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**“The Impact of Remittance on the Housing Market
in Emerging Economies”**

by

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The Impact of Remittance on the Housing Market in Emerging Economies

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Abstract. Remittances are transfers of money by foreign workers to their home countries. Money sent home by migrants constitutes the second largest financial inflow to many developing countries. About 45 percent of remittance-receiving households use this income for asset accumulation such as property. Therefore, an increase in remittances determines a rise in household incomes and consequently an increase in consumption of housing services. The economy should respond to the increasing housing demand with more investment and productivity growth, with strong impact in terms of business cycle. The aim of this paper is to describe the implications of remittance fluctuations for various macroeconomic variables and in particular for the housing market, as a resource of asset reallocation. The paper employs a DSGE model with financial frictions, with large quantitative impacts when the economy is borrowing constrained. The development of flexible credit system makes easier the possibility to send money back home and the facility to ask for a mortgage loan. Therefore, a more developed credit and mortgage system amplifies the impact of remittance on housing. In addition, remittances can make up a large part of a down-payment. Households that receive remittances can access formal financing, if they are able to document their total income, including remittances, to acquire a house (expanding the financial frontier).

JEL Classification: F22; F32; F33; F41; F44, J20, O10

Keywords: Remittance, International Migration, Household Expenditure, Business Cycle.

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1 Introduction

In today's globalized economies these conceptual frameworks about financial asset accumulation intersect with the resources or stocks that migrants raise in their efforts to support their families. Migrant foreign savings, the stock of predominantly economic and financial resources, then become an important economic base for remittance recipient households that may constitute the foundation for asset accumulation and poverty reduction. However, in order to understand the relationship between migrant foreign savings and asset accumulation it is first important to distinguish between the various types of transnational economic activities that migrants engage in. Trends in international migration over the past thirty years have shown that migrants have become substantively and more directly involved in different economic and social activities in their countries of origin. This is due in part to the dynamics of globalization and to new opportunities resulting from political and economic opening in their home societies. One of the most important outcomes of globalization and migration has been the formation of transnational families and communities; defined as groups or families that maintain relations and connections that encompass both the home and host societies. In practical terms, a typical immigrant's economic linkage with their home country extends to at least four practices that involve spending or investment: family remittance transfers; demand of services such as telecommunication, consumer goods or travel; capital investment; and charitable donations to philanthropic organizations raising funds for the migrant's home community. Remittances became important a few years ago, when they began to eclipse other forms of capital flows, such as foreign direct investment, multilateral assistance and loans. In 2005, the World Bank estimated that the total level of money sent home by immigrants from emerging market countries was \$223 billion. In 2006, Latin America received \$62 billion in remittances, of which 75% was from the U.S. The multilaterals and Latin American governments were ecstatic about the increase in remitted funds. They attributed the inflows to changes in regulatory framework, the proliferation of financial transfer networks and a reduction in transfer costs. Some Central American governments issued long-term bonds, modeling their balance of payments on the steady increase in remitted funds. However, few people bothered to realize that much of the generated money was a result of the large increase in U.S. home construction and associated services. Unfortunately, everything that goes up must come down—and the decline in the U.S. housing market has dangerous impli-

cations for some emerging market countries. Migrants sent approximately 10% of their household incomes; these remittances made up a corresponding 50-80 % of the household incomes for the recipients. Recognizing that remittances can be used in a diversified portfolio of consumption, financial, risk reduction, and investment goods and services, and that it may also have a positive impact on economic growth (Adelman and Taylor 1990) as workers' remittances influence financial deepening. More specifically, it has been showed that there exists a positive relationship between financial deepening, defined as the ratio of the money supply (M2) to GDP (McKinnon 1973; Shaw 1973), and remittances. A second focus of the research is to ascertain whether the remittance-decay hypothesis (RDH) holds, taking into account the altruistic behavior of the migrant worker. Altruistic behavior of the migrant worker is premised on the notion that remittances increase the utility of family members at home, but beyond some point the marginal utility per unit of remittance declines. Current literature has not provided a theoretical framework for establishing a causal link between remittances and financial deepening, although other macroeconomic variables, such as interest and exchange rates, have been identified as being important for influencing an increased flow of remittances to finance economic development (El-Sakka and McNabb 1999). In addition, on the subject of identifying the determinants of remittance behavior, the approach has been to use micro-survey data that target the characteristics of households and migrant workers, along with a time variable, as possible determinants of remittances. In this connection, Brown (1997) framed the RDH as the longer the duration that migrants lived away from home, coupled with the decline in the number of dependents at home in the village, the less likely it will be for the migrant to remit funds home, since the willingness to remit decreases over time. Brown (1997), however, did not find any evidence to support the RDH, but found evidence supporting the opposite conclusion that remittances tended to increase, the longer the migrant worker was absent from home.

2 Remittance and Housing Finance

Remittance backed low-income mortgages can help migrants pay for homes of relatives or for their own use. The reliable flow of remittances can help transnational families save the required down-payment and build their credit records, expanding the range of financial products and services

available to them. In addition, households that receive remittances can access formal financing, if they are able to document their total income - including remittances - to acquire a house (expanding the financial frontier). In acquiring a house, the migrant turns capital flows into equity. This in turn enhances access to credit through the availability of collateral. Remittance backed housing mortgages tend to concentrate in low-income housing social segments and rural areas. The migration target population increases its financial literacy due to its exposure to financial intermediaries and services. By increasing the size of the housing market, migrant flows also help develop local capital markets.

Latin America and the Caribbean (LAC) face a significant housing shortage both in terms of number of units and quality. The housing deficit in the region in the late 1990's was 38 million units, or 40% of the regional housing stock. Housing finance is substandard. A sample of 19 countries done by UNHABITAT found that only 62% of housing finance was of acceptable quality. Affordability is a problem; over 50% of the population cannot afford any kind of mortgage finance. For many remittance receiving families, flows sent from abroad represent a significant portion of their income. Surveys show that a significant portion of remittances are used on housing-related expenditures. For example, in Mexico, the percentage of remittances spent on housing ranged from 5-20%. When added to own-source income, remittances can make many families credit-worthy. In addition, remittances can make up a large part of a down-payment. Remittance-backed mortgages are increasingly being promoted by financial institutions in LAC to leverage the significant remittance flows. Banks are seeking to capitalize on opportunities to cross-sell to remittance recipients, and mortgages are important to this strategy. Remittance-financed small loans to low income households for home improvement and expansion can also reduce qualitative defects in the housing stock. When added to own-source income, remittances can make many families credit-worthy. In addition, remittances can make up a large part of a down-payment. Remittance-backed mortgages are increasingly being promoted by financial institutions in LAC to leverage the significant remittance flows. Banks are seeking to capitalize on opportunities to cross-sell to remittance recipients, and mortgages are important to this strategy. Remittance-financed small loans to low income households for home improvement and expansion can also reduce qualitative defects in the housing stock. The lack of data on payment performance by

transnational families makes risk management and modeling difficult for financial institutions. There are logistical difficulties of signing loans, registering mortgages, and foreclosing when one of the debtors lives overseas. Currency mismatches between the loan and the payment currency or the loan and the collateral can complicate lending.

3 Empirical Motivation: VAR

An important feature of the emerging economy is that of remittances from abroad. For example, during 1999 remittances in Colombia accounted for 1.5% of GDP. In 2004, they increased to 3%. To have an idea of the magnitude of the shock, in 1999 the flow of remittances was similar to the flow of coffee exports. In 2004 remittances were approximately three times the amounts of coffee exports. As differently from other private capital inflows, remittances do not create any liabilities such as debt servicing or profit transfers in the future. Remittance flows are usually more stable than private capital flows including FDI (Ratha,2003; Buch and Kuckulenz, 2004) and they are likely to serve as macroeconomic stabilizers, since migrant workers are expected to increase the amounts transferred to help family members left behind compensate for the resulting drops in household income, whenever the economic activity back home slows down or falls (UNCTAD, 2006; World Bank, 2006a and b). Yet, whether high remittance receipts are always a blessing depends on the nature of co-movements, if any, between business cycles in the home countries of migrants and cyclical fluctuations in the remittance flows.

I run a vector autoregressive model to determine the countercyclical path between housing price and remittance. The VAR model solves the causality problem. An exogenous shock on remittance due to favorable economic conditions abroad or better exchange rate determines an increase in housing price due to higher housing demand. It is not true the contrary. Households tend to use the remittance flow as a down-payment for the mortgage loan.

4 Theoretical Model for Emerging Country

This paper aimed to close this gap in the literature by exploring the effects of migrants' remittances flows with opposite responses to business cycle fluctuations in the recipient economies on

Figure 1: Colombia - VAR Housing Prices, Remittance

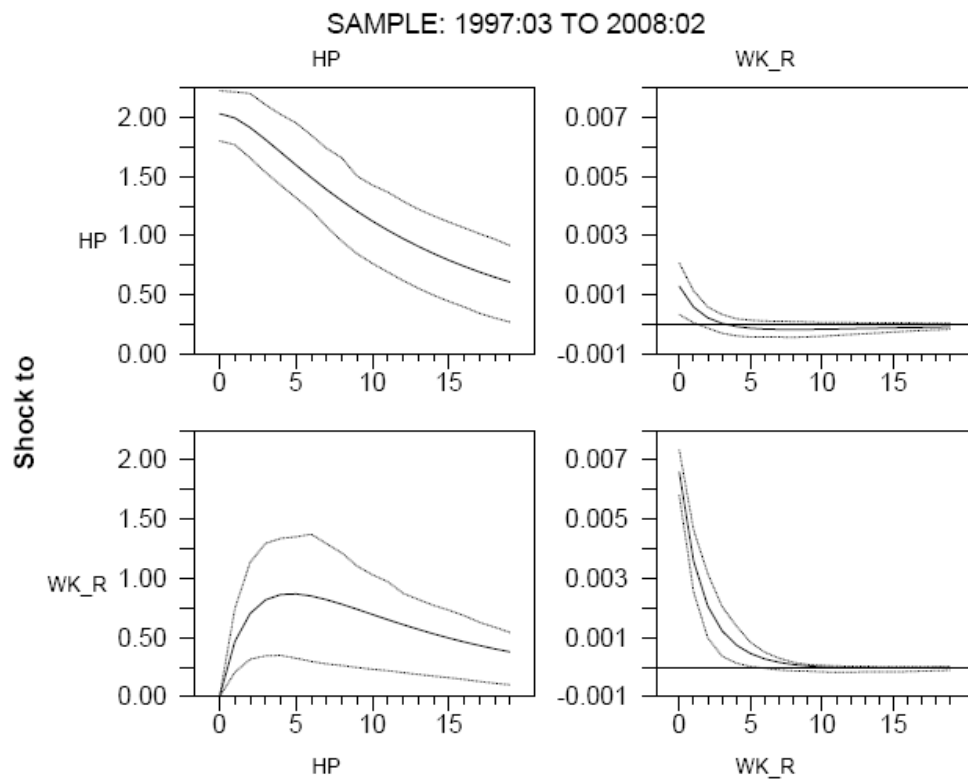
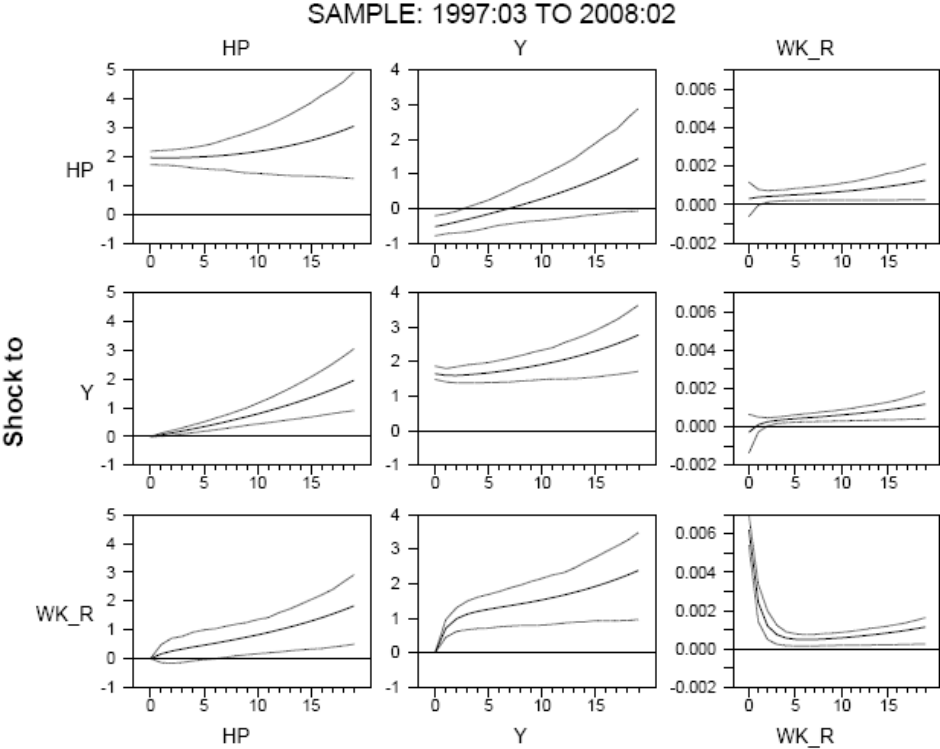


Figure 2: Colombia - VAR Housing Prices, Income, Remittance



The sample size shows that a positive shock of remittance flows increases both housing prices and mortgage loans. People tend to use remittance for the down-payment on the mortgage loans. Plus, increasing housing demand raises the housing price.

key macroeconomic aggregates and the housing market. For this purpose, I considered emerging economies that rank among the major recipients of remittances, whose receipts are countercyclical and procyclical to home business cycles, respectively. I employed a general equilibrium framework with a tradable goods and housing service as a special case of non- tradable goods in a two-country model. I let some agents to face a borrowing constraint in international capital markets for added realism in capturing the common structural characteristics of emerging economies.

4.1 Model with Heterogeneous Agents

Heterogeneous Agents

Saver

In this model, the Saver chooses to work in the good production sector, (L_c) and the construction sector, (L_h), she consumes non-durable goods (c) and housing services (h), and owns all the capital used in the production of consumption goods, (k_c) and all the capital used in the production of new houses, (k_h), which is rented to firms. She extends financial credit (b) to the borrower and has access to international asset (b^*). The house price index, (q), measures how many units of consumption are necessary to buy one unit of housing services.

The Saver maximizes the following utility function:

$$U_t = E_t \sum_{t=0}^{\infty} \beta^t \left[\ln c_t + j_t \ln h_t - \eta \frac{(L_{ct}^{1-\nu} + L_{ht}^{1-\nu})^{\frac{1+\eta}{1-\nu}}}{1+\eta} \right]$$

subject to:

$$\begin{aligned} c_t + q_t \left[h_t - (1-\delta_h)h_{t-1} \right] + \frac{\phi_{house}}{2} \left(\frac{h_t - h_{t-1}}{h_{t-1}} \right)^2 + k_{ct} + \frac{\phi_c}{2} \left(\frac{k_{ct} - k_{c,t-1}}{k_{c,t-1}} \right)^2 + k_{ht} + \frac{\phi_h}{2} \left(\frac{k_{ht} - k_{h,t-1}}{k_{h,t-1}} \right)^2 + B_t^* + \frac{\psi_b}{2} (B_t^* - \bar{B}_t)^2 - b_t \\ \leq (1 - \delta_k + R_{c,t-1})k_{c,t-1} + (1 - \delta_k + R_{h,t-1})k_{h,t-1} + R_{t-1}^* B_{t-1}^* - R_{t-1} b_{t-1} + w_{c,t} L_{c,t} + w_{h,t} L_{h,t} \end{aligned}$$

ϕ_{house} , ϕ_c and ϕ_h are the coefficients for adjustment cost (i.e., the relative prices of installing the existing capital) for housing stocks, capital used in the good sector and housing sector, respectively. Adjustment costs are incorporated because in their absence, the supply of fixed capital would be infinitely elastic, implying excessive volatility in sectoral investment flows in response to technology

shocks. Following Schmitt-Grohe and Uribe (2003), ψ_b and \bar{B}_t are constant parameters defining the portfolio adjustment cost function. If the household chooses to borrow an additional unit abroad, then current consumption increases by one unit minus the marginal portfolio adjustment cost $\psi_b(B^* - \bar{B})$. Next period, the household must repay the additional unit of debt plus interest. At the optimum, the marginal benefit of a unit debt increase must equal its marginal cost. The portfolio adjustment cost solves non-stationarity function of debts forces wealth allocations in the long run to return to their initial distribution.

Borrower The borrower consumes non-durable goods (c') and housing services (h'), she can decide to work in the non-residential (L'_c) or residential sector (L'_h).

The borrower maximizes the utility function:

$$U_t = E_t \sum_{t=0}^{\infty} \gamma^t \left[\ln c'_t + j_t \ln h'_t - \eta \frac{(L'_{ct})^{1-\nu} + L'_{ht})^{\frac{1+\eta}{1-\nu}}}{1 + \eta} \right]$$

subject to:

$$\begin{aligned} c'_t + q_t \left[h'_t - (1 - \delta_h) h'_{t-1} \right] + \frac{\phi_{house}}{2} \left(\frac{h_t - h_{t-1}}{h_{t-1}} \right)^2 + R_{t-1} b'_{t-1} \\ \leq w_{c,t}(L'_{c,t}) + w_{h,t}(L'_{h,t}) + b'_t + (1 + \varepsilon_t^R) Rem_t \end{aligned}$$

and

$$b'_t \leq m q_t h'_t$$

where $m \in (0, 1)$ captures the borrowers relative impatience. As for the Saver, the parameter ν defines the degree of substitution between the two sectors in terms of hours worked. For a high value of ν , labor hours are perfect substitutes, which means that the worker would devote most of the time to the sector that pays the highest wage. Small values of ν implies that hours worked are not perfect substitutes, thus the worker is willing to diversify labor working for equal numbers of hours in each sector even in the presence of wage differences across sectors.

Firms Firms produce non-durable goods (y) and new houses (N). Both sector have Cobb-Douglas production functions, with different capital and labor intensities. Firms pay wage to households and repay back rented capital to the Savers.

Max:

$$y_t + q_t N_t - [w_{ct} L_{ct} + w_{ht} L_{ht} + w'_{ct} L'_{ct} + w'_{ht} L'_{ht} + R_{c,t-1} k_{c,t-1} + R_{h,t-1} k_{h,t-1}]$$

where

$$y_t = (A_{ct}) ((L'_t)^{1-\mu_c-\theta_c}) (L_t^{\theta_c}) (k_{c,t-1}^{\mu_c})$$

$$N_t = (A_{ht} A_{ct}) ((L'_{ht})^{1-\mu_h-\theta_h}) (L_{ht}^{\theta_h}) (k_{h,t-1}^{\mu_h})$$

and

$$h_t - (1 - \delta_h) h_{t-1} + h'_t - (1 - \delta_h) h_{t-1} = N_t$$

Exogenous Remittance:

$$Rem_t = \rho_{rem} * Rem_{t-1} + \xi_{Rem,t}$$

or

Home-Born foreign Residents Remittance:

$$Rem_t = \varphi(w_t^* L_t^*)$$

where

φ is the portion of immigrants abroad.

Exchange rate:

$$\varepsilon_t^R = \rho_\varepsilon * \varepsilon_{t-1}^R + \xi_{\varepsilon_t^R}$$

Current Account Equation:

$$\begin{aligned} CA_t &= (-b_t^* + b_{t-1}^*) \\ &= -(R_t - 1) b_t^* + y_t - c_t - c_t' + (1 + \varepsilon_t^R) Rem_t \\ &= -(R_t - 1) b_t^* + TB_t + (1 + \varepsilon_t^R) Rem_t \end{aligned}$$

4.2 Foreign Country

4.3 Model with a Representative Agent

Household: Max utility function:

$$U_t = E_t \sum_{t=0}^{\infty} \beta^t \left[\ln c_t^* + j_t \ln h_t^* - \eta \frac{L_t^*}{\alpha} \right]$$

subject to:

$$\begin{aligned} &c_t^* + q_t^* \left[h_t^* - h_{t-1}^* \right] + k_{ct}^* + \frac{\phi_c}{2} \left(\frac{k_{ct}^* - k_{c,t-1}^*}{k_{c,t-1}^*} \right)^2 - B_t^* - \frac{\psi_b}{2} B_t^* \\ &\leq +(1 - \delta_k + R_{c,t-1}^*) k_{c,t-1}^* - R_{t-1}^* B_{t-1}^* + w_t^* L_t^* \end{aligned}$$

Firms maximize Profits:

$$y_t^* - [w_t^* L_t^* + R_{c,t-1}^* k_{c,t}^*]$$

where

$$y_t^* = (A_t^*)(L_t^*)^{1-\alpha}(k_{c,t-1}^*)^\alpha$$

and

$$k_{c,t}^* - (1 - \delta)k_{c,t-1}^* = I_t^*$$

$$h_t^* - h_{t-1}^* = 1$$

4.4 Simulation

In progress

4.5 Preliminary Results

Long run effects of remittances do not significantly depend on the existence of borrowing constraints, but their short run effects depend on whether the economy is borrowing constrained or not. Debt deflation can magnify the effects of fluctuations in remittances in the short run in both countries. Countercyclical (or procyclical) remittance fluctuations can help to reduce precautionary savings by increasing (or reducing) catastrophic income levels. In the case of financial crisis, remittances packages received from abroad could significantly reduce (or increase) the impact effect of financial crises if the remittances are countercyclical (or procyclical), implying that it could indeed pour, when it rains in the case of procyclical remittances.

The impulse responses show that household who receive such resources are likely to allocate those funds by increasing of housing holdings, and the increased demand implies higher price.

5 Discussion and Conclusions

Uncertainty of remittance inflows also plays a role in households' spending patterns. The past literature has not given too much attention to this issue, but the few empirical past works show

that remittance-receiving households spend relatively more on housing accumulation as captured by their expenditure shares on human, physical and financial assets. So far, only Amuedo & Pozo (2008) found preliminary evidence supporting the notion that the Among remittance-receiving households, those with more volatile and uncertain remittance inflows appear to spend more on asset accumulation, as would be predicted by the permanent income hypothesis and precautionary saving theories. Understanding household spending patterns is important in order to inform policymaking. For example, policies regarding remittances from the U.S. to poor countries have been focused on i) lowering transactions fees and on ii) the integration of immigrant populations into the formal financial (banking) sector with the expectation that cheaper and more secure money transfer mechanisms will increase remittance flows. Yet, to date, we know little about the impact on housing finance and the optimal policy response on this issue. This paper shows that by an increasing flow of remittance from abroad, households tend to demand more for houses given also the easier way to get mortgage loans in developing countries. Higher demand implies higher housing prices. The following questions would be to study the role of monetary policy of an increasing housing price in developing countries.

And, if so, does this help us understand the established usage patterns of remittance inflows in various emigrant-sending economies? Very little consideration has been given to how these policies affect the time pattern of remittance flows. Preliminary findings suggest that the predictability of remittance income should be given full consideration in order to comprehend how households spend remittance receipts and accordingly, how remittance related policies should be designed to influence household spending patterns and leverage the most out of remittance inflows to developing economies.

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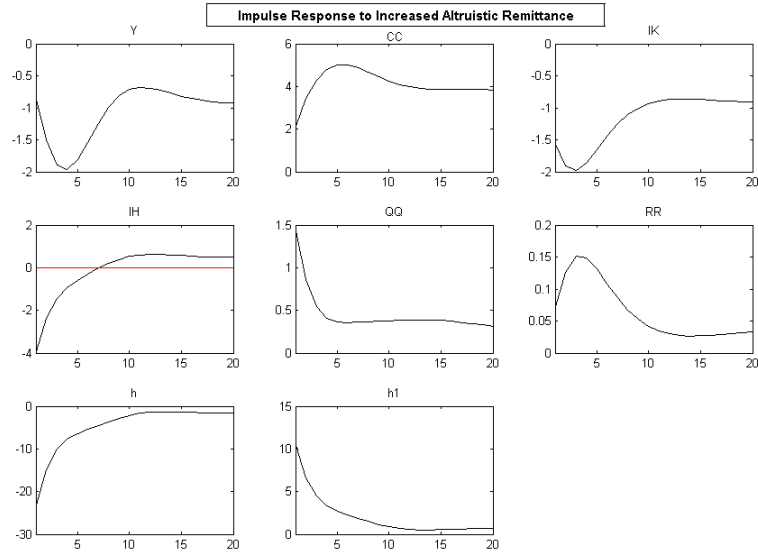
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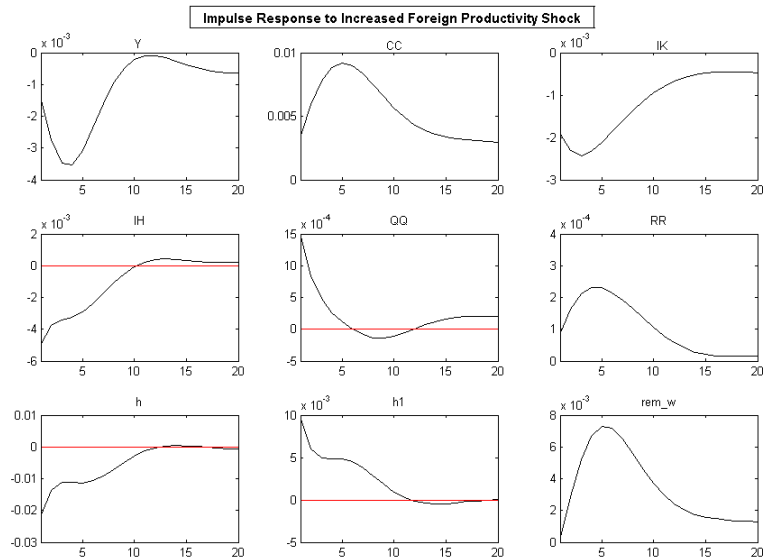
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6.1 Some Impulse Responses

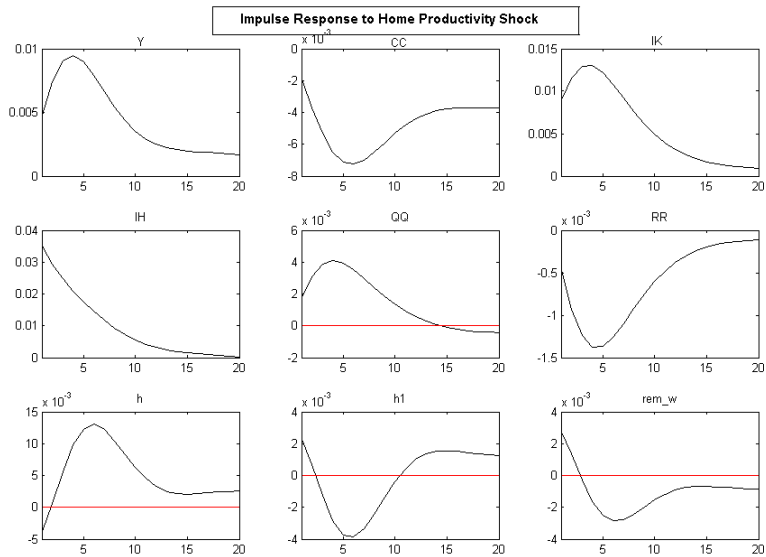
Impulse responses: Exogenous Increase of Remittance



Impulse responses: Foreign Productivity



Impulse responses: Home Productivity



Impulse responses: Monetary Policy

