

Remittances and catching up of Southern Mediterranean

Countries

Very preliminary version¹

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Résumé :

D'une revue de littérature, nous concluons que, contracycliques, les transferts des migrants de l'UE contribuent au développement des PSEM. Les migrants établissent des contrats implicites de financements réciproques avec leur famille et favorisent ainsi l'insertion économique du reste de la famille ainsi que l'éducation, la santé, etc. Se fondant sur un modèle de nouvelle économie géographique, nous montrons que les remises de fonds réduisent les divergences de localisation industrielles Nord Sud résultant des économies d'agglomération. Nous concluons qu'une politique facilitant les remises pour le pays receveur ne favorise les projets d'investissement et le développement, qu'accompagnée d'autres financements, comme l'aide officielle au développement.

Abstract:

From the literature, we conclude that, countercyclical, remittances from the EU promote development in MENA countries. Migrants establish implicit contracts of reciprocal financing with their family and ease economic insertion of the rest of the family, education, health, etc. From a new economic geography model, we show that remittances reduce manufacturing location divergences between North and South arising from agglomeration economies. We conclude that a policy facilitating remittances for the receiving country can promote investment and development projects if and only if accompanied by other financing, such as official development aid.

Mots clés : Partenariat Euro-Méditerranéen – Transferts des migrants – Migration – Intégration économique – Croissance et concentration des activités

Codes JEL : F14, F24, F22, F15, R11

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1. Introduction

Remittances are financial resources flows arising from the cross-border movement of nationals of a country (Kapur, 2003). We study remittances between the EU and the MPCs in order to better understand the motivations to remit and to assess the economic impact of remittances on receiving countries, with a focus on their impact on the catching up of Southern Mediterranean Partner countries (MPCs). Are remittances fostering development thanks to external financing of small and medium enterprises in origin countries? Or, conversely, is this external funding mainly spent on consumption and thus not invested in firms or education? What are the impacts of such remittances on growth in the sending countries? To answer these questions, we will first focus on an assessment of the importance of remittances for receiving countries. Second, we will briefly survey the economic role of remittances. More precisely, we will focus on the determinants of money remittances and the macroeconomic effects of remittances.

2. Remittances in MPCs: stylised facts

2.1. Global outlook

More formal channel to transfer remittances due to reduced costs through technological progress in banking, as well as frequent economic and financial crisis in developing countries explain the fast increase of remittances in the early 1990s. However, a statistical artefact due to improvements both in data quality and foreign exchange markets and a burgeoning infrastructure that helps easing the movement of money across borders also contributes to the rise (Kapur, 2003; Chami et al., 2005).

More than half of all remittances received by developing countries flow to lower middle-income countries while 28% flow to low income countries and 17% to upper-middle income countries. The middle-revenue countries have the highest expatriation rate compared to richest and poorest Third World countries and thus receive more remittances. Remittances are more evenly spread among developing countries than are capital flows and appear decisive for economies facing difficulties to attract FDI. Thus, remittances to low income countries are larger as a share of GDP and imports than those to middle income countries. While they equal Official Development Aid (ODA) in low income countries, remittances are considerably lower in middle income countries. The converse holds when comparing them to FDI (see table 1).

Table 1: Remittances received by developing countries in 2000* (billions of dollars)

	Low income	Lower middle income	Low & middle income	Upper middle income
Total remittances	21 704.9	41 947.0	76 786.9	13 135.0
as % of GDP	2.5%	1.2%	1.3%	0.7%
as % of imports	11.7%	4.7%	4.5%	2.1%
as % of domestic investment	12.1%	4.8%	5.4%	3.6%
as % of FDI inflows	203.2%	47.6%	n.a.	18.8%
as % of total private capital inflows	143.7%	39.0%	41.3%	20.7%
as % of official development aid	107.0%	220.0%	135.7%	384.3%
as % of international tourism receipts	n.a.	53.9%	55.1%	26.0%

* We use the World Bank's income classification of countries.

(Source: calculus of the authors, from WDI database)

As far as MPCs (i.e.: Algeria, Egypt, Morocco, Tunisia and Turkey) are concerned, remittances appear as the most important financial inflow. They even outmatch FDI inflows, except for in Turkey, not to speak of ODA, or of private capital inflows. Moreover, remittances are a more stable source of financing than short time capital. Among MPCs, Morocco was the foremost receiving country in 2003, before Egypt, Jordan, Algeria, Tunisia and Turkey (see table 1). When it comes to the ratio of remittances to GDP, Jordan appears as the first receiving country in 2004 (19%, after a maximum of 24% in 1984). The second receiver is Morocco (8%), where remittances' share is steady. While representing 5% of GDP in Tunisia, remittances inflows into Egypt have sharply fallen in 1993, after a maximum of 15% in 1992, they hardly reach 4% nowadays. In all other countries, for which international data were available, remittances represent less than 3% of GDP (Table 2).

Table 2: Remittances received by MPCs in 2003 (billions of dollars)

	Algeria	Egypt	Jordan	Morocco	Tunisia	Turkey	TOTAL
Total remittances	1 750	2 961	1 981	3 614	1 250	729	12 285
as % of GDP	2.6%	3.6%	19.4%	8.2%	5.0%	0.3%	2.6%
as % of imports	10.8%	14.6%	28.4%	22.5%	10.5%	1.0%	8.5%
as % of domestic investment	10.7%	21.9%	94.8%	34.4%	21.4%	2.0%	14.4%
as % of FDI inflows	307.7%	1 4096.9%	589.6%	148.8%	257.5%	48.6%	204.1%
as % of official development aid	746.5%	300.1%	158.8%	670.6%	420.0%	442.5%	354.0%
as % of international tourism receipts	1 562.5%	62.9%	156.5%	95.0%	64.62%	21.5%*	

* 2002 for Turkey

(Source: calculus of the authors, from WDI database)

2.2. Assessment of bilateral links

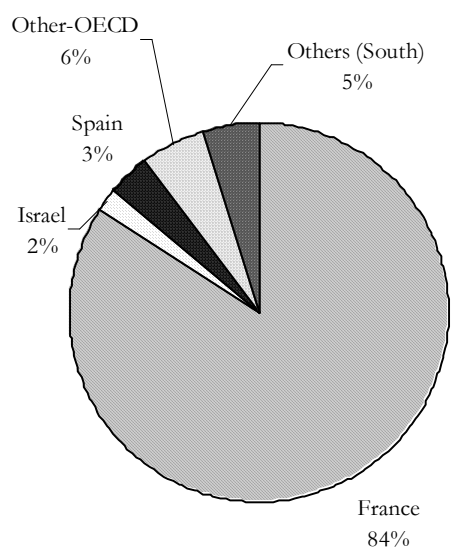
Between 1963 and 1972, Maghrebi countries experienced their greatest labour migration towards Europe. For Morocco, and to a lesser extent, Tunisia, it went along with a diversification of migration beyond France. Unskilled ‘guest workers’ went also to Germany, Belgium and the Netherlands. Algerian migration remained overwhelmingly oriented toward France. Algeria formally suspended all migration to France in 1973 in line with the oil crisis. Tightening of visa policies make migrants fear that coming back to Europe might be impossible if they returned in their origin country and pushed migrants into permanent settlement. Unexpectedly, larger number of Maghrebi migrants, therefore ended up staying permanently. The 1991 Gulf War led to massive labour force repatriation from the Gulf countries, in particular for Egyptians, thus reducing the potential of migration for unskilled workers to Arab countries – which has stimulated Egyptian migration to Italy. In reaction to the UN air and arms embargo between 1992 and 2000, Libya started to encourage Sub-Saharan Africans to work in Libya and thus became a major destination and transit zone for those migrants. After 1995, an unexpected resumption of labour migration occurred not only from the Maghreb but also from Egypt to southern Europe. Spain and Italy have emerged new major destination countries for Moroccan, Tunisian (mainly to Italy), Algerian (mainly to Spain) and Egyptian (mainly to Italy) migrants since the mid 1980s. North African migration to Europe has generally been the migration of unskilled and semi-skilled workers from rural areas who obtained manual jobs in industry, agriculture and formal and informal service sectors (De Haas, 2007b).

The historically different patterns of migration are reflected in the geographic distribution of remittances. Maghrebi countries receive the majority of remittances from Europe: mainly from France for Algeria (84%), migration of which is highly concentrated, and Tunisia (68%), while Morocco’s receipts are more diversified and nearly equally coming from France (31%) and Spain (29%). Turks also received the main part of remittances from Europe, where Germany is the main sending country (64%). In contrast, Gulf countries do provide the lion’s share of remittances to Egypt (50% from Saudi Arabia) and Jordan (41% from West Bank and Gaza and 28% from Saudi Arabia) (see figure 1).

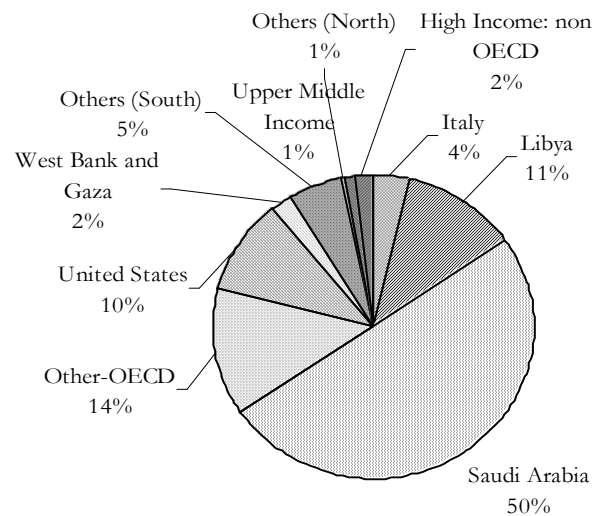
As remittances to Maghreb and Turkey mainly come from Europe and thus happen to be more stable than money received by Egypt and Jordan from oil-rich Gulf countries, we have decided to focus our analysis on the former countries. As the main receiver of remittances and the most geographically diversified in terms of migration outflows among Maghreb countries, a special focus is given to Morocco.

Indeed, Moroccans form not only one of the largest, but also one of the most dispersed migrant communities in Western Europe. France is home to the largest legally residing population of Moroccan descendents, followed by Spain. Migrant remittances from Europe to Morocco have shown an upward trend over the past decades. The so-called “Euro-effect” and concomitant money laundering

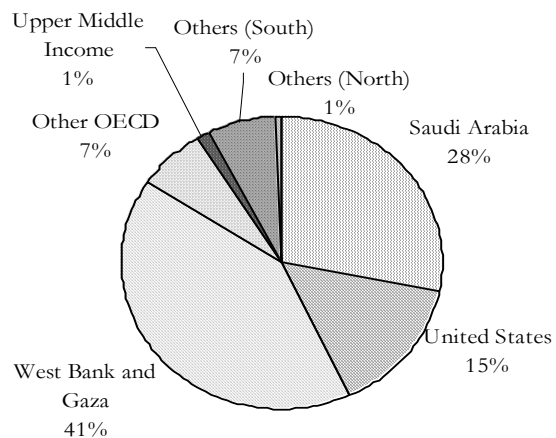
Figure 1: Breakdown of remittances by sending countries for MPCs (in 2000 and %)



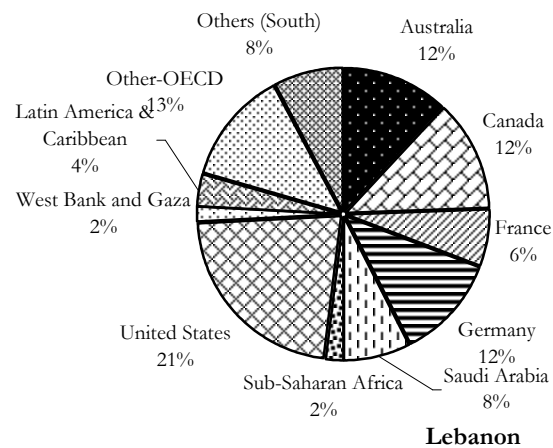
Algeria



Egypt



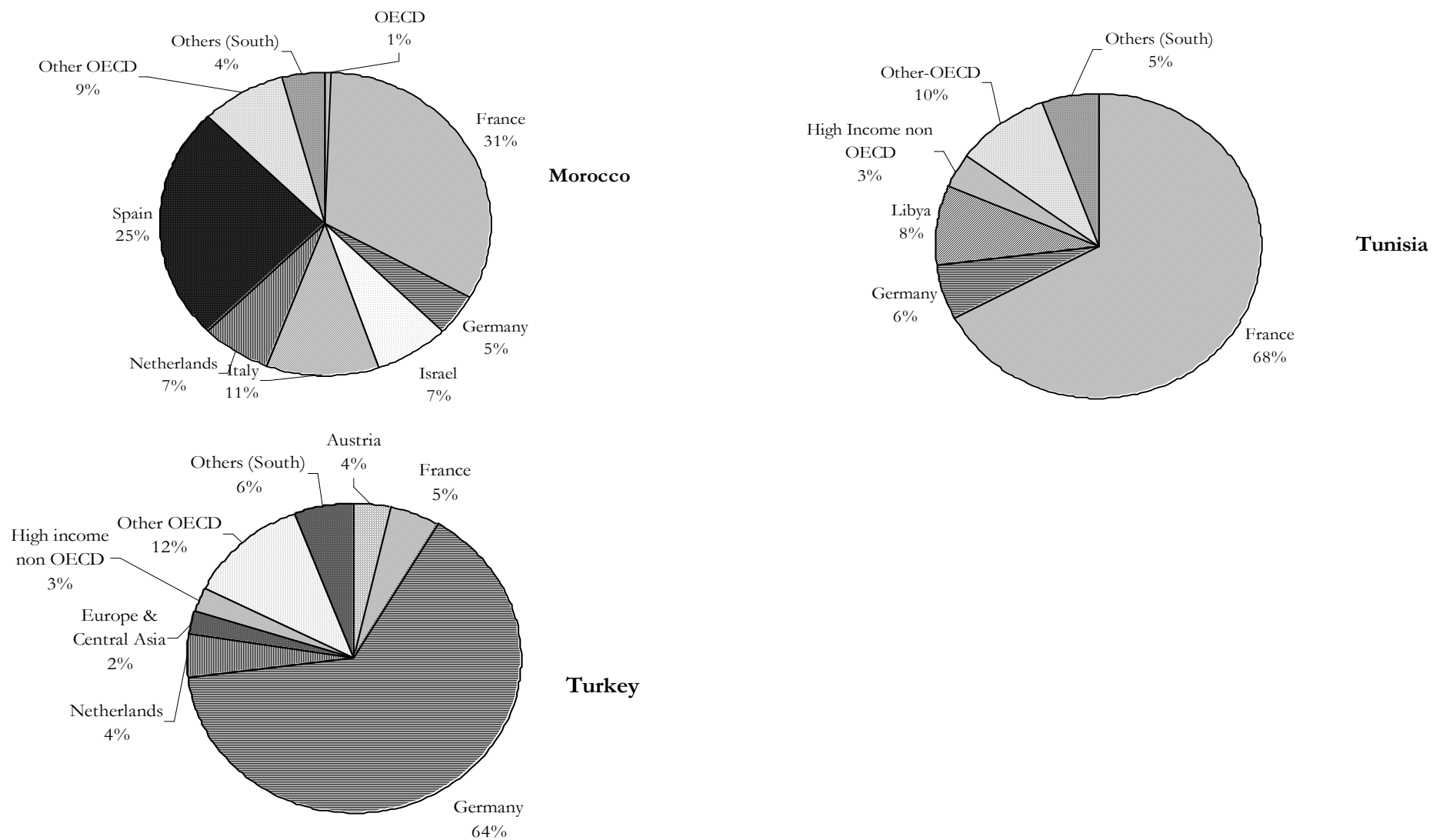
Jordan



Lebanon

(Source: Calculus of the authors, from WDI and Ratha and Shaw (2007)'s database)

Figure 1: Breakdown of remittances by sending countries for MPCs (in 2000 and %), continued



(Source: Calculus of the authors, from WDI and Ratha and Shaw (2007)'s database)

can only explain part of the recent surge in remittances. The structural strength of remittances is explained by the unforeseen persistence of migration to North-Western Europe; new labour migration towards Southern Europe; and the persistence of cross-border and cross-generational links between migrants and “stay behinds” (De Haas, 2007a and 2007b).

Studies on remittances are split into two categories: (1) identification of factors determining remittances and (2) assessment of macroeconomic impact of remittances. The following sections successively deal with these two issues on both a theoretical and an empirical point of view.

3. Economic determinants of remittances

3.1. Microeconomic perspective

In contrast to the neoclassical model, for which wage differentials across countries are the leading factors explaining international migrations, in the early 1980s, the new economics of labour migration (NELM) assumes imperfect credit and insurance markets so that migration is perceived as household response to income risks; the entire family is sharing and trading off the costs and benefits from remittances, which serve as income insurance for household in the origin country (Massey and Espinosa, 1997; Mora and Taylor, 2006). Remittances are then driven by individual (altruism, exchange of services or self-interest) or family (investment, insurance) motives. They also provide a potential source for productive investment in a context of imperfect financial markets in a portfolio approach (Rapoport and Docquier, 2004).

3.1.1. Individual motives

Boughga-Hagbe (2004) proposes a model in which utility of the migrant depends on his/her own consumption, the consumption of his/her family and on his/her asset accumulation, the latter including real estate in the home country. His equations imply clear altruistic motives behind remittances: remittances will increase with poor economic performance in the home country, and with good performances in the country of residence. The ‘attachment to homeland’, the willingness of Moroccan migrants to build one’s own house in Morocco, should imply a positive elasticity between remittances and the amount of construction GDP. Moreover, motivations for portfolio diversification (i.e. interest rate differential between origin and resident country) are not significant among long-run explanatory factors.

3.1.2. Family motives or portfolio approach

Glytos (2002a) views remittances as an endogenous variable in the migration decision process: remittances are part of the migration-repatriation cycle in a family network. He developed a model

based on the assumption that the family claims for 'warranted remittances' are higher than the required remittances (i.e. the difference between the average income per remaining family member and the average income in the community in which the family lives). In order to obtain grants allowing a higher standard of living than its neighbours, the family is counting on the altruistic feelings of the migrant or on an implicit contract with him. The latter is motivated by the relative return of savings in the host and the home country and is pursuing a saving target (portfolio approach). Then, the claim will depend on the bargaining power of the family members. During the period 1973-1998, Jordan, Morocco, Syria and Turkey show a relatively stronger preference for the future insofar as the family is accepting less than its warranted remittances and allows the migrant financing his/her saving target. Nevertheless, the migrant sends almost all surplus savings to these countries, which suggest a slowly moving upward saving target. In contrast, Egyptian migrants give a high priority to present consumption at the expense of future welfare and are running down the saving target. Algerian and Tunisian migrants demonstrate the same behaviour as Egyptian migrants, but they manage to hardly damage their saving target. Jordanian and Moroccan are capable of providing remittances well above low claims, whereas Turkish remissions cover comfortably the stronger claims of their families. Syrian and Algerian migrants cover much less than the claimed amount, while the Egyptian and Tunisian migrant families go in the red for supporting their relatives abroad to accumulate savings. Moreover, in Algeria, Morocco, Syria and Tunisia, cooperation between the migrant and his/her family in determining the flow of remittances is closer than in Egypt, in Jordan and in Turkey, which at least for Jordanians and Egyptians may be partly explained by the volatility of migration in the Gulf (Glytos, 2002a).

In a study on macroeconomic determinants of remittances in MPCs, Mouhoud et al. (2007) find that intra-family contracts prevail in the decision to send remittances of Algerian, Moroccan and Tunisian migrants, and to a lesser extent Turkish. Migrants originating from Egypt are an exception. The leading motivation for Egyptian migrants is altruism, which is explained by the prevalence of temporary migrations.

3.2. Macroeconomic environment favourable for remittances

Using a gravity model with distance as a proxy for migration costs, Adams (2007) shows the amount of workers' remittances to decrease with distance and the square of income, but increasing with income. He concludes that an inverted U-shaped curve exists between the level of country income (development) and the receipt of per capita workers' remittances. Developing countries with low or high per capita GDP income receive smaller levels of per capita workers' remittances. The shares of secondary-educated people and poverty have no influence on the amount of remittances, an outcome for which he gives two explanations. The first contradicts the intuition of Chami et al. (2005): migrants

do not remit for altruistic purposes. The second seems more likely: countries with high levels of poverty are not producing many international migrants.

According to the OECD (2006a), if some macroeconomic factors such as interest rates, exchange rates, inflation, and relative rates of return on different financial and real assets tend to influence remittances, they only have a short-term effect. Political stability, i.e. an environment of confidence in safety and liquidity of savings, seems more important than options for possible higher returns. The Moroccan case study illustrates that it can take decades before positive development impacts of migration gain full momentum insofar as 'integrated' and settled migrants possess greater capabilities to remit and invest. Then, improvements in general investment conditions, restored trust in political and legal institutions and sensible immigration policies not deterring migrants from circulating are a key element of successful and productive investment of remittances (De Haas, 2007a).

4. Macroeconomic impacts of remittances

4.1. Stylised facts in MPCs

When it comes to Morocco, on average, current and return migrant households invest four and six times more, respectively, than non-migrant households. Housing is Moroccan migrants' first investment priority: 83.7% of all migrants' investment projects were in real estate, 7.5% and 8.8% in agriculture and other sectors, respectively. Remittances-enabled investments in commercial agriculture in parts of the Sous and the Rif and some oases have created substantial employment for farm workers. The first objective of migrants is to meet the household's immediate needs through providing them with proper nutrition, health, care, clothing and housing. Second, insofar as remittances are sent to one of the men in the household, women wish to have one's own house – away from in laws' authority. It could also be an effective strategy for migrants to escape from the heavy financial burden of supporting large extended families. Third, housing turned out to be a rational, relatively secure capital investment, through which households can generate additional income (De Haas, 2007a).

Actually, as far as economic activity is concerned, in Morocco international remittances have played a key role in facilitating agricultural investments. Moroccan migrants have shown a preference for investments in the development of new irrigated agriculture. Investments in all kinds of service enterprises have become increasingly more important to the detriment of real estate and, particularly, agricultural investment. Migrants have also played an important role in the growth of small-scale industry in Morocco. Migration and remittances have a positive influence on the educational participation of migrants' daughters and play an accelerating role in closing the gender gap in education (De Haas, 2007a).

De Haas (2007a) shows that, in Morocco, remittances per migrant head from northwest European countries reveal a peak around 1990, more than two decades after the onset of large-scale migration (versus between 3 and 12 years as usually observed). Migration is ‘maturing’; investment priorities tend to shift over the life-cycle. If housing is generally the first major investment, after the first years, migrants tend to diversify their investments towards agriculture, small-scale industry and services. For Morocco, De Haas (2007a) identified a sequence in which real estate investment occurs relatively early in the migration cycle and peaks 5-14 years after initial migration, to stabilise at a high level. Major agricultural investments mostly occurred 15-24 years after migration and investment in non-agricultural private businesses peaked 25-29 years after migration.

Regarding Egypt, a large proportion (46%) of the 1526 Egyptian return migrants, analysed by McCormick and Wahba (2001), invested in housing and 10% invested in economic projects.

4.2. Short-turn impact on investment and small and medium enterprise creation

Drawing on a probit econometric model, McCormick and Wahba (2001) used a 1988 survey of 1526 Egyptian migrants who had worked abroad at least six months and then returned home. They find that time spent working abroad and total amount of money saved abroad have a positive and significant effect on the likelihood of a return migrant becoming an entrepreneur (i.e.: either an employer, a self-employed individual, or someone with a business project in addition to his/her usual economic activity). For the 70 percent of return migrants in the Egyptian data who are literate, the primary factor affecting the probability of becoming an entrepreneur is the amount time spent working abroad: an increase from 6 to 30 months of overseas work lead to a rise in the probability of literates becoming entrepreneurs from 0.19 to 0.32, in accordance with social capital theory. By contrast, for the 30 percent of return migrants in the Egyptian data set who are illiterate, the total amount of money saved abroad is the most important factor. Thus, according to the paper, illiterate Egyptian migrants may not learn many new skills working abroad and this is the reason why savings accumulated abroad – rather than time spent abroad – is the critical factor affecting the likelihood of becoming an entrepreneur, in line with home capital market restrictions.

4.3. Structural impact on growth and poverty reduction

4.3.1. General results

Remittances simply go directly to households and their immediate poverty alleviation impact can be greater than traditional foreign aid, depending on the income characteristics of the receiving household. Its long-term impact may be more questionable. Remittances are a better instrument to

address transient poverty, which arises due to shocks, rather than structural poverty. To alleviate structural poverty, broad economic transformation may still require external financial resources in the form of budgetary support to governments in many poor countries (Kapur, 2003).

Glytos (2002a) estimated a dynamic Keynesian macroeconomic model based on three behavioural equations for consumption, investment and import plus an income identity in which the 'national disposable income' is made up of GDP and the volume of migrant remittances. He finds a great structural uniformity among the countries of both shores of the Mediterranean Sea (i.e.: Egypt, Greece, Jordan, Morocco and Portugal): there are generally more good cases where remittances boost growth, or moderate recession than bad cases where remittances restraint growth or accentuate recession. In Egypt and Jordan, the short-run effect on consumption of an increase in remittances are more delayed than in other countries like Greece and Morocco because of the greater uncertainty concerning remittances. The immediate effect is rather high in Morocco and moderate in the other countries (very small and negative in Egypt). In Jordan, the long-run growth generating capacity of remittances is three times higher than that of Egypt, Greece and Morocco, with Portugal occupying an intermediate place. The elasticity of long-term induced growth rates of output with respect to the growth rates of remittances rises considerably over time in Egypt and Morocco; slightly in Jordan; falls drastically in Greece; and rises and subsequently falls in Portugal. The growth-destroying capacity of falling remittances is about three times higher than the growth capacity of rising remittances for Egypt and Morocco, and to a lesser extent for Jordan, while Greece and Portugal experience each just about the same elasticities in the rising and the falling years. This diverging impact on output of remittances is explained by their relative weight in the economy (reflection of the Dutch disease problem), the liquidity they generate and the phase of business cycle as well as conditions and policies of individual countries. The impact is asymmetric: the response is stronger to failing than to rising remittances, witnessing the vulnerability of the economies that depend heavily on remittances.

Two studies the first from the IMF and the second from the World Bank (WB), both published in 2005, reach opposite conclusions on the impact of remittances on growth and poverty reduction.

First, Chami *et al.* (2005) collected a panel of aggregate data on remittances from the WB's WDI databases. Their data set includes 113 countries over the 1970-1998 period. They find a robust negative correlation between the growth rate of remittances and both per capita GDP growth and income gap, which contrasts with the positive correlation of FDI inflows with GDP growth. They conclude that remittances are compensatory by nature and therefore should not be considered equivalent to capital flows. When predicated on the presumption that remittances have similar uses and effects as other private capital flows, policies may have unintended consequences. If remittances are used by recipients to reduce their labour market participation, economic activity might be adversely affected. Another concern would be the incentive effects of these remittances on recipient country governments, who may view such transfer as stable source of insurance.

Second, using a new database of 71 developing countries, Adams and Page (2005) find that both migration and remittances have a strong statistically significant impact on reducing poverty in the developing world. They base their work on the assumption that migration and remittances are contributing to growth, which in turn will reduce poverty. After instrumenting for the possible endogeneity of migration⁵, and controlling for income, its distribution and regional fixed effects, their results suggest, that, on average, a 10% increase in the share of migrants in a country's population will lead to a 2.1% decline in the share of people living on less than \$1.00 per person per day. After instrumenting for possible endogeneity of remittances, a similar 10% increase in per capita official remittances will lead to a 3.5% decline in the share of people living in poverty. Moreover, per capita official remittances have a negative and statistically significant impact on the level of poverty (poverty headcount index), the depth of poverty (poverty gap) and the severity of poverty (squared poverty gap).

4.3.2. The case of Morocco

From data on standards of living in Morocco in 1998/99, Souidi and Teto (2003) projected that 1.17 million out of 30 millions of Moroccans would fall back to absolute poverty without international remittances. In 1998, such transfers have represented approximately 6.9% of private consumption and 5.7% of gross national product. The proportion living below the poverty line would increase from 19.0 to 23.2 percent (from 12.0 % to 16.6% for urban areas and from 27.2% to 31.0% in rural areas). The middle classes, particularly its higher income part, profit relatively more from remittances than the lowest income groups. De Haas (2007a and 2007b) finds that the average international migrant Moroccan household's income was 2.5 times higher than the non-migrant household's income, largely because of remittances.

In Morocco, as a result from international migration, new forms of inequality, based on access to monetary resources, have been largely superimposed upon the traditional forms of structural, hereditary inequality based on kinship, complexion and land possession (De Haas, 2007a). The middle and higher income classes profit relatively more from remittances than the lowest income groups, because migration is an increasingly selective process, more dependent on international migrant networks (De Haas, 2007a). For the Moroccan government, remittances are a crucial and relatively stable source of foreign exchange and have sustained Morocco's balance of payments (De Haas, 2007b).

⁵ Reverse causality may be taking place: migration and remittances may reduce poverty in the developing world, but poverty in the developing world may also affect the share of migrants being produced and thus the level of remittances being received. For this reason, Adams and Page (2005) use three instrumental variables.

4.4. Impact of remittances on the localisation of activities

In a standard Core-Periphery model with two regions (North and South), two goods (homogenous agriculture and increasing returns differentiated manufacturing), where wage differentials are the only motivation to migrate, we introduce remittances as an element completing workers' income in migrant sending countries. Thus, each region's revenue is defined as the sum of workers' earnings in local agriculture and manufacturing, plus remittances received and minus remittances paid.

All manufacturing activities are initially assumed to be located in the North. Workers then trade-off between the two regions depending on the real earning offered. Insofar as manufacturing goods are more expensive in the South than in the North due to transaction costs linked to their importation, living in the South is more costly for mobile manufacturing workers than staying and living in the North⁶. So if a firm wants to implement a manufacturing plant in the South, it should compensate for the extra-cost of living, before workers accept to move. However, as usual in such new economic geography models, the larger the home market, the more attractive the region and the smaller the compensation needed.

4.4.1. The model

4.4.1.1. Customer behaviour

4.4.1.2. Two factors of production

Each sector employs a single specific resource, workers and "farmers" respectively, and we assume that each of these factors is in fixed supply. The farmers are geographically motionless. Considering L^A farmers all over the world, we assume that each region is endowed with an exogenous share of this world labour force denoted ϕ . The workers are mobile over time. We denote the share of region r in the world worker supply L^M by λ_r . We choose units so that $L_N^A + L_S^A + L_N^M + L_S^M = L^A + \mu = 1$, where μ is the share of expenditures of consumers in industrial goods.

Workers are geographically mobile and choose their location depending only on the regional real offered wages Ω_r^M such that the migration dynamics of this population can be written:

$$\dot{\lambda}_r^M = \iota(\Omega_r^M - \bar{\Omega}^M)\lambda_r^M \quad (\text{E.1})$$

This equation ensures that the slightest regional advantage in terms of real salary is translated into the arrival of skilled labour up to the equalisation of real salaries.

⁶ In our model, we assume null migration costs. The inclusion of positive migration costs would only reduce the impact of remittances without any alteration of the model's results.

4.4.1.3. Producer behaviour

The technology used in manufacturing is identical for all the varieties produced and is independent of production location. It is characterised by the existence of marginal costs (c_m) and fixed costs (F) inducing increasing returns.

The individual profit of manufacturing companies can be written:

$$\Pi_r^M = p_r^M q_r^M - w_r^M (TC) \text{ with } TC = F + c_m q_r^M \quad (\text{E.2})$$

The following normalisations simplify the model without altering their conclusions. Thus, the marginal and fixed industrial costs will have the following values⁷ respectively: $c_m = (\sigma - 1)/\sigma \equiv \rho$ and $F = \mu/\sigma$, with σ the elasticity of substitution between differentiated industrial goods. These equalities, related to the conditions of maximisation of profit, allow us to determine the equilibrium production $q_r^* = \mu$. This equality and the condition of null profits in long term lead to the expression of price of each industrial variety which depends on nominal offered wages of workers.

$$p_r^M = w_r^M \quad (\text{E.3})$$

Moreover, the definition of the equilibrium quantities q^* allows defining the number of varieties in each of the branches with increasing returns. Indeed, the value of industrial production is composed of a unit part by the wage mass of the sector, which leads to:

$$w_r^M \lambda_r^M = n_r p_r^M q^* \quad (\text{E.4})$$

With the previous simplifications, the number of manufacturing firms becomes:

$$n_r = \frac{w_r^M}{p_r^M} \mu \lambda_r \quad (\text{E.5})$$

4.4.1.4. Long term equations of the model

In order to determine the wages equations of both differentiated sectors, we specify firstly the notation of the regional revenues (Y_r):

$$Y_r = w_r^M \lambda_r + B(1 - \lambda_r^M) - \delta_{\lambda_r > 0.5} (\lambda_r - 1/2) \mu \theta w_r^M + \delta_{\lambda_r < 0.5} (1/2 - \lambda_r) \mu \theta w_s^M \quad (\text{E.6})$$

The first two parts represent the sum of working revenues in the both sectors⁸ whereas the two last parts represent the value of the remittances and their spread out between the regions denoted r and s .

$\delta_{\lambda_r > 0.5}$ and $\delta_{\lambda_r < 0.5}$ act as the Kronecker symbol so that if $\lambda_r > 0.5$, so $\delta_{\lambda_r > 0.5} = 1$ and $\delta_{\lambda_r < 0.5} = 0$ but if $\lambda_r < 0.5$, so $\delta_{\lambda_r > 0.5} = 0$ and $\delta_{\lambda_r < 0.5} = 1$. $|(\lambda_r - 1/2) \mu|$ represents the number of workers employed in the abroad region and so concerned by remittances, whereas θ denotes the share of revenue they

⁷ Each firm faces an elasticity σ of the demand on the variations of price and fixes their prices by increasing their marginal costs with a constant relative *mark-up*. In this way, defining the value of the marginal cost as equal to the *mark-up* allows us to simplify the writing of prices

⁸ We consider in the rest of the model that the productivity B of the traditional sector H is equal to unity.

send to their home region. For instance, if all manufacturing activities are located in the north (N) and no one in the South (S), the remittances amount $(\lambda_N - 1/2)\mu\theta w_N^M$ received by the southern region from the northern.

Equations (E.2), (E.3) and (E.5) allow us to write the index of manufacturing prices G_r^M in function of the interest variables of the model:

$$G_r^M = \left[\lambda_r (w_r^M)^{1-\sigma} + (1 - \lambda_r^M) (w_s^M t)^{1-\sigma} \right]^{1/(1-\sigma)} \quad (\text{E.7})$$

Knowing the demand of industrial consumption to which is faced each manufacturing firm, the equation (E.3) expresses the nominal industrial regional wages:

$$w_r^M = \left[Y_r (G_r^M)^{\sigma-1} + Y_s (G_s^M)^{\sigma-1} t^{1-\sigma} \right]^{1/\sigma} \quad (\text{E.8})$$

The consumptions are spread out between homogeneous good, with a unity cost, and the manufacturing expenditures with a part μ . Consequently, we can deduce the real labour wages according to their level of qualification and their localisation:

$$\Omega_r^M = w_r^M (G_r^M)^{-\mu} \quad (\text{E.9})$$

The equations (E.6) to (E.9) allow determining the instantaneous equilibrium of the model. Their number and their non-linearity symbolise the difficulty of the resolution of the model. This aspect is common to models of economic geography based on the Dixit-Stiglitz frame. The following sections will lead to numerous and instructive conclusions. Before discussing the equilibrium conditions, it is important to describe the forces presupposing the agglomeration or dispersion schemas of both differentiated sectors.

4.4.2. Forces fostering dispersion and agglomeration

The interactions between centrifugal and centripetal forces cause the equilibrium location of firms depending on the values of four parameters: the share of industrial expenditures (μ), the share of revenue the migrants send to their home region (θ), the transaction costs level (t) and the elasticity of substitution among the differentiated goods which constitutes the measure of increasing returns (σ).

Two centrifugal forces promote spatial dispersion. On one hand, the constraint of geographical fixity of labour implies, for industrial firms, permanent prospects, and thus a motive of location. Indeed, high transaction costs between both countries favour a stability of activities near those markets. Thus, employees from the industrial and traditional sectors form a localised demand. On the other hand, firms with increasing returns face a so called pro-competitive effect. A geographical concentration of industrial firms (increase of λ_r^M) increases tensions on the differentiated goods market. Profits of industrial companies will be negatively influenced since at the same time with the offer of a superior quantity of varieties, each firm will have to face a reduction of its individual demand.

4.4.3. Economic conditions of CP sustainability with remittances

The analysis assumes that all manufacturing activities are initially located in region 1 only, the so called Northern region. The question is to know the determinants of the stability of this asymmetrical situation where we assume then $\lambda_N^M = 1$ and $\lambda_S^M = 1 - \lambda_N^M = 0$. In these conditions and according to the equilibrium between global supply and demand in manufacturing and traditional goods, we deduce that $w_N^M = 1$ (see Appendix 1). The expression of the regional indexes of manufacturing prices comes easily from the equation (E.7) and becomes $G_N^M = 1$ and $G_S^M = t$ whereas we obtain $\Omega_N^M = 1$. These elements are useful to compare the regional real wages. The workers arbitrate indeed between both regions according to the real offered remuneration. We have so to compare the value of Ω_S^M with Ω_N^M that is, with the unity. A southern real wage index superior to the unit ($\Omega_S^M > 1$) will thus be equal to an industrial development in this region. Such a result will be a sign of manufacturing concentration unsustainable since the firms of this sector will relocate themselves from the core to the periphery predisposing a symmetric repartition of activities. Inversely, a real wage value below the unit ($\Omega_S^M < 1$) will show a sustainable concentration. Consequently, it is important to determine the expression of real manufacturing wages in the periphery Ω_S^M depending on the other variables and parameters in the model.

From all the equalities previously specified, it is possible to determine the notation of the real industrial wage from equations (E.8) and (E.9):

$$\Omega_S^M = t^{-\mu} \left[\frac{1 + \mu(1-\theta)}{2} t^{1-\sigma} + \frac{1 - \mu(1-\theta)}{2} t^{\sigma-1} \right]^{\frac{1}{\sigma}} \quad (\text{E.10})$$

This equation is globally similar with the Krugman (1991) one, excepting the presence of remittances here. With $\theta = 0$, that is without remittances, the equation becomes exactly identical to the seminal one. We find in this equation (E.10) the backward and forward linkages defined in the previous section.

The latter is present with the initial factor $t^{-\mu}$. The manufacturing prices in the South are t times higher than in the North due to the importation costs on these goods. To import manufacturing goods reduces the southern attractiveness making location in this region relatively costly for new workers.

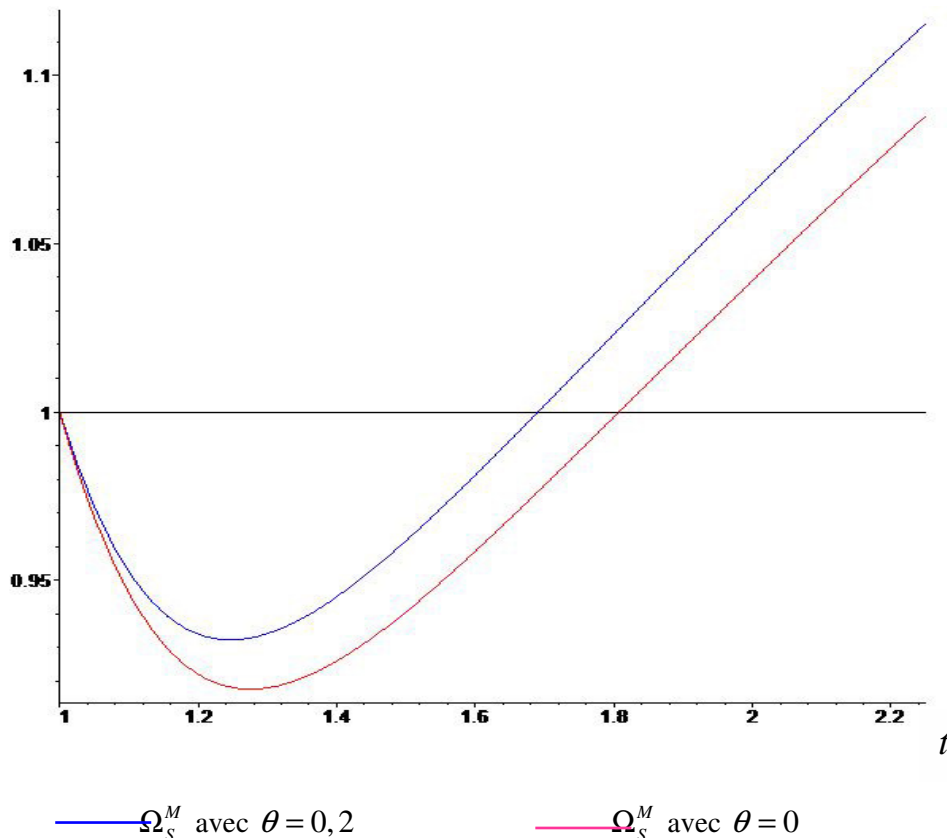
The term in the brackets represents the wages which firms have to offer to their workers in order to encourage them to work in the South rather than in the North. At the numerator, $(1 + \mu(1-\theta))/2$ corresponds to the revenues in the North. This part is weighted by $t^{1-\sigma}$ which represents the relative disadvantage for a firm in the South to supply these northern consumers⁹. In the same way,

⁹ $t^{1-\sigma}$ is inferior to unity such that it corresponds identically to the advantage for a firm localised in the South to supply its local market in regards to competing firms in the other region.

$(1-\mu(1-\theta))/2$ represents then the revenues in the South and $t^{\sigma-1}$ represents then the weighting linked to the disadvantage for a firm in the North to supply the South. Through this term in the brackets can be seen the backward linkage via a demand effect (home market effect). The higher the home market is, the more attractive the region with higher revenues. The relative weight of this cumulative causation comparing with the centrifugal forces depends directly on the parameters of the model, especially the transaction costs and the level of the remittances newly integrated inside this model. We have thus to analyse the parameters impacts on Ω_S^M by means of simulations.

The repartition of firms from the increasing-returns sector depends closely on the level of both integration and remittances (Figure 1). When the real peripheral manufacturing wages are unity and equal with the northern ones ($\Omega_S^M = 1$ at the horizontal curve), it's all the same to the mobile workers to locate in the South or in the North. For all the points stand above the horizontal line (higher real wages in the South), the symmetrical distribution is the only stable equilibrium and concentration is unsustainable. For all the points stand below (lower real wages in the South), the concentration becomes sustainable.

Figure 1: The sustain point with and without remittances¹⁰



To evaluate the impacts of remittances on the core – periphery pattern, we introduce two situations. The red curve indicates a situation without remittances, that is, absolutely equivalent with the

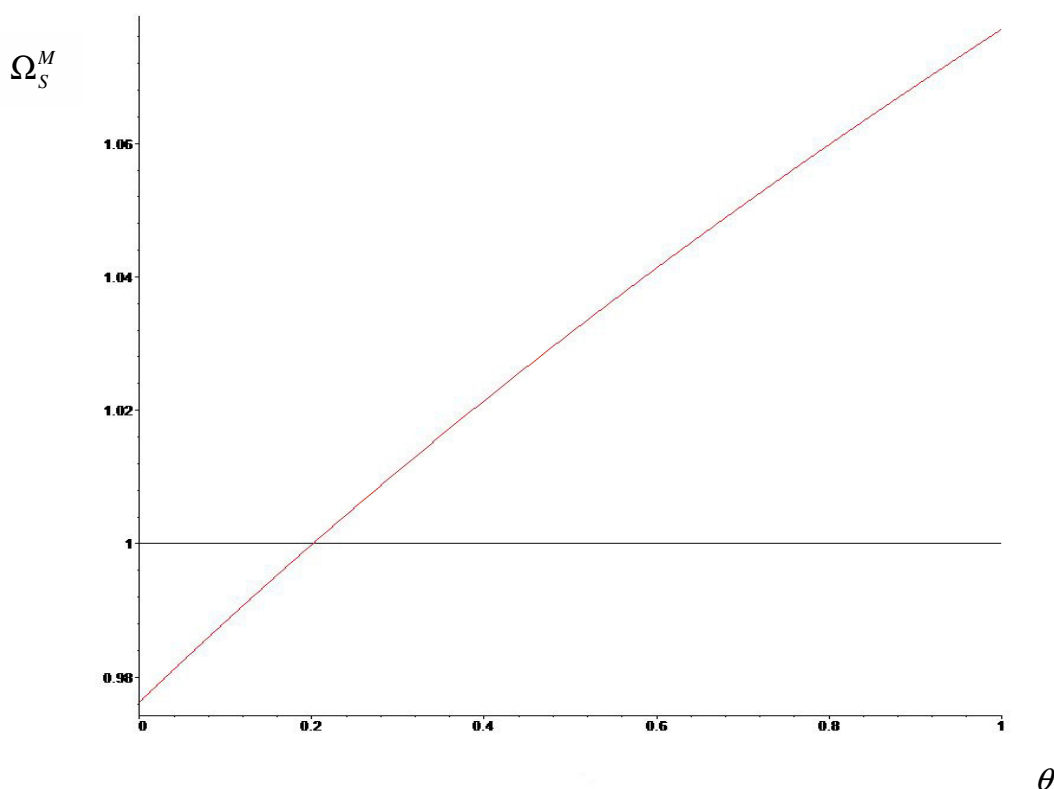
¹⁰ This graph is build with the following values: $\mu = 0.4$ $\sigma = 5$.

Krugman (1991) model. The blue curve describes the contribution of our model: a situation including remittances assuming with this example that the migrant send back 20% of their revenues toward their native land, the South here. Several conclusions emerge.

First, unsurprisingly, the likelihood of Core-Periphery equilibrium pattern rises while integration deepens. We obtain the seminal U-curve. Second, this model shows that with the inclusion of remittances, the probability of a Core-Periphery pattern to occur is reduced, thus promoting some convergence of the Southern region with the Northern region. Remittances seem apparently a significant way to support growth and catching up for the Southern region.

Third, a modification of the value of parameters does not affect these qualitative results. As expected, an increase in manufacturing expenditures (increase of μ) or in economies of scale (decrease of σ) strengthens the probability of manufacturing activity to agglomerate in the North. Finally, a fall in the remittances (increase of θ) reinforces the concentration of activities in the North ($\Omega_S^M < 1$), as illustrated by Figure 2 below.

Figure 2: Influence on remittances on the southern real revenues¹¹



This Figure 2 is built with the same parameters values as the precedent Figure 1. We have just used the transaction costs inducing geographical indifference for workers to locate when $\theta = 0,2$, that is $t = 1.69$ in the Figure 1. We check that for all θ -values inferior to 0.2, the core - periphery becomes a sustainable equilibrium ($\Omega_S^M < 1$ at the left side on the Figure 1) whereas the θ -values superior to 0.2

¹¹ This graph is build with the following values: $\mu = 0.4$ $\sigma = 5$ $t = 1.69$.

corresponds to an unsustainable CP pattern ($\Omega_S^M > 1$ at the right side on the Figure 1). We observe just that the θ impact on Ω_S^M , that is, on the CP pattern, is almost linear. An increase in θ raises Ω_S^M a little less than proportionally.

Thus, remittances increase incomes in the South, raising the ‘home market effect’ of this very region, improving its attractiveness for new manufacturing firms. They are beneficial insofar as integration is not too high; they compensate for the agglomeration effect of such integration.

4.4.4. Lessons from the model

The slowing down of the concentration process of manufacturing by remittances is our main conclusion. Remittances can thus appear as a way to favour catching up for the Southern Euro-Mediterranean countries with the Northern core European countries. However, this result is obtained with some heroic assumptions and the model needs to be adapted to fit with the particular context of the Euro-Mediterranean partnership. In practice, despite relatively weak integration and increasing remittances, Southern Mediterranean countries do not catch up with European core countries, unlike the model’s predictions. This contradiction can be explained by the omission of six characteristics of the whole region in our model. First, we assume no transaction costs for the agricultural good. Their presence does not alter the qualitative result but reduces slightly the probability of the core-periphery pattern. Thus the MENA countries can suffer from asymmetrical transaction costs concerning the agricultural goods that constitute their main source of exports; reducing their revenues, and so the home market effect they could benefit from. Second, migration costs were omitted. Their inclusion will lower the impact of remittances on the revenue in the South and thus reduce their effect in slowing down concentration of manufacturing in the North. Third, we assume an identical share of manufacturing expenditures in both regions. Changes in the model’s outcome could occur due to a higher share in the European countries. Fourth, regions are assumed identical, not only in taste, but also in technology. In practice, Southern Mediterranean countries are still lagging behind in terms of technology compared to core European countries. This factor could affect the location dynamics in the MENA countries. Fifth, Southern workers are assumed to respond perfectly to a regional real wage differential. An imperfect response could result in more unemployment, reducing attractiveness of this region. This could lead to emigration (and remittances) inducing future growth in the MENA countries. Finally, remittances act as complementary revenues for the MENA countries, that is, as an increase in their home market. The model does not integrate the way remittances are captured and employed in the MENA economies. Insofar as remittances result in more basic consumption and housing expenditures with few investments in manufacturing sectors or in infrastructures, the catching up perspectives are reduced.

All these MENA-relevant elements explain why remittances do not induce a catch-up in the MENA countries while they are theoretical sources of growth in the Southern region. Remittances indeed

increase the probability of reaching a symmetrical distribution of manufacturing activities between the EU-members and the MENA countries due to increased growth in the latter.

5. Policy recommendations

(1) Return policies and temporary migration programs initiated either by European and Maghrebi governments do not seem to be appropriate to reduce and stop in migration, the current socio-economical context. Tightening of visa policies make Maghrebi migrant feared that coming back to Europe might be impossible if they returned in their origin country and pushed migrants into permanent settlement. Excessive restrictions are likely to be very costly, especially for source countries when applied to unskilled migrants, and for destination countries when applied to skilled migrants and students. Given the important gains from migration and remittances for sending countries, governments should aim to reduce or remove the transactions costs and other barriers to sending remittances, which can be quite substantial. Such policies also failed because they were implemented with the idea of complementarity between trade, FDI, capital movements, knowledge and technology (globalisation), on the one hand and migration, on the other hand. In contrast, the Moroccan case study shows that policies to increase remittances and channel them through formal channels can be successful if they coincide with general macroeconomic stability and banking infrastructure. Moreover, remittances can be used as a lever to realise development projects in association with, for instance, official development aid. Policies aiming at securing stable and increasing saving transfers from migrants and development projects supported by migrants permit a reduction of poverty and a development of public services, transport and public utilities infrastructures in urban and rural areas.

(2) Success of migration and remittances to foster development in a more business-friendly environment (i.e. improving trust in political and legal institutions) is contingent on how association agreements with the EU will be implemented, how this will affect MPCs' competitiveness and to what extent market integration will also allow increased access of North African producers to the EU market. Keeping in mind that trade liberalisation will not reduce migration since migration and trade are complement not substitute, at least in the short-run.

(3) In contrast with other financial inflows (FDI and portfolio investments), remittances are countercyclical in line with their role of compensatory income. Moreover, if remittances tend to slightly increase income and growth, inasmuch as their amount remains limited and they are primarily spent to meet the household primary needs (nutrition, health care and housing) and barely used for productive investments, their role in fostering growth is still limited. In addition, while controversial, the impact of remittances on poverty reduction is still circumscribed to transient poverty reduction, with no effect on structural poverty. For all these reasons, grounding a development policy only on

remittances is misleading. Voluntary development policies, funded by national and international public subventions, are still needed.

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Appendix 1

In the asymmetrical case described in our model, all manufacturing activities are localized in the Northern region. The manufacturing demand writes thus: $D_N^M = \mu Y_N = \mu \left(\mu w_N + \frac{1-\mu}{2} - \frac{\mu \theta w_N}{2} \right)$. The southern equivalent expression is $D_S^M = \mu Y_S = \mu \left(\frac{1-\mu}{2} + \frac{\mu \theta w_N}{2} \right)$. The northern and southern manufacturing supplies are lighter: $S_N^M = \mu w_N$ and $S_S^M = 0$. Following the necessary equality between supply and demand in our two-regions economy, it results that the calculated northern nominal wage becomes $w_N^M = 1$. A same result arises with the traditional sector with equations: $D_N^A = (1-\mu) Y_N = (1-\mu) \left(\mu w_N + \frac{1-\mu}{2} - \frac{\mu \theta w_N}{2} \right)$, $D_S^A = (1-\mu) Y_S = (1-\mu) \left(\frac{1-\mu}{2} + \frac{\mu \theta w_N}{2} \right)$ and $S_N^A = S_S^A = \frac{1-\mu}{2}$.