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**Centre d'Analyse Théorique et de
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**THE IMPACT OF REMITTANCES
ON ECONOMIC GROWTH:
THE EVIDENCE FROM MOROCCO**

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The Impact of Remittances on Economic Growth: The Evidence from Morocco

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Abstract

The purpose of this article is to contribute to the empirical literature and to enrich the debate on the impact of worker's remittances on growth, in home countries. By using the VAR model, we analyzed the impact of the worker's remittances transfers on the economic growth in Morocco. Impulse response functions and variance decomposition show that the worker's remittances have a positive impact on the GDP per capita. The results show also that through financial development through which remittances affect economic growth.

Keywords : Remittances, Economic Growth, VAR, Morocco.

JEL : D1, F2, E2

Résumé

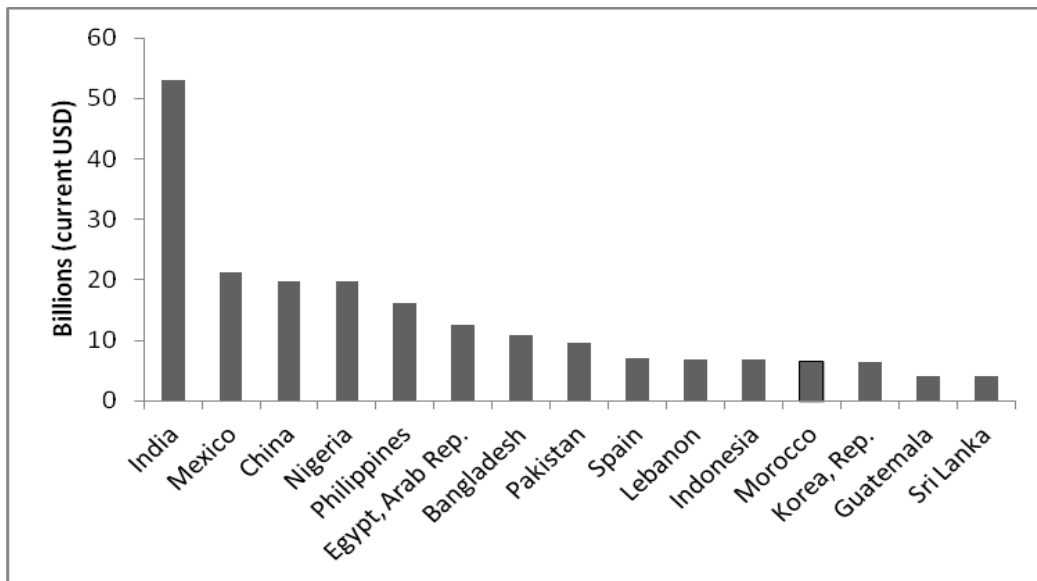
L'idée de cet article est de contribuer à la littérature empirique sur l'impact des transferts de fonds des migrants sur la croissance économique dans les pays d'origine. En utilisant le modèle VAR dans le cas Marocain, les résultats des fonctions « impulsions réponses » et la décomposition de la variance montrent que les transferts de fonds ont un effet positif sur la croissance économique marocaine. Les résultats démontrent également que le développement financier est le principal canal de transmission.

Mots clés : Transferts de fonds, croissance économique, VAR, Maroc

1. Introduction

Remittances have now become an important source of financing for developing countries, when their volume and the impact they may have on developing countries' economies are factored in. Indeed, several studies have recently attempted to explain the phenomenon of remittances and their impact on developing economies. Currently, there is a consensus among economists that migrants' remittances are a major source of international capital for labor exporting countries. In the case of Morocco, the volume of remittances has been increasing over the last few years. Between 2000 and 2007, the average growth rate of remittances was 11.53%¹. According to statistics from the World Bank, the share of remittances to GDP ratio in Morocco was around 9% in 2008. This share may be greater, actually, if remittances through informal channels are also taken into account. In the MENA² region, Morocco is one of the countries that benefits most from remittances. In addition, Morocco is one of the 15 developing countries worldwide that receive the most remittances from migrants. The graph below shows which developing countries receive the greatest amounts of remittances.

Top 15 remittance-receiving countries (2010)



Source: World Bank (WDI, 2013)

In Morocco, revenue from remittances is higher than foreign direct investments (FDI) flows and development aid as a percentage of GDP. In addition, these transfers may increase in times of crisis and natural disasters (Mughal and Makhlouf, 2011).

¹ Authors' calculations from the Moroccan Currency Board's statistics

² Middle East and North Africa

Remittances can be classified into three categories: i) transfers of funds by individuals in order to help their families living in the country of origin, ii) transfers of funds by individuals, with a view to financing investment projects, iii) remittances in a collective way for community projects. Moreover, official development assistance is currently in decline, and remittances can make up for it.

Several factors led the Moroccan workforce to choose Europe as an ideal destination. Indeed, the Maghreb and Europe, including France, have been historically connected, and there is great geographical proximity between the two shores of the Mediterranean. All these conditions place Europe in pole position in terms of remittances towards Morocco. Thus, in 2006, approximately 40%³ of remittances were sent to Morocco by Moroccans residing in France. Our goal in this paper is to analyze the impact of remittances on Moroccan economic growth. The rest of this work is organized as follows: Section 2 presents the relevance of remittances; Section 3 presents the importance and specific features of remittances to Morocco. Section 4 is devoted to the empirical analysis; Section 5 concludes this work and some recommendations are suggested.

2. Review of literature

Taylor (1999) suggests that remittances positively affect the demand for goods and services, which implies an increase in growth. In this vein, Massey and Parrado (1998), and Griffin (1976) argue that remittances contribute to productive investment. *In hoc sensu* Bouoiyour et al (2003) found that remittances increase households’ investments stock. Using a portion of remittances towards investments can promote economic growth. Moreover, the impact of remittances on growth is not yet clear because results obtained are disparate. Stark and Lucas (1988), Faini (2002), Garcia-Fuentes and Kennedy (2009) found remittances impacted growth positively, while Chami et al (2003), and Ramirez and Sharma (2009) claimed they had a negative effect. Migrants tend to send more money in times of crises, natural disasters and conflicts (Ratha 2007). In this case, they contribute to economic stability and reduce the amplitude of economic cycles. In addition, remittances are considered stable financial flows (Ratha, 2007; Mughal and Makhoulf, 2011; Mughal, 2013). Therefore, Yang (2008) and Mughal and Anwar (2012) consider remittances as a stabilizing factor for the economy. In addition, the country of origin’s instability may influence remittances (Elbadawi and Rocha 1992). In this sense, remittances are deemed counter-cyclical (Kapur 2004; Grabel 2008; Mughal, and Ahmed, 2013). In Morocco’s case, Makhoulf and Naamane (2011) regard remittances as the result of reaction to a shock that has hit the Moroccan economy. The table below gives the main results, in the literature, about the impact of remittances on economic growth

Table 1 : definition of variables used in the estimation	
Authors	Impact of remittances on growth
Tansal & Yasar (2010)	(+)
Barajas <i>et al.</i> (2009)	(-)

³ Office de Change of Morocco

Fayissa & Nsiah (2008)	(+)
Pradhan <i>et al.</i> (2008)	(+)
Ruiz <i>et al.</i> (2009)	(+)
Jongwanich (2007)	(+)
Acosta <i>et al.</i> (2007)	No evidence
Catrinescu, <i>et al.</i> (2006)	(+)
Guiliano & Ruiz-Arranz (2006)	(+)
Chami <i>et al.</i> (2005)	(-)
Agunias (2006)	No evidence

3. Importance and specific features of remittances⁴

Morocco has been a country of emigration since the 60s, mainly to Western Europe, but also to other continents including North America and the Gulf countries. A large Moroccan Diaspora was formed over the years, and it has established strong economic and cultural ties with the country of origin. This relationship has become a major issue in Morocco's relations with host countries, especially the European Union, MRA's (Moroccans residing abroad) main destination.

Migrants' remittances are an important source of foreign currency for Morocco. This is the second source of foreign exchange behind exports and ahead of tourism. That is why Moroccan authorities have tried to perpetuate these remittances and sought opportunities to increase them. Therefore, we became interested in the evolution of the Moroccan Diaspora, its characteristics and prospects. We wanted to know the potential impact of these remittances on the Moroccan economy, both in terms of investment, consumption, banking and social effects (improvement in the living-standards of migrants' families that remained in Morocco; poverty reduction and the development of the most deprived areas).

The 1960s and 1970s were characterized by migration flows consisting of migrants born in rural areas who were hired as general handicrafts workers, often in jobs requiring physical labour. This category of migrants has shrunk over time and currently represents only one in three migrants. This change is due to several factors: rural exodus within the country of origin, labor needs as well as economic and immigration policies in host countries.

One trend is noticeable in terms of demography: migrant populations are aging and becoming more feminine. Migrants' marital status has also changed. Thus, early on, they used to be mostly singles but the trend has changed thanks to the family reunification opportunities granted by some host countries.

Socio-professional characteristics have evolved: migrants' level of education and training has much improved, which has allowed them access to professions and industries that require a

⁴ Figures in this section are based on the results of the survey conducted in late Summer 2005 by the Hassan II Foundation observatory studying Moroccans residing abroad.

high level of qualification, hence a better professional situation. We can talk about a brain drain because, in 2005, one in ten migrants to Europe had a higher education level.

It is difficult to measure the amounts transferred because it is hardly possible to control all the circuits that are used. Cash transfers represent the largest share, with 87%, against 13% of transfers in kind (cars, appliances, electronic equipment...). Almost two-thirds of remittances are allocated to the migrant and his family's current expenditures, followed by cash deposits (21%) and finally investment (7%). Morocco-born MRA tend to invest more in their country of origin than those born abroad. Real estate is by far the sector that absorbs most investments, and other sectors have later developed, especially tourism.

MRA still send a large part of their income to Morocco, but this proportion has declined over time. This share is higher in countries dubbed new immigration countries, such as Italy and Spain. MRA born abroad generally send less money to Morocco than those born in Morocco. The 40 to 69 age-group is the one that sends the most money. Transferring means have evolved over time, with the decline of formal channels (banks, post-office...), which accounted for 83% of shipments in 1998, to the benefit of other channels like Western Union. A non-negligible share of transfers, difficult to estimate, is made on the occasion of MRA's visits to Morocco.

4. Empirical analyses

In the previous section, we saw that remittances are an important source of funding. In this section, we will try to measure the impact of remittances on economic activity. Empirical studies examining the impact of remittances on economic growth show disparate results (see section 1). The purpose of this section is to contribute to the empirical literature and enrich the debate on remittances.

4.1. Data

When attempting to explain the role of remittances on economic activity in Morocco, we rely on the Augmented Solow growth model. GDP per capita (y) is accounted for by physical capital and human capital, (k) and (l) respectively. Then we add some control variables such as financial development (fd).

In accordance with the literature on the subject, the latter variable is approximated via credits to the economy (King and Levine 1993)⁵. To see the influence of remittances on GDP per capita, we use the variable (r), as defined in the table below. Graphs and descriptive statistics are given in Appendix A.

Table 2 : definition of variables used in the estimation

Variables	Definition	Source
Y	GDP per capita (current US\$)	World Bank (WDI)
Fd	Domestic credit provided by banking sector (% of GDP)	World Bank (WDI)

⁵ Other variables may be used as proxy for financial development, such as the money supply or bank deposits, etc.

R	Workers' remittances and compensation of employees, received (% of GDP)	World Bank (WDI)
T	Merchandise trade (% of GDP)	World Bank (WDI)
K	Gross capital formation (% of GDP)	World Bank (WDI)
L	Labor participation rate, total (% of total population ages 15+)	World Bank (WDI)

4.2. Econometric model

The debate on the economic impact of remittances on countries of origin including growth, exchange rate, financial development, and so on, is far from over. Endogeneity and reverse causality are major problems faced by empirical studies on the impact of remittances. Researchers in this area have to face these problems in order to improve the quality of results. In this regard, Agunias (2006) pointed out that many studies are weighted down by the endogeneity bias. In this vein, modern econometrics offers a variety of methods capable of overcoming this problem.

At econometrics level, we see that more and more techniques are being used, whose restrictive assumptions are less constraining. Macroeconomic determinants of economic growth are built on several complex relationships. To model this phenomenon, only one equation is insufficient; specification requires several interconnected equations. This system of multiple equations can be studied in a VAR model. This model gives a better adjustment quality compared to simultaneous equations models (Sims 1980). At present, to study the interrelations between the economic variables, the VAR model is considered as an optimal model (Joiner, 2001). This type of model is well-suited for macroeconomic series (Green 2005). It eliminates the endogeneity problem associated with the remittances variable.

Several studies used the VAR model to study the impact of remittances on economic growth. For example in the case of Bangladesh and India Siddique et al (2010) use the VAR model to assess the impact of remittances on economic growth. Further, Couharde et al (2011) use the same model for a set of West African countries. Finally, Katsushi et al (2012) use the PVAR model to study the relationship between remittances and economic growth for 24 developing countries in Asia and Pacific.

In our model, we use impulse response functions to study the impact of remittances on economic activity in Morocco.

The VAR of order p can be written as follows:

$Y_t = BY_{t-l} + u$ (3) Y : the vector of endogenous variables defined in Table 2 (see graphs and descriptive statistics of the series in appendices) where t represents time and l the optimal delay.

4.3. Results and discussion

The results of “impulse responses” functions (appendice-B1-) show that remittances have a positive impact on GDP per capita. Figure (1) summarizes the relationship between remittances, financial development and GDP per capita.

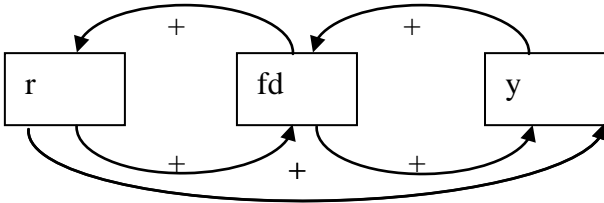


Figure (1)

r: remittances; fd: financial development; y: GDP per capita

However, the relations given by the "impulse responses" functions cannot detect the impact of each variable innovation on GDP per capita. To do this, we will study the decomposition of each variable variance (Appendice-B2-).

The variance decomposition shows that, first, 53% of the variation in GDP per capita is due to its own innovations, 10% to remittances and 11% to financial development. Second, 36% of remittances variance is due to innovations in GDP per capita, 18% to its own innovations and only 8% to financial development innovations. Third, 19% of the financial development variation is due to its own innovations, 12% to remittances innovations, and 28% to GDP per capita innovations. Figure 2 shows the relationships with the weight of each variable in its own variation and that of other variables.

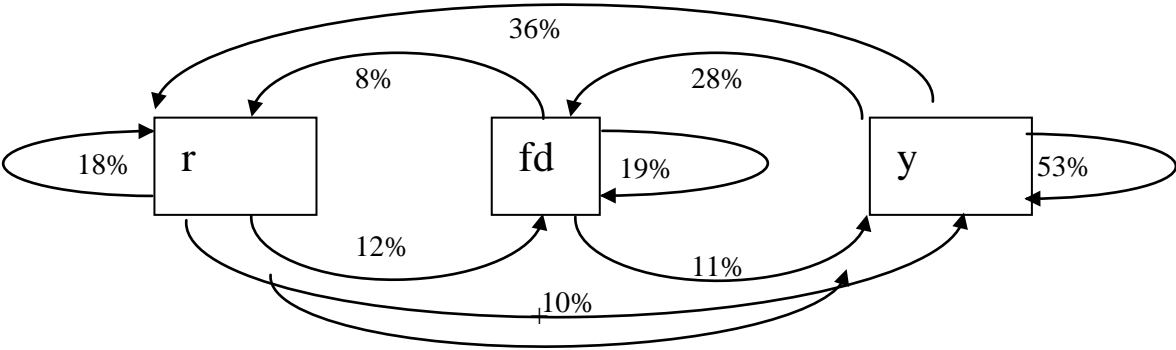


Figure (2)

r: remittances; fd: financial development; y: GDP per capita

The results we obtained show that remittances have a positive impact on GDP per capita, and this is how it can be explained: a part of remittances is allocated to investment in housing. In addition, since a significant portion of remittances is meant for migrants’ families remaining in Morocco, remittances are likely to have a positive effect on growth through increased

domestic consumption. Finally, a portion of the funds sent by MRA is saved in the form of deposits that can be recycled by the Moroccan banking sector as credit for investment or as consumption. Indeed the results obtained either by studying the Hassan II Foundation's observatory, mentioned in the previous section, and those obtained in the study by the African Development Bank⁶ show the importance of the part of remittances used for consumption and investment. According to the same report, based on data from Bank al Maghreb, the banking sector significantly profits from RMAs' remittances. Indeed, in 2006 these transfers accounted for 22.3% of bank deposits, 17.90% of banks resources, and 22.40% of non-remunerated bank deposits. In fiscal year 2007, MRA's deposits accounted for 30% of all checking accounts, 31% term deposits and more than 7% of total savings accounts. These checking accounts do not accrue any remuneration by banks: is a free resource for them.

As the results show, remittances have two effects on financial development. A substitutability effect and a complementarity effect; however, the complementarity effect outweighs the other in the long term. In addition, financial development might attract more remittances (Deisting et al. 2012). The relationship between remittances and financial development could lead to a multiplier effect.

According to Amuedo-Dorante and Pozo (2004) remittances can first decrease households' budget constraints. Thus, remittances can reduce the demand for credit. Therefore, remittances have more or less diverse effects on Morocco's financial development. However, according to the World Bank, remittances contribute to countries of origin's financial development. A study of 99 countries over the 1975-2003 period about the impact of remittances on deposits and loans shows that remittances contribute to increased loans and deposits through the banking sector. In addition, panel studies can hide each country's individual characteristics. According to the same reference, remittances may not increase bank deposits if they are used for immediate consumption.

In this regard, many developing countries resort to this resource to finance local development (Gabel, 2008). In addition, some economists claim such transfers have a positive impact on the balance of payments so that they contribute to its equilibrium (Chami, Fullenkamp and Jahjah 2003). Indeed, Morocco's trade balance is chronically in deficit. Imports far exceed exports. Currencies sent by RMA are a great source of revenue, besides tourism, to level off the balance of payments. It is also worth pointing out RMA are a significant proportion of tourists visiting Morocco.

Remittances bring about different results from one country to another. This depends on which economic policies are implemented, and more particularly the way these transfers are put to use. Thus, governments intervene in various ways to manage these flows, but on the whole state intervention is ubiquitous in developing countries.

At this stage, we know that remittances sent by migrants to their countries of origin make up a major source of funding, especially so in Morocco. In developing countries, that windfall might be used as a substitute to other financial flows so as to support their economic and financial institutions. Remittances are an important source of foreign capital for developing countries (Garcia-Fuentes and Kennedy, 2009). International emigration can be a way for households remaining in the country of origin to get relief from their financial straits. It can

⁶ See the Prime Minister's report

contribute to improving living standards. However, it is also liable to result in unwanted consequences on recipient economies. Indeed, recent economic literature focuses on the negative effects of remittances on the macro and micro-economic level. In addition, these negative effects may arise in the form of a phenomenon known as the Dutch disease (Fajnzylber and López, 2007). Moreover, this result is particularly serious in small countries (Kapur, 2004). The phenomenon has been analyzed by Corden and Neary (1982) and Corden (1984), as regards a massive influx of foreign currency.

Besides, it proves difficult to steer the way remittances are used. We know the way these remittances are exploited has significant consequences on the economy. The Moroccan economy can benefit more extensively from these transfers by allocating them to development projects.

As for Morocco, remittances are more focused on construction and services, which is detrimental to the agricultural sector. In other words, owing to these remittances, people leave their farms to find work in industries. This can result in an increase in wages in the agricultural sector, hence more expensive agricultural produce, causing agriculture to lose some of its competitiveness. However, labor is still so abundant that it is still possible, for the time being, to keep wages stable despite that increase in demand.

As for the robustness of the relationship, we performed stability testing using the COUSUM test (see Appendix C). The results show that stability can be found regarding all variables.

5. Conclusion

Our study has aimed to analyze the impact of remittances on economic growth in Morocco. The results we obtained show that remittances have a positive impact on GDP per capita. This is how it can be explained: a part of remittances is allocated to investments, especially in housing. In addition, since a significant portion of remittances goes to migrants' families remaining at home in Morocco remittances can be expected to impact growth positively, through boosting domestic consumption. Finally, a portion of the funds sent by MRA is saved in the form of deposits that the Moroccan banking sector can reuse in the form of investment loans or consumer credit. Morocco has a chronic deficit in its trade balance and currencies sent by RMA are an important way – besides tourism – to level the balance of payments. Many RMA's families remaining in Morocco rely on remittances to improve their daily lives. This has a significant impact on the country's human and social development in terms of poverty alleviation and access to education and health. As we mentioned earlier, the debate on the impact of migrants' remittances on countries of origin's economies is in full swing. This financial resource generated by international migration can help improve the living-standards of households remaining in the country. It can provide the necessary resources to launch productive investments. Moreover, it can also cause some unwanted effects on recipient economies. These effects differ from one country to another. This is mainly due to the economic policies that are implemented, and more particularly the way these transfers are put to use. We know that remittances sent by migrants to their countries of origin constitute a major source of funding, especially in the case of Morocco. Morocco needs to better steer this windfall so as to boost its development and avoid a significant portion of these remittances being invested only as bank deposits, which feed that sector's excess liquidity.

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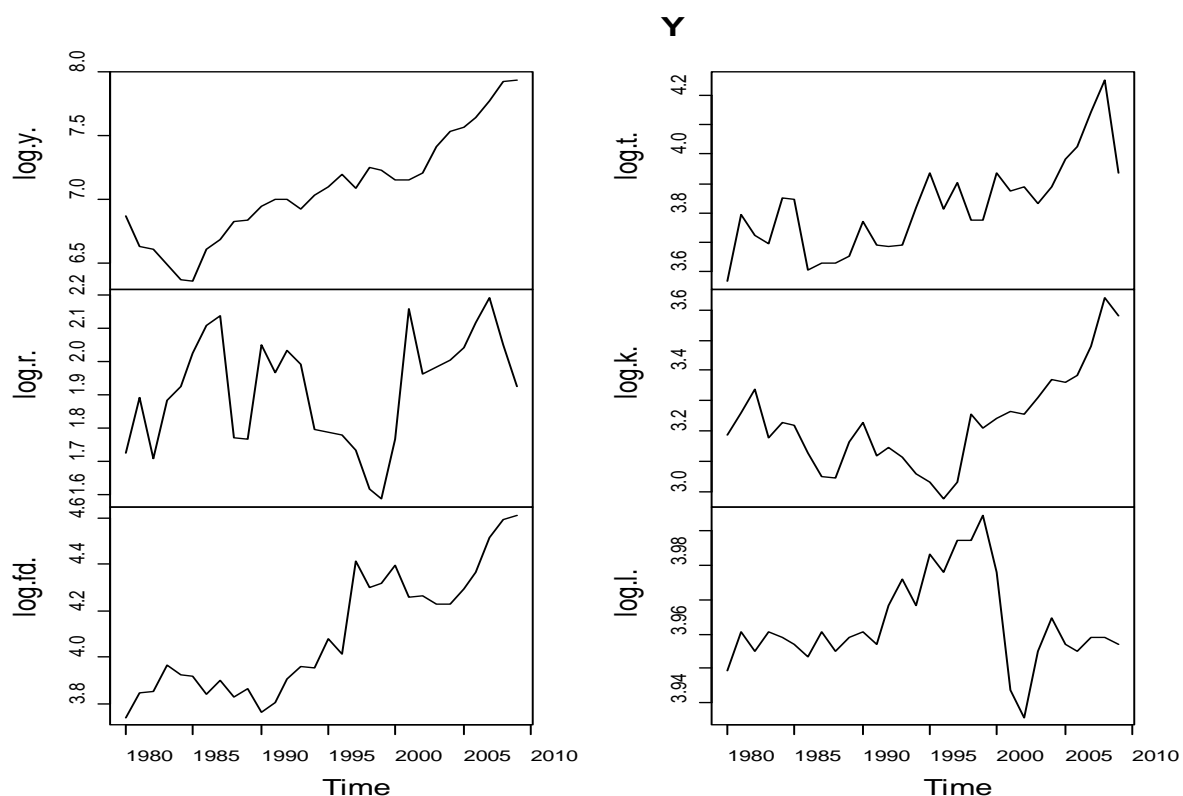
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Annex

A1: Graphs of variables used in estimations



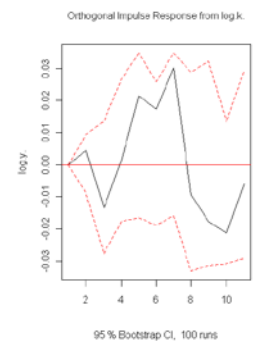
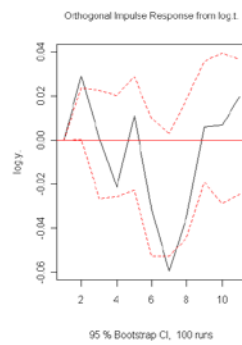
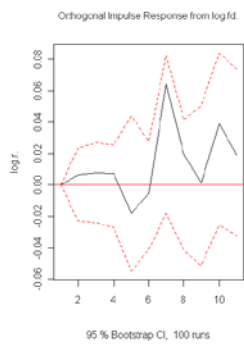
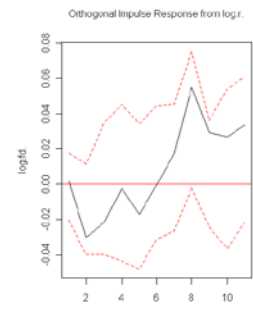
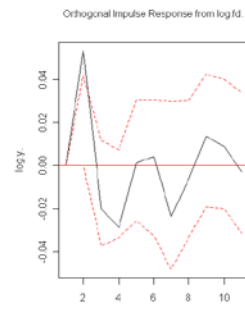
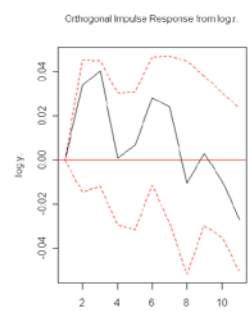
A2 : Summary statistical

	Y	R	Fd	T	k	L
Min.	572.4	4.878	42.13	35.37	19.58	51.20
1st Qu.	924.8	5.885	48.15	40.10	22.66	52.23
Median	1162.8	6.990	54.05	45.41	25.16	52.40
Mean	1297.5	6.878	62.32	46.17	25.57	52.63
3rd Qu.	1402.3	7.690	73.52	49.36	27.05	52.90
Max.	2811.0	8.947	100.48	70.39	38.12	54.30

A3 : Optimal lag

Lag	1	2	3
AIC(n)	-32.893	-34.464	-41.103
HQ(n)	-32.208	-33.265	-39.391
SC(n)	-30.589	-30.432	-35.344
FPE(n)	0.000	0.000	0.000

B1 : Impulses responses functions



B2 : Variance decomposition

Variance decomposition of GDP per capita						
Horizon	log.y.	log.r.	log.fd.	log.t.	log.k.	log.l.
1	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2	69.37%	7.20%	17.93%	5.37%	0.13%	0.00%
3	63.43%	14.26%	16.84%	4.42%	1.02%	0.03%
4	62.73%	12.29%	18.22%	5.84%	0.89%	0.03%
5	61.36%	12.03%	17.59%	6.15%	2.84%	0.03%
6	57.25%	13.84%	15.82%	9.37%	3.69%	0.04%
7	52.85%	11.78%	13.17%	16.89%	5.27%	0.04%
8	51.53%	11.45%	12.58%	19.18%	5.22%	0.05%
9	53.49%	10.69%	12.18%	17.96%	5.64%	0.05%
10	53.30%	10.58%	11.99%	17.52%	6.56%	0.05%

Variance decomposition of remittances						
Horizon	log.y.	log.r.	log.fd.	log.t.	log.k.	log.l.
1	32.68%	67.32%	0.00%	0.00%	0.00%	0.00%
2	18.88%	58.56%	0.25%	0.45%	21.81%	0.05%
3	22.92%	51.74%	0.53%	3.87%	20.88%	0.06%
4	20.99%	50.20%	0.73%	7.38%	20.64%	0.06%
5	16.34%	32.37%	1.38%	36.69%	13.02%	0.20%
6	20.26%	30.41%	1.30%	34.79%	13.04%	0.21%
7	37.37%	20.00%	7.19%	27.20%	8.12%	0.13%
8	37.76%	19.09%	7.25%	27.51%	8.27%	0.12%
9	37.08%	20.05%	7.03%	27.64%	8.04%	0.16%
10	36.29%	18.85%	8.54%	28.25%	7.93%	0.15%

Variance decomposition of financial development						
Horizon	log.y.	log.r.	log.fd.	log.t.	log.k.	log.l.
1	19.43%	0.06%	80.51%	0.00%	0.00%	0.00%
2	9.87%	13.97%	59.75%	2.47%	13.92%	0.02%
3	15.26%	8.80%	44.04%	24.83%	6.83%	0.22%
4	31.79%	3.99%	25.62%	34.55%	3.95%	0.10%
5	30.43%	4.61%	24.98%	33.39%	6.47%	0.11%
6	28.57%	4.26%	23.29%	35.95%	7.80%	0.12%
7	31.87%	4.48%	22.66%	33.75%	7.12%	0.12%
8	29.94%	10.38%	20.95%	31.41%	7.20%	0.12%
9	29.37%	11.65%	20.16%	31.07%	7.63%	0.12%
10	28.97%	12.79%	19.72%	30.83%	7.54%	0.14%

Stability test

