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# MIGRANT REMITTANCES, CAPITAL CONSTRAINTS AND NEW BUSINESS STARTS IN DEVELOPING COUNTRIES

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According to the World Bank (2013), migrant remittances to developing countries in 2013 totaled US$ 414 billion, quadruple the approximately US$ 100 billion remitted to developing countries in 2000. The sheer size and substantial growth of remittances to developing countries in the 2000s compel attention regarding how remittances are used, with past research summarized by Brown (2006) indicating that they generally finance household consumption. On the other hand, Yang's (2011) review of the same literature notes circumstances when remittances may also support business investment. Woodruff and Zenteno (2007), for example, report evidence from survey data indicating that remittance flows from the US through migrant networks alleviate capital constraints for microenterprises in Mexico.

We reconcile these differing research perspectives by proposing that remittances to developing countries generally finance household purchases, but broaden financing scope to entrepreneurial activities when local capital constraints are substantial. Our empirical study builds on this proposition. We ask how constrained local capital access is before remittances have a significantly positive impact on one entrepreneurial activity vital to private sector-led growth in developing countries: new business starts. Analyses of annual new business starts in 47 developing countries observed from 2002-2007 suggest that remittances have significantly positive effects, but only for countries in the lowest quintile of local capital access. Remittances matter as early-stage capital for business creation associated with private sector-led economic growth, but such entrepreneurial use diminish with increase to even moderate levels of local capital access.

Our findings contribute to research on remittances and entrepreneurship in developing countries. First, to the extent remittances help finance development (Ratha, 2003), our study guides understanding about when such finance is more likely to affect entrepreneurs leading business creation. Second, we take a cross-country approach to investigating one specific entrepreneurial process by which remittances likely affect economic growth and development, a complement to other recent cross-country studies relating remittances to broader macroeconomic indicators of the same trends (*e.g.*, Guiliano and Ruiz-Arranz, 2009). We elaborate on these points below.

[1] This MFM Practice Note was cleared by Seynabou Sakho, Practice Manager (GMFDR).

**Empirical Methodology**

**Model Specification and tests**. To test our proposition that remittances boost new business starts when developing countries have substantial capital constraints, we follow methods previously used by Vaaler (2011), starting with a statistical model explaining annual new business starts closely following his:

$$New\ Business\ Starts_{ijt} = \alpha + \beta_1 Remittances_{ijt-1} + \beta_2 Capital\ Access_{ijt-1}$$
$$+ \beta_3 Remittances * Capital\ Access_{ijt-1} + \sum_{a=1}^{a=5} \gamma Controls_{ijt-1} + \sum_{b=1}^{b=5} \chi Regions_j + \sum_{c=1}^{c=5} \phi Years_t + \varepsilon_{ijt}$$

In (1), the dependent variable, *New Business Starts* is count of new businesses entered into official registries of a migrant's home country *i* (in geographic region *j*) during year *t*. This measure likely understates the actual number of new businesses created to the extent that they are founded and operate in the country's informal economy.

Key right-hand side terms in (1) vary by country *i*, region *j*, and year *t*. *Remittances* comprises total remittances in US dollars divided by the recipient country population. We again follow Vaaler (2011) by measuring *Capital Access* different ways. Our principal measure, *General Capital Access* varies from 0 (low capital access) to 10 (high capital access),[2] and scores the ability of entrepreneurs to gain access to financial capital in countries around the world. It is based on the Milken Institute's expert annual assessment of several country components, including an 'alternative sources of capital' from private placements of debt, credit cards, personal savings, family and friends. An alternative *Venture Capital Access* measure is also a 0-10 score but is based exclusively on assessment of the alternative sources of capital component. Another alternative *Bank Capital Access* measure varies from 1 (very difficult) to 7 (very easy) based on responses by business executives to an annual survey question from the World Economic Forum's *Global Competitiveness Report* asking how easy it is in a country to obtain a bank loan with only a good business plan and no collateral.

Consistent with our research proposition, *Remittances* should be positively related to *New Business Starts* ($\beta_1 > 0$) as should *Capital Access* ($\beta_2 > 0$) however scored. The interaction term, *Remittances*Capital Access*, tests whether and how quickly the impact of remittances on new Business starts in the recipient country diminishes with better local capital access. This interaction term should be negatively related to *New Business Starts* ($\beta_3 < 0$).

We include five additional country- and year-varying *Controls* with the expected impact on *New Business Starts* in parentheses: the natural log of home-country GDP (*Log GDP*) (+); the natural log of home-country GDP per capita (*Log Per Capita*) (+); the percentage of home-country GDP growth (*GDP Growth*) (+); the percentage of home-country GDP comprised of state-owned enterprises and government) (*Percent State GDP*) (-); and the US dollar value (in billions) of home-country inward foreign direct investment (*Inward FDI*) (+). Finally, we include year (*Year*) and region (*Region*) dummies to capture other unspecified effects on *New Business Starts* tied to time and geographic location.

**Data and Sampling**. Data for terms in (1) come from different sources. *Remittances* data are from the World Bank's Word Development Indicators as are data for *Controls*. *General Capital Access* and *Venture Capital Access* data are from the Milken Institute (2002-2007), while *Bank Capital Access* data are from the World Economic Forum

[2] *General Capital Access* (and *Venture Capital Access* described below) is measured on a 0-7 scale for 2002-2003 and a 0-10 scale after 2003. We re-scale the 2002-2003 measures to the 0-10 scale.

(2002-2007). Our base sample using *General Capital Access* comprises 195 observations from 47 developing countries for 2002-2007. Somewhat sparser data availability when using *Venture Capital Access* and *Bank Capital Access* decreases the sample to 164 and 166 observations respectively. Column 1 of Table 1 presents means and standard deviations for all terms in (1).

**Estimation Strategy**. *New Business Starts* is a count variable exhibiting substantial dispersion, thus, we rely primarily on cross-sectional negative binomial regression with robust standard errors. To reduce the possibility of estimation bias related to omitted variables and or reverse causation, we also take the natural log of *New Business Starts*, add a lagged value of this transformed dependent variable to the right-hand side of (1), and then use a dynamic panel Generalized Method of Moments (GMM) estimator initially developed by Arellano and Bond (1991). This GMM panel estimator generates plausibly exogenous instruments in both levels and differences in levels of the lagged dependent variable and all other right-hand side terms. Table 1 reports the number of instruments generated, and diagnostic tests commonly used to verify that GMM panel estimation assumptions are met.

**Results**

In Columns 2-5 of Table 1 we observe a positive relationship between *Remittances* and *New Business Starts* across negative binomial and panel GMM estimations and alternative *Capital Access* scoring measures, as expected. The positive relationship is significant at the 1% level (except in Column 4). *Capital Access*, however scored, also exhibits the expected positive relationship with *New Business Starts* across Columns 2-5 but is significant at commonly-accepted levels only after negative binomial estimation with *General Capital Access* in Column 2 and *Venture Capital Access* in Column 4. The expected negative relationship between the interaction term, *Remittances*Capital Access* and *New Business Starts* is significant across Columns 2-5 at the 1% level.

Together, these results support our research proposition that remittances boost entrepreneurial activity in developing countries, but the boost diminishes with better capital access. Results in Columns 2-3 using the *General Capital Access* score, suggest a broad base for this support. Negative binomial estimates best suited for count data of *New Business Starts* yield expected signs at significant levels for *Remittances*, *Capital Access* and their interaction in Column 2. Panel GMM estimates of logged *New Business Starts* in Column 3 are less efficient than negative binomial estimates of unlogged counts, but also less vulnerable to bias given the lagged dependent variable and instruments that Hansen and Arellano-Bond tests suggest are properly applied. Signs on all three terms in Column 3 again exhibit the expected sign with significance at the 1% level for *Remittances* and the *Remittances*Capital Access* interaction.

The positive impact of remittances on new business starts diminishes quickly. Simulation results suggest that a one-standard deviation increase in *Remittances* from 0.120 ($120 per person in the recipient country) to 0.325 ($325 per person) raises *New Business Starts* by nearly 5,000 annually for the developing country with the lowest *General Capital Access* score, Madagascar with a 2.36 score in 2005. When *General Capital Access* scores exceed approximately 3.75, the cut-off for the lowest quintile of countries sampled, the positive impact of *Remittances* on *New Business Starts* loses significance, even at the 10% level.

**Conclusion**

Research on remittances in developing countries suggests that they generally finance household purchases, but that substantial capital constraints in recipient countries may broaden uses of remittances for entrepreneurial activities. Consistent with that proposition, we showed that remittances boost new business starts in developing countries with substantial

capital constraints. Migrant remittances can play an important role as early-stage capital for business creation associated with private sector-led economic growth and development, but that role fades quickly as local capital access increases from the poorest to even moderate levels. Our findings set the stage for future research investigating other new roles for remittances as the economic development process advances.

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**TABLE 1**
**Results from Regression Analyses of New Business Starts on Remittances, Capital Access and Related Terms, 2002-2007**

| **Descriptive Statistics, Estimators and *Capital Access* Measure→** *Variables* ↓ | **(1) Means (Std. Dev.)** | **(2) Negative Binomial *GCA*** | **(3) Sys-Diff GMM *GCA*** | **(4) Negative Binomial *VCA*** | **(5) Negative Binomial *BCA*** |
|---|---|---|---|---|---|
| *New Business Starts* ($Y_{ijt}$) | 34,993 (88,342) | | | | |
| *Log New Business Starts* ($Y_{ijt-1}$) | 8.982 (1.801) | | 0.952** (0.073) | | |
| *Remittances* ($\beta_1$) | 0.120 (0.215) | 4.057** (1.493) | 5.426** (0.810) | 1.202 (0.751) | 3.993** (1.578) |
| *Capital Access* ($\beta_2$) | 4.509 (0.925) | 0.145† (0.087) | 0.085 (0.137) | 0.100* (0.046) | 0.130 (0.121) |
| *Remittances* Capital Access* ($\beta_3$) | 0.560 (1.082) | -0.910** (0.282) | -1.100** (0.167) | -0.866** (0.257) | -1.897** (0.560) |
| *Log GDP* ($\gamma_1$) | 24.310 (1.550) | 0.754** (0.060) | 0.147 (0.098) | 0.681** (0.062) | 0.714** (0.065) |
| *Log Per Capita* ($\gamma_2$) | 7.441 (1.030) | -0.056 (0.091) | -0.118 (0.185) | -0.089 (0.084) | 0.103 (0.096) |
| *GDP Growth* ($\gamma_3$) | 5.103 (3.212) | 0.015 (0.021) | -0.003 (0.022) | -0.022 (0.026) | -0.025 (0.022) |
| *Percent State GDP* ($\gamma_4$) | 14.359 (4.277) | 0.020 (0.016) | -0.019 (0.039) | 0.009 (0.015) | 0.022 (0.070) |
| *Inward FDI* ($\gamma_5$) | 2.560 (4.457) | 0.074** (0.019) | -0.008 (0.009) | 0.075** (0.018) | 0.067** (0.020) |
| Constant ($\alpha$) | | -9.715** (1.471) | -2.296 (1.514) | -7.055* (1.369) | -9.285** (1.683) |
| *Year* ($\phi_{1-6}$) | | Yes | Yes | Yes | Yes |
| *Region* ($\chi_{1-5}$) | | Yes | No | Yes | Yes |
| Instruments Generated | | | 48 | | |
| Hansen $\chi^2$ Test | | | 23.80 ($p < 0.69$) | | |
| Arellano-Bond AR(2) *Z* Test | | | 1.34 ($p < 0.18$) | | |
| *N* | 195 | 195 | 185 | 164 | 166 |
| Wald $\chi^2$ ($R^2$) | | 1069** | 5870** | 1108** | 879** |

Means and standard deviations appear in Column 1. Coefficient estimates and robust standard errors appear in Columns 2-5. The dependent variable in Columns 2 and 4-5 is *New Business Starts* (mean = 37,539, std dev = 93,115). The estimator is negative binomial regression. The dependent variable in Columns 3 is the natural log of *New Business Starts* (mean = 9.057, std dev = 1.798) The estimator is panel dynamic system and difference Generalized Method of Moments regression. *Capital Access* descriptive statistics above are for *General Capital Access* (*GCA*). Results where *Capital Access* is *Venture Capital Access* (*VCA*) (mean = 3.125, std dev = 1.647) appear in Column 4. Results where *Capital Access* is *Bank Capital Access* (*BCA*) (mean = 2.940, std dev = 0.684) appear in Column 5. The base sample of 195 country-year observations from 2002-2007 (Columns 1-3) includes 47 countries grouped alphabetically by six geographic regions: East Asia and Pacific (4): Indonesia, Malaysia, Philippines and Thailand; Europe and Central Asia (9): Armenia, Croatia, Latvia, Lithuania, Moldova, Romania, Russia, Turkey and Ukraine; Latin America and Caribbean (14): Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Haiti, Jamaica, Mexico, Nicaragua and Peru; Middle East and North Africa (7): Egypt, Jordan, Lebanon, Morocco, Oman, Tunisia and Yeman; South Asia (4): Bangladesh, India, Pakistan and Sri Lanka; and Sub-Saharan Africa (9): Botswana, Ghana, Kenya, Madagascar, Malawi, Senegal, South Africa, Tanzania and Uganda. Difference GMM regression results in Column 3 are based on a sub-sample of 185 country-year observations from 2002-2007 and 44 countries –dropping Ecuador, Egypt and Senegal. Negative binomial regression results in Column 4 (Column 5) are based on a sub-sample of 164 (166) country-year observations from 2002-2007 and 42 countries –dropping Botswana, Haiti, Madagascar, Senegal and Yemen.

Significance: † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.