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THE MACROECONOMICS OF WORKERS' REMITTANCES IN GCC COUNTRIES

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Abstract.

The paper investigates the macroeconomic effects of workers' remittances on the economies of the Gulf Cooperation Council. The theoretical Dutch Disease model is augmented in order to take into account migration and remittances, and the paper shows that workers' remittances from the Gulf dampen the appreciation of the real exchange rate led by the boom in oil resources.

ملخص

تبحث هذه الورقة التأثيرات الاقتصادية الكلية لتحويلات العمال على اقتصاديات دول مجلس التعاون الخليجي، حيث تم إبراز النموذج النظري للمرض الهولندي لكي نأخذ في الاعتبار تأثيرات الهجرة وتحويلات العاملين. كما تبين الورقة أن تحويلات العمال بالخليج تخفض ارتفاع القيمة الحقيقية لسعر الصرف نتيجة لازدهار الموارد البترولية.

Introduction

Workers' remittances have grown to become a major source of external financing in developing countries. They have often surpassed foreign direct investment and official development assistance inflows, and are usually considered as an attractive source for development. In fact, workers' remittances are unrequited transfers and represent relatively stable capital inflows. Moreover, contrary to Official Development Assistance (ODA), they directly reach the recipient and therefore are not subject to corruption or mismanagement by local governments.

A renewal of interest in the literature for recipient country economic prospects has recently accompanied the surge in workers' remittances inflows, focusing mainly on two strands. The first looks at the determinants of workers' remittances, while the second investigates their macroeconomic impact on recipient countries, particularly on growth. However, the economic impact of migrant workers' remittances on the sending countries has not been duly addressed in the recent studies. This gap could be explained by the importance of workers' remittances in promoting growth in developing countries on the one hand, and their negligible share in GDP of most sending countries, on the other hand.[1] The aim of this paper is to study the macroeconomic effects of foreign workers' remittances on the GCC economies, and particularly the relationship between workers' remittances outflows and Dutch Disease linked phenomenon.

Foreign workers' remittances from the countries of the Gulf Cooperation Council, GCC hereafter, (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates) represent a unique phenomenon. In fact, their high dependence on oil resources and relatively small population size, have led them to rely massively on foreign workers. The stock of migrants in GCC countries reached 12.8 million in 2005 accounting for almost 6.7 percent of the stock of migrants in the world. GCC countries also rank among the top 15 sending countries of workers' remittances. Almost 14.8 percent of worldwide paid workers' remittances originated from the region in 2005. Workers' remittances also represent important capital outflows in the balance of payments of GCC countries and average between 3 percent of GDP in Kuwait and 9 percent of GDP in Bahrain.

The behavior of foreign workers' remittances could significantly impact the dynamics of growth in GCC countries since it influences capital accumulation and savings. In addition the important share of foreign workers and the degree of market flexibility in these countries affect the allocation of factors of production between the tradable and non-tradable sectors.

The organization of the paper is as follows. Section 2 presents some stylized facts about migration and remittances in the GCC countries. Section 3 revisits the core model of the Dutch Disease and incorporates the effect of migration and remittances on the real exchange rate, section 4 empirically tests the model and presents the main results and section 5 concludes.

Migration and Remittances in GCC Countries

The economic impact of immigration on host countries is well documented in the literature, and covers several issues such as the effect on relative wages, employment, fiscal policies, total factor productivity and growth. Although these effects are complex and may last several decades, there is a consensus about the positive impact of immigration. In fact, attracting workers at international competitive wages improves the competitiveness of the economy, and the increase

[1] For example, workers' remittances from the United States and the European Monetary Area represented respectively 0.33 and 0.52 percent of GDP in 2005.

in the stock of labor leads to higher output. In addition, immigration affects the distribution of skilled and unskilled workers in the economy, and may increase total factor productivity. Relatively young immigrants may also contribute to lowering the strains on social security in host countries with ageing populations, and could have a positive impact on the fiscal balance.

Immigration to the Gulf region has attracted increasing attention in the literature. The latter has mainly focused on immigration policies across the region and the impact on labor markets. The large share of migrants in the population of GCC countries and the recent increase in unemployment, particularly among young nationals, have led these countries to adopt more restrictive policies in order to curb immigration trends. It is crucial however for policymakers to fully understand the effects of migration on the economy of host countries in order to balance between the competitiveness of the economy and the unemployment of nationals. This paper is a first attempt in the literature to study the macroeconomic effects of migration and remittances on GCC economies.

The demand for foreign workers in the GCC countries has been significantly affected by international shocks stemming from changes in oil prices. In fact, oil discoveries and the sharp increase in oil prices by the late 1970s led to a large increase in the demand for foreign labor. The relatively small labor markets in GCC countries and the demand for skilled labor in oil fields have led these countries to become dependent on foreign workers. The share of migrants in the population of GCC countries have increased since the 1970s reaching between 24 percent in Oman and 71 percent in the United Arab Emirates in 2005 (Table 1), despite some negative shocks that hit the region. The share of foreign workers in the labor force is even higher ranging between 50 percent in Saudi Arabia and more than 90 percent in the United Arab Emirates.

A common feature of GCC labor markets is the segmentation between the public sector, the major employer of indigenous workers, and the private non-oil sector which employs mainly foreign workers at lower wages. An important gap exists between the two sectors in terms of wages and skills. In the GCC countries, a significant share of nationals has only completed a secondary degree and thus lacks the skills required in the private sector. The share of GCC nationals in the public sector varies between 70 and 90 percent while the share of nationals working in the private sector is less than 10 percent, except in Oman and Saudi Arabia. Moreover, while the contracts of foreign workers are relatively flexible, jobs in the public sector were implicitly considered a safe haven for nationals. These factors have led to high reservation wages among GCC workers and have limited factor mobility within these economies. The internal mobility of foreign workers is also limited since it is constrained by the sponsorship system (*kafeel*).

Importing foreign labor at international competitive wages and the absence of trade unions in GCC labor markets have contributed to contain wage inflation and to preserve the competitiveness of the non-oil tradable sector. In fact, foreign labor has played a key role, particularly in the development of the non-oil private sector and in expanding the diversification of these economies. For example, Goyal (2003) shows that more than half of non-oil growth in the United Arab Emirates over the 1990s is explained by labor growth. In addition, unit labor costs in the manufacturing sector in the UAE have decreased by almost 27 percent over the period 1993-2004, while overall unit labor costs increased by almost 10 percent over the same period.

The important upward trend in migration inflows to GCC countries and the factors linked to foreign workers has led to an important increase in workers' remittances from the region. Workers' remittances originating from GCC countries rank among the highest in the world, with Saudi Arabia the most important sending country after the United States. Workers' remittances per worker are also relatively high; they totaled 2200 dollars on average in 2005 compared to 1000 and 1700 dollars respectively from the United States and the European Monetary Union.[2] Several factors contribute to explaining these patterns. For instance, the financial constraints imposed on the delivery of GCC visa residence to family members on the one hand, and the relatively high living costs in GCC countries on the other hand, led most low-skilled foreign workers to leave their spouses and family members behind. Workers' remittances represent then important compensatory transfers for the absence of the migrant. Moreover, citizenship and naturalization are virtually nonexistent in GCC countries, impeding foreign workers' settlement on a more permanent basis like their European or US counterparts. Hence, the ties between migrants and their countries of origin do not decay overtime, and the trend in workers' remittances remains sustained.

Table (2) shows that workers' remittances in GCC countries averaged between 3.5 percent of GDP in Kuwait and 9 percent of GDP in Bahrain in 2005. In comparison to other major host countries, workers' remittances represented 0.33 and 0.52 percent of GDP respectively from the United States and the European Monetary Union, in 2005. The fifth column of the table also shows that workers' remittances represented between 5 and 13 percent of exports' receipts of goods and services. In other words, on a weighted average, GCC countries have foregone more than 8 percent of their foreign exchange income. These figures have led to fierce criticism by some GCC officials, widely reported in local press, that these are 'capital flights' that would have contributed to sustain consumption and investment in the GCC economies. This has also ignited a debate on how to encourage foreign workers to retain their savings in the region.

The first columns of Tables (1) and (2) show that workers' remittances are positively correlated to the stock of migrants. For example, half of the stock of migrants is located in Saudi Arabia, which represents almost 51 percent of workers' remittances originating from GCC countries, while the United Arab Emirates hosts 25 percent of migrants who send 19 percent of workers' remittances. IMF (2005) estimated this relationship over the period 1981-2005 for a panel of 22 advanced economies and found a strong and significant correlation between remittances outflows and the number of migrant workers to population. It is worth noticing that migration and remittances affect respectively the distribution of labor between the tradable and non-tradable sectors and the patterns of savings in host countries.

The Dutch Disease Revisited

The term 'Dutch Disease' refers to structural adjustments usually triggered by a boom in natural resources.[3] An appreciation of the real exchange rate follows, which hampers the competitiveness of the tradable sector and leads to de-industrialization. In the case of GCC countries the term *lagging industrialization* would be however more appropriate than *de-industrialization* since GCC exports have been dominated by fuel exports which average between 50 percent in the UAE and 93 percent in Kuwait. Beside these figures and the rapid increase in oil prices since 2002, real

[2] The European Monetary Union represents the twelve countries of the euro zone.

[3] Natural resources booms could be minerals such as gold discoveries, natural gas, or oil. More recently the literature has investigated the cases of official development assistance, tourism and remittances.

effective exchange rate appreciation has been moderate in most GCC countries. Moreover, some countries, such as Bahrain and the UAE, have succeeded in diversifying their economies and lowering their oil dependence.

To understand the expansion of the tradable sector in Gulf countries, Wahba (1998) shows through theoretical modelling that labor migration to GCC countries has offset the adverse effects of the Dutch Disease. To our knowledge there are no studies in the literature that have empirically tested this argument. This paper aims to fill this gap and to estimate the effect of migration and remittances on the real exchange rate.

Without loss of generality, suppose a small and open economy with three sectors: fuel minerals, tradable and non-tradable sectors. The tradable sector is assumed to be more capital intensive than the non-tradable sector but less capital intensive than energy. Labor is mobile between the three sectors but immobile internationally. Fuel minerals use a specific factor, while capital is mobile between the tradable and non-tradable sectors as well as between countries. The tradable and non-tradable sectors form a mini-Heckscher-Ohlin economy, which always produces on its production possibilities frontier with balanced trade and perfectly flexible factors of production, ruling out unemployment.

Figure 1 departs from the Salter-Swan framework and draws the steady-state equilibrium of the economy on the production possibilities frontier and on the highest indifference curve, at point A. The x-axis represents non-tradables, while the y-axis is a Hicksian composite good including energy and tradables. The tangency at point A represents the relative price of non-traded goods expressed in terms of tradable goods. An oil boom increases the demand for the factors of production in the energy sector, displacing the production possibilities frontier upward. At a constant real exchange rate and assuming a zero income-elasticity of demand for non-tradables, the boom displaces the production to point B as an application of the Rybzcynski effect. The oil boom draws the factors of production from the tradable and non-tradable sectors lowering the output in both sectors. At a constant real exchange rate P_{NT}^{0}, the movement of resources out of the non-tradable sector lowers output in this sector. As shown in the lower-panel of Figure 1, this generates an excess demand for non-tradables and leads to an appreciation of the real exchange rate, which restores the equilibrium of the non-tradable sector and hampers the competitiveness of the tradable sector as the supply curve of non-tradables moves to S_{NT}'. This is the resource movement effect where the output of the non-tradable sector falls unambiguously, while the output of the tradable sector could move either way. In fact, some of the adverse effects of the movement of labor from the tradable to the energy sector and the appreciation of the real exchange rate will be offset by the movement of capital from the non-tradable to the tradable sector which employs capital more intensively (Rybzcynski, 1955).

The oil boom also produces structural adjustments through the spending effect which increases the demand for non-tradables as a result of the increase in wealth. At a constant real exchange rate and assuming that non-tradables are normal in aggregate, the demand curve for non-tradables moves upward to D_{NT}' (Figure 1) creating an excess demand for non-tradables and leading to an appreciation of the real exchange rate. The spending effect unambiguously increases the output of non-tradables and lowers the output of tradables. The combination of the resource movement and the spending effects produces an appreciation of the real exchange rate to P_{NT}^{1}. De-industrialization occurs however only if the adverse effects are higher than the increase in the output of tradables led by the movement of capital to the more capital-intensive sector. The oil boom could increase or decrease the output of non-tradables depending on which effect

dominates – the resource movement or the spending effect. The final equilibrium of the economy is represented at Q_{NT}^1 on the new *PPF'* assuming that the spending effect dominates.

The above analysis shows that the oil curse leads to an appreciation of the real exchange rate while the final effect on the tradable sector is ambiguous. However, in case the non-tradable sector is more capital-intensive than the tradable sector, the oil curse will unambiguously lower the output of tradables and lead to de-industrialization.

We now introduce migration and remittances, and examine their effects on the real exchange rate and the different structural adjustments of the economy (Figure 2). At present, assume that labor is internationally mobile but immobile within the country, and that host countries face a perfectly elastic supply of guest workers at internationally competitive wages. The initial equilibrium of the economy is at point A on the *PPF* curve. To abstract from the spending effect, the income elasticity of non-tradables is assumed to be equal to zero. At the same real exchange rate the oil boom raises the demand for labor which increases the marginal product of labor in the booming sector leading to an increase in migration. Guest workers are attracted by higher real wages as well as by government spending, linked to accrued oil-revenues, through lower taxes and better facilities (education, healthcare, infrastructure…). Migration will increase the supply of labor in the booming sector and contribute to restoring the equilibrium in this sector without drawing resources from the tradable and non-tradable sectors, as in the Dutch Disease model without migration. Henceforth, the output of tradables and non-tradables will not decrease and the relative price of non-tradable goods remains unchanged. In other words, labor migration offsets the adverse effects of the resource movement effect.

Turning to the spending effect, the increase in oil revenues increases the demand for tradable and non-tradable goods. The former will be satisfied by an increase in imports and at exogenous world prices, while the latter will be satisfied by an increase in domestic supply.[4] Migration raises the supply of labor in the non-tradable sector and moves the supply curve of non-tradable goods to S_{NT}' (Figure 2). For instance, in order to abstract from the effect of demand (D_{NT} remains unchanged) the income-elasticity of demand for non-tradables is assumed to be equal to zero. At the same real exchange rate the shift of the supply curve of non-tradables creates an excess supply, and brings about a depreciation of the real exchange rate in order to restore equilibrium. This improves the price competitiveness of the tradable sector and produces pro-industrialization. Now, the impact of the spending effect on demand is considered abstracting from the shift of the supply curve (meaning that the adjustment of the supply of non-tradables is assumed to be more sticky). The wealth effect raises the indigenous demand for non-tradable goods, and an excess demand will be created due to migration. The domestic demand of migrants will be equal to their income less remittances to their home countries.[5] The demand for tradable goods will increase net imports at exogenous world prices, while the demand for non-tradables will be satisfied domestically. Aggregate demand of indigenous and migrants shifts the demand curve of non-tradables to D_{NT}' (Figure 2) creating an excess demand at the same relative price of non-traded goods. The latter brings about an appreciation of the real exchange rate in order to restore equilibrium, and hampers the competitiveness of the tradable sector. In an extreme case where migrants' remittances are set to zero, the shift of the demand curve will be higher than D_{NT}'

[4] The increase in demand for tradable goods will also increase the supply of domestic tradables since migration will increase the supply of labor in the tradable sector.

[5] For simplification, it is assumed that migrants' income in the host country less remittances is always equal to expenditures.

leading to an increase in the supply of non-traded goods and a higher appreciation of the real exchange rate. In other words, workers' remittances dampen the appreciation of the real exchange rate brought about by the excess demand of migrants for non-tradable goods. In a dynamic model, migrants' excess demand for non-tradables will lead to a higher supply of non-tradables, and the real exchange rate depreciation will be higher than in the case of no migration. In a nutshell, the spending effect increases unambiguously the supply of non-traded goods to Q_{NT}^{1}, while the impact on the real exchange rate remains ambiguous. The lower-panel of Figure 2 is drawn assuming that the spending effect leads to some appreciation of the real exchange rate.

In a dynamic model, the oil boom unambiguously increases the supply of energy and non-tradables' sectors as a result of migration, though the supply of tradables could move either way. In case the depreciation led by the shift of the supply of non-tradables is more important than the appreciation brought about by the increase in demand for non-tradables, the spending effect will lower the relative price of non-tradables (lower than P_{NT}^{0}). The oil boom will therefore unambiguously increase the supply of the tradable sector as a result of the depreciation of the real exchange rate and the increase in demand for tradables brought about by the increase in income. Migration will offset the adverse effects of the oil curse and lead to pro-industrialization. Now in case the real appreciation led by the increase in demand for non-tradables is higher than the depreciation led by the shift to S_{NT}', market clearing of non-tradables will produce some appreciation of the real exchange rate (Figure 2). The latter hampers the competitiveness of the tradable sector and leads to de-industrialization only if the adverse effects of the appreciation are higher than the effects of the increase in the demand for tradables led by the increase in income. However, if the higher demand for tradable goods is met by imports, the oil boom unambiguously produces de-industrialization.

The Model and Results

The above analysis shows that in the case of GCC countries, migration dampens the adverse effects of the oil curse on the real exchange rate. We turn now to the empirical specification in order to test the validity of the theoretical argument. Workers' remittances are inherently linked to a movement of labor and could therefore proxy the stock of migrants. The data availability of workers' remittances on a yearly basis makes them more attractive than the stock of migrants, for which census data are available only every five years. In the above theoretical model both migration and remittances contribute to offset the Dutch Disease. Nonetheless, in the empirical analysis it is impossible to separate their effect on the real exchange rate, since workers' remittances encompass information on the number of migrant labor.

To test the effect of workers' remittances on the real exchange rate, we follow Clark and McDonald (1999) and consider the Behavioral Equilibrium Exchange Rate model (hereafter BEER). The BEER departs from the stock-flow approach originated by Faruqee (1995) and sets the fair value of the real exchange rate to be determined by certain macroeconomic variables. The BEER is particularly appropriate in the context of the above theoretical model since it is a positive rather a normative approach. The BEER approach has the potential to capture transitory as well as long-term factors that explain the persistence in real exchange rates, and is therefore flexible to augmenting the model with workers' remittances. The real exchange rate could be expressed as:

$$q_t = f(\text{rem, nra, prod, oil, r, open, nfa, g}) \quad (2)$$

where q_t is the multilateral real exchange rate relative to 63 major trading partners. *rem* and *nra* are the augmented variables to the core BEER model, and denote respectively workers'

remittances relative to GDP and natural resource abundance defined as exports of fuel minerals to GDP. The variable *prod* represents relative productivity to the 63 major trading partners and captures the Balassa-Samuelson effect. The ratio of GDP per capita, in purchasing power parity, to GDP per capita of the 63 major trading partners, in purchasing power parity, is used to proxy relative productivities. *oil* represents real oil prices which capture shocks to the terms of trade in GCC countries, defined as nominal oil prices deflated by world inflation. *r* is the real world interest rate, defined as US federal funds deflated by US inflation. *open* denotes the degree of openness of the economy defined as the sum of exports and imports to GDP and *nfa* represents net foreign assets.

The expected signs of the different variables in equation (2) are positive except for workers' remittances and openness. According to the above theoretical model, a negative sign on workers' remittances is expected, which tends to lower the appreciation of the real exchange rate led by the boom in the oil sector. A rapid increase in productivity in the tradable sector in GCC countries relative to their major trading partners leads to an appreciation of the real exchange rate and a positive sign on *prod* is hence expected. The sign on *oil* is expected to be positive, as an increase in oil prices leads to an improvement in the terms of trade in GCC countries. An increase in real interest rates in the United States is expected to produce an appreciation of the multilateral real exchange rate in GCC countries, which peg their currencies to the US dollar. The variable *open* is a proxy for trade policies and is expected to be negatively correlated to the real exchange rate, while *nfa* is a proxy for the equilibrium capital account and is expected to have a positive sign. An increase in government expenditures *g* leads to an appreciation of the real exchange rate as it puts an upward pressure on the demand for non-tradable goods. However, government expenditure will not produce an appreciation if it serves to increase imports.

Equation (2) is estimated for the six GCC countries over the period 1980-2006, except for Qatar and the UAE for which data on workers' remittances start in 1990. The data come from *International Financial Statistics*, *Balance of Payments*, *World Economic Outlook* database, *World Development Indicators*, and the internal database of the Arab Monetary Fund.

Before estimating equation (2) it is important to assess the stationarity of the variables. After transforming the variables into natural logarithms, a Fischer unit root test is conducted on an unbalanced panel using a general-to-specific approach. The results show that all variables are stationary.[6] Equation (2) is then estimated using random effects and the results in Table (3) show that all variables are correctly signed. The coefficient on relative productivities is significant at the 5 percent significance level indicating that relative productivity improvements in GCC countries represent an important determinant of the real exchange rate. The positive and significant coefficient on natural resource abundance indicates the presence of Dutch Disease effect, and confirms that a booming oil sector tends to crowd out the tradable sector by lowering its price competitiveness. Workers' remittances are negatively correlated and significant at the 1 percent level, which confirms the previous analysis of the theoretical model. Migration and remittances tend to dampen the adverse effects of natural resource abundance on the real exchange rate. Real oil prices and real US federal funds are positively and significantly correlated to the real exchange rate. The coefficient on real interest rates is however relatively low, emphasizing the exchange rate peg of GCC currencies to the US dollar and that most of GCC trading partners also peg their currencies to the US dollar. Openness, net foreign assets and government expenditures are non-significant.

It is worth noting that the results of Table (3) do not take into account the possible endogeneity

[6] The results of unit root tests are not reported but are available from the author upon request.

and simultaneity bias of some variables. In equation (2) workers' remittances affect the behavior of the real exchange rate, but migrants also incorporate developments in foreign exchange markets in their decision to remit. Moreover, relative productivities measured as relative GDP per capita of GCC countries to their partners is an important determinant of workers' remittances. Furthermore, oil price developments affect economic activity in GCC countries and raise the demand for guest workers, introducing an endogeneity bias for workers' remittances and relative productivities. To take into account this endogeneity, equation (2) was estimated with instrumental variables, and the results are presented in Table (4). In the first three specifications we instrumented workers' remittances with the stock of migrants and surface per capita, transformed in natural logarithms, as well as the first-difference of remittances, real oil prices, and the real exchange rate. The results confirm the importance of natural resource abundance in explaining the persistence of real exchange rate appreciation across GCC countries. Workers' remittances are negatively and significantly correlated at the 5 percent level. The Balassa-Samuelson effect and oil price developments are correctly signed and significant, indicating the importance of these factors in the exchange rates' behavior of GCC countries. Openness is correctly signed and significant at the 10 percent level, while net foreign assets and government expenditures are non-significant. To test the sensitivity of these results to the choice of the instruments, equation 2 is re-estimated instrumenting for workers' remittances, relative GDP per capita and natural resource abundance with the stock of migrants and the surface per capita transformed into natural logarithms, as well as the first difference of workers' remittances real oil prices, relative GDP per capita, natural resource abundance and the real exchange rate. The three last columns of Table (4) confirm the results of the model and show relatively stable coefficients.

The empirical results confirm the argument that migration has contributed to dampen the adverse effects of the Dutch Disease, and partly explains why real exchange rates in GCC countries have not substantially appreciated despite the sharp increase in oil prices since 2002. These findings add to the merits of migration and workers' remittances discussed in the literature and show that workers' remittances could have a positive impact not only on remittances recipient countries but also on remittances sending countries.

Conclusions

Workers' remittances represent an important share of GDP in most GCC countries, affecting some structural adjustments in these economies. The paper investigated the Dutch Disease hypothesis and its impact on real exchange rate appreciation of GCC currencies. It argued that the abundance of natural resources is strictly linked to the demand for foreign workers, in presence of supply constrains in domestic labor markets. The paper revisited the core theoretical model of the Dutch Disease, incorporating the effect of migration and remittances on the different structural adjustments of the economy. The empirical analysis confirms this argument, showing that workers' remittances contribute significantly to lowering the appreciation of the real exchange rate in the host countries of foreign labor.

This paper suggests additional evidence from the economic benefits of foreign workers' remittances to foreign workers' host countries. These countries could also benefit from these capital outflows as they contribute to stabilize the business cycle and to dampen the adverse effects of the real exchange rate appreciation. A better understanding of how remittances impact economic conditions in GCC countries is important and may provide ground for better access of banking facilities in the region by foreign workers.

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Figure1. Dutch Disease without Migration

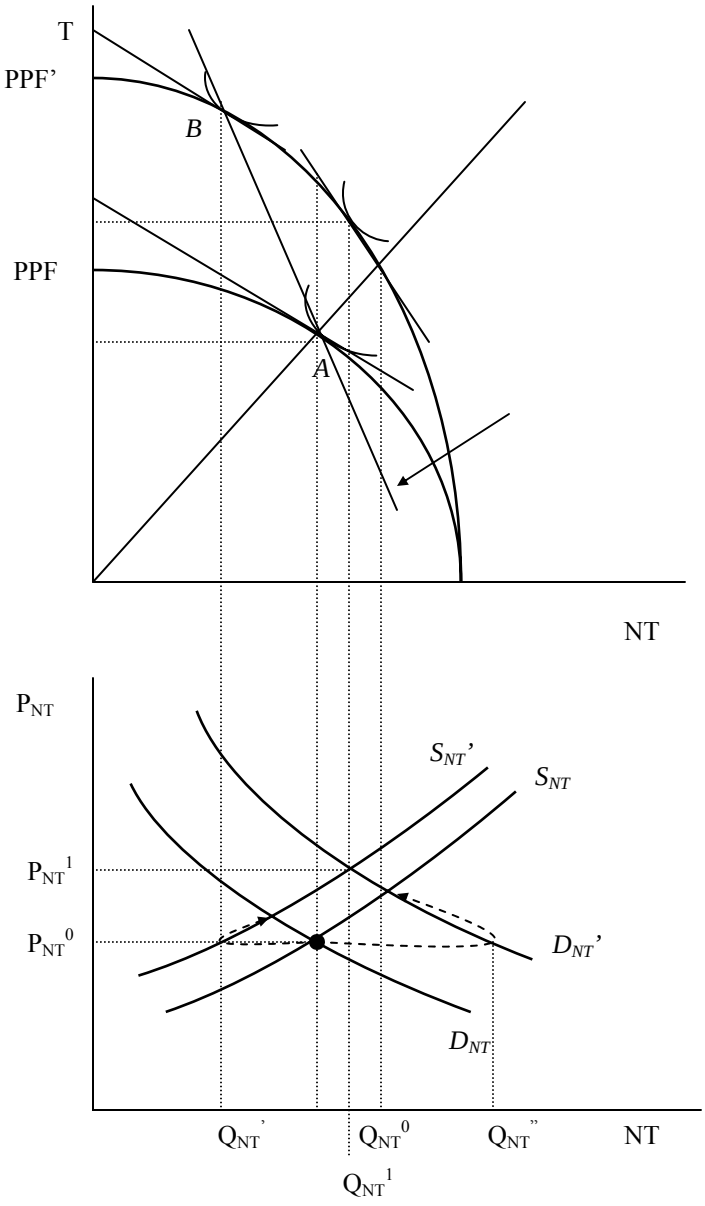

Figure 2. Dutch Disease with Migration

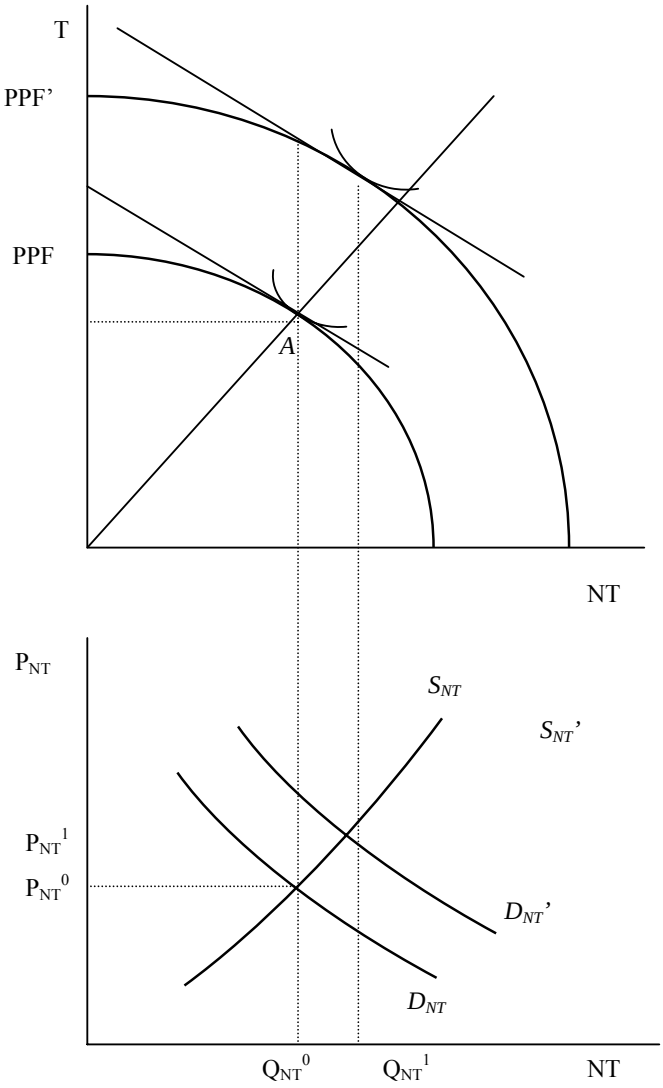

Table 1: Migration in GCC Countries

Country	Stock of migrants	Migrants/ population	% increase mig/pop 1970-2005
Bahrain	295 461	41	241.18
Kuwait	1 668 991	66	106.45
Oman	627 571	24	480.00
Qatar	636 751	78	127.87
Saudi Arabia	6 360 730	26	433.33
UAE	3 211 749	71	236.67

Table 2: Workers' Remittances in GCC Countries in 2005

Country	Remittances (millions US dollars)	Remittances per migrant	Remittances /GDP (%)	Remittances /Exports (%)
Bahrain	1223	4139.3	9.0	7.64
Kuwait	2647	1586.0	3.5	7.51
Oman	2257	3596.4	7.3	12.97
Qatar	2176	3417.3	6.3	8.31
Saudi Arabia	14318	2251.0	4.6	9.11
UAE	5372	1672.6	4.1	5.76

Table 3. Dutch Disease and Migration (Random Effects)

q	[1]	[2]	[3]	[4]
prod	0.18**	0.23***	0.17**	0.21***
nra	0.24***	0.19***	0.18***	0.17**
rem	-0.18***	-0.16***	-0.18***	-0.17***
oil	0.12***	0.13***	0.13***	0.13***
r	0.02**	0.01**	0.02**	0.01**
open	-0.05	-0.06		
nfa	0.01		0.01	
g	0.05			0.02
Constant	4.08***	4.52***	4.30***	4.23***
N	135	136	135	136
Nb of grp	6	6	6	6
R^2	0.58	0.58	0.58	0.57
Wald χ^2	177.86	180.30	177.8	177.99
Prob > χ^2	0.00	0.00	0.00	0.00

*(**(***)) denotes significance at the 1%0(5%(1%)) level.

Table 4: Dutch Disease and Migration (instrumental variables)

	[1]	[2]	[3]	[4]	[5]	[6]
prod	0.56**	0.37*	0.41**	0.71***	0.60**	0.60**
nra	0.73***	0.54**	0.40**	0 .73***	0.70**	0.52**
rem	-0.24*	-0.30**	-0.41***	-0.32**	-0.36**	-0.40**
oil	0.18***	0.17***	0.19***	0.17***	0.16**	0.18**
r	0.05	0.05	0.08**	0.05	0.06*	0.07*
open	-0.30*			-0.32*		
nfa	*0.04*	0.04			0.04	
g			-0.28			-0.19
Constant	3.41***	2.92***	4.69***	3.70***	2.27**	3.81**
N	25	25	26	26	25	26
Nb of grp	6	6	6	6	6	6
R^2	0.69	0.64	0.62	0.66	0.62	0.62
Wald χ^2	37.69	31.15	33.33	38.48	33.12	34.99
Prob > χ^2	0.00	0.00	0.00	0.00	0.00	0.00

*(**(***)) denotes significance at the 10%(5%(1%)) level.

[1, 2, 3]: instrumenting rem with the stock of migrants and surface per capita, as well as the first-difference of rem, oil,, and q.

[4, 5, 6]: instrumenting rem, prod, and nra with the stock of migrants and surface per capita, as well as the first-difference of rem, oil, prod, nra, and q.