

The Impact of Remittance on the Housing Market in Emerging Economies

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- Remittances are private income transfers that take place between family members. In many cases, one or more family members live and work abroad while regularly transferring, or remitting, income back to the remaining family unit in the home country.
- The typical transfer amount does not exceed a few hundred dollars, but millions of these transfers take place worldwide through both formal and informal channels.
- The World Bank (2006a) estimates official remittances received by developing countries in 2005 were \$ 167 billion, up 73 percent from 2001.
- Remittances, like private capital flows, have both positive and negative economic effects.
- While remittances increase consumption and have the ability to smooth household consumption against income shocks, they also increase the correlation between labor and output, contributing to increased macroeconomic risk through higher business cycle volatility.

Question

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].

⇒ Formulate a theoretical model to predict that remittance should be inflationary and generate an increase in the domestic housing demand.

⇒ Should monetary policy be more aggressive and taking into account a possible extra channel besides the standard inflation targeting?

⇒ Developing a stochastic dynamic general equilibrium model with housing market block in order to investigate the implication of countercyclical remittance flows on economic decision making and the conduct of monetary in a business cycle setting.

- Represent a stable and reliable source of foreign exchange;
- Reduce poverty;
- Insure consumption against bad shocks;
- Reduce macroeconomic volatility;
- Enhance investment in physical and human capital;
- Alleviate credit constraints;

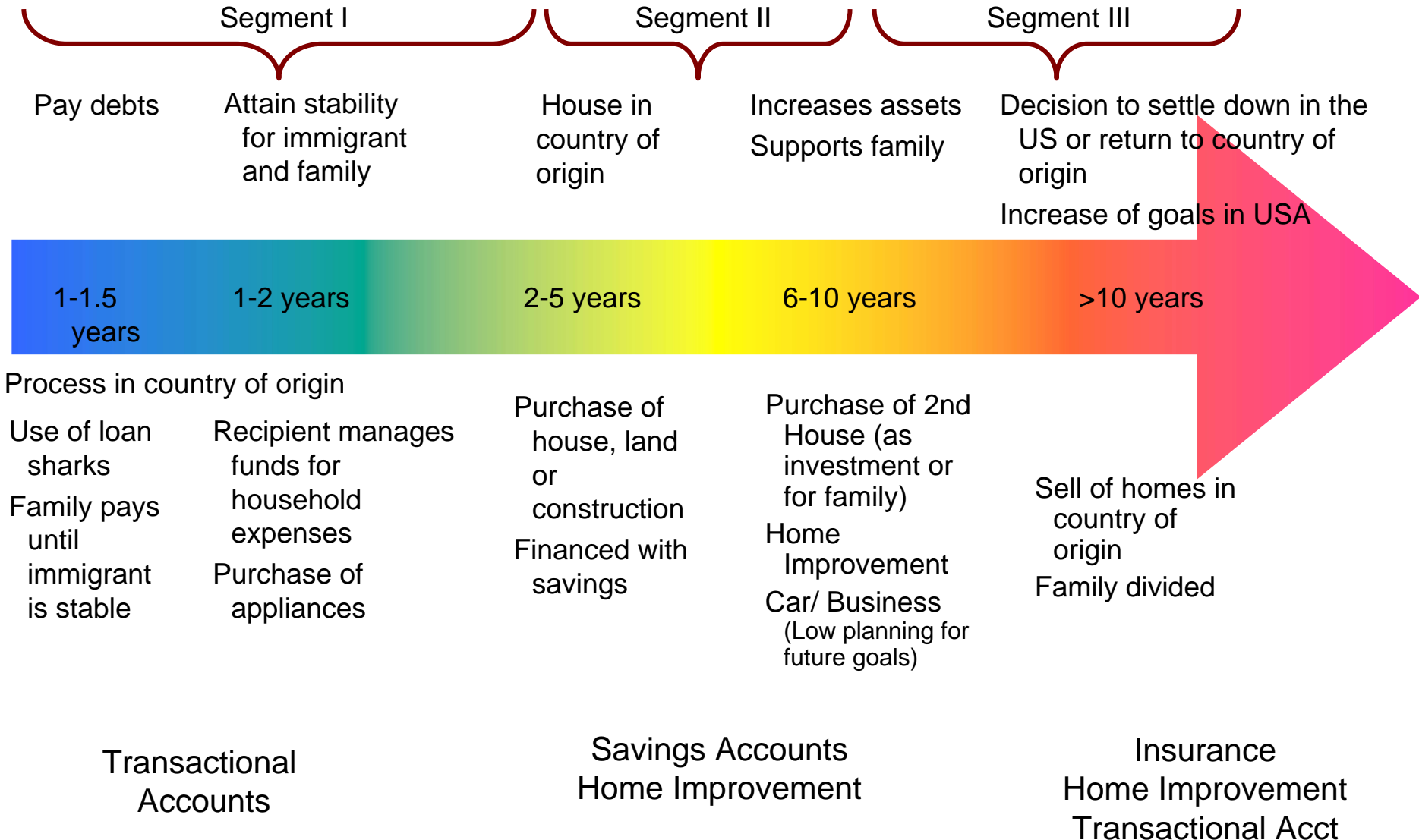
⇒ Consequently, there is a current emphasis among policy makers to highlight remittances as a potential cure to the many economic challenges facing developing countries that depend on such transfers.

⇒ Without careful analysis of the macroeconomic implications of such transfers, policies aimed at encouraging remittances may create unintended consequences for the recipient economies.

- Taylor & Mora (2006) conclude that households affected by international migration modify their expenditure patterns by increasing the share of expenditures on investment at the expense of consumption;
- Adams (2005) finds that remittance receiving households in Guatemala spend less on consumption (defined as food, consumer goods and durables), and more on education, health and **real estate** relative to non-remittance receiving households;
- Airola (2007) reports that remittance-receiving households spend relatively more on durable goods, on health and on **housing**, but less on food relative to households that do not receive remittances.
- Amuedo-Dorantes & Pozo (2008) hypothesize that remittance-receiving households with more volatile remittance inflows will end up spending more of the inflows on **asset accumulation**.

⇒ **What is the impact (if any) on the housing prices?**

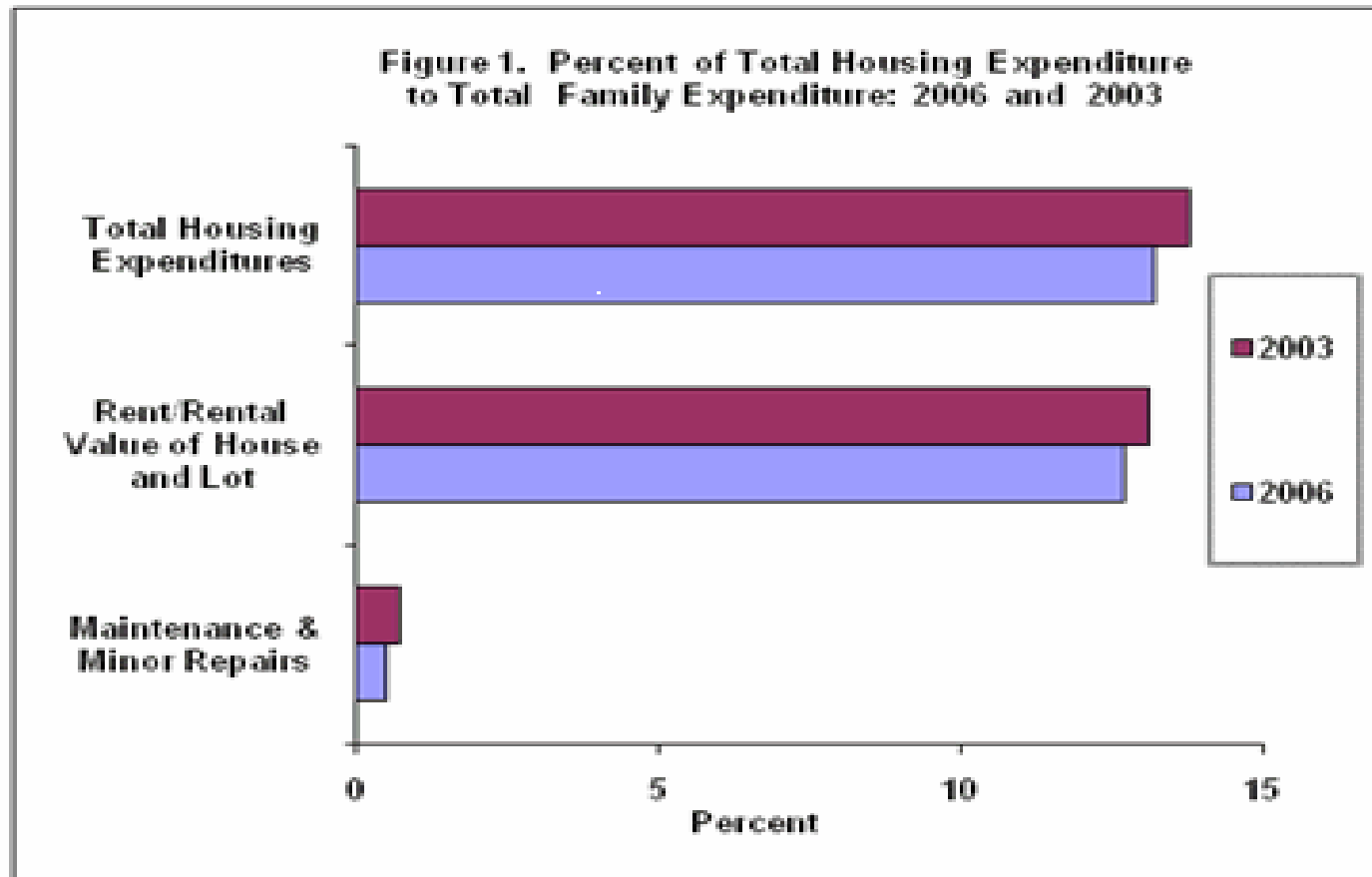
Segmenting the market by the stage in the immigration life cycle helps determine how remittances are being used:



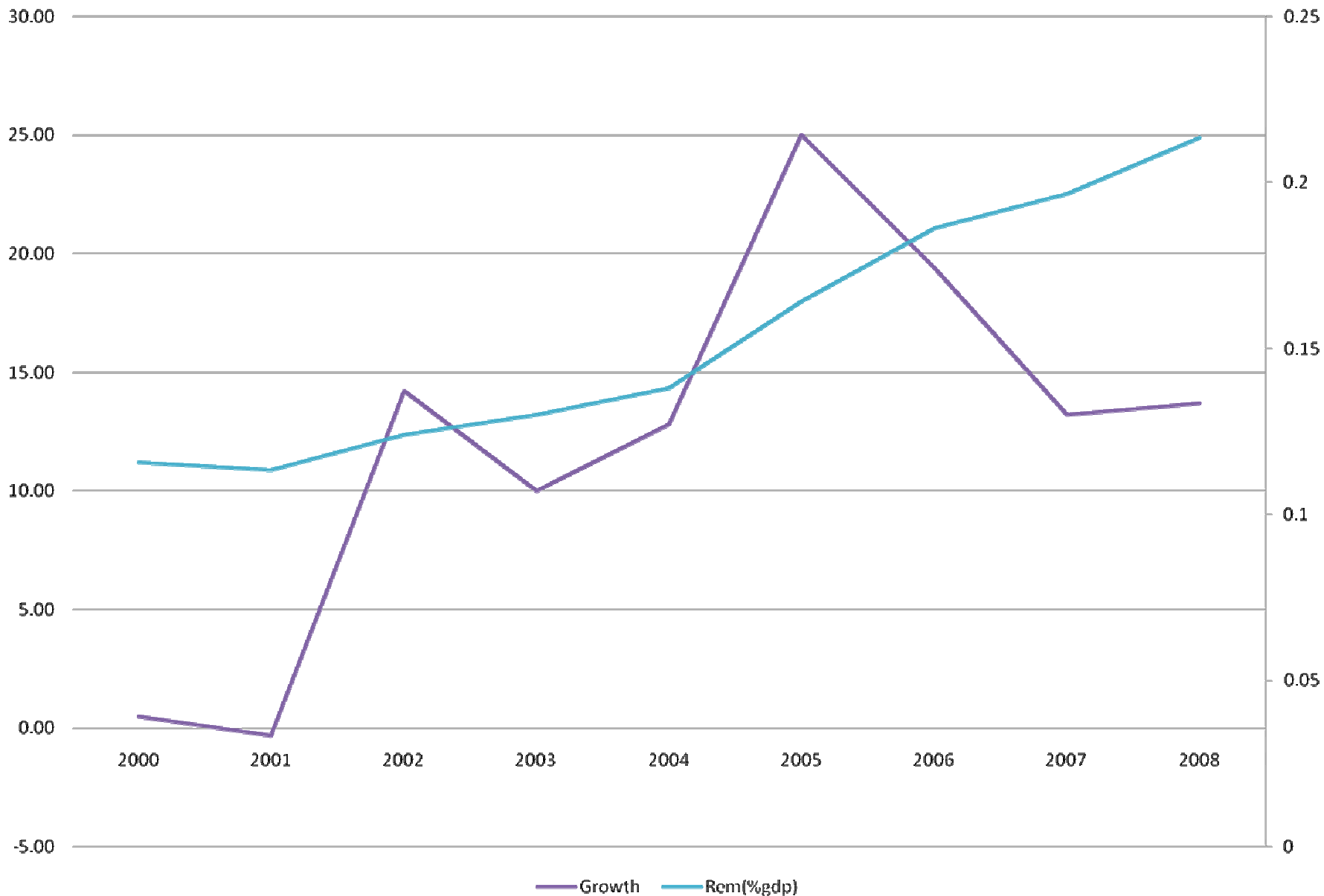
In Philippines:

Total housing expenditure in 2006 was estimated at P340.6 billion indicating an increase of 21.3% over the 2003 estimate of P280.8 billion.

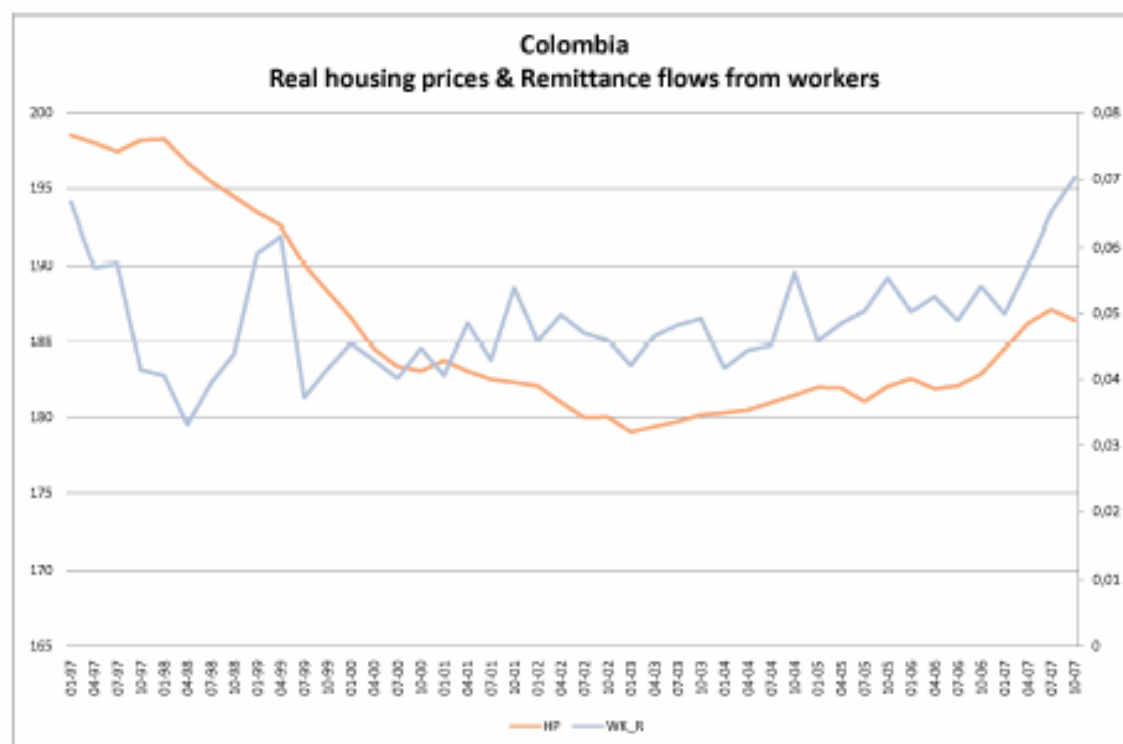
Of the P340.6 billion reported housing expenditure, 12.7 % went to rent/rental value of house and lot, while only 0.5% was spent on house maintenance and minor repairs.



Remittance Flow in Philippines (Annual Data 2000 - 2008)

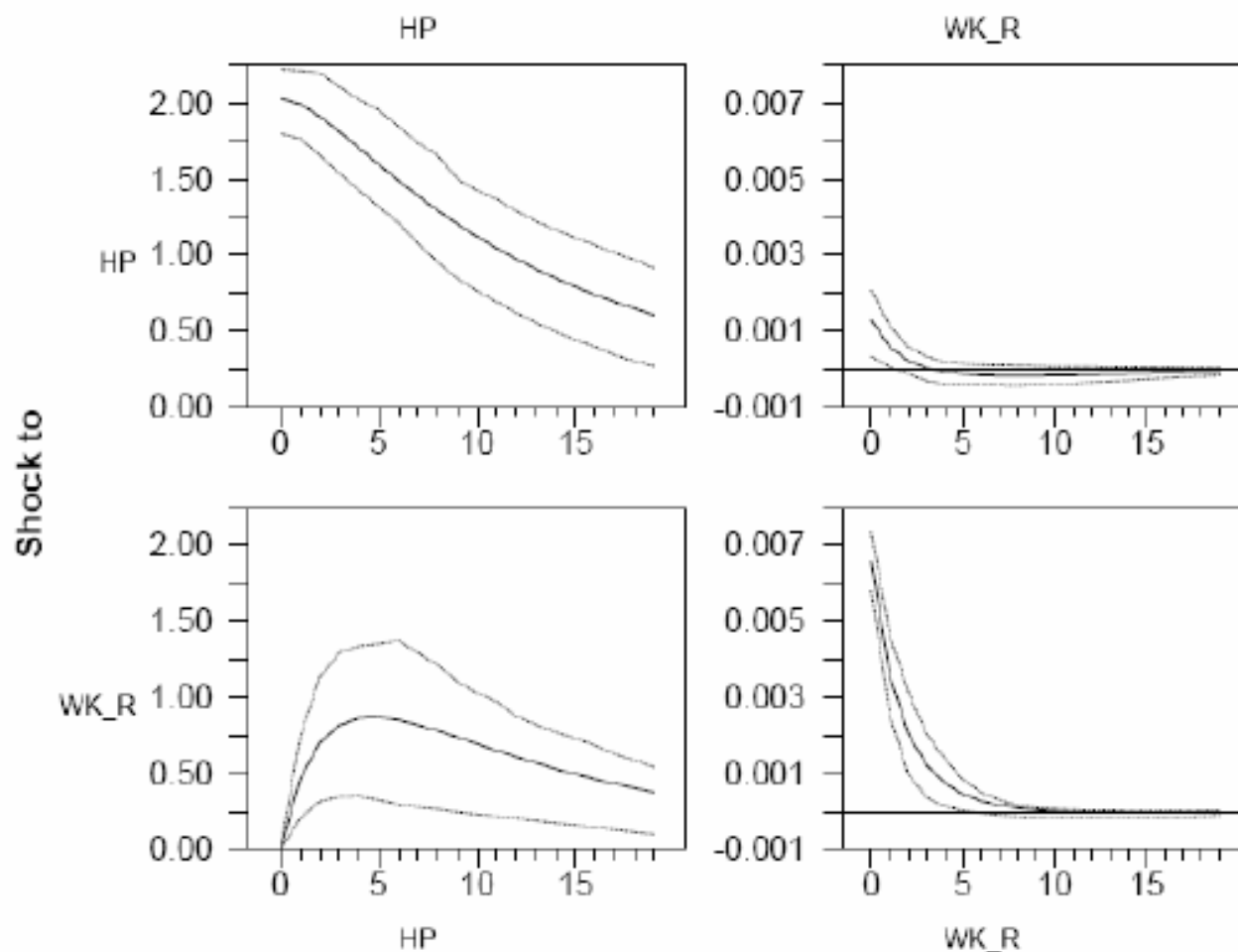


Colombia Example



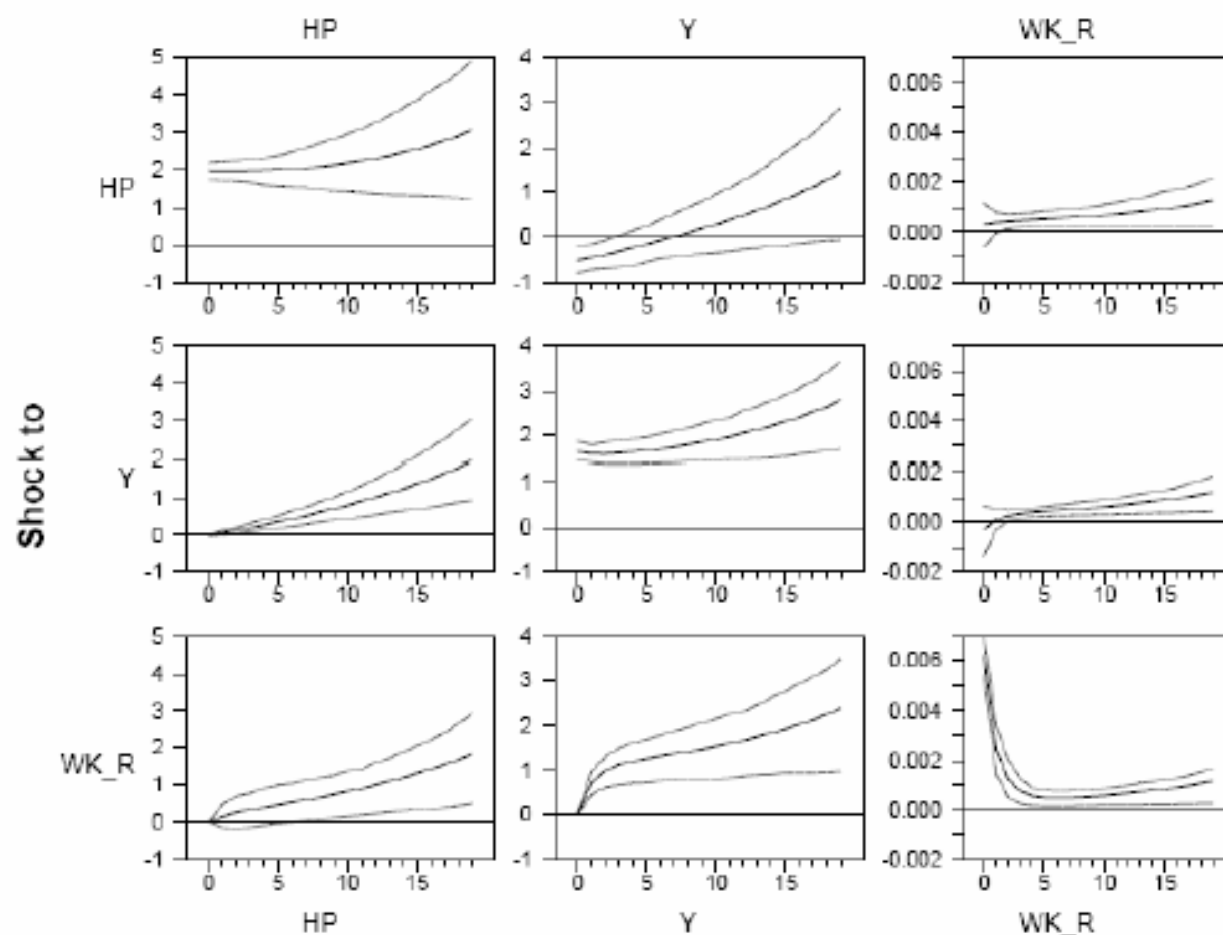
Empirical VAR for Colombia (2 variables)

SAMPLE: 1997:03 TO 2008:02



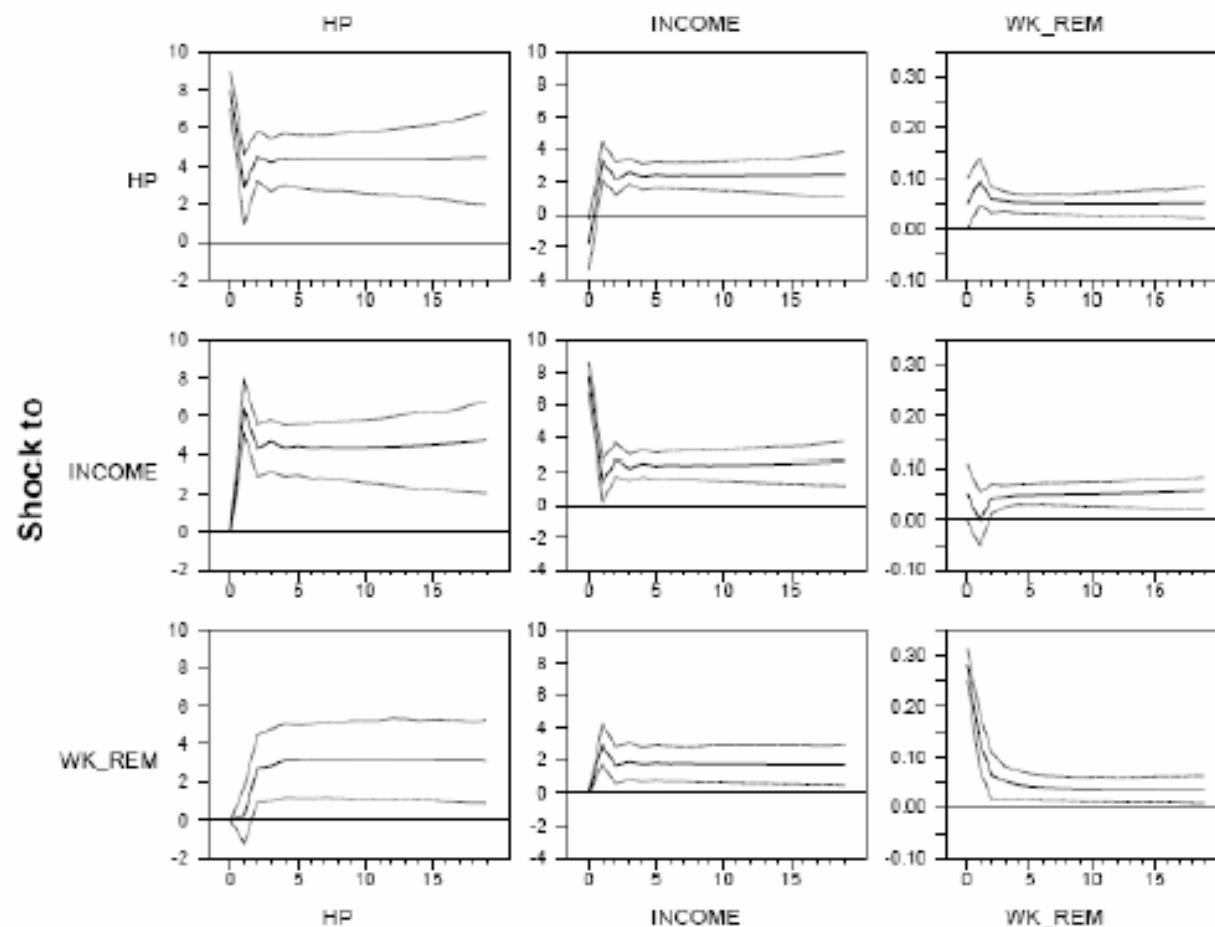
Empirical VAR for Colombia (3 variables)

SAMPLE: 1997:03 TO 2008:02

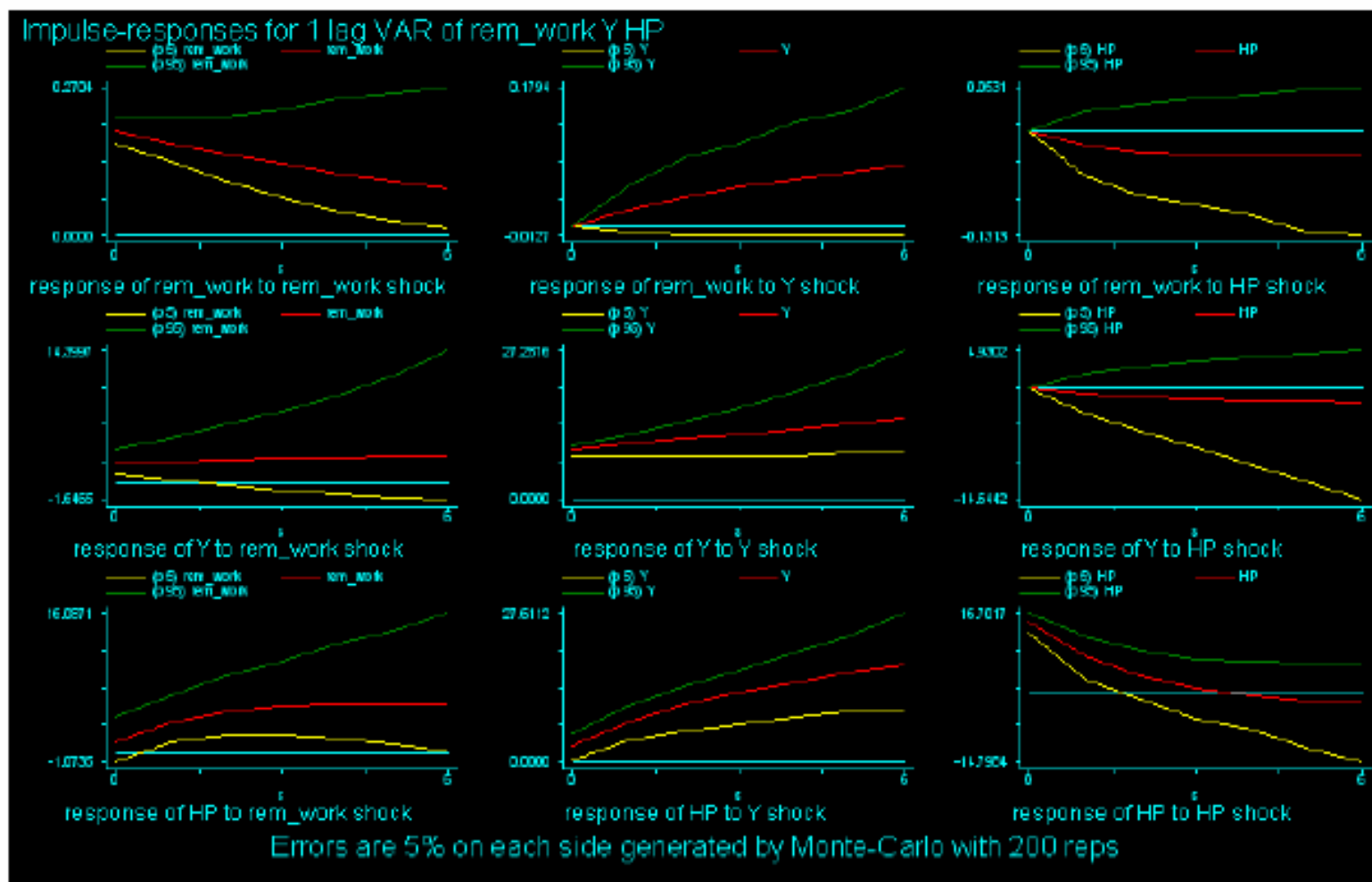


Empirical VAR for Lithuania

SAMPLE: 2000:01 TO 2008:02

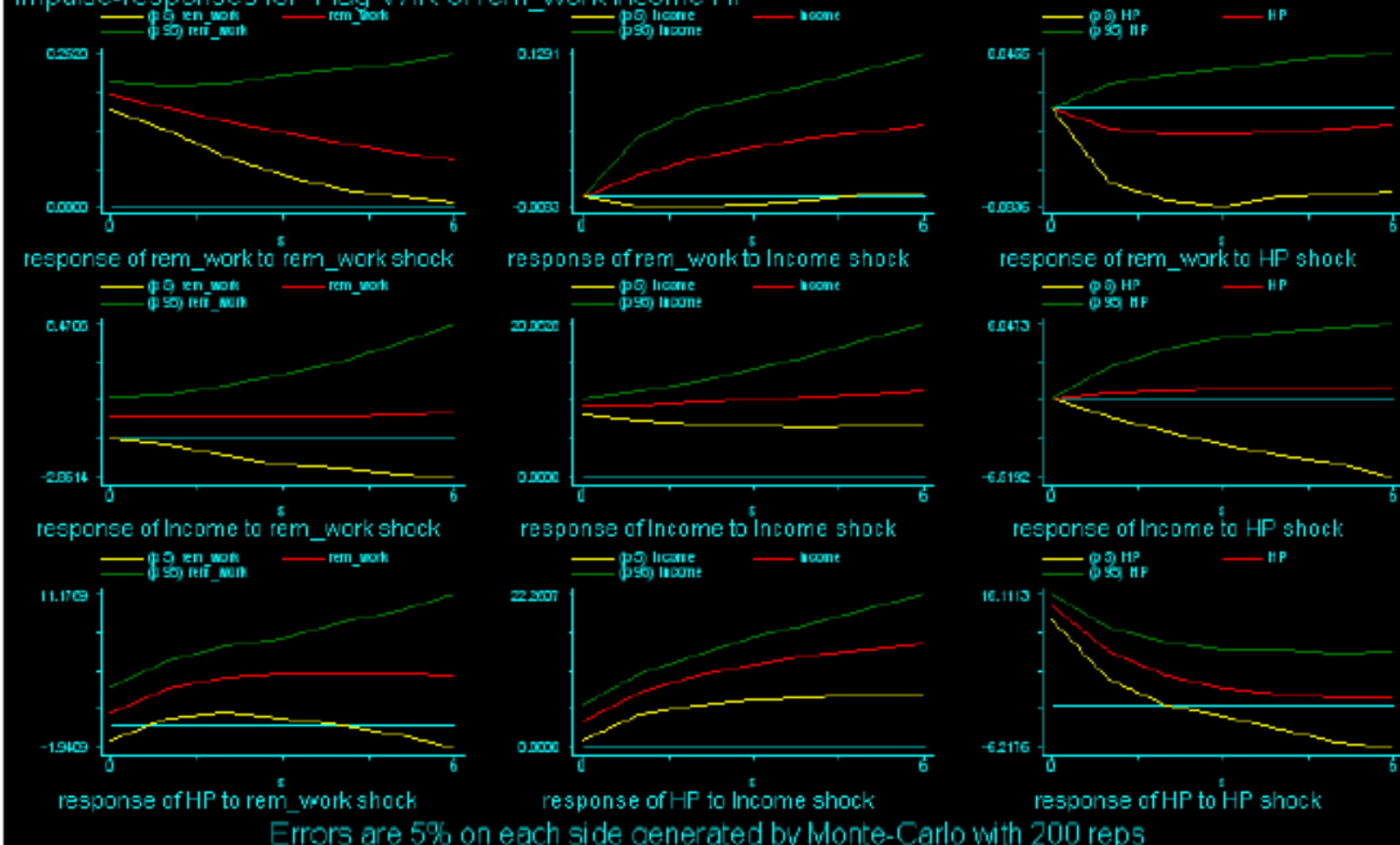


Panel VAR for Baltics Countries



Panel VAR for Baltics Countries

Impulse-responses for 1 lag VAR of rem_work Income HP



Contribution

- Modeling exogenous (altruistic) and endogenous remittance
- I develop a two-country open economy model with sticky prices, which include:
 - Real Estate Sector.
 - Heterogeneous Agents.
 - Financial Frictions: agent borrows and collateralizes the value of the house.

Two-Country Model:

Nouriel Roubini's Global EconoMonitor shows:

Falling Remittances from the U.S. to Latin America as Evidence of the Housing Slump

“The rapid slowdown of the U.S. housing sector could have dangerous implications for Latin America and the other emerging market countries that depend on remittances for their balance of payment needs”.

Saver and Borrower

- Saver (patient) - Borrower (impatient):
 - Old/Young
 - Rich/Poor
 - Poor Family who send family member abroad to work and receive regularly transferring or remitting income back.

Heterogeneous Agents

Saver: Max utility function:

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

subject to:

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

Heterogeneous Agents

Borrower: Max utility function:

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

subject to:

$$c'_t + q_t \left[h'_t - (1 - \delta_h) h'_{t-1} \right] + \frac{R_{t-1} b'_{t-1}}{\pi_t} \\ \leq w_{ct}(L'_{ct}) + w_{ht}(L'_{ht}) + b'_t + (1 + \varepsilon_t^R) R_{emt}$$

and

$$b'_t \leq m E_t \left(\frac{q_{t+1} h'_{t+1} \pi_{t+1}}{R_t} \right)$$

Firms

Firms maximize Profits:

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

where

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

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

Remittance

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:

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

Market Clearing Conditions

$$b_t + b'_t = 0$$

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

$$k_{c,t} - (1 - \delta_k)k_{c,t-1} + k_{h,t} - (1 - \delta_k)k_{h,t-1} = IK_t$$

$$c_t + c'_t + k_{ct} + k_{ht} = y_t + (1 - \delta_k)(k_{ct-1} + k_{ht-1})$$

$$CA_t = (-b_t^* + b_{t-1}^*)$$

$$= -(R_t - 1) b_t^* + y_t - c_t - c'_t + (1 + \varepsilon_t^R) Rem_t$$

$$= -(R_t - 1) b_t^* + TB_t + (1 + \varepsilon_t^R) Rem_t$$

Household: Max utility function:

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

subject to:

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

Firms maximize Profits:

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

where

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

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

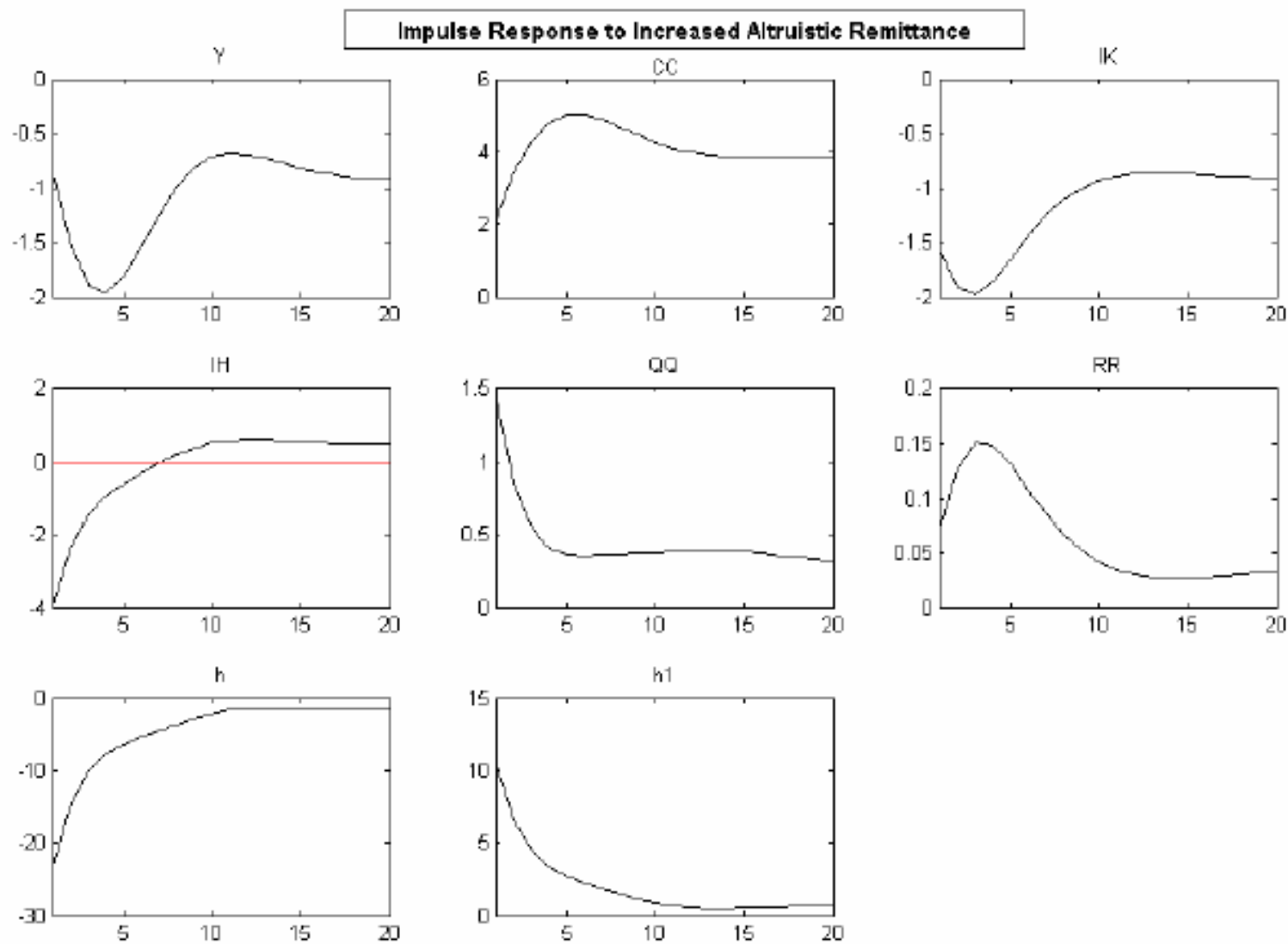
$$h_t^* - (1 - \delta_h) h_{t-1}^* = 1$$

Calibration for Spain

$\beta = 0.99$	Subject Discount Factor of Saver
$\gamma = 0.98$	Subject Discount Factor of Borrower
$\delta_k = 0.035$	Depreciation Rate of Capital
$\delta_h = 0.025$	Depreciation Rate of House
$j = 0.18$	Weight on Housing Services
$m = 0.85$	Loan-to-value Ratio
$\psi_b = 0.008$	Bond Adjustment Cost
$\mu_c = 0.35$	Capital Share for Good Sector
$\mu_h = 0.10$	Capital Share for House Sector
$\psi_h = 0$	House Stock Adjustment Cost

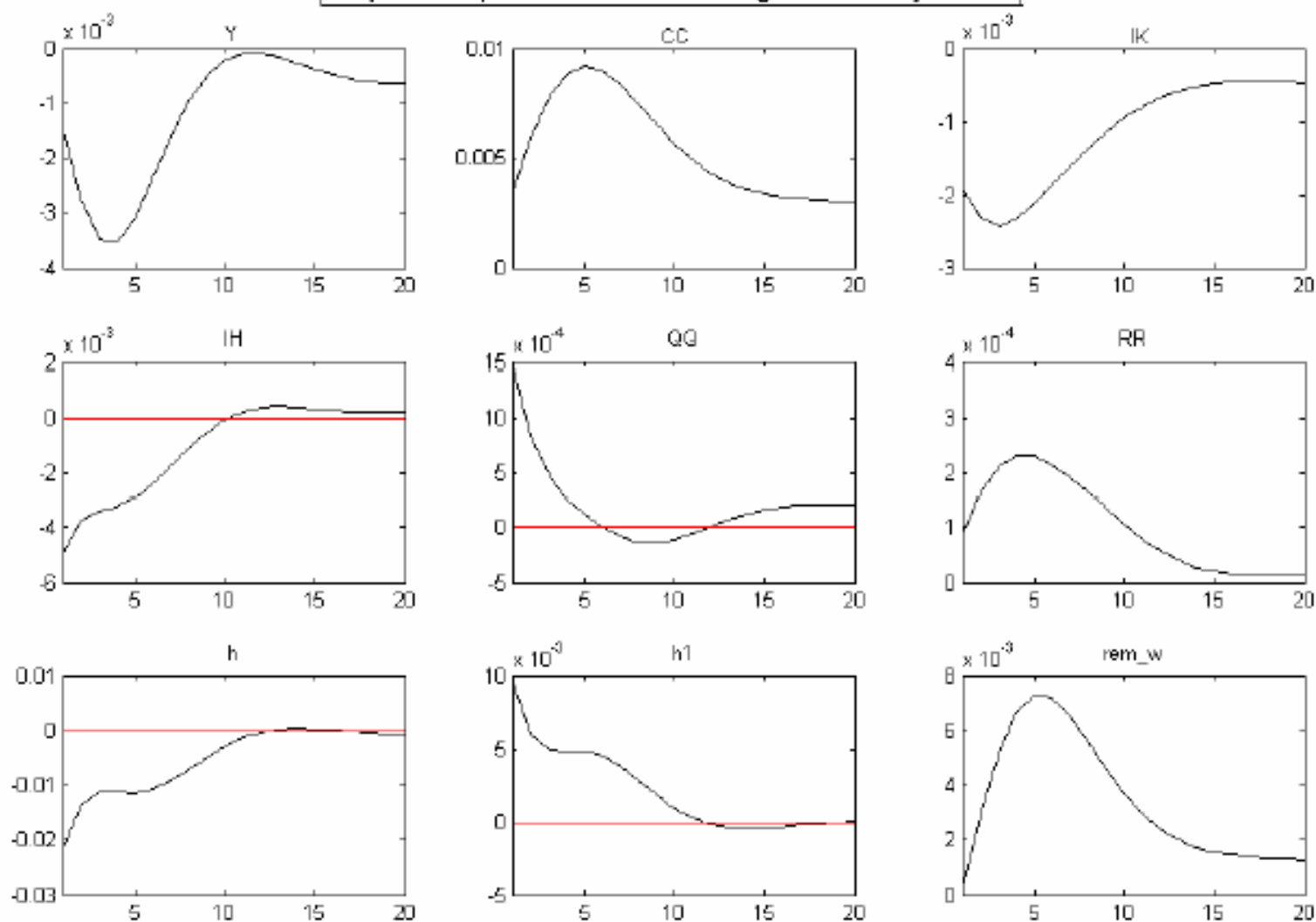
(1)

Impulse responses: Exogenous Increase of Remittance

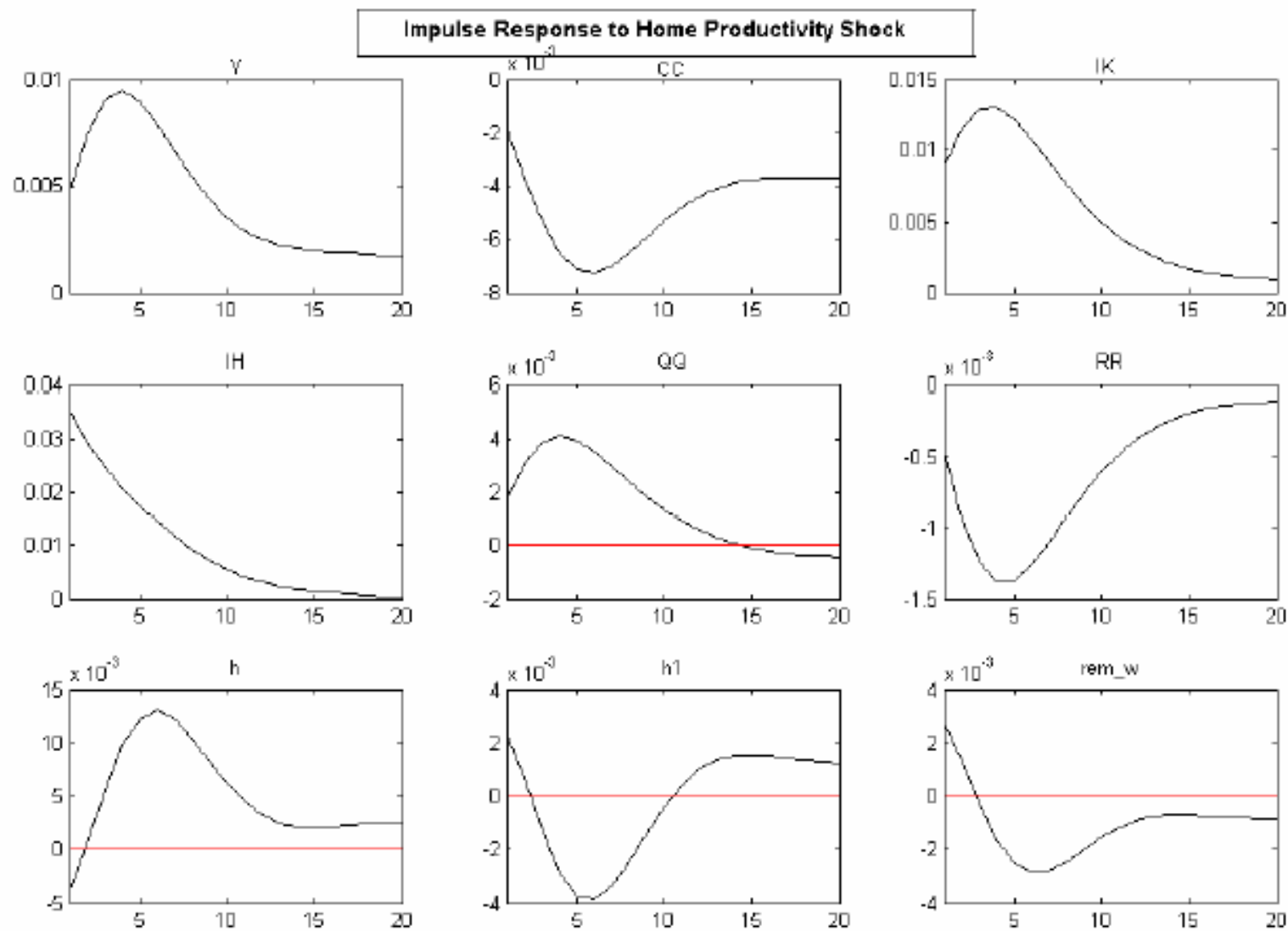


Impulse responses: Foreign Productivity

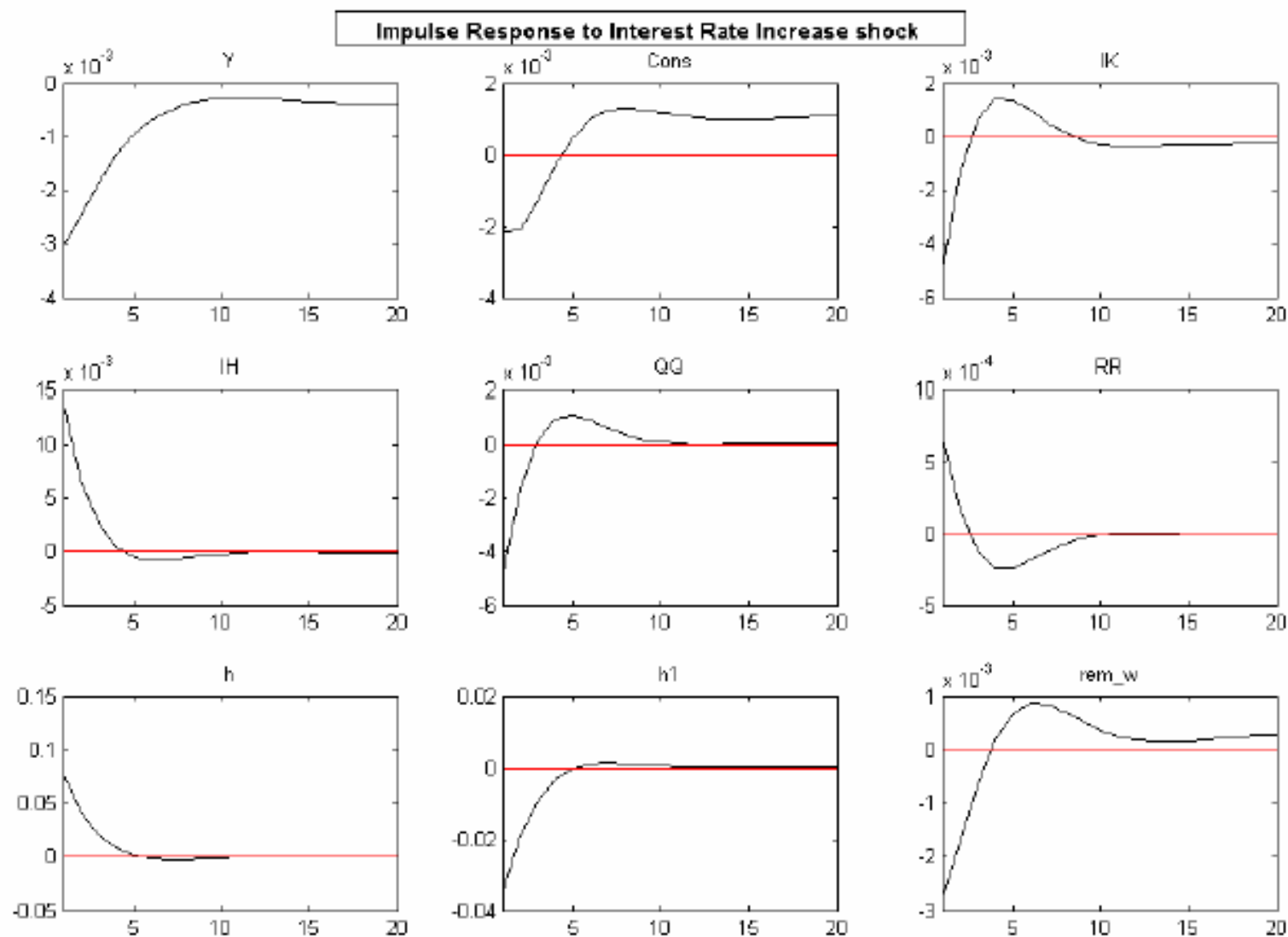
Impulse Response to Increased Foreign Productivity Shock



Impulse responses: Home Productivity



Impulse responses: Monetary Policy



Monetary Policy

Monetary Policy should be:

$$\hat{R}_t = \phi_R R_{t-1}^{\hat{}} + (1 - \phi_R) \phi_{\pi} \pi_{t-1}^{\hat{}} + (1 - \phi_R) \phi_Y \hat{Y}_t + u_{R,t}$$

or

$$\hat{R}_t = \phi_R R_{t-1}^{\hat{}} + (1 - \phi_R) \phi_q \hat{q}_t + (1 - \phi_R) \phi_{\pi} \hat{\pi}_t + (1 - \phi_R) \phi_Y \hat{Y}_t + u_{R,t}$$

if $\phi_q \neq 0$, then central bank can respond to current asset price movements.

⇒ Compute Efficient Policy Frontiers and Asset Price Responses

Conclusions and Extension

- Remittance receiving households spend less on consumption and more on real estate
- Monetary Policy should evaluate the impact of remittance on housing prices
- Next:
 - evaluate exchange rate impact
 - improve model and simulation results...