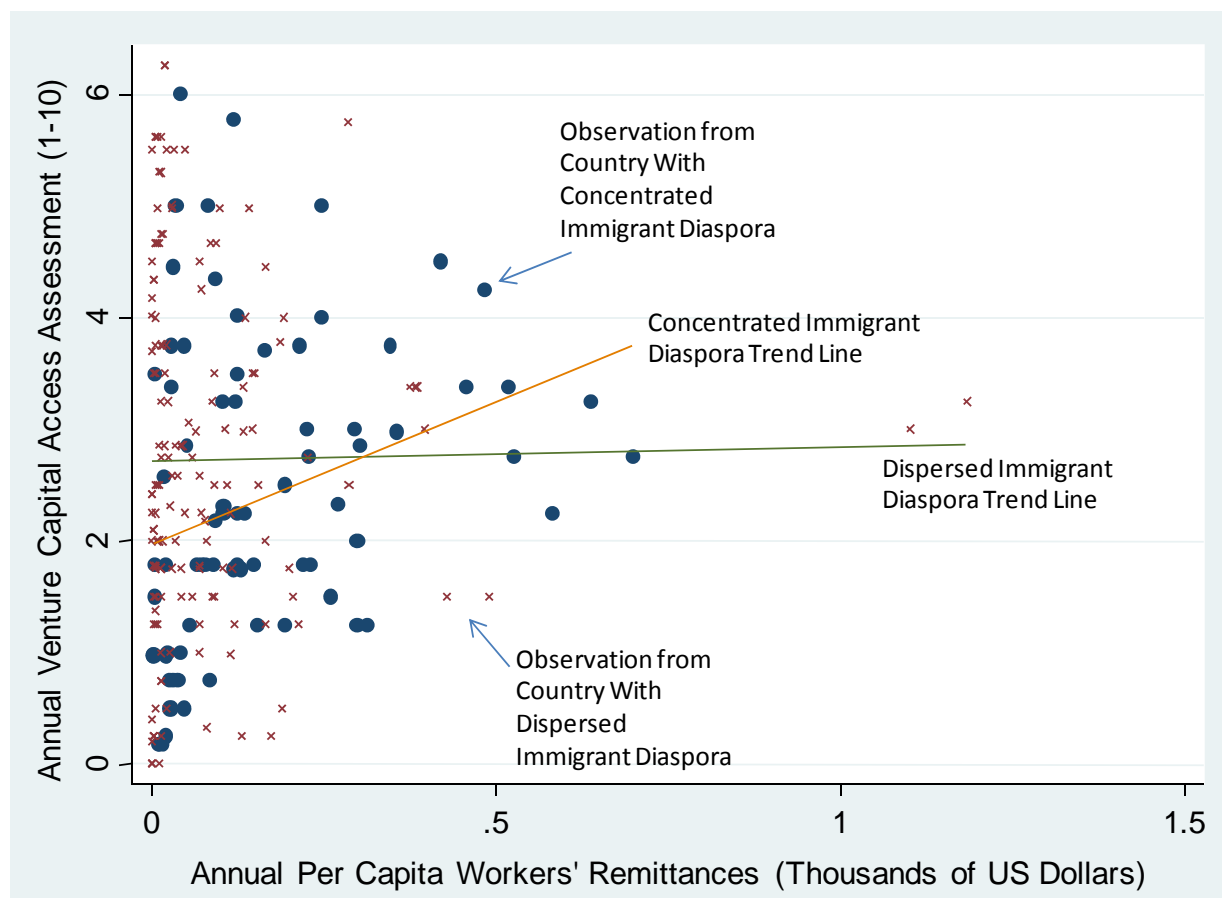
FIGURE 2
Analyses of Linear Trends for Diaspora Dispersion and the
Venture Investment Impact of Remittances, 2002-2007[a]

a. Figure 1 report results from bi-variate linear trend line estimation of annual per capita workers' remittances (*Diaspora Remittances*) and a measure of annual venture capital access published annually by Michael Milken Institute (*Venture Capital Access*). Observations represented as dots (•) are from concentrated immigrant diasporas, that is, immigrant diasporas with a diaspora HHI score greater than 0.48, roughly the top 1/3 of an HHI score distribution running from 0.075 (India) to 0.85 (Mexico) with a sample mean of 0.30 and standard deviation of 0.20. Observations represented as an x (**x**) are from dispersed immigrant diasporas, that is immigrant diasporas with a diaspora HHI score less than 0.48, roughly the bottom 2/3 of the same HHI score distribution.