IMF Working Paper

Do Workers' Remittances Promote Economic Growth?

Adolfo Barajas, Ralph Chami, Connel Fullenkamp, Michael Gapen and Peter Montiel

INTERNATIONAL MONETARY FUND

IMF Working Paper

Middle Eastern and Central Asia Department

Do Workers' Remittances Promote Economic Growth?

Prepared by Adolfo Barajas, Ralph Chami, Connel Fullenkamp, Michael Gapen and Peter Montiel[1]

July 2009

Abstract

This Working Paper should not be reported as representing the views of the IMF.
The views expressed in this Working Paper are those of the author(s) and do not necessarily represent those of the IMF or IMF policy. Working Papers describe research in progress by the author(s) and are published to elicit comments and to further debate.

Over the past decades, workers' remittances have grown to become one of the largest sources of financial flows to developing countries, often dwarfing other widely-studied sources such as private capital and official aid flows. While it is undeniable that remittances have poverty-alleviating and consumption-smoothing effects on recipient households, a key empirical question is whether they also serve to promote long-run economic growth. This study tackles this question and addresses the main shortcomings of previous empirical work, focusing on the appropriate measurement, and incorporating an instrument that is both correlated with remittances and would only be expected to affect growth through its effect on remittances. The results show that, at best, workers' remittances have no impact on economic growth.

---

[1] Barajas and Chami are affiliated with the International Monetary Fund, Fullenkamp and Montiel are affiliated with Duke University and Williams College, respectively, and Gapen is affiliated with Board of Governors of the Federal Reserve System. The views expressed are solely those of the authors and should not be reported as representing the views of the Board of Governors of the Federal Reserve System or of any other person associated with the Federal Reserve System.

<div align="center">Contents   Page</div>

I. INTRODUCTION

Workers' remittances—transfers from international migrants to family members in their country of origin—represent one of the largest sources of financial flows to developing countries. In 2007, over $300 billion of workers' remittances were transferred worldwide through official channels, and it is likely that billions more were transferred through unofficial ones[2]. Although the sheer size of remittances suggests that they should be economically important to many countries, their magnitude relative to income flows makes this conclusion seem even more likely. For example, Chami et al (2008) reported that the average workers' remittances-GDP ratio for all developing countries over the period 1995-2004 is 3.6%. On a country-by-country basis, workers' remittances exceeded 1% of GDP (on average) for over 60 countries during this period, and seven of these countries had average workers' remittances-GDP ratios of 15% or higher.

For developing countries, remittances are also large relative to other financial flows. During the most recent 10-year period, remittance flows amounted on average to about one third of export earnings, more than twice private capital flows, almost 10 times official capital flows, and more than 12 times official transfers. Remittances have even recently become as large as foreign direct investment (FDI) flows to developing countries. Thus, although workers' remittances have not been uniformly significant across all emerging economies, for a large group of countries in which they are, they represent a resource inflow that often exceeds a variety of other balance of payments flows that have received much more attention from economists as well as policymakers.

Certainly, remittances do not go unnoticed in most of the countries that receive them. Typically, each international migrant leaves several family members behind and supports them with a steady flow of remittances. Therefore, a global stock of many millions of migrants implies that many more millions of people are directly affected by remittance flows. Because remittances are generally spent on consumption necessities—food, clothing, medicine, and shelter—they help lift huge numbers of people out of poverty by supporting a higher level of consumption than would otherwise be possible. This effect is widely recognized.

Beyond the fact that remittances alleviate poverty, however, their macroeconomic impacts are not well understood. Given their effects on consumption, effects on short-term output from fluctuations in remittance flows are to be expected, and a few papers have estimated remittances multipliers for economies such as Pakistan and Mexico[3]. But a more pressing question is whether remittances have any long-term effects on economic performance, and in particular, whether remittances can hasten a country's economic development. This possibility is suggested by the fact that remittances are essentially unrestricted, private financial flows that could finance investment as well as consumption. In other words, certain

---

[2] See World Bank (2009).

[3] See, for example, Nishat and Bilgrami (1991) and Adelman and Taylor (1990).

aspects of remittances appear, at least on the surface, to be similar to FDI and other private international capital flows, and they may therefore have similar effects on economic growth.

Such thinking seems to be popular among policymakers, who increasingly associate remittances with other private capital flows. The discussion of remittances in the UN's *Monterrey Consensus* document (United Nations, 2003), which has formed the basis of international development finance policy since 2002, is a case in point. Remittances are mentioned only once, in Paragraph 18, and then only in the context of urging countries to reduce the costs of sending remittances internationally. But the very same sentence also goes on to urge countries to "…create opportunities for development-oriented investments, including housing." (United Nations, 2003, p. 9) Remittances are thus being associated with other private investment flows, albeit tentatively.

The U.S. State Department, on the other hand, has been much more forward about suggesting that remittances can play an important role in development finance and promoting economic growth. Its 2005 document, the *U.S. Approach to International Development: Building on the Monterrey Consensus* (U.S. Department of State, 2005), labels remittances as a "development resource" and places remittances in the same category as domestic savings and foreign private investment. A search on the State Department's website reveals dozens of official statements and remarks made by officials emphasizing the size of remittances sent from the U.S. and suggesting that these funds are being used to facilitate economic development in the recipient countries. For example, a press release produced by the State Department in 2007 again places a statement about the amount of remittances sent by US residents directly after a statement about the amount of FDI originating from the US. The continual association of remittances with FDI in the State Department's public statements clearly implies that these officials consider the two types of flows to be fundamentally similar in their economic impact.

Policy-oriented economists have also made similar claims about remittances. Ratha (2003), for example, calls remittances "an important and stable source of external development finance" but mainly suggests that remittances could and should enhance economic growth rather than show that remittances have actually done so.

Given the importance that policymakers and economists increasingly place on remittances as a potential source of development finance, it is critical to know whether this optimism is truly warranted. A systematic analysis of how remittances could affect growth, followed by robust empirical evaluation of this relationship, would provide a better foundation for development policy, especially if remittances are found not to have a positive impact (or any impact) on economic growth. In this case, policymakers could focus their efforts on two areas: finding ways to channel remittances into uses that do enhance economic growth, and promoting other activities that facilitate economic development.

This paper provides the systematic theoretical analysis and robust empirical estimation mentioned above, using the most accurate and comprehensive remittances data available. Starting from an initial database encompassing 84 recipient countries and annual observations for the 1970–2004 period, we estimate panel growth regressions both on the full

sample of countries and for emerging economies only. We introduce a new instrument for remittances and a complete set of conditioning variables that resolve the weaknesses of previous empirical work. Thus, our estimations represent the most reliable information produced on the remittances-growth relationship to date. Unfortunately, our results demonstrate that remittances have had, at best, no impact on economic growth.

This is partially because the multiple paths through which remittances can affect growth include negative as well as positive influences of remittances on long-run economic activity. This result implies that policymakers' high hopes for remittances are likely to be disappointed. It also may suggest, however, that many countries do not yet have the institutions and infrastructure in place that would enable them to channel remittances into growth-enhancing activities. To this extent, our results support the spirit of the *Monterrey Consensus*, which emphasizes the importance of having well functioning domestic institutions.

The paper is structured as follows. The next section examines the various pathways through which remittances could affect economic growth. Section III reviews previous empirical findings on the remittances-growth relationship. Section IV introduces and implements two improvements to the empirical research on remittances and growth. Section V concludes by discussing the implications of our findings for policy.

II. REMITTANCES AND GROWTH: THEORY

Remittance inflows on the scale described above can be expected to potentially have large effects on the rate of growth of productive capacity in the receiving economies. This section examines the channels through which remittance receipts may exert such effects. We consider such channels within a "growth accounting" framework—that is, as effects that operate through capital accumulation, labor force growth, and total factor productivity (TFP) growth. We discuss each path in turn.

A. Remittance Inflows and Capital Accumulation

There are various ways through which inflows of worker remittances can affect the rate of capital accumulation in recipient economies. The most obvious of these, of course, is by directly financing an increase in capital accumulation relative to what would have been observed if the recipient economies had been forced to rely only on domestic sources of income to finance investment. From a microeconomic perspective, if domestic households face financial restrictions that constrain their investment activities—for example, as the result of poor domestic financial development—remittance inflows may directly serve to ease such constraints, permitting an increase in the recipient households' rate of accumulation of physical and human capital.

But the effects of remittance inflows on the financing of domestic investment need not operate simply through the additional resources that such inflows provide. If access to remittance inflows improves the creditworthiness of domestic investors, then large remittance inflows may lower the cost of capital in the domestic economy. In this case,

additional borrowing would allow the amount of new investment that can be financed in the presence of remittance flows during any given period of time to exceed the magnitude of remittance flows during that period, since future inflows can be used to service the accumulated debt. In other words, remittances may effectively augment household collateral.

A third mechanism through which remittance inflows may affect domestic capital accumulation is through their effects on domestic macroeconomic stability. To the extent that inflows make the domestic economy less volatile, they would tend to reduce the risk premium that firms demand in order to undertake investment, and thus make domestic investment more attractive. Chami, Hakura and Montiel (2009) show, using a large sample of remittance-receiving countries, that remittances do reduce output volatility.

However, none of these effects need necessarily materialize in remittance-receiving economies, and even if channels such as these are operative, their effects on growth need not be positive in every case. First, given their compensatory nature, it is quite probable that remittances will be received by households with a high marginal propensity to consume, and therefore, simply may not be directed in significant quantities toward investment. Second, if remittances are perceived to be permanent, they may tend to stimulate additional consumption rather than investment, even in the presence of credit constraints. This would imply positive effects on household welfare, but not necessarily on aggregate economic growth. Finally, the more highly integrated an economy is with world financial markets, and the more highly developed the domestic financial system, the less likely it is that remittance receipts will stimulate investment by relaxing credit constraints.

As discussed above, remittance receipts could conceivably stimulate additional investment in the form of human capital accumulation. They could do so by financing the cost of this investment directly, or by reducing the need for younger members of the household to abandon formal schooling in order to work and contribute to household income. However, the effects on domestic economic growth will depend on the recipients' subsequent participation in the domestic labor force. Positive growth effects obviously would not be forthcoming if the extra education funded by remittances makes it possible for the recipients themselves to emigrate, for example.

B. Remittance Inflows and Labor Force Growth

Remittance receipts may also influence growth through their effects on the rate of growth of labor inputs (while holding the level of human capital fixed). One channel through which remittances could impact labor inputs is through labor force participation[4]. Remittance receipt would be expected to have a negative effect on labor force participation, for the

---

[4] Another channel may be through fertility. Fargues (2007) finds strong positive and negative correlations between remittance receipts and fertility rates for Egypt and Morocco, respectively. But the author argues that remittances may simply be proxying for the transmission of social attitudes rather than having a causal impact on fertility. In addition, Cox and Stark (2005) argue that parents provide financial help to encourage the production of grandchildren through what the authors identify as the "subsidization effect", or a child's willingness to furnish parents with attention and care conditioned on prior parental example.

following reasons. To the extent that remittance inflows are simple income transfers, recipient households may rationally substitute unearned remittance income for labor income. In addition, regardless of their intended use, remittance transfers may be plagued by severe moral hazard problems, an idea that was first formalized by Chami, Fullenkamp, and Jahjah (2003). Because these flows occur under asymmetric information and in a context in which monitoring and enforcement are made extremely difficult by the distance separating remitter and recipient, moral hazard problems may induce recipients to divert resources to the consumption of leisure, thereby reducing their labor market effort[5]. Anecdotal evidence of the labor effort effect is abundant, and academic studies have detected such an effect as well.[6]

C. Remittance Inflows and TFP Growth

Remittance receipts may affect TFP growth through effects on the efficiency of domestic investment as well as through effects on the size of domestic productive sectors that generate dynamic production externalities. Whether such effects actually arise in a remittance-receiving economy, however, depends on a variety of factors which may vary from one economy to another.

Remittances may affect the efficiency of investment by altering the quality of domestic financial intermediation. There are at least two ways in which this can occur. First, if remittances are primarily disguised capital inflows—that is, if the recipients are investing on behalf of the remitter—then efficiency of investment is affected to the extent that the agent making the investment decision, whether the remitter or the recipient, possesses some informational advantage or disadvantage relative to formal domestic financial intermediaries. For example, if the agent making the investment decision is a family member who receives a migrant's remittances, and if that family member is less skilled in allocating capital than are domestic financial intermediaries, then having the resource flow take the form of a remittance receipt rather than a capital inflow intermediated by the domestic formal financial system would reduce the efficiency of domestic investment. It is unclear, however, what portion of remittances are intended to be invested, and whether those investing the remittances have informational advantages or disadvantages, on average, relative to banks or other intermediaries.

---

[5] Chami, Gapen and Cosimano (2006), using a dynamic general equilibrium model with remittances, show that these flows reduce labor supply, thereby increasing the correlation between labor and output. Thus, higher remittances can lead to greater output volatility.

[6] For example Kozelt and Alderman (1990) studied labor force participation and labor supply in Pakistan using data from the 1986 survey by the Pakistan Institute of Development Economics and found a significant negative impact of remittances on the labor force participation of males. Similarly, Itzigsohn (1995) also found, in a sample of Caribbean Basin cities, that remittances significantly reduce the labor force participation of household heads as well as other members of remittance-receiving families. For a discussion of the literature on the impact of remittances on labor supply, see http://programs.ssrc.org/intmigration/AnthologyT16/. The papers there point to a reduction in labor participation.

Remittances may also affect the ability of the recipient economy's formal financial system to allocate capital. Remittances are likely to expand the quantity of funds flowing through the banking system.[7] This in turn may lead to enhanced financial development and thus to higher economic growth through one or both of two channels: (1) increased economies of scale in financial intermediation, or (2) a political economy effect, whereby a larger constituency (depositors) is able to pressure the government into undertaking beneficial financial reform. But again, neither of the efficiency-enhancing effects just described is certain. For example, the political economy mechanism arising from a larger banking system may actually have an adverse effect on financial development: depositors may lobby the government for reforms favoring safety over improved efficiency in intermediation, increasing bank concentration and causing banks to increase their holdings of safe assets rather than more productive, but possibly riskier, forms of lending.

A different mechanism through which remittances may affect TFP growth is by changing the size of dynamic production externalities generated by an economy. Empirical evidence suggests that remittances inflows may be associated with equilibrium real exchange rate appreciation[8]. This implies a potential for Dutch disease effects in remittance-receiving countries. Such effects would materialize if equilibrium real exchange rate appreciation results in the contraction of sectors of production that generate dynamic production externalities (such as manufacturing exports). As with the mechanisms described previously, however, this is not a necessary result. Its emergence depends not just on whether remittance inflows indeed result in real exchange rate appreciation, but also on whether the nature of traded goods production in the remittance-receiving country is actually likely to generate dynamic production externalities.

There are also broader political economy effects of remittance flows that could affect growth through all three growth accounting channels considered above. In particular, to the extent that remittances provide a source of income for domestic households that is independent of the domestic production process, the presence of remittance inflows reduces the incentives for private citizens to monitor and manage the domestic government's policy performance. Moreover, since the costs of poor domestic macroeconomic performance are at least partially shifted on to migrants, who increase their transfers to domestic residents when things go badly at home, remittances create a moral hazard problem for the domestic government. The upshot is that large remittance inflows may undermine good domestic governance, with widespread implications for the quality of the domestic policy environment that may have adverse effects for capital accumulation, TFP growth, and growth in labor inputs. Recently, Abdih et al (2008) find evidence that remittance flows adversely impact the quality of institutions in recipient countries. In particular, remittances expand the tax base, enabling the government to appropriate more resources and distribute them to those in power. By acting

---

[7] Aggarwal, Demirguc-Kunt, and Martínez Pería (2006) show that this is the case; using panel estimations over 99 developing countries for the 1975–2003 period, remittances are found to be associated with higher ratios of both banking deposits and credit to GDP.

[8] See, for example, Acosta, Lartey, and Mandelman (2007) and (2008), and Montiel (2006).

as a buffer between the government and the people, remittances allow government corruption to be less costly for households that receive those flows.

Overall, this discussion shows that there are many potential effects of remittances on economic growth, but these effects are of highly uncertain magnitude and conflicting direction. The main implication that emerges is that the effects of remittance inflows on the economic growth of the recipient economy are theoretically ambiguous. The issue is therefore an empirical one. In the next section we review recent empirical work on the remittance-growth nexus before presenting our own work in Section IV.

III. RECENT EVIDENCE ON THE GROWTH EFFECTS OF REMITTANCES

Studies of the growth effects of remittances tend to be of two types: reduced-form estimates of the growth effects of remittance inflows in the tradition of the cross-country growth literature, using either cross-section or panel data; and estimates that attempt to detect specific channels through which remittance inflows may affect growth, such as Dutch-disease effects. We focus our discussion on studies of the first type, since these provide both the relevant background for the empirical approach that we adopt and the appropriate benchmarks for the estimation results presented in Section V.

In order for their results to be considered credible, reduced-form studies must sufficiently mitigate a serious endogeneity problem associated with remittances. There are two reasons why we should expect two-way causality between remittances and economic growth. The first is that domestic growth in the remittance-receiving economy can potentially drive remittance inflows. This can occur either through effects on migration, in which low economic growth leads to higher outward migration and higher remittances; or through altruistic behavior on the part of the existing migrant community, in which low economic growth in the home country leads altruistic migrants to increase compensatory transfers.[9] The second reason for two-way causality is that growth and remittance flows may both be affected by independent (non remittance-driven) causes. One such "third" variable could be poor domestic governance, which both motivates higher migration (leading to higher remittances), and retards economic growth. Another is high economic growth in a country that is both a major trading partner of a migrant-sending county and a major destination for these migrants. Higher growth in such countries will lead to higher remittances, due to larger migrant incomes, as well as to higher growth in the migrant-sending country via higher exports.

---

[9] Some studies refer to an alternative explanation for remittances, namely that they follow an investment or portfolio motive. In this case, endogeneity would also arise, but in the opposite direction. An *improvement* in domestic economic conditions, higher economic growth, for example, would be expected to encourage an *increase* in these profit-driven flows. Of course, the empirical evidence to date points overwhelmingly toward the altruistic and compensatory motive for remitting (see Chami, et al., 2008 for a survey of the theory and empirical evidence regarding the drivers of remittance flows).

Correcting for the endogeneity of remittances remains the primary challenge for researchers into the effects of remittances on growth. There are three main tools for mitigating endogeneity problems: choosing a set of instrumental variables, choosing a set of conditioning variables, and, to a certain extent, choosing the estimation technique. To date, no consensus regarding any of these tools has emerged in the literature on remittances. Therefore, in the discussion that follows, we distinguish among the existing reduced-form studies on remittances and growth by categorizing them first according to the instrumental variables used, and then by differences in conditioning variables included, estimation techniques, and other differences in the data used such as the definition of remittances, the time period covered, and countries included. We describe the most important recent studies on remittances and growth according to their choice of instruments, and then present a critique of these choices.

The earliest reduced-from study, by Chami, Fullenkamp, and Jahjah (2003), used the ratios of a country's income to US income, and a county's real interest rate to the U.S. real interest rate, as instruments for the workers' remittances received. The growth effects of workers' remittances were estimated using panel regressions designed to explain annual growth in real GDP per capita in 83 countries over the 1970–1998 period. The authors regressed per capita growth on both the workers' remittances-to-GDP ratio and the change in that ratio, while controlling for several other potential growth determinants, including the investment rate, the rate of inflation, the ratio of net private capital flows to GDP, and regional dummies. They found that whereas domestic investment and private capital flows were positively related to growth, the workers' remittances-to-GDP ratio either was not statistically significant or was negatively related to growth. Instrumental variables estimation using lagged right-hand-side variables as instruments did not change the basic result that changes in remittances were negatively related to growth.

An alternative instrument used in several subsequent studies is the distance between the migrants' home country and their main destination country. This was used in a study by the IMF (2005), along with a dummy variable indicating whether the home and main destination country shared a common language. The IMF study was able to use time-invariant instruments because it employed a cross-section rather than an annual panel.[10] The results yielded no statistically significant effect of remittances on economic growth.

Faini (2006) also used distance from the migrants' main destination countries as the instrument for remittances in cross-sectional growth regressions using a sample of 68 countries with data averaged over 1980 to 2004. The innovation in Faini's study was that he did not include the investment rate in the set of control variables, on the grounds that investment could be driven in part by remittance flows, as suggested in Section II. Unlike in previous studies, the estimated coefficient on the total remittances-to-GDP ratio in Faini's ordinary least-squares (OLS) regression was positive and significant, both when averaged as well as when initial remittance ratios were used in the regression. However, when the

---

[10] The cross section was based on 101 countries with data averaged over 1970-2003.

regression was estimated with instrumental variables, the coefficient on the remittance ratio lost its statistical significance, though it remained positive.

The World Bank (2006) transformed the time-invariant distance instrument described above into a time-varying instrument in the following way. The inverse of the distance between the migrants' destination (OECD) country and the remittance-receiving country was multiplied by a measure of the respective OECD country's economic performance, such as GDP per capita, the GDP growth rate, or the unemployment rate. Migration shares were also used in place of distance to construct analogous instruments, resulting in alternative "migration" instruments. The migration shares were the fractions of a country's migrants going to each of its top five OECD country destinations (as of 2000). The migration instruments reflect the idea that income in the host country is likely to be a key driver of remittances.

The instruments described above were used to estimate cross-country growth regressions on a data set of 67 countries with variables measured over 1991–2005. The control variables included (logs of) initial GDP per capita, the secondary school enrollment ratio, the ratio of private domestic credit to GDP, the *ICRG* political risk index, the ratio of real imports and exports to GDP, the inflation rate, a measure of real exchange rate overvaluation, the ratio of government consumption to GDP, and time dummies. The estimation yielded a consistently positive relationship between the remittances-to-GDP ratio and GDP growth, both when investment was included and when it was excluded from the specification. Somewhat surprisingly, however, when investment was excluded the coefficients lost their significance. The authors also calculated the contribution of remittances to growth rates and found that it was small.

A later exercise in the same World Bank study included interaction terms for remittances and education, remittances and financial depth, and remittances and institutional quality indicators, in three separate growth equations with the same specification as the growth equations examined previously, based on the argument that remittances may be more likely to augment growth in the presence of high levels of educational attainment, enhanced financial market depth, or high-quality institutions. This version yielded a negative and significant coefficient on the remittances-to-GDP ratio, but positive and significant coefficients on each of the interaction terms. The study thus concluded that the impact of remittances on growth is conditional—i.e., the impact that depends on a variety of domestic factors. The study also estimated the effect of remittances on investment, finding a similar pattern of coefficients.

Giuliano and Ruiz-Arranz (2005) used internal instruments (lagged explanatory variables) and system GMM techniques (in addition to OLS and fixed-effects panel regressions) to mitigate the endogeneity problem. Their sample included 73 countries with data over the 1975–2002 period, measured in 5-year averages. Their basic specification regressed per capita GDP growth on the total remittances-to-GDP ratio, conditioning on the initial level of GDP per capita, the investment rate, population growth, the fiscal balance as a percentage of GDP, years of education, a measure of openness, and inflation. They did not find a statistically significant effect of remittances on growth with this specification. However, they also explored possible interactions between the remittances-to-GDP ratio and financial

deepening,[11] as a way of testing whether remittances might enhance growth by relaxing credit constraints. They found significant negative interaction terms and interpreted these results as supportive of a credit constraint hypothesis: remittances appear to have positive effects on growth only in countries with small financial sectors, where their arrival serves to relax credit constraints.[12] Ramirez and Sharma (2008) obtained similar results using an annual panel of 23 Latin American countries between 1990 and 2005. This study attempts to correct the endogeneity problem using the fully modified OLS technique rather than instrumental variables, although fully modified OLS may not perform well in small samples.

Catrinescu et al (2006) also used an internal instrument (lagged remittances) in a study that included cross-sectional as well as various static and dynamic panel regressions on a dataset of 114 countries during the 1991–2003 period. In addition to using dynamic panel methods, this study extends previous work by incorporating institutional variables into the analysis. Their controls included initial GDP per capita, the ratios of gross capital formation and net private capital inflows to GDP, institutional variables such as the United Nations Human Development Index, six governance indicators as in Kaufmann, Kraay, and Mastruzzi (2003), and risk ratings from the *International Country Risk Guide* (*ICRG*). Though they found some evidence of a positive relationship between growth and the (log of the) remittance ratio, they concluded that this relationship was not very robust and was relatively mild.

As the results discussed above suggest, the empirical literature on the effects of remittance flows on growth appears to be inconclusive, covering the full gamut from negative effects, to no discernible effects, to positive effects, to conditional effects. This diversity of results can be traced to several sources.

An important one is likely to be the underlying data used to construct the time series for remittance flows. As argued in Chami et al. (2008), the balance of payments categories of employee compensation (*ec*) and migrant transfers (*mt*) are conceptually quite different from and behave differently than workers' remittances (*wr*). In particular, *ec* is mostly related to either seasonal labor or the employment in embassies abroad, while *mt* refer to the one-time movements in funds associated with changes in residence. Furthermore, within countries, correlations between *wr* and *ec* tend to be small, or even negative in many cases. It is *wr*, the narrower and more precise definition, to which most of the analytical material on growth

---

[11] The study used three measures to proxy for the level of financial deepening, all expressed as a ratio to GDP: M2, aggregate banking sector deposits, and aggregate bank credit to the private sector.

[12] However, there could be an alternative interpretation of this result. On the one hand, there is a vast empirical literature supporting a link between financial deepening and economic growth, and on the other hand, as mentioned earlier, Aggarwal, et al. (2006) find a positive link between remittances and financial deepening. The negative coefficient on the interaction between financial deepening and remittances in growth regressions could be showing that increases in financial depth achieved through remittance flows are of lesser quality; although the financial sector is larger, it is not intermediating resources more efficiently, and therefore its positive effects on growth are attenuated.

effects refers. However, save for the Chami, Fullenkamp, and Jahjah (2003) study, all others used a definition of workers' remittances that simply lumps together all three categories.

A second source of disparity in the results of previous studies arises from the different types of variation relied upon to identify the growth effects of remittance flows. The studies described in the last section encompass cross-sections, 5-year panels, annual panels, and difference estimators. Similarly, a third source of disparity in the studies discussed above may be due to the differing time periods and sets of countries included, which vary greatly among these studies.

A fourth potential source of disparities concerns the control variables included in the growth regressions. Some studies may be omitting important conditioning variables that affect both remittances and economic growth. On the other hand, at least two of the most recent studies indicate that there may be important conditional or threshold effects in the remittances-growth relationship, as illustrated by the apparent interactions between remittances and financial development or institutional quality.

The final source of disparity among previous studies' findings is the wide variation in the choice of variables used as instruments for remittance flows. Two key features govern the selection of appropriate instruments: instruments must be correlated with the potentially endogenous explanatory variable, and their effect on individual country growth must operate solely through its effect on that variable. The second of these considerations renders the interpretation of results obtained using many obvious instruments, such GDP per capita in the recipient country, and growth in the countries where migrants reside, unreliable. The second of these instruments was used in several of the studies described above. The potential problem with using these variables as instruments is that both are likely to have a direct impact on growth over and above any indirect impacts they may have through effects on remittance flows. Domestic real GDP per capita may affect economic growth directly through convergence effects, while GDP growth in the countries where remitters reside is likely to be correlated with trade flows, which in turn would be expected to exert an independent impact on growth as well.[13]

This illustrates a general problem: the challenge in finding an appropriate instrument is that most variables that might explain remittances—domestic and foreign macroeconomic variables in particular—also tend to affect growth. For this reason, internal instruments (lagged right-hand-side variables) have been criticized (see especially World Bank, 2006), and migration and distance instruments have been suggested. These instruments may not be as great an improvement over internal instruments as they initially seem, however. Distance between migrants' destination country and the remittance-receiving country is exogenous but time invariant, so it must be multiplied by host country GDP to obtain a time-varying instrument. Thus, distance instruments may be too strongly correlated with the growth rate in

---

[13] Lueth and Ruiz-Arranz (2006) showed that, just as is the case for trade, a gravity equation explains a large portion of the variation in bilateral remittance flows. Thus, trade and remittance flows tend to be highly correlated.

remittance-receiving countries. A similar argument can be applied to migration instruments: because migration shares are reported only periodically, such shares are fixed and researchers have multiplied them by host country GDP to make them time-varying.

The above discussion clearly points out that the endogeneity problem associated with remittances has not yet been satisfactorily addressed. Despite the use of different individual instruments, each of the studies cited above employs internal instruments—lagged values of right-hand-side macro variables. It is extremely difficult to ensure that such variables' impact on growth operates solely through their impact on remittances. In addition, it is not clear that a set of conditioning variables has been found that sufficiently controls for economic forces that affect both remittances and economic growth without implying any causality from one to the other. Therefore, our empirical approach is based on finding a better instrument and a more complete set of conditioning variables.

IV. ESTIMATING THE REMITTANCES-GROWTH RELATIONSHIP

Our primary strategy for mitigating the endogeneity problem is to find an alternative instrument for workers' remittances**.** The weaknesses of macroeconomic instruments suggest that promising candidates for instruments could be found among microeconomic determinants of remittances, since these are unlikely to exert a direct impact on the growth rate of the recipient countries. One such variable, for example, is the transaction cost associated with making a remittance transfer. Changes in the effective cost of remittance flows should be negatively correlated with aggregate remittance flows, yet the microeconomic innovations affecting such transactions costs should be uncorrelated with the error terms in the growth equations for remittance-receiving countries. Unfortunately, direct observations of such costs are unavailable.

Our approach is therefore to construct an instrument for workers' remittances that captures the effect of changes in the microeconomic determinants of remittances, yet is observable. The instrument that we construct is the ratio of remittances to GDP *of all other recipient countries*, which we call *wrrow$_i$* (workers' remittances to the rest of the world) in the tables below. This instrument will capture the effects of global reductions in transactions costs and other systematic changes in the microeconomic determinants of remittances, since such changes should increase remittances globally. It cannot, however, capture the effects of idiosyncratic changes in the determinants of remittances.

This instrument represents a significant improvement both over internal, lag-driven instruments as well as over previous attempts at obtaining an external instrument. By excluding the remittances-to-GDP ratio of the country in question, *wrrow$_i$* is free of a direct causal link with other domestic macroeconomic variables. Though this variable would tend to be affected by income growth in the developed world, and thus could affect growth in remittance-receiving countries through trade links, potential correlation with the error term in growth equations should be diluted to the extent that, for a given country *i,* the growth rates on which *wrrow$_i$* depends are not necessarily those of countries with which country *i* is linked through trade and migration flows. In other words, the diversification effect reduces any correlation between the instrument and the growth rate in the remittance-receiving

country. Finally, and more importantly, any remaining trade effects can be controlled for by including trading-partner growth in the set of control variables.

Therefore, we complement our instrument by adding a new control variable that has not been used in other studies: the trade-weighted average growth rate of real per capita GDP of the remittance-receiving country's top 20 trading partners. The rationale for including this conditioning variable is to control more explicitly for growth that originates from common trends, especially ones that are propagated through trade. In other words, this attempts to control for the independent "third" variables that could be driving both growth and remittances. And as mentioned above, this will control for trade effects that remain in our instrument even after the diversification effect. This conditioning variable is included in all sets of conditioning variables and its coefficient is reported separately in the estimation results below.

In addition to the average growth rate of trading partners, we incorporate the principal control variables employed in previous studies. The basic conditioning set used in all regressions includes (in addition to average growth rate of trading partners) the initial GDP-per-capita for each five-year period, five-year averages of the trade-to-GDP ratio, the M2-to-GDP ratio (both in logs), and the inflation rate. The full conditioning set includes, in addition to the basic conditioning set, five-year averages of logs of the ratios of foreign direct investment, the fiscal balance, and population growth to GDP, and the log of the five-year average of the composite *ICRG* political risk indicator.

As is to be expected, the presence of the investment ratio as a control variable seems to make a difference in the magnitude and significance of the remittances variable. Including a measure of domestic investment (the investment ratio or gross capital formation) as a control variable implies that any estimated growth effects of remittances are constrained to operate through changes in total factor productivity (TFP) rather than through capital accumulation. Since the preceding theoretical discussion indicated that effects of remittances on the volume of domestic investment may be important, this section presents results both excluding and including the five-year average of the log of the investment-to-GDP ratio as a regress or in some specifications to account for this possibility.

Other key details of the estimation include the following. The dataset includes the longest period and broadest set of countries for which remittances data are available: the 1970–2004 period and 84 countries. To keep the reporting simple while allowing for possible country heterogeneity in the effects of remittances on growth, we report results for two different sets of countries: all countries, and emerging economies only. The measure of remittances used is the workers' remittances-to-GDP ratio, which Chami et al (2008) show is the more theoretically appropriate measure of remittances. And finally, to exploit the information contained in the time series variation of the data while smoothing out cyclical effects, we estimate growth regressions using five-year panels.

We define three specifications of the model that depend on the way that remittances are included as explanatory variables. In Specification 1, only the (fitted) ratio of worker remittances to GDP, which we call *wr*, is included. In Specification 2, both *wr* and wr^2 are

included as explanatory variables. In Specification 3, *wr* and an interaction term consisting of the product of *wr* and the M2-GDP ratio are included.

The estimation results are reported in Tables 1 and 2, which are organized in the following way. First, only the coefficients on the worker remittance variables, and the new control variable *avgrowth_tradepartners*, are reported. The rows of the tables present coefficient estimates that differ according to the three specifications described above, while each column denotes a different combination of estimation method (OLS-IV or fixed effects IV) and conditioning variable set used to estimate each specification. Furthermore, Table 1 presents results from using all countries, while Table 2 presents results from estimating the models on the emerging economies only.

Although the estimation results may appear to lack uniformity at first glance, several pronounced tendencies do emerge upon closer inspection. First, in nearly two thirds of the estimations, the worker remittance variables had negative signs. Remittances had a positive and significant coefficient only when the additional M2-GDP interaction variable was also present, and then only when OLS-IV was the estimation method, the basic conditioning variables were included, and investment was excluded (this is the Giuliano and Ruiz-Arranz specification described above). On the other hand, worker remittances took on a negative and significant sign when fixed-effects IV methods were used to estimate specifications 1 and 2, both when investment was included and excluded from the specification.

When the full conditioning set was used, the coefficients on the *wr* variable tended to be positive but small in magnitude, and uniformly lacking in significance. Interestingly, the use of the full conditioning set tended to reverse the sign on the *wr* coefficient, relative to the corresponding estimation that used the basic conditioning set.

The main message of the estimation results is that remittances do not seem to make a positive contribution to economic growth. Remittances have a statistically significant impact on growth in less than half of the estimations, and when they do have a significant impact, it is generally negative. Most of the coefficients are small in magnitude and lacking in significance, especially when a larger set of conditioning variables is included in the specification. The coefficients and their significance seem highly sensitive to the choice of conditioning variables and estimation method. In short, there is no robust evidence that remittances have made the sort of contribution to economic growth that has been hoped for.

V. CONCLUSION

The findings of this paper echo the recent criticisms of foreign aid presented by Rajan and Subramanian (2005) and others, who point out that there is very little evidence that decades of official transfers have contributed much to the growth of developing economies. Similarly, our findings suggest that decades of private income transfers—remittances—have contributed little to economic growth in remittance-receiving economies and may have even retarded growth in some. We find that when remittances are properly measured, and when the growth equations are well specified and instrumented, we cannot find a robust and

significant positive impact of remittances on long-term growth, and often find a negative relationship between remittances and growth.

Perhaps the most persuasive evidence in support of this finding is the lack of a single example of a remittances success story: a country in which remittances-led growth contributed significantly to its development. Given that some countries' remittance receipts exceeded 10% of GDP for long periods of time, we should expect to find at least one example of this phenomenon during the past four decades. But no nation can credibly claim that remittances have funded or catalyzed significant economic development.

The lack of empirical or anecdotal evidence linking remittances to growth should lead policymakers to reconsider their optimistic views of remittances and move toward a more realistic understanding of their effects. Part of the reason why remittances have not spurred economic growth is that they are generally not intended to serve as investments but rather as social insurance to help family members finance the purchase of life's necessities. Remittances lift people out of poverty but they do not typically turn their recipients into entrepreneurs. The intriguing possibility remains that remittances can be channeled somehow into achieving both of these ends, but this will require a better understanding of the role that remittances play in their recipients' lives, and institutions that can help recipients of remittances make the most of the transfers they receive.

References

Abdih**,** Yasser, Ralph Chami, Jihad Dagher, and Peter Montiel, 2008, "Remittances and Institutions: Are Remittances a Curse?," IMF Working Paper 08/29 (Washington: International Monetary Fund).

Acosta, Pablo A., Emmanuel K. K. Lartey, and Federico Mandelman, 2007, "Remittances, and the Dutch Disease," Federal Reserve Bank of Atlanta Working Paper No. 2007–08 (Atlanta: Federal Reserve Bank).

Acosta, Pablo A., Emmanuel K. K. Lartey, and Federico Mandelman, 2007, "Remittances, Exchange Rate Regimes, and the Dutch Disease: A Panel Data Analysis," Federal Reserve Bank of Atlanta Working Paper No. 2008–12 (Atlanta: Federal Reserve Bank).

Adelman, Irma, and J. Edward Taylor, 1990, "Is Structural Adjustment with a Human Face Possible? The Case of Mexico," *Journal of Development Studies*, Vol. 26, pp. 387–407.

Aggarwal, Reena, Asli Demirguc-Kunt, and María Soledad Martínez Pería, 2006, "Do Workers' Remittances Promote Financial Development?," World Bank Policy Research Paper 3957 (Washington: World Bank).

Catrinescu, Natalia, Miguel León-Ledesma, Matloob Piracha, and Bryce Quillin, 2006, "Remittances, Institutions, and Economic Growth," IZA Discussion Paper No. 2139 (Bonn: IZA).

Chami, Ralph, Adolfo Barajas, Thomas Cosimano, Connel Fullenkamp, Michael Gapen, and Peter Montiel, 2008, *Macroeconomic Consequences of Remittances*, IMF Occasional Paper No. 259 (Washington: International Monetary Fund).

Chami, Ralph, Connel Fullenkamp, and Samir Jajah, 2003, "Are Immigrant Remittance Flows a Source of Capital for Development?" IMF Working Paper 03/189 (Washington: International Monetary Fund).

Chami, Ralph, Thomas F. Cosimano, and Michael T. Gapen, 2006, "Beware of Emigrants Bearing Gifts: Optimal Fiscal and Monetary Policy in the Presence of Remittances," IMF Working Paper 06/61 (Washington: International Monetary Fund).

Chami, Ralph, Dalia Hakura and Peter Montiel, 2009, "Remittances: An Automatic Stabilizer?," IMF Working Paper 09/91 (Washington: International Monetary Fund).

Faini, Ricardo, 2006, "Migration and Remittances: The Impact on the Countries of Origin," mimeo, University of Rome. Available at: http://www.eudnet.net/download/Faini.pdf

Fargues, Phillipe, 2007, "The Demographic Benefit if International Migration: A Hypothesis and Its Application to Middle Eastern and North African Contexts" in *International Migration, Economic Development and Policy*, (Washington: World Bank).

Giuliano, Paola and Marta Ruiz-Arranz, 2005, "Remittances, Financial Development, and Growth," IMF Working Paper 05/234 (Washington: International Monetary Fund).

International Monetary Fund, 2005, "Two Current Issues Facing Developing Countries," in *World Economic Outlook*, April 2005 (Washington).

Itzigsohn, Jose, 1995, "Migrant Remittances, Labor Markets, and Household Strategies: A Comparative Analysis of Low-Income Household Strategies in the Caribbean Basin," *Social Forces,* Vol. 74, pp. 633–55.

Kaufmann, Daniel, Aart Kraay, and Mossimo Mastruzzi, 2003, "Governance Matters III: Governance Indicators 1996-2002," Policy Research Working Paper 3106 (Washington: World Bank).

Kozel, Valerie, and Harold Alderman, 1990, "Factors Determining Work Participation and Labour Supply Decisions in Pakistan's Urban Areas," *Pakistan Development Review*, Vol. 29, pp. 1–18.

Lueth, Erik and Marta Ruiz-Arranz, 2006, "A Gravity Model of Workers' Remittances," IMF Working Paper 06/290 (Washington: International Monetary Fund).

Montiel, Peter J., 2006, "Workers' Remittances and the Long-Run Equilibrium Real Exchange Rate: Analytical Issues," Williams College, mimeo.

Nishat, Mohammed, and Nighat Bilgrami, 1991, "The Impact of Migrant Worker's [sic] Remittances on Pakistan Economy," *Pakistan Economic and Social Review*, vol. 29, pp. 21–41.

Rajan, Raghuram and Arvind Subramanian, 2005, "What Undermines Aid's Impact on Growth?," IMF Working Paper 05/126 (Washington: International Monetary Fund) and NBER Working Paper 11657, (October).

Ramirez, Miguel D. and Hari Sharma, "Remittances and Growth in Latin America: A Panel Unit Root and Panel Cointegration Analysis," Yale Economics Department Working Paper 51.

Ratha, Dilip, 2003, "Workers' Remittances: An Important and Stable Source of External Development Finance," in *Global Development Finance 2003* (Washington: World Bank).

United Nations, 2003, *Monterrey Consensus on Financing for Development* (New York: United Nations Department of Economic and Social Affairs, Financing for Development Office).

U.S. Department of State, 2005, *The U.S. Approach to International Development: Building on the Moterrey Consensus*, (Washington, D.C.: U.S. Department of State) www.state.gov

World Bank, 2006, *The Development Impact of Workers' Remittances in Latin America*, Vol. 2: Detailed Findings, Report No. 37026 (Washington: World Bank).

World Bank, 2009, *Migration and Remittances Factbook 2008* (Washington: World Bank).

Table 1. OLS and Fixed Effects Instrumental Variables Regressions Explaining Per Capita GDP Growth as a Function of Workers' Remittances and Different Conditioning Sets, and Controlling for GDP Growth in Trading Partners, All Countries

	Conditioning Sets of Variables					
	Basic Conditioning Set: Excludes Domestic Investment		Basic Conditioning Set: Plus Domestic Investment		Full Conditioning Set: Including Institutional Variable	
	OLS-IV	Fixed Effects-IV	OLS-IV	Fixed Effects-IV	OLS-IV	Fixed Effects-IV
Sample: All Countries						
Specification:						
1. wr only						
fitted wr	-0.021	-5.563	-0.053	-5.288	0.047	0.223
	(0.22)	(2.40) **	(0.61)	(2.31) **	(0.49)	(0.04)
Average growth of trading partners						
avgrowth_tradepartners_5y	1.002	1.094	0.946	1.082	0.838	0.654
	(4.93) ***	(5.55) ***	(4.92) ***	(5.58)***	(4.04) ***	(2.55) **
R^2	0.096	0.310	0.197	0.340	0.462	0.407
Observations	310	310	308	308	169	169
Countries	84	84	84	84	59	59
2. wr and wr-squared						
fitted wr	-0.110	-5.474	-0.133	-5.130	0.044	-3.069
	(0.92)	(2.35) **	(1.17)	(2.24) **	(0.35)	(0.59)
fitted wr-squared	-0.036	-0.472	-0.032	-0.790	-0.002	-2.451
	(1.16)	(0.63)	(1.10)	(1.06)	(0.04)	(2.51) **
Average growth of trading partners						
avgrowth_tradepartners_5y	1.001	1.083	0.946	1.062	0.838	0.620
	(4.93) ***	(5.46) ***	(4.92) ***	(5.45) ***	(4.02) ***	(2.48) **
R^2	0.097	0.312	0.197	0.343	0.458	0.443
Observations	310	310	308	308	169	169
Countries	84	84	84	84	59	59
3. wr and interaction with M2-GDP						
fitted wr	0.924	-4.448	0.575	-4.128	-0.223	0.169
	(1.98) **	(1.58)	(1.29)	(1.48)	(0.45)	(0.03)
fitted wr ·M2-GDP	-0.278	-0.253	-0.185	-0.263	0.080	0.011
	(2.06) **	(0.69)	(1.43)	(0.73)	(0.56)	(0.03)
Average growth of trading partners						
avgrowth_tradepartners_5y	0.949	1.077	0.913	1.063	0.852	0.655
	(4.66) ***	(5.41) ***	(4.72) ***	(5.43) ***	(4.07) ***	(2.51) **
R^2	0.105	0.312	0.200	0.341	0.459	0.407
Observations	310	310	308	308	169	169
Countries	84	84	84	84	59	59

Note: This table shows results of panel data regressions of per capita real GDP growth on remittances and different sets of conditioning variables, as explained below. t-statistics are reported in parentheses. The variable fitted wr denotes the fitted value from a first-stage regression of the log of the ratio of workers' remittances to GDP as a function of remittances received by the rest of the world. Basic conditioning set: five-year averages of the trade-to-GDP ratio, the M2-to-GDP ratio (both in logs), the inflation rate, and the trade-weighted average growth rate of real per capita GDP for trading partners, in addition to the initial GDP-per-capita for each five-year period. A five-year average of the log of the investment-to-GDP ratio is included in the second conditioning set. The full conditioning set includes, in addition, five-year averages of logs of ratios to GDP of foreign direct investment, the fiscal balance, and population growth, in addition to the log of the five-year average of the composite *ICRG* political risk indicator. The table reports adjusted R^2 for OLS regressions and within-R^2 values for fixed-effects regressions.

Table 2. OLS and Fixed Effects Instrumental Variables Regressions Explaining Per Capita GDP Growth as a Function of Workers' Remittances and Different Conditioning Sets, and Controlling for GDP Growth in Trading Partners, Emerging Economies

	Conditioning Sets of Variables					
	Basic Conditioning Set: Excludes Domestic Investment		Basic Conditioning Set: Plus Domestic Investment		Full Conditioning Set: Including Institutional Variable	
	OLS-IV	Fixed Effects-IV	OLS-IV	Fixed Effects-IV	OLS-IV	Fixed Effects-IV
Sample: Emerging Economies						
Specification:						
1. wr only						
fitted wr	-0.020	-5.202	-0.054	-4.958	0.043	0.355
	(0.21)	(2.12) **	(0.58)	(2.05) **	(0.44)	(0.07)
Average growth of trading partners						
avgrowth_tradepartners_5y	1.054	1.152	1.002	1.151	0.849	0.666
	(4.90) ***	(5.54) ***	(4.93) ***	(5.64) ***	(3.98) ***	(2.49) **
R^2	0.098	0.315	0.200	0.347	0.465	0.409
Observations	287	287	286	286	162	162
Countries	78	78	78	78	56	56
2. wr and wr-squared						
fitted wr	-0.119	-4.979	-0.133	-4.635	0.056	-2.937
	(0.95)	(2.01) **	(1.12)	(1.90) *	(0.44)	(0.56)
fitted wr-squared	-0.041	-0.596	-0.033	-0.854	0.007	-2.663
	(1.26)	(0.72)	(1.07)	(1.05)	(0.17)	(2.61) **
Average growth of trading partners						
avgrowth_tradepartners_5y	1.054	1.138	1.002	1.130	0.849	0.634
	(4.90) ***	(5.44) ***	(4.93) ***	(5.52) ***	(3.97) ***	(2.45) **
R^2	0.100	0.317	0.200	0.350	0.461	0.449
Observations	287	287	286	286	162	162
Countries	78	78	78	78	56	56
3. wr and interaction with M2-GDP						
fitted wr	1.456	-3.985	0.933	-3.837	-0.309	0.268
	(2.63) ***	(1.33)	(1.75)	(1.30)	(0.58)	(0.05)
fitted wr ·M2-GDP	-0.444	-0.269	-0.296	-0.248	0.105	0.017
	(2.71) ***	(0.71)	(1.87) *	(0.66)	(0.67)	(0.04)
Average growth of trading partners						
avgrowth_tradepartners_5y	0.981	1.132	0.956	1.132	0.867	0.668
	(4.57) ***	(5.39) ***	(4.69) ***	(5.49) ***	(4.03) ***	(2.45) **
R^2	0.118	0.317	0.207	0.348	0.463	0.409
Observations	287	287	286	286	162	162
Countries	78	78	78	78	56	56

Note: This table shows results of panel data regressions of per capita real GDP growth on remittances and different sets of conditioning variables, as explained below. t-statistics are reported in parentheses. The variable fitted wr denotes the fitted value from a first-stage regression of the log of the ratio of workers' remittances to GDP as a function of remittances received by the rest of the world. Basic conditioning set: five-year averages of the trade-to-GDP ratio, the M2-to-GDP ratio (both in logs), the inflation rate, and the trade-weighted average growth rate of real per capita GDP for trading partners, in addition to the initial GDP-per-capita for each five-year period. A five-year average of the log of the investment-to-GDP ratio is included in the second conditioning set. The full conditioning set includes, in addition, five-year averages of logs of ratios to GDP of foreign direct investment, the fiscal balance, and population growth, in addition to the log of the five-year average of the composite *ICRG* political risk indicator. The table reports adjusted R^2 for OLS regressions and within-R^2 values for fixed-effects regressions.