



BSP International Research Conference on Remittances
**“The Macroeconomic Consequences of Remittances:
Implications for Monetary and Financial Policies in Asia”**
30-31 March 2009
Mandaluyong City, Philippines

Conference Paper No. 5

**“Workers’ Remittances and External Equilibrium:
An Application to the Philippines”**

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Workers' Remittances and External Equilibrium

An Application to the Philippines ¹

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¹ The views expressed herein are those of the author, and should not be attributed to the IMF, its Executive Board, or its management.

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Abstract

Motivated by the growing importance of workers' remittances in developing and emerging market economies, this paper explores their impact on a country's equilibrium current account position and equilibrium exchange rate. Plausible extensions of a standard optimizing model suggest that consumption may not rise sufficiently to fully offset an increase in remittances, implying a positive impact on the economy's equilibrium saving-investment balance. Such an effect is strongly supported by the paper's empirical evidence, which points to a offset coefficient significantly less than one. Applied to the case of the Philippines, one of the largest remittance recipients, the paper's results confirm that taking remittances into account has a major impact on the estimated equilibrium saving-investment balance and the peso's equilibrium real exchange rate.

Workers' Remittances and External Equilibrium: An Application to the Philippines

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I. Introduction

In recent years, workers' remittances provide an important source of balance of payments financing in a growing number of countries. This is especially the case in the Philippines, where remittances have grown markedly since 1999, rising to over 10 percent of GDP in the last few years.

Motivated by this development, a substantial literature has emerged exploring the macroeconomic relevance of remittance flows, aiming to provide an analytical and empirical investigation of both their determinants and their impact on the macroeconomy. While the results of this evolving literature point to some interesting differences for different country groups, a general conclusion is that remittances can have important implications for both consumption smoothing at business cycle frequencies and long-term growth and development in recipient countries.

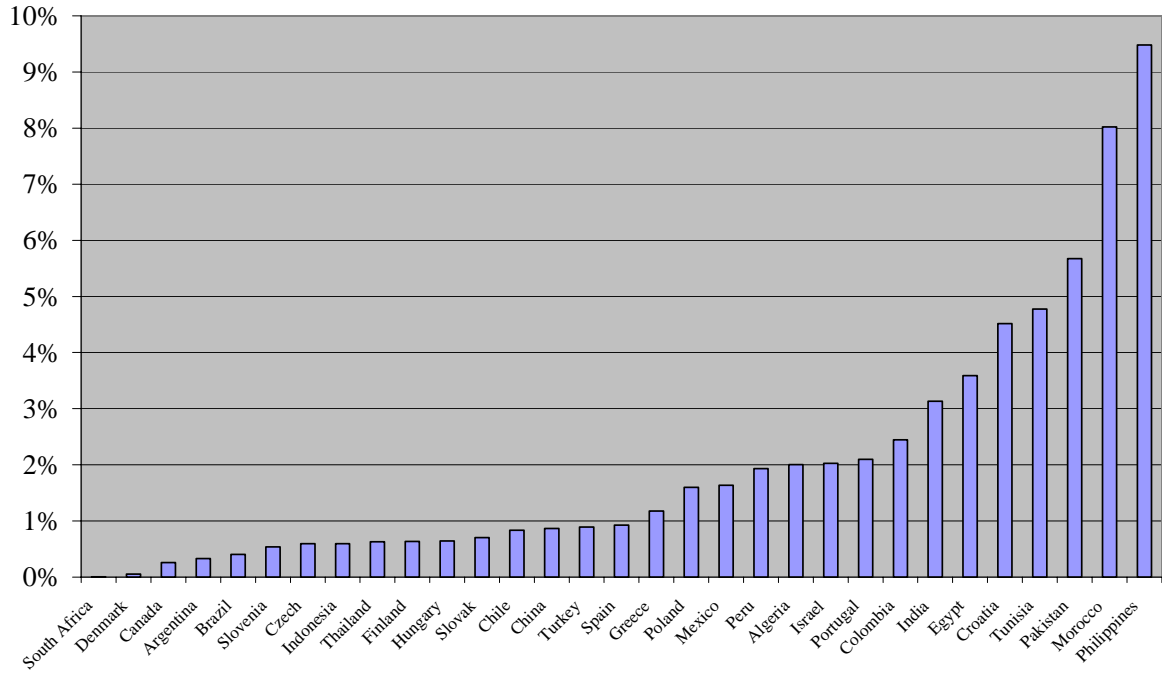
In view of these findings, it is somewhat surprising that the potential implications of remittances for an economy's equilibrium saving-investment balance and equilibrium real exchange rate remain largely unexplored. Indeed, the Fund's CGER exercise has so far not incorporated remittances in its macrobalance approach to exchange rate assessment. This paper is a contribution towards filling this gap, with an application to the case of the Philippines, where the issue at hand can be particularly pertinent.

II. Background and literature review

Workers' remittances have emerged as a major component of the balance of payments in a growing number of countries. By 2005, recorded remittances globally had reached some \$160 billion. And given that a substantial portion are believed to be channeled through the informal sector and thus not captured by official statistics, their actual level could be much higher—Freund and Spatafora (2005) estimate that these informal remittances may amount to about 35 to 75 percent of official remittances.

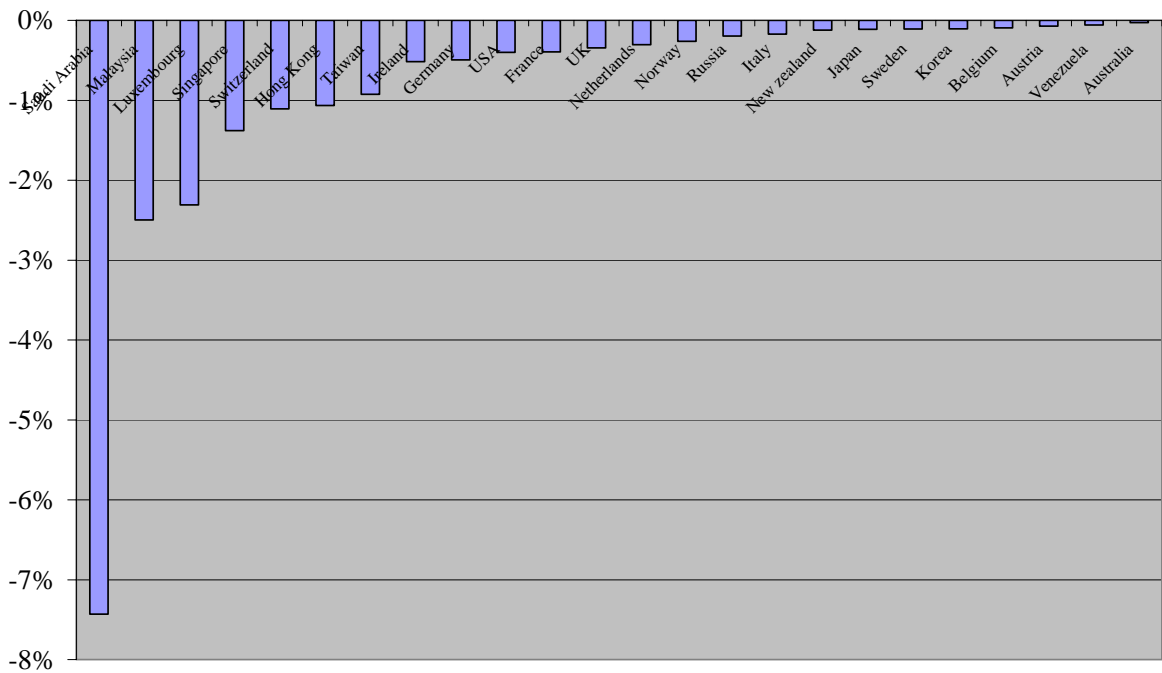
At the same time, the distribution of remittances differs significantly between net recipient and net provider countries. Within the sample that will be used for the purposes of this paper, among net recipient countries some 50 percent recorded net remittance inflows in excess of 1½ percent of GDP on average during 2000-05. Within this sample, Philippines clearly stands out, followed by Morocco, Pakistan, Tunisia, and Croatia.

Remittances to GDP (2000-05 average), Net Recipients



By contrast, among countries that are net providers of remittances, countries with net remittance outflows in excess of 1½ percent of GDP account for only 12 percent of the sample. Among the high-provider group, Saudi Arabia clearly stands out, followed at some distance by Malaysia and Luxemburg.

Remittances to GDP (2000-05 average), Net Providers



An implication of this asymmetry for the issue at hand is that, to the extent that remittances turn out to be an important factor for the determination of the equilibrium saving-investment balance, a methodology that ignores them would lead to a greater number of biased estimates for net recipient than for net provider countries.

A growing literature has been emerging in recent years that aims to explore both the determinants and the macroeconomic impact of remittances in recipient economies. The main findings can be summarized as follows:

- On **determinants** of remittances, despite many researchers' priors, evidence that macroeconomic conditions in the host country is important turns out to be surprisingly weak: see for, example, Vargas-Silva and Huang (2006) on Mexico, Lueth and Ruiz-Arranz (2006) on a sample of Middle Eastern, European, and Asian countries, Gupta (2005) on India, and Roache and Gradzka (2007) on a sample of Latin American countries. Instead, the emerging consensus in the literature appears to be that the *quality of policies and institutions* in receiving countries, including multiple exchange rates, foreign exchange deposit restrictions, large black market premia, and other types of transactions costs, are much more important: see, for example Aggarwal and Spatafora (2005) and Freund and Spatafora (2005).
- On the **macro impact of remittances at business cycle frequencies**, an important horizon for the issues of this paper, there is some evidence that remittances play a countercyclical, consumption-smoothing role: see, for example, Aggarwal and Spatafora (2005) on a large sample of developing and emerging market economies, and the case studies in Bouhga-Hagbe (2004) on Morocco, Chamon (2005) on Samoa, and Gupta (2005) on India. The empirical evidence on this issue is not unambiguous, however: for instance, Durdu and Sayan (2008) finds a stabilizing impact of remittances for Mexico, but not for Turkey—a finding echoed by Sayan (2004) and Sayan and Tekin-Koru (2008). Importantly, Burgess and Haksar (2005) do not find clear evidence of a countercyclical impact of remittances in the case of the Philippines.
- On the **macro impact of remittances at longer horizons**, the main transmission channels, and even the net direction of impact of remittances, are not clear-cut. On the negative side, Chami et. al. (2003) find evidence of an adverse impact on labor force participation and labor effort. On the positive side, there is evidence of remittances having a beneficial impact on poverty reduction—Aggarwal and Spatafora (2005)—and on relaxing liquidity constraints and/or promoting financial development—Giuliano and Ruiz-Arranz (2005) and, for the case of the Philippines, Yang (2008).

However, this literature, while documenting an important macroeconomic impact of remittance flows, leaves largely unexplored the impact of remittances on the equilibrium saving-investment balance and the equilibrium real exchange rate. An analytical and empirical investigation of this question is taken up in the next two sections of this paper.

III. Analytical issues

The analysis and empirical tests of this paper will use as benchmark the methodologies used in the IMF's exchange rate assessments. The Fund's CGER exercise¹ aims at assessing a country's exchange rate on the basis of three distinct methodologies: (i) the **macrobalance (MB)** approach estimates the equilibrium current account balance, or "S-I norm", and assesses the degree of exchange misalignment on the basis of the deviation between this norm and the actual current account balance (corrected for the cycle and the impact of lagged real exchange rate changes); (ii) the **equilibrium real exchange rate (ERER)** approach directly estimates a country's "equilibrium" real exchange rate on the basis of a reduced-form equation estimated over a country panel; (iii) the **external sustainability (ES)** approach calculates the current account balance that stabilizes a country's net financial asset position and assesses the exchange rate on the basis of the deviation of the actual current account (corrected as in the MB approach) from this level.

For the purposes of this paper, the focus will be on the MB approach. In the first place, within the three CGER methodologies, the MB approach, which has a long history at the Fund, remains the cornerstone of its exchange rate assessments, and is considered to be more reliable than ERER in cases where the two methodologies point in different directions (although such conflict cases could point to the need for a deeper assessment). Second, unlike the reduced-form ERER, the MB approach is more structural in nature, and can be linked to a well-specified underlying model; as such, it makes much more straightforward to explore how remittances fit into the analysis. With regard to the ES approach, it essentially serves to check whether the output of the other approaches could give rise to explosive external liability dynamics, in which case it would obviously not be sustainable, but is not designed to pin down an equilibrium exchange rate per se. For the issue at hand, the answer that the ES approach would give is trivially clear: starting from a position of net foreign asset stability, an increase in any non-debt inflow (including remittances) can be fully offset by an equal decline in the trade balance without affecting external debt dynamics.

While the CGER exercise is not explicit about the precise analytical underpinnings of its empirical strategy, the history of the MB approach at the fund (and the choice of variables), suggest a model of the Mundell-Flemming type, augmented to allow for intertemporal optimizing foundations (but without full Ricardian equivalence) in an overlapping generations setting. In line with such a model, the key factors that drive the S-I norm include the fiscal position, demographic variables, the net foreign asset position (to capture the intertemporal budget constraint), the country's relative income level, and the oil balance.

¹ The Consultative Group on Exchange Rate Assessments (CGER) generates estimates of multilateral equilibrium real exchange rates (and corresponding misalignments) for industrial countries and a significant number of emerging market economies twice a year, around the time of the publication of the Fund's *World Economic Outlook*.

Importantly, remittances are absent from the list of explanatory variables. This can be rationalized in a one-good setting, with a single good used both for domestic spending and exports. In such a setting, the conclusion that the equilibrium current account could be independent of the level of remittances appears intuitive, at least under certain conditions. Faced with an *exogenous* permanent increase in current external transfers (including remittances) an optimizing household would adjust lifetime consumption upwards to exactly offset this increase. At the macro level, this would translate in a widening trade deficit one-for-one with the increase in remittances.

This conclusion, however, is generally not robust to plausible extensions of the modeling environment. A *first natural extension* would be to depart from the one-good setting, by introducing a nontraded along side the traded good. While the literature suggests a wide range of modeling strategies to incorporate nontraded goods, it appears useful to consider a simple two-sector open economy framework that retains the concepts of internal and external balance that are key features of the Mundell-Flemming model that underpins the MB approach,² as this would help render the significance of incorporating remittances in the CGER framework more transparent.

In this setting, the equilibrium level of the exchange rate (from a medium-term perspective) is naturally defined as that which helps attain external and internal balance simultaneously. In turn, these concepts can be clarified by depicting the equilibrium conditions for internal and external balance in the real consumption-real exchange rate space, with real consumption (C) measured in terms of the tradable good and the real exchange rate (RER) defined so that an increase signifies depreciation. In particular:

- *External balance* (EB) can be viewed as a situation where the current account deficit is financed by sustainable capital inflows. In the C-RER space, this can be depicted by an upward-sloping curve: an increase in C creates excess demand for traded goods requiring a RER depreciation to maintain the trade balance at a level consistent with the given level of capital inflows.
- *Internal balance* (IB) can be defined as a situation where the market for the nontraded good clears at full employment. In the C-RER space, this can be depicted by a downward-sloping curve: the excess demand for the nontraded good generated by an increase in C requires a RER appreciation to return the nontraded good market to equilibrium.

Insert graph

Equilibrium is determined at the intersection of the EB and IB curves. It should be noted that, while equilibrium in this class of models is typically discussed in terms of the real exchange rate, it is straightforward to express it in terms of the current account norm by

² For a recent model of this type, also used in Chami et. al. (2008), chapter VII, see Montiel (2006).

focusing on real consumption, which is negatively related to the trade balance. This allows a direct comparison with the MB model.

This simple setting can illustrate the relevance of remittances for the equilibrium current account position. An exogenous increase in remittances shifts the EB curve out, but leaves the IB curve unaffected, since remittances do not *directly* affect the nontraded good market. The new equilibrium is characterized by an appreciated real exchange rate and a higher real consumption level, or a wider trade deficit that offsets the higher current inflows. Thus, the results of this analysis are *qualitatively* consistent with the MB approach.

The key point to note, however, is that, in contrast to the one-good case, the offset from the trade balance to an exogenous increase in remittances *is less than complete*, as long as the IB curve is downward-sloping—a direct consequence of the presence of nontradables. In other words, in this more general modeling environment, the equilibrium current account balance (inclusive of remittances) would tend to increase in response to an increase in remittances. The degree of offset from the trade balance would depend on structural factors that affect the elasticities of the EB and IB curves, including the degree of substitutability between tradables and nontradables in both consumption and production. Other potentially relevant factors include the extent to which remittances are inversely related to income, and the extent to which remittance-related spending falls on traded goods.

A *second reason* why the “irrelevance of remittances” proposition may not hold could be less-than-full optimization on the part of households, possibly reflecting liquidity constraints, imperfect information, or other frictions. The counterpart of full offset of an exogenous increase in remittances by a wider trade balance is a one-for-one decline in national saving. In turn, this would imply that remittances achieve perfect consumption smoothing in the face of shocks at business cycle frequencies. Burgess and Haksar (2005) provide direct tests of this hypothesis for the case of the Philippines. Using simple correlation analysis, as well as vector autoregression techniques, the authors find very weak evidence of a stabilizing impact of remittances on private consumption. This result suggests that remittances could play a non-trivial role in the determination of the S-I norm.

A *third possible analytical extension* that could render remittances relevant in determining the S-I norm could entail departing from the (implicit) assumption of their exogeneity. In principle, remittances (as distinct from other current external transfers) should be viewed as the endogenous outcome of the household’s optimization over consumption/saving and consumption/leisure choices. Incorporating remittances into the optimization problem, and adding a non-trivial labor supply choice, significantly complicates the analysis—and a full analytical exposition is beyond the scope of this paper. At the same time, such a modeling strategy carries the reward of a much richer set of results. For the issue at hand, it turns out that, in general, the “full offset” result of the MB approach is no longer robust even under the one-good formulation.

While the above discussion suggests that there are compelling theoretical reasons to expect that remittances could have an the impact on a country's equilibrium current account position, getting a sense of the relevant magnitudes, and determining the extent to which taking remittances into account affects the conclusions of the basic MB approach, is ultimately an empirical issue. Such an empirical investigation is taken up in the next section.

IV. Empirical results

To ensure comparability of S-I norms and exchange rate assessments, the empirical analysis utilizes the CGER country sample. This is a sample of 54 countries, broadly balanced between industrial (25) and emerging market economies (29), with observations spanning the 1970-2004 period. A distinct disadvantage for the issue at hand is that the sample excludes some large net remittance recipients, especially in Latin America and in central and eastern Europe. The tabulation below summarizes the set of variables considered by the CGER's MB approach; for a discussion of the underlying economic rationale (including coefficient signs), see Lee et. al. (2008).

Variable	Description
CA	Current account balance as a percentage of GDP
FISCAL	Government balance as a percentage of GDP
PPPGRDP	PPP adjusted GDP per capita (constant 2000 International \$)
RYGROP	Growth rate of real GDP per capital (constant LCU)
NGDPD	Nominal GDP in billion of U.S. dollars
Odep_30	Ratio of population (65 and above) over (30 to 64 years old)
PGRO	Total Population Growth
TBO	Trade balance of oil in billion of U.S. dollars
CRISIS	Indicator of Banking Crisis Episodes
NNFAD	Nominal net foreign assets in billion of U.S. dollars

As a benchmark empirical specification, estimates of the S-I norm can be obtained by regressing the current account variable on the CGER explanatory variables using a *panel* methodology. Under this specification, common coefficients, *including a common constant term*, are imposed across the countries of the sample. The estimation results are summarized in the tabulation below.

Panel Specification: CGER Variables

Dependent Variable: CA

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.033381	0.007540	4.427183	0.0000
FISCAL	0.334782	0.027343	12.24389	0.0000
PPPGDPP	2.36E-06	2.19E-07	10.78190	0.0000
RYGROP	-0.075709	0.032172	-2.353244	0.0187
NGDPD	4.00E-06	1.71E-06	2.339985	0.0194
ODEP_30	-0.215755	0.027558	-7.829189	0.0000
PGRO	-1.127122	0.203137	-5.548581	0.0000
TBO	0.000540	0.000110	4.890302	0.0000
CRISIS	0.017141	0.003509	4.884540	0.0000
NNFAD	4.88E-05	6.23E-06	7.841905	0.0000
R2	0.280850	Mean Dep. Var.	-0.009424	
Adj. R2	0.276454	S.D. Dep. Var.	0.052447	
S.E.	0.044603	Akaike	-3.375763	
SSR	3.143293	Schwarz	-3.341980	
Log Likelihood	2693.731	F-stat.	68.55988	
DW	0.508717	Prob (F-stat.)	0.000000	

All estimated coefficients are statistically significant and have the theoretically predicted sign. In particular:

- An increase in the fiscal balance raises the equilibrium current account balance (less than full “Ricardian equivalence”);
- Among the demographic variables, a high old-age dependency ratio and rapid population growth allow wider current account deficits in equilibrium;
- Low levels of development and rapid output growth imply wider equilibrium current account deficits as the economy is converging;
- Economic size appears to be associated with a larger equilibrium current account balance;
- Banking crises, typically associated with sudden stops, force the equilibrium current account position to shift into larger surplus (“current account reversal”).

The key empirical issue for this section is to what extent adding remittances to the CGER specification carries additional explanatory power, and whether the remittance variable is “economically” important. Before proceeding, the appropriate concept of remittances to be used in the empirical analysis warrants brief elaboration. The literature has explored three different components of workers’ remittances: (i) a narrow component consisting of current *transfers* by migrants; (ii) *employee compensation* recorded under the BOP income account; (iii) *migrants’ transfers*, consisting of contra-entries to the flow of goods and changes in financial items that arise from individuals’ change of residence. From an

analytical perspective, a strong case can be made for focusing on the narrow concept, as the latter two categories are not conceptually representative of remittance behavior—for a detailed discussion of these issues, see Chami et. al. (2008), Chapter II. From a more practical perspective, data limitations pose problems in using a broader concept of remittances: serious statistical problems of cross-country comparability of the latter two categories have been well documented, and in any event a broader concept entails a large number of missing observations for the sample under consideration that would result in a significant loss of degrees of freedom. For all these reasons, the empirical analysis of this section is based on the narrow transfer component of remittances.

The tabulation below summarizes the empirical results from adding remittances as a ratio to GDP (REM) to the CGER explanatory variables under the panel specification.

Panel Specification: Including Remittances

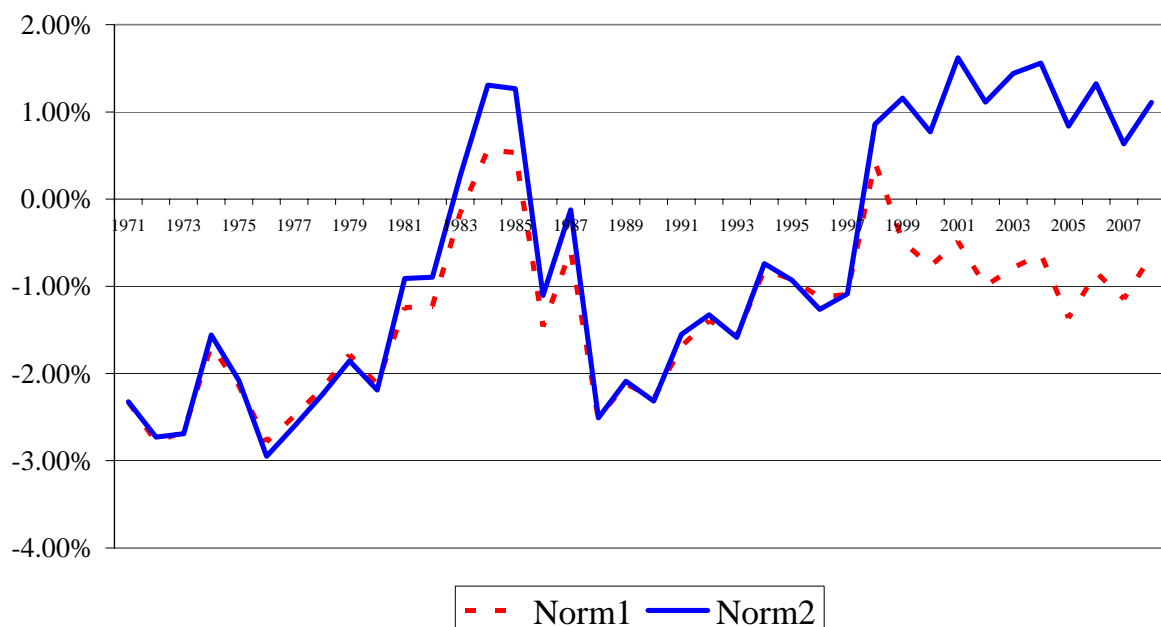
Dependent Variable: CA

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.035353	0.007877	4.488339	0.0000
FISCAL	0.366395	0.029678	12.34552	0.0000
PPPGDPP	2.59E-06	2.49E-07	10.38141	0.0000
RYGROP	-0.106876	0.035370	-3.021725	0.0026
NGDPD	5.44E-06	1.75E-06	3.099238	0.0020
ODEP_30	-0.240561	0.029535	-8.145005	0.0000
PGRO	-1.201322	0.212591	-5.650859	0.0000
TBO	0.000657	0.000116	5.677527	0.0000
CRISIS	0.021647	0.003654	5.924194	0.0000
NNFAD	4.92E-05	6.92E-06	7.835246	0.0000
REM	0.208722	0.054345	3.840686	0.0001
R2	0.327070	Mean Dep. Var.	-0.008934	
Adj. R2	0.322046	S.D. Dep. Var.	0.052704	
S.E.	0.041657	Akaike	-3.371951	
SSR	2.629832	Schwarz	-3.331448	
Log Likelihood	2621.945	F-stat.	65.13772	
DW	0.500175	Prob (F-stat.)	0.000000	

The coefficient of the remittance variable is correctly signed, statistically significant, and economically quite important: a 1 percentage point increase in the remittance-to-GDP ratio is estimated to raise the equilibrium current account balance by 0.2 percentage points of GDP. Moreover, inclusion of the remittance variable improves the equation fit and has very moderate impact on the estimated coefficients of the other explanatory variables, which remain statistically significant. Overall, the estimation results argue strongly for including remittances as an explanatory variable of the S-I norm, consistent with the analytical considerations of the previous section.

Figure 3 depicts the time series for the S-I norm for the Philippines under the panel specification alternatively estimated on the basis of the standard CGER variables (Norm1) and including remittances (Norm2). Clearly, including remittances has a material impact on the estimated equilibrium current account, especially over the post-1998 period: as of 2008, Norm2 exceeded Norm1 by over 1½ percentage points of GDP. The estimated S-I norms even differ in sign: while the MB approach using the standard CGER variables points to a small deficit as an equilibrium current account position for the Philippines, accounting for remittances instead points to a substantial surplus..

Figure 3
Philippines: S-I Norm, Panel Estimation



As an alternative empirical specification, the equations for the equilibrium current account are estimated using *fixed effects (FE)*—the preferred specification in the CGER exercise: while the explanatory variable coefficients are kept identical across countries, *country-specific constant terms* are now allowed. Allowing for country-specific FE has the advantage of controlling for omitted variables, as well as for relevant country-specific factors that cannot be easily modeled. On the other hand, the methodology also has drawbacks. By essentially removing the cross-sectional component of the sample, FE estimation can result in substantial loss of information. As a related matter, it can artificially compress the statistical and economic significance of variables that exhibit limited time series (but substantial cross-sectional) variation: for the issue at hand, this could be relevant for the remittance variable, but also for the demographic, stage of development, and economic size variables of the standard CGER specification. Since it is difficult to determine the balance of pros and cons, FE estimation is included as a robustness test of the panel results and to ensure comparability with the CGER methodology.

The tabulation below summarizes the FE estimation results on the basis of the CGER explanatory variables—to conserve space, only the Philippines-specific FE is reported (the estimated FE for the other countries of the sample are available upon request).

FE Specification: CGER Variables

Dependent Variable: CA

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.077675	0.013435	5.781634	0.0000
FISCAL	0.340338	0.029967	11.35720	0.0000
PPPGDPP	3.72E-06	3.63E-07	10.25929	0.0000
RYGROP	-0.122155	0.031084	-3.929864	0.0001
NGDPD	3.91E-07	2.56E-06	0.152842	0.8785
ODEP_30	-0.313421	0.061448	-5.100605	0.0000
PGRO	-1.637819	0.258130	-6.344933	0.0000
TBO	0.001012	0.000165	6.135922	0.0000
CRISIS	0.012604	0.003453	3.650253	0.0003
NNFAD	3.39E-05	7.88E-06	4.300656	0.0000
FE (Philippines)	-0.026224	0.010015	-2.618632	0.0089
R2	0.455943	Mean Dep. Var.	-0.009424	
Adj. R2	0.433482	S.D. Dep. Var.	0.052447	
S.E.	0.039475	Akaike	-3.586854	
SSR	2.37988	Schwarz	-3.370643	
Log Likelihood	2915.549	F-stat.	20.29928	
DW	0.668956	Prob (F-stat.)	0.000000	

The FE estimation results do not fundamentally change the conclusions from the panel specification. As expected, FE considerably improve the equation fit, suggesting that unmodeled country-specific factors may indeed be important. On the other hand, for the most part the conclusions regarding the statistical and economic significance of the explanatory variables remain broadly unaffected: the main exception is the economic size variable (NGDPD) whose coefficient turns statistically insignificant under the FE specification; while the coefficients of the crisis dummy and net foreign assets are marginally lower compared to the panel results, they remain statistically significant at conventional levels.

The next step is to add the REM variable to the FE specification. The estimation results are summarized in the tabulation below.

FE Specification: Including Remittances

Dependent Variable: CA

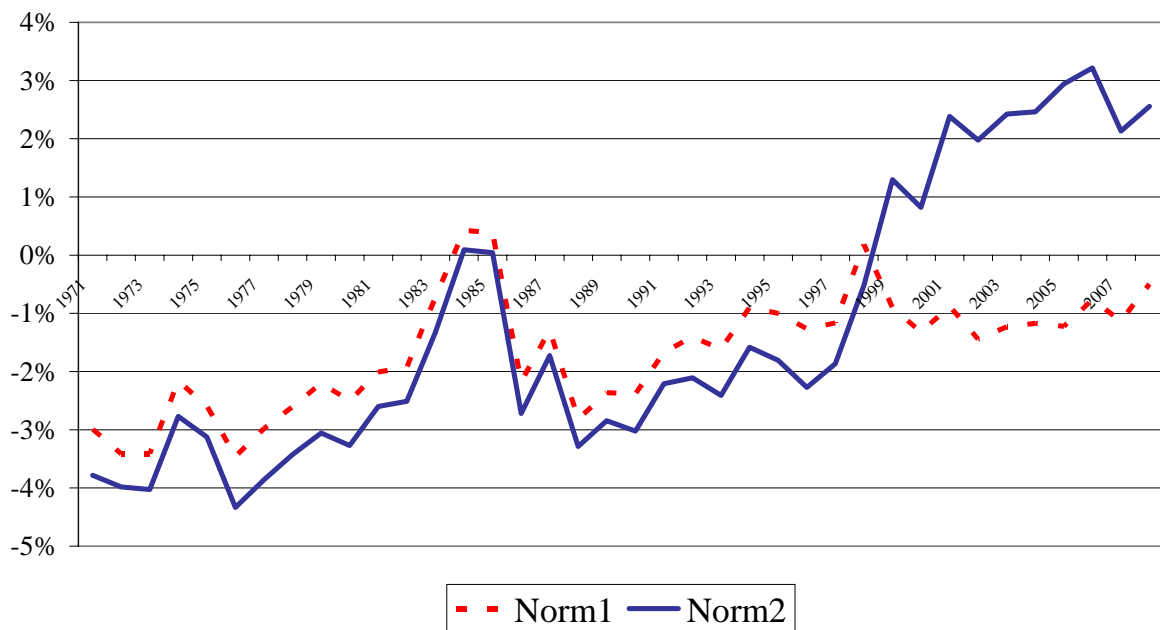
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.081914	0.138520	5.913402	0.0000
FISCAL	0.343986	0.032336	10.63790	0.0000
PPPGDPP	4.29E-06	3.94E-07	10.86997	0.0000
RYGROP	-0.146788	0.034246	-4.286313	0.0000
NGDPD	-1.26E-06	2.62E-06	-0.481630	0.6301
ODEP_30	-0.312871	0.064371	-4.860433	0.0000
PGRO	-1.894908	0.267811	-7.075539	0.0000
TBO	0.001022	0.000168	6.088203	0.0000
CRISIS	0.014088	0.003629	3.881807	0.0001
NNFAD	3.21E-05	7.97E-06	4.028667	0.0001
REM	0.453077	0.089700	5.051009	0.0000
FE (Philippines)	-0.039293	0.010372	-3.788535	0.0002
R2	0.509781	Mean Dep. Var.	-0.008934	
Adj. R2	0.484920	S.D. Dep. Var.	0.052704	
S.E.	0.038866	Akaike	-3.592519	
SSR	2.100598	Schwarz	-3.353181	
Log Likelihood	2733.651	F-stat.	19.29697	
DW	0.669391	Prob (F-stat.)	0.000000	

The FE estimation results presented above are broadly consistent, and if anything strengthen, the results obtained under the panel specification. The REM coefficient remains correctly signed and strongly significant, but, somewhat at odds with our priors, its size actually *increases*, at more than double its panel estimate: the FE estimation results suggests that an increase in remittances by 1 percentage point of GDP raises the equilibrium current account balance by almost $\frac{1}{2}$ percentage point of GDP. The estimation results regarding the other explanatory variables are broadly robust, with the economic size variable remaining statistically insignificant.

Figure 4 summarizes the evolution of the equilibrium current account balance under FE estimation, with the standard CGER explanatory variables (Norm1) and with remittances included (Norm2). In qualitative terms, the picture painted by Figure 4 is broadly consistent with that of Figure 3, derived under panel estimation. It is reassuring that the estimated 2008 norm on the basis of the standard CGER variables is essentially identical across FE and panel specifications (-0.5 versus -0.6 percent of GDP, respectively), given lack of strong theoretical priors on which the two methodologies can be judged a priori. At the same time, Figure 4 confirms that taking remittances into account makes a substantial difference for the S-I norm in the case of the Philippines: with remittances incorporated in the empirical specification, the equilibrium current account balance turns out to be significantly higher relative to the standard CGER model throughout the post-

1998 period, when remittances took off. In fact, the discrepancy in estimated norms between the two models is much higher under the FE specification—mainly a reflection of the much higher estimated coefficient of the remittance variable: with FE included, the estimated S-I norm for the Philippines reaches a surplus 2.6 percent of GDP in 2008 (versus 1.1 percent of GDP based on panel estimates).

Figure 4
Philippines: S-I Norm, with FE



In summary, consistent with the analytical intuition of the previous section, the empirical results of this section make a strong case for taking remittances into account for the estimation of a country's S-I norm. Applied to the Philippines, the results suggest that omitting remittances from the estimation could entail substantial underestimation of the equilibrium current account position—in the range of 1½ - 3 percentage points of GDP depending on the specification used. In turn, this could be expected to have important implications for the assessment of the Philippines' equilibrium exchange rate. This is the topic of the next section.

V. Implications for the equilibrium exchange rate

Deriving an estimate of exchange rate misalignment from the S-I norm on the basis of the CGER's macrobalance approach involves a number of steps. In particular:

- Correct the nominal current account balance for cyclical and transitory effects, as well as for the impact of past exchange rate changes—either directly or by using the medium-term forecast which by construction corrects for these factors (in this case, one has also to correct for the impact of real exchange rate changes over the forecast period)—to arrive at the “underlying” current account.

- Estimate the real exchange elasticity of the current account balance—this section assumes the CGER’s panel estimate (0.24) for this elasticity, implying that a 1 percent real appreciation worsens the current account by some ¼ percentage point of GDP.
- Use this elasticity to calculate the change in the real exchange rate required for the underlying current account to move to equality with the S-I norm—this is a first-round estimate of the exchange rate misalignment.
- Adjust the calculated misalignment to ensure that the model’s “adding up” constraint holds, i.e. that the global current account balance is zero.

The tabulation below summarizes each of these steps for the S-I norm estimated using the standard CGER variables, as well as adding remittances (in bold). For reference purposes, the table also includes the exchange rate assessments on the basis of the equilibrium real exchange rate (ERER) and external sustainability (ES) approaches.

Philippines

Exchange rate assessment

	Elasticities	Projected medium-term		Change in REER from reference period to projection date	Projected medium-term CA/GDP at reference period exchange rate	REER gap	Multilaterally consistent
		CA/GDP	CA/GDP norm				REER gap
MB approach - standard CGER variables	0.24	0.5	-1.2	1.2	0.8	-8.2	-5
MB approach with Remittances - Panel	0.24	0.5	1.1	1.2	0.8	1.2	1
MB approach with Remittances - FE	0.24	0.5	2.6	1.2	0.8	7.1	5
ERER approach				Actual ln(REER)	Equilibrium ln(REER)	Misalignment	Multilaterally consistent misalignment
				4.58	4.45	12.9	12
ES approach							
	Elasticities	Projected medium-term CA/GDP	NFA/GDP 2007	NFA-stabilizing CA/GDP	Change in REER from reference period to projection date	Projected medium-term CA/GDP at reference period exchange rate	REER gap
	0.24	0.5	-34.0	-1.7	1.2	0.8	-11

All figures are in percent, except for elasticity.

The tabulation above confirms that incorporating remittances in the estimation of the S-I norm has a non-trivial impact on the Philippines’ exchange rate assessment under the MB approach. While the standard CGER exercise points to a peso undervaluation of 5 percent, incorporating remittances points to an *over*valuation in the range of 1-5 percent. Even though both sets of values are reasonably close to equilibrium, the difference between the point estimates is statistically (and economically) significant.

A final point to note is that incorporating remittances in the S-I norm estimation considerably reduces the discrepancy in the peso’s exchange rate assessment between the MB and ERER approaches.³ While the two approaches in principle capture the impact of a different set of explanatory variables and entail different underlying methodologies, the large discrepancy in resulting exchange rate assessments under the standard CGER

³ The ES approach, essentially a bound test to ensure non-explosive behavior of the NFA position, is not comparable to the other two approaches in this regard.

methodology (some 17 percentage points) is something of a puzzle. Incorporating remittances in the MB approach reduces this discrepancy by almost one-half.

VI. Concluding remarks

This paper has explored, from an analytical and an empirical perspective, the implications of workers' remittances for the Philippines' S-I norm and equilibrium exchange rate. While remittances have emerged as an increasingly prominent source of BOP financing in the case of the Philippines, particularly over the last decade, a similar trend also characterizes a number of other emerging market and developing economies. Accordingly, the analysis and empirical findings of this chapter potentially carry broader implications for the Fund's exchange rate assessment exercise.

From an analytical perspective, it is argued that a number of intuitive extensions to the standard one-good, intertemporal optimizing model of the current account can yield a positive impact of remittances on an economy's S-I norm. Such extensions could include: adding nontraded goods to the benchmark model; assuming less-than-perfect consumption smoothing due to a variety of market frictions; nesting the benchmark model in a more general framework that treats remittances as endogenous in the representative household's intertemporal consumption and labor-leisure choice. The empirical results provide strong support for this hypothesis: under alternative specifications, remittances consistently turn out to be a large and significant determinant of the equilibrium current account balance. Accordingly, omitting this factor from the exchange rate assessment exercise could result in substantial bias in the estimated S-I norm: in the case of the Philippines this degree of underestimation was found to be in the range of 1¾-3 percent of GDP, depending on the specification.

The analysis and empirical work of this paper can be usefully extended in a number of directions. The following appear particularly promising:

- The empirical testing was restricted to the CGER sample, essentially for reasons of comparability. Extending the sample would allow inclusion of a substantial number of countries—mainly in eastern Europe and Latin America—for which remittances are quantitatively significant. This would provide an important robustness check of this paper's results.
- The analytics of fully endogenizing remittances—which are only alluded to in this paper—could be developed more formally. This would provide better intuition on key channels through which remittances impact the equilibrium current account balance, and also provide better guidance to the empirical specification.

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