

Remittances and External Equilibrium

An Application to the Philippines

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Outline

- Background and Literature
- IMF Methodologies
- Introducing Remittances – Analytical Issues
- Empirical Results
- Exchange Rate Assessment Revisited

Background

- In recent years, remittances provide important source of BOP financing in a growing number of countries
- Estimated global remittances: \$160 bn in 2005
- Substantial under-reporting: between 35 and 75% of official remittances
- Particularly important in the case of the Philippines: over 10% of GDP in recent years

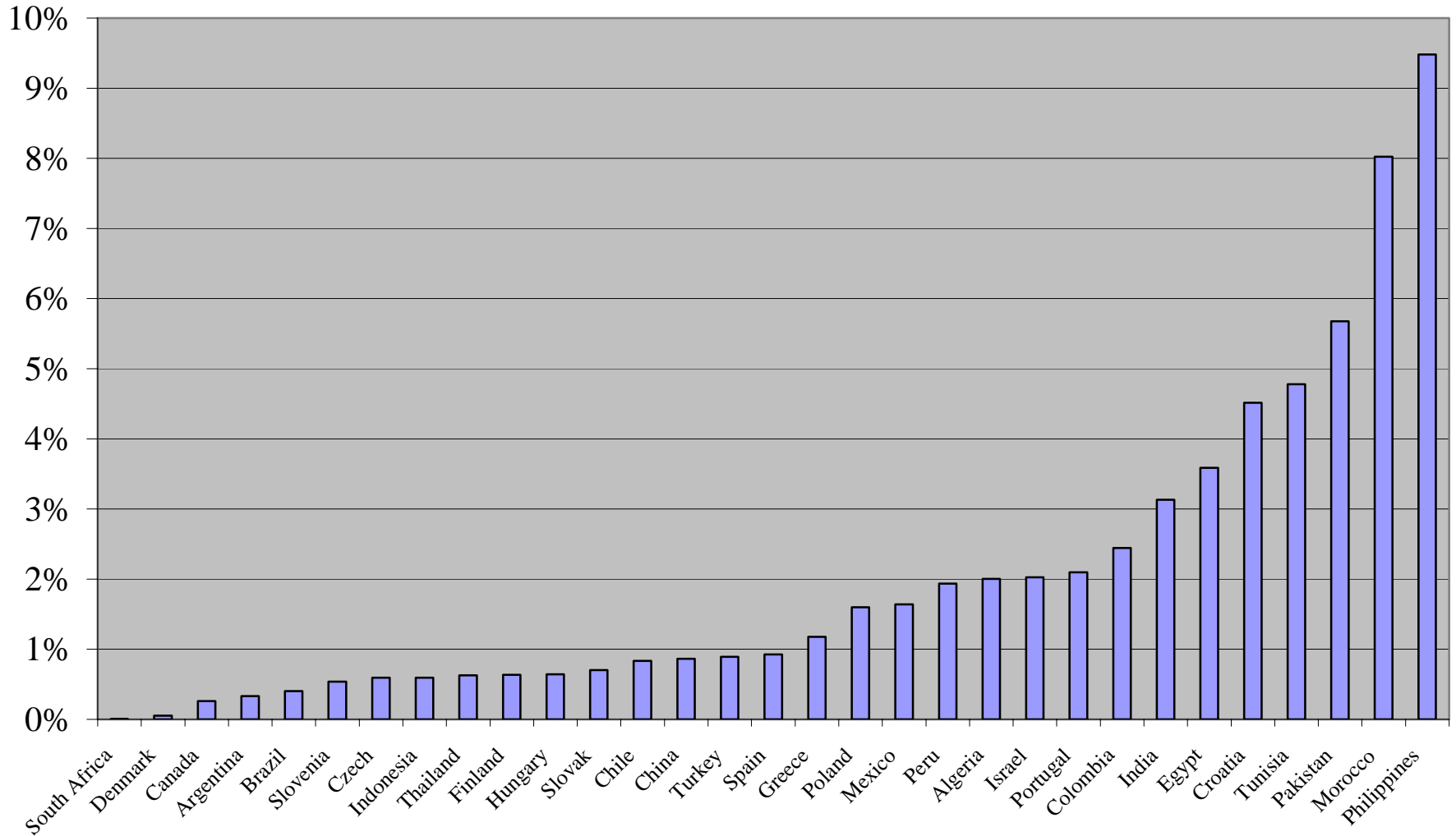
Distribution of remittances

Important asymmetries

- **Net recipients:** 50% of CGER sample in excess of 1½% of GDP in 2000-05
 - **Net providers:** 12% of CGER sample in excess of 1½% of GDP in 2000-05
- ➔ Hence, if remittances are important for exchange rate assessment, bias more important for recipients

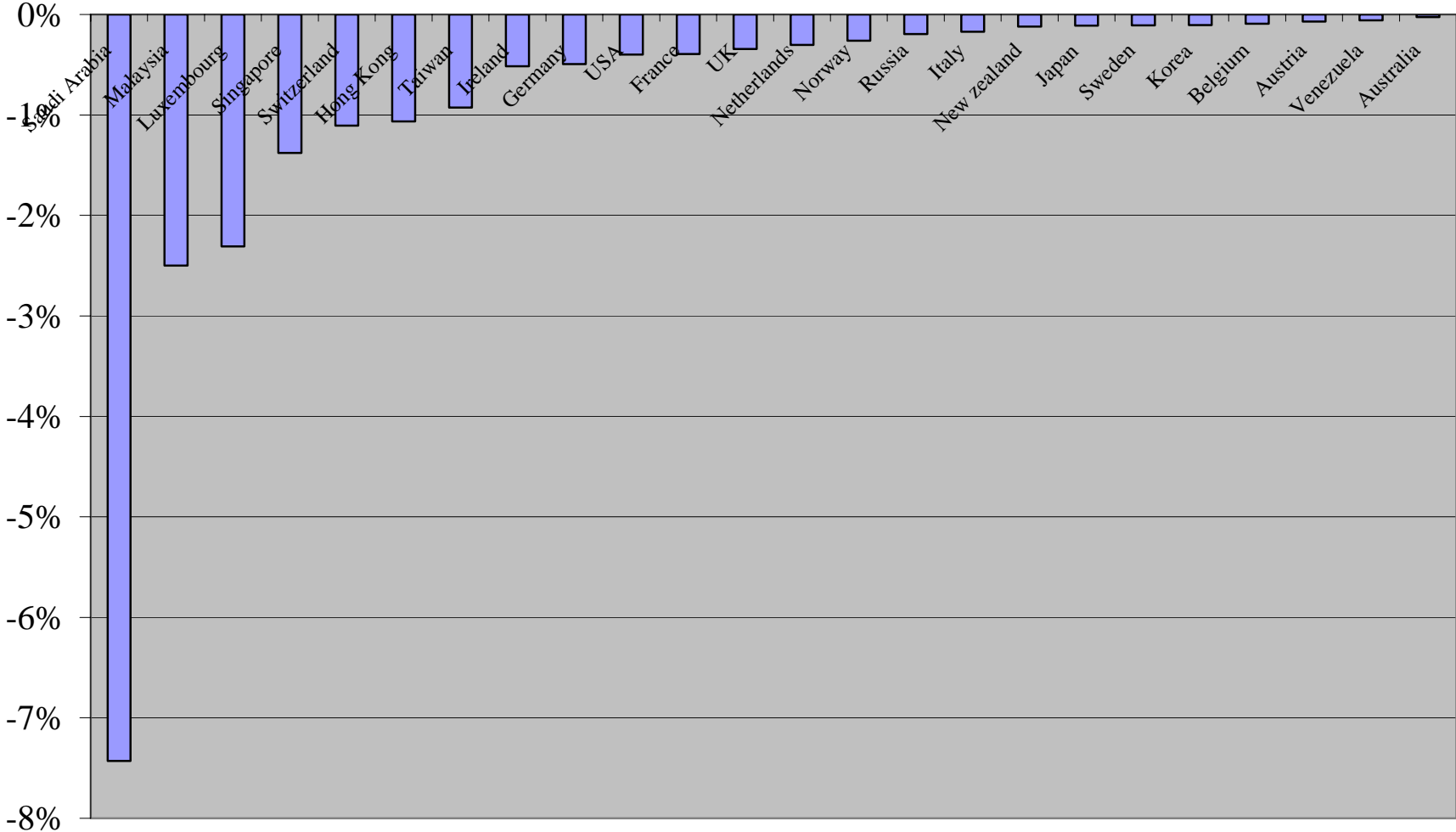
Net Recipients

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



Net Providers

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



Determinants and macro impact of remittances

- Policies and institutions in recipient countries at least as important as macroeconomic factors
 - Countercyclical impact of remittances – but weak evidence for the Philippines, Burgess and Haksar (2005)
 - Impact on long-term growth – Mixed evidence: Augment available resources; Substitute for lack of financial development; Skill acquisition / But also: Impact on labor force participation; Dutch disease; Brain drain
- ➔ Despite potentially important macro impact, impact on equilibrium S-I balance and equilibrium RER largely unexplored

IMF exchange rate assessment methodologies

- MB approach: Estimate S-I norm, derive exchange rate misalignment
- EREER approach: Estimate reduced-form relation on fundamentals
- ES approach: Calculate current account balance that stabilizes NFA position, derive misalignment

More on MB approach

- Key tool for IMF exchange rate assessment
 - One-good Mundell-Flemming (MF) model, augmented with intertemporal optimization, overlapping generations structure
 - Key explanatory variables: fiscal, demographics, level of development, NFA
- No role for remittances in standard MB approach: exogenous permanent increase in remittances fully offset by trade balance**

Model extensions

Extensions to the baseline model:
remittances can impact equilibrium CA

- Less-than- full household optimization
- Nontradable goods
- Endogenous remittances

Role of remittances - analytics

- One-good structure of baseline model:
Key weakness
- Introduce nontraded good in standard two-sector OEM
- Retain other key features of MF: ***external balance (EB)*** – upward-sloping in C-RER space; ***internal balance (IB)*** – downward-sloping in C-RER space
- Concept of equilibrium

Role of remittances – analytics (continued)

- Comparative statics: Exogenous increase in remittances
→ outward shift of EB
 - New equilibrium: wider trade deficit, appreciated equilibrium exchange rate
 - So, qualitatively similar to standard MB results
- ***But key difference: Trade balance offset no longer full – In new equilibrium, larger CA balance (inclusive of remittances)***
- Determinants of degree of offset: Tradable-Nontradable substitutability in production and consumption; relation of remittances to income; extent to which remittance-related spending falls on tradables

Further model extensions

- Exogenous nature of remittances problematic
 - Endogenize remittances in consumption- saving optimization problem
 - Endogenize remittances in consumption- leisure optimization problem – need non-trivial model of labor supply
- ➔ Extensions complicate analysis, but richer results: ***full trade balance offset no longer robust even in one-good model***

Empirics - Overview

- Use IMF country sample: 55 countries, broadly balanced between industrial and EMEs
- Use narrow concept of remittances – transfer component
- Panel estimation
- FE estimation: Improves fit, can control for country-specific structural determinants / But lose cross-country dimension, important for variables with low time-series variation

List of variables

CA2Y	Current account balance as a percentage of GDP
FB2Y	Government balance as a percentage of GDP
PPPGDPP	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

Panel estimation – Standard MB

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	

Panel estimation – Add remittances

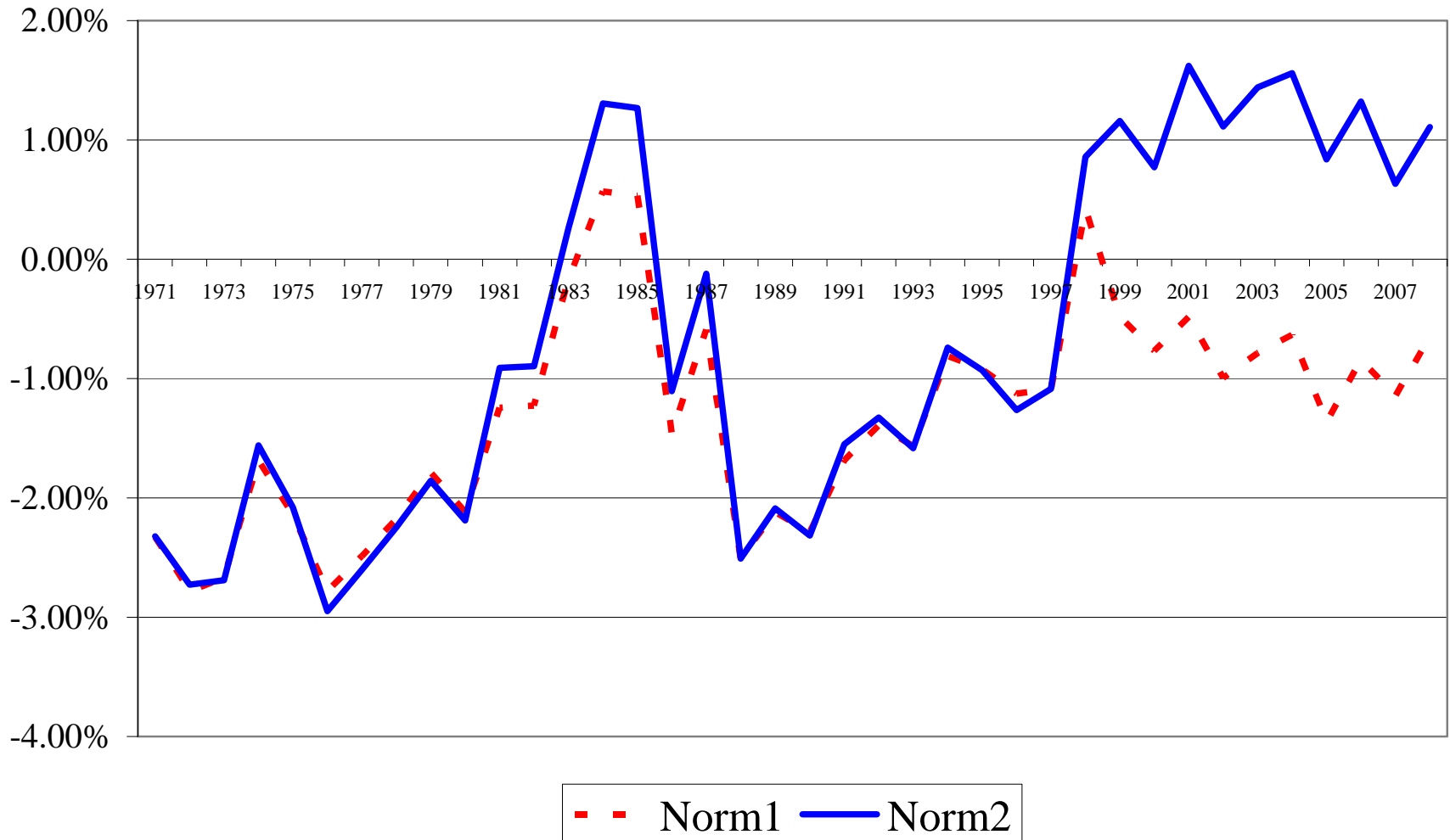
Panel Specification: Including Remittances

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	

S-I Norm: Panel Specification

Philippines: S-I Norm, Panel Estimation



FE estimation – Standard MB

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	

FE estimation – Add remittances

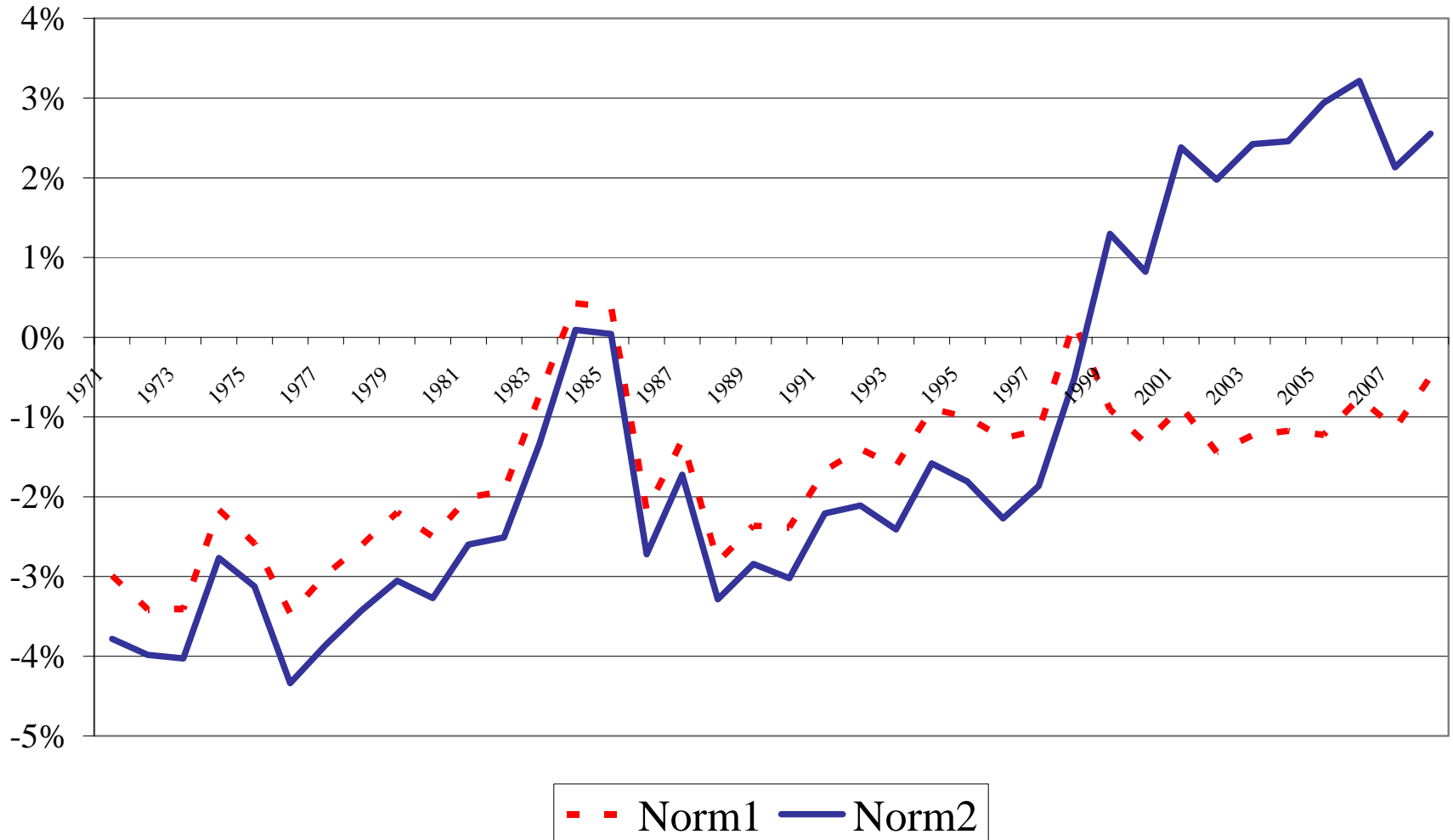
FE Specification: Including Remittances

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	

S-I Norm: FE Specification

Philippines: S-I Norm, with FE



Exchange rate assessment

MB approach

	Elasticities	Projected medium-term CA/GDP	CA/GDP norm	Change in REER from reference period to projection date	Projected medium- term CA/GDP at reference period exchange rate	RER gap	Multilaterally consistent RER gap
Standard MB	0.24	0.5	-1.2	1.2	0.8	-8.2	-5
MB with REM-Panel	0.24	0.5	1.1	1.2	0.8	1.2	1
MB with REM-FE	0.24	0.5	2.6	1.2	0.8	7.1	5

All figures are in percent, except for elasticity.

Questions and Discussion

Thank you!