Competitiveness and the Equilibrium Real Exchange Rate in Morocco

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Abstract

This paper assesses several indicators of competitiveness and economic performance of Morocco. The recent improvement of the net external position hasn't been accompanied by higher growth and more dynamic export. The paper also gauges the degree of the deviation of the real exchange rate of the dirham from its equilibrium level (ERER) using the Edward's Model and the CGER methodology and concludes that since 2002 the dirham is undervalued. A forward-looking scenario which incorporates the impact of the ongoing implementation of the FTA with the UE and the needed increase in the rate of investment points to the existence of potential pressures towards depreciation on the ERER at medium term.

Keywords: Equilibrium exchange rate, Competitiveness, External sustainability, Economic Performance.
INTRODUCTION

Moroccan economy has succeeded, over recent years, to put in place strong macroeconomic conditions with inflation below 2 percent and improving external position; for the 3rd successive year, there has been significant surplus in the BOP current account and the foreign reserves has attained the record level of 14 US$ Billions which covers 10 months of imports of goods and non factor services and is equivalent to the total external public debt.

However, Morocco's growth performance has been lackluster: growth rate during 1993-2003 has been relatively weak, averaging about 3.5 percent per year. The growth has been also volatile reflecting the dependence of the economy on the agricultural sector and the recurrence of the droughts. The non-agricultural GDP grew by only 3.2 percent per year during the same period. As a consequence Morocco has lost grounds vis-à-vis similar countries. The weak growth performance also reflected in steady increase in the unemployment rate which attained almost 20 percent in urban areas in 2003.

Moreover, the strong external position performance should, to some degree, be downplayed as it's mainly explained by the expansion of the migrant's remittances and the FDI inflows linked mainly to privatization process, while domestic investment remains weak pointing to a possible existence of latent external deficit.

The aim of this paper is to look if the exchange rate has something to do with this low economic performance as the trade deficit has widened, reaching 12.2 percent of GDP in 2003, reflecting stagnating export sector while the real effective exchange rate of the dirham appreciated since 1990 by 14.6 percent according to IMF calculations.

The literature identifies many channels through which an exchange rate misalignment could dampen growth (Collins and Razin, 1997). A misalignment could influence domestic and foreign investment and thereby the capital accumulation process. Also, a misalignment can hinder productivity growth by harming the competitiveness of the tradable sector.

We'll begin by an examination of various indicators of economic performance and external competitiveness. We then gauge the magnitude of the deviation of the dirham from its equilibrium level, defined as the level of the real exchange rate that is consistent with full employment and viable external position.

In order to evaluate the degree of the misalignment, we'll use two model-based measures of misalignment: (i) the Edwards' model which linked the real exchange rate to economic fundamentals that economic theory suggests should influence its equilibrium value and (ii) the methodology proposed by the IMF's Coordination Group on Exchange rate issues (CGER).

We'll conduct, at the end, some simulations based, alternatively, on counterfactual estimates and forward-looking scenario.
I- ECONOMIC PERFORMANCE AND COMPETITIVENESS

A- Growth's performance

During 1990-2003, Morocco achieved an average annual growth of 3 percent, below rates observed in 1970's and 1980's with 5.3 and 3.8 percent respectively. The GDP growth was also volatile reflecting an important agricultural sector (16 percent of total GDP) and recurrent droughts(fig 1).

The growth in the manufacturing sector, which has proven to be the growth's engine in the emerging countries¹, was also moderate. The annual growth of the value added of the manufacturing sector was on average 3.5 percent during 1990-2003 and its contribution to non agricultural GDP growth declined from 1 percent in the 1970's to 0.7 percent in 1990-2003.

The slow GDP growth reflected in an increase in unemployment in the urban labor market. Urban unemployment rate rose from 13.5 percent in 1985 to near 20 percent in 2003, affecting mainly young and educated persons.

Morocco's growth lagged behind other developing countries. As a consequence, the PPP GDP per capita of Morocco relative to the median of developing countries declined since the mid-1990's. The decline is more pronounced against selected emerging countries (table 1).

B- Indicators of competitiveness

The effective real exchange rate of the dirham appreciated by 10 percent between 2003 and 1990, its lowest historical level. A large part of this appreciation occurred during 1990-95 as the dirham appreciated by 9.5 percent in real terms, reflecting mainly higher inflation in Morocco compared to European Union countries. During 1996-97, the real exchange rate of the dirham stabilized, as appreciation vis-à-vis European countries was offset by depreciation against the US dollar and currencies of competitor developing countries. Morocco succeeded also during this period to reduce inflation significantly. The dirham appreciated again during 1998-2000 by 6 percent in a context marked by a weakening euro. This led the authorities to revise the basket that serves for the determination of the external value of the dirham in a sense of reinforcing the euro weight in order to make the dirham more stable against the euro, which is the currency of the main trading partner of Morocco. This measure was accompanied by a devaluation of 5 percent that translated in a real depreciation of same range. The dirham depreciated again by 2 percent between 2001 and 2003 thanks to a vigorous euro and very low inflation in Morocco.

The unit labor costs in the Moroccan manufacturing sector² expressed in dirham rose by 2.4 percent per year during 1991-2001, reflecting annual growth of compensation per employee in the manufacturing sector by 4.5 percent linked to frequent reevaluations of the minimum wage in the first half of 1990's, which more than offset the slight improvement in the labor productivity by 2 percent.
The relative unit labor costs increased by nearly 2 percent per year reflecting lower productivity compared to trading partners. The low labor productivity in Morocco, by emerging economies standards\(^3\), reflects the structure of the Moroccan manufacturing sector which is still dominated by low-technology industries. These industries represent 60 percent of total manufacturing production, employ 70 percent of labor force and represent 58 percent of total wage salaries of the manufacturing sector. This structure didn't change significantly during 1985-2001, pointing to lack of dynamism and low development of manufacturing sector. Indeed, the labor force is in general not highly qualified: persons without a diploma represented in 2000, 68 percent of total labor force and persons with only primary school certificate, 18 percent.

On the export front, the trade liberalization process and the promotion of private sector measures initiated since 1983 conducted to a surge in the exports of manufactured products. In 1980-90, theses exports increased by an annual growth rate of 16.4 percent in dollars, which allowed an increase of the share of manufactured products in total exports from 27 percent in 1980 to 61 percent in 1990 and of world market share from 0.06 percent in 1980 to 0.13 in 1990. During the first half of 1990's, exports of manufactured products continued to grow, although at lower rate of 9 percent per year, bringing the manufactured products share to 68 percent and maintaining the market share around 0.13 percent. However, during 1996-2002, the manufactured exports decelerated strongly with annual growth of only 2 percent. This translated in the erosion of Morocco’s market share which declines to 0.11 percent. Some reverse in this tendency was observed in 2003 with an increase of 16 percent of manufactured exports.

In an analysis of the profile of Moroccan manufactured exports, Zouhar and Chouqui (2002) found many factors that could explain the deceleration of these exports observed in recent years:

- the low product diversification with 5 products (at 3-digit SITC), representing 65 percent of total manufactured exports.
- The low market diversification as France represents 42 percent of total manufactured exports.
- the lack of regional dynamics with intra-trade in the Arab Maghreb Union\(^4\) representing less than 2.6 percent of Morocco's manufactured exports.
- the concentration in low technology products which represents 64 percent of manufactured exports.
- Manufactured exports are also concentrated on products not sufficiently dynamic in the world markets.
- the low integration of the manufacturing sector as 90 percent of manufactured exports are done under the temporary admission regime which doesn't allow for a significant technological and know-how transfer.

These reflect in the decline of the ranking of Morocco in the UNIDO's competitive industrial performance\(^5\) from the 45\(^{th}\) place in 1990 to 52\(^{nd}\) in 2000 while it was at rank 62\(^{nd}\) in 1980.

**C- External Sustainability**

The current account shows significant surpluses of about 4 percent of GDP since 2001, while it was nearly at balance during the second half of 1990's. This improvement is associated with the surge in the net transfers and factor revenues from 4 percent of GDP in
1990's to nearly 8 percent in 2001-03. The current surpluses reflects also moderate rates of investment which are stable around 23 percent of GDP while domestic saving is below 20 percent of GDP. On the negative side, the trade balance (fob-fob) had deteriorated from 6 percent of GDP in 1996 to 10 percent in 2003.

The Morocco's external public and guaranteed debt to GDP has decreased dramatically from 80 percent of GDP in 1993 to 30 percent in 2003. More than 80 percent of the outstanding debt is owed to bilateral creditors and international institutions at low interest rates. The short-term debt represents less than 0.5 percent of total debt. In order to mitigate the exchange rate risk, the currency composition of the external debt is dominated by the euro (56.5 percent), the US dollar (25 percent) and the yen (8 percent). Moreover, only 25 percent of the external debt bears variable interest rates. At the same time, the interest payments on external public debt dropped from about 14 percent of total current receipts in 1993 to 3 percent in 2003.

The foreign capital inflows reached an annual average of 1.3 US$ billion during 1993-2003. These flows are dominated by foreign direct investment which represents 80 percent of total capital inflows. This reflected in the large share of FDI (95 percent) in the stock of foreign investment in Morocco.

The net international reserves at the end of 2003 were at a record level of 14 US$ billions which covers total external public and guaranteed debt, rendering Morocco's net external position immune to the exchange rate fluctuations. The ratio of M2 to net international reserves decreased from 4 in the first half of 1990's to 2.5 in the early 2000's.

The picture from the analysis above is mixed. From one side, Morocco has strongly reinforced its external position. On the other side, however, this improvement hasn't been accompanied by higher growth rates, reflecting stagnating investment rate and not sufficiently dynamic export sector.

II- ESTIMATING THE EXCHANGE MISALIGNMENT USING EDWARD'S MODEL

A- A model for the equilibrium real exchange rate

Following Baffes et al. (1999), we'll start by defining the "internal" real exchange rate as:

\[ RER = \frac{EP_x}{P} \]  \hspace{1cm} (1)

Where \( P \) is the price of traded goods, \( P_x \) the domestic price of nontraded goods and \( E \) the foreign value of the domestic currency.

The literature defines the equilibrium real exchange rate as the rate consistent with internal and external balances. The internal balance holds when the markets for labor and nontraded goods clear:

\[ y_N(\xi) = c_N + g_N(1-\theta) \frac{c}{e} + g_N, \quad \frac{\partial y_N}{\partial e} > 0, \quad \frac{\partial y_N}{\partial \xi} < 0 \]  \hspace{1cm} (2)

where \( y_N \) is the supply of nontraded goods under full employment, \( c \) is the total private spending measured in traded goods, \( \theta \) is the share of the spending devoted to traded goods,
\( g_N \) is the government spending of nontraded goods and \( \xi \) is the differential productivity shock.

The external balance is attained when levels of spending and real exchange rate are consistent with the country's net creditor position being at its steady-state equilibrium:

\[
y_r(e^\xi) - g_r - (1 + \phi)c + r_f = 0, \quad \frac{\partial y_r}{\partial e} < 0, \quad \frac{\partial y_r}{\partial \xi} > 0
\]

where \( f \) is total net foreign assets, \( r \) is the real yield on foreign assets and \( \phi \) is the transaction costs associated with consumption.

The combination of the two above equations gives the equilibrium real exchange rate as:

\[
e^* = e^* (g_N, g_r, \phi, h^\xi, \eta, \tau)
\]

where \( \eta \) is a measure of the stance of domestic trade policy and \( \tau \) is the external terms of trade. The signs of the partial derivatives of \( e^* \) are shown under each variable. We'll leave the discussion of these aspects to the next sub-section.

Assuming that this long-run relationship is linear in logarithms we can write:

\[
\ln e^* = \beta \cdot F^p
\]

Where \( F^p \) is a vector of the permanent values of the fundamentals and \( \beta \) the vector of the long-run parameters.

An empirical model is then derived which links the actual real exchange rates and fundamentals as:

\[
\ln e^* = \beta \cdot F + \omega, \text{ where } \omega \text{ is a white noise.}
\]

Any shock that affects the equilibrium real exchange rate will provoke an adjustment process during which the actual real exchange rate deviates from its equilibrium. If domestic wages and prices are perfectly flexible the adjustment will be immediate. However, in a context marked by sticky prices, the adjustment would take some time to proceed and would be borne at short term by output and spending. The following error-correction model captures the exchange rate dynamics in face of sticky wages and prices but also when there is temporary change in one of the fundamentals or policy variables:

\[
\Delta \ln e^* = \alpha (\ln e^* - \beta \cdot F^p) + \sum_{j=1}^{\pi} \mu_j \Delta \ln e^* - \sum_{j=0}^{\varphi} \gamma_j \Delta F - \lambda (Z_r - Z^*) + \omega
\]

\( \omega \) is a white noise, \( Z \) is a vector of policy variables and \( Z^* \) is a vector of policy variables that is consistent with the equilibrium real exchange rate.

**B- The real exchange rate of the dirham and its determinants (fig 4)**

In this section, we'll expose what theory tell about the nature of the relationship between the equilibrium real exchange rate and its determinants. We'll also present in the context of Morocco, the main features of the real exchange rate the dirham and the economic fundamentals during 1969-2003.

The real effective exchange rate (REER in logarithms) is computed as a weighted geometric average of the bilateral exchange rate of the dirham vis-à-vis the currencies of its main trading partners and competitors (nearby 30 countries) adjusted by the relative consumer prices (Zouhar and Lezar, 2001).
\[ REER = 100 \times \prod_{i=1}^{n} \left( \frac{P_{Mori}E_{Mor}}{P_{i}E_{i}} \right)^{\text{weight}_i} \] (8)

Where \( E_i \) is the nominal exchange rate of country \( i \)'s currency in US dollar and \( P_i \) is the consumer price index of country \( i \).

The weight attached to country \( i \) is derived from aggregation of the weights attached to that country based on trade in three main manufactured products (Textile and clothing, fertilizers and others products) and primary commodities.

Before 1973, the dirham was pegged to French franc at 1DH = 1.097 franc. Since May 17, 1973, as a consequence of the breakdown of the gold standard, the external value of the dirham has been determined against a basket of the main trading partners' currencies with weights reflecting geographical distribution of Morocco's foreign trade and financial transactions. During 1980-85, within the structural adjustment program implemented in the early of 1980's, Moroccan authorities pursued an active exchange rate policy, which resulted in a real depreciation by about 30 percent. In May 1990, the dirham was devaluated by 9.25 percent in face of a sharp deterioration in terms of trade which had caused the widening of the trade deficit during 1987-89. In April 2001, the basket of the dirham was modified by increasing the weight of euro in order to take into account the increased integration with the European union. This measure was accompanied by a devaluation by 5 percent which helped to offset the cumulated appreciation of the dirham induced by the weakness of the euro since its introduction.

The external terms of trade (TOT in logarithms) measured as the ratio of price of exports over the price of imports. An increase in the terms of trade increases national income measured in imported goods which induces a spending effect that appreciates the real exchange rate. Empirical evidence tends to show that this effect dominates the substitution effect on the demand and supply sides.

In 1974, the boom in the price of phosphates led to an improvement in the terms of trade by 42 percent. This prompted a higher level of government expenditures which became unsustainable after the sharp drop in terms of trade two years later. Since the mid-90, the volatility of the terms of trade declined sharply reflecting increasing share of manufactured products in total trade flows.

The productivity differential (PRODUCTIVITY in logarithms) measured as the non-agricultural real GDP per capita of Morocco over a weighted average of real GDP per capita of main partners and competitors. The weights are those used for the calculation of the real effective exchange rate of the dirham. This variable serves to capture the Harrods-Balassa-Samuelson (BHS) effect which contends that productivity improvement will concentrated in the tradable sector. A country’s growth rate in GDP per capita that is faster relative to its trading partners may signal faster productivity growth in the traded goods’ sector, leading to higher prices and wages growth and hence a more appreciated real exchange rate.

The Net Foreign liabilities (NFL scaled by GDP) calculated as the net foreign reserves taken from monetary survey statistics (line 31 in the IFS) minus public external debt including guaranteed external debt at the end of the year. In the case of Morocco, this variable approximates well the true net external asset position as private external debt is not significant and on the assets side residents are not allowed in principle to have foreign assets due to exchange restrictions. The larger the liabilities the larger the resource transfers that the
country need to undertake in order to service its external liabilities, and hence the larger the trade surplus needed. This requires a more depreciated level of the real exchange rate.

In early 1980's, official reserves were exhausted, as a consequence of expansionary fiscal and monetary policies, aggravated by the conjunction of the sharp rise in the world interest rates and oil prices and the recurrence of severe droughts. The implementation of the structural adjustment program helped to restore financial equilibriums and foreign exchange reserves begun to build up, reaching 5 US$ billions in 2000 which is equivalent to nearly 5 months of imports of goods and non-factor services. In 2003, thanks to a sharp increase in workers' remittances and important privatization proceeds during 2001-03, foreign reserves reach the record level of 14 US$ billions which covers 10 months of imports of goods and non-factor services.

In 1975, the public external debt represented 20.6 percent of GDP. After the fall in the phosphates prices in the mid-1970's, and in order to maintain the high level of government expenditures, Morocco resorted extensively to foreign borrowing to finance the ambitious investment program. As a result, the external debt increased to 52 percent of GDP in 1979 and 118 percent of GDP in 1984.

The structural adjustment program and the debt rescheduling helped to reduce gradually the debt burden to 80 percent of GDP in 1993. The external debt fell then sharply to 30 percent of GDP in 2003, as a result of debt equity swap operations, unprecedented privatization proceeds and the substitution of foreign debt by domestic debt.

The net private capital flows as percentage of GDP (NPCF). This variable is introduced to take into account the degree of controls on capital account operations. An increase in the capital inflows should lead to an excess demand for non-tradable goods leading to an appreciation of the real exchange rate.

The evolution of private capital flows are strongly linked to the evolution of the exchange arrangements and the reform process. As a consequence of the promulgation of the "Moroccanization" law in 1973, which tended to restrain foreign ownership, the private capital flows remained mitigated.

In the early 1990's, the reduction of the exchange restrictions gained momentum with the liberalization of foreign investment (the 1973 decree was abolished in 1989) for non residents and of foreign borrowing for residents. By the end of 1993, Morocco accepted the article VIII of the IMF's Articles of Agreement which allows for convertibility for current transactions.

In 1996, a foreign exchange market was put in place, ending the central bank's monopoly on holding and managing foreign currencies. More recently in 2001, commercial Banks were allowed to make investment abroad.

The severity of trade restrictions. A tightening of the trade policy diverts more spending to nontradedables, increasing thereby their prices and hence causing the appreciation of the real exchange rate. We use as proxy for the trade restrictiveness the ratio of real GDP to the sum of real exports and imports (CLOSE). This index could be biased, in the case of Morocco, because of the induced massive imports of cereals during droughts years. We were tempted to use, instead, the IMF index of trade restrictiveness which take into account tariff levels and nontariff barriers. Nevertheless, this index fails to catch well the stance and the evolution of Morocco’s trade policy as (i) it’s based on the simple average of the most favored nation (MFN) tariff while Morocco has free trade agreements (FTA) mainly with the European union which account for about 70 percent of Morocco’s trade. Tariffs under these FTA are largely below those applied under the MFN regime, and (ii) it doesn’t take into account the tariff
exemptions allowed for imports under the temporary admission regimes or the charter of investments. For instance, in 2000 the Morocco’s trade regime was rated under the IMF index, placing Morocco's trade regime among the most restrictive in the world. At the same time, the effective tariff rate measured by the imports duties over imports declined from nearly 18 percent in the beginning of the 90’s to 10.5 percent in 2000.

To take into account these caveats, we use alternatively a proxy calculated as the weighted average (in log) of effective tariff rate and the proportion of the imports subject to non-tariffs barriers (TRADREST).

Until early 1980's, Morocco had maintained a comprehensive system of exchange and trade controls, aimed at shielding import-substituting activities from international competition and containing external imbalances. Imports were regulated under annual import programs which distinguished three categories of imports: (i) unrestricted imports- list A, (ii) licensed imports-list B and (iii) prohibited imports- list C. Occasionally, an advance import deposit requirement, to be held on a non-interest bearing basis for three months, was imposed to limit imports. At the utmost of the restrictions in 1983, list A represented only one-fourth of total imports and an advance import deposit of 15 percent was required. The simple average import tariff rate was also high, attaining 46 percent.

Within the structural adjustment package, Morocco adopted a trade liberalization strategy in mid-1980's aiming at lowering protection, reducing the level and the dispersion of tariffs and eliminating gradually the non-tariff barriers. In February 1986, list C was abolished while imports subject to license dropped from 75 percent in 1983 to 10 percent in early 1990's. The simple average import tariff rate declined slightly to 37 percent in mid 1990's and the number of tariffs bands was gradually reduced from 26 in 1990 to 6 in 1996.

Morocco joined the GATT in 1987. Morocco is also liberalizing its trade system through bilateral agreements with the European Union, the Unites States, Turkey and some Arab countries. The FTA with the EU became effective in 2000 and aims at creating a free trade zone for industrial products by 2012. Morocco reduced multilateral tariff rates to 10 percent on goods that are freely traded with EU, which decreases the average tariff rate by 4 percent.

On the same front, customs management has been thoroughly modernized. As a consequence, the time needed for clearing imported goods has been reduced from 2-3 days in 1990’s to less than one hour in 2003.

**The ratio of investment to GDP (INVEST).** In Morocco, like in most developing countries, given the high import content of investment, an increase in the ratio of investment to GDP is likely to shift spending to traded goods leading therefore to the depreciation of the real exchange rate.

**The ratio of government consumption to GDP (PUBCON).** A rise in this ratio will appreciate the real exchange rate if the government spending is more oriented towards non-tradable than tradable goods.

We add also the *agricultural production variable (AGRVA in logarithms)* measured by the logarithms of value added of the agricultural sector, in order to take into account the impact of supply shocks that occurred mainly on the primary sector. These shocks are mainly the frequent droughts and more recently the sharp decline in the fish stock. Since the primary sector products are mainly tradable goods, a supply shock should depreciate the real exchange rate.
In addition to the fundamentals outlined above, we use the following variables for the estimation of the short-run dynamics of the real exchange rate:

- **the excess supply of domestic credit (EXCR)**, measured as the difference between growth in domestic credit and real non agricultural GDP growth. Under a fixed exchange rate and given the existence of controls on capital flows, a monetary expansion could lead to excess demand and inflation, causing an appreciation of the real exchange rate.

- **the fiscal policy stance measured** alternatively by the overall balance as a percentage of GDP (BUDGDEF) and the financing requirements (FINREQ scaled by GDP). An expansionary fiscal policy is likely to cause the appreciation of the real exchange rate at short term as it could induce excess demand for goods and hence higher inflation.

- **the nominal effective exchange rate of the dirham (NEER)**.

### C- Econometric results

We consider data for the real exchange rate of the dirham, the economic fundamentals and the policy variables for the period 1969-2003. Before proceeding with the estimation procedure, we first test the stationarity of the fundamentals variables. Table 2 provides the unit root tests for levels and first difference of fundamentals using Augmented Dickey-Fuller and Phillips-Perron Statistics. The results show that all variables are integrated of order 1. The next step is to test for the cointegration and to determine the cointegration rank. For the OLS estimation to be valid, the variables have to be cointegrated. Table 3 reports the results of Johansen’s Likelihood ratio tests for cointegration. They show that the variables are cointegrated with a cointegrating rank equal to 5.

We can now apply the OLS regression technique to estimate the long-run relationship between the real exchange rate and its fundamentals (eq 6). This is the first step of the Engle-Granger method. We estimate various combinations and retain the following regression equation:

**Dependent variable: REER**

<table>
<thead>
<tr>
<th></th>
<th>TOT</th>
<th>PRODVTY</th>
<th>NFL</th>
<th>NPCF</th>
<th>TRADREST</th>
<th>INVEST</th>
<th>AGRVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coefficient</td>
<td>0.243</td>
<td>1.463</td>
<td>0.282</td>
<td>0.824</td>
<td>0.139</td>
<td>1.402</td>
<td>0.244</td>
</tr>
<tr>
<td>t-Statistic</td>
<td>2.11</td>
<td>7.45</td>
<td>6.42</td>
<td>1.06</td>
<td>2.77</td>
<td>-3.75</td>
<td>-3.66</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.87</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DW</td>
<td>1.44</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADF(residuals)</td>
<td>-3.42</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fist of all, the analysis of unit-root tests of the estimated residuals confirms the existence of the cointegration: the calculated value, –3.42, rejects nonstationarity in favor of stationarity.

We drop from the initial equation the ratio public consumption to GDP although it has the positive sign as it clearly fails to pass the student test. This could indicate that the public consumption is not strongly oriented towards the nontradable goods. As expected, the regressions results were better with TRADREST variable as a proxy of trade policy than the CLOSE variable. Accordingly, we retain the former variable.
Turning now to the analysis of the regressions results, we can note that all the coefficients are of the expected signs.

- an improvement of 10 percent in the terms of trade appreciates the real exchange rate by 2.4 percent. This fall within the range of values estimated by baffes *et al.* (1999) and Nabli and Véganzonès-Varoudakis (2002) for other developing countries.

- the coefficient reflecting BHS effect is positive. Morocco has seen since the beginning of the 80’s a widening of the gap between its real GDP per capita relatively to its trading and competitor partners by half percent a year. The pace of implementation of the structural reforms, initiated under the structural adjustment program in the mid-80’s, has been accelerated and widened during the last years. It’s expected it would improve the productivity in the mid-term. If for instance, we assume that it will result in a reduction of the productivity gap with partners and competitors by a half percent a year, this will appreciate the real exchange rate by 0.7 percent a year.

- the coefficient of net foreign liabilities is positive and within the range of the estimates by Lane and Milesi-Ferretti (2000) for developing countries using panel splits regressions.

- although the coefficient for capital flows is positive, it’s not significant. This could be due to the high volatility of the capital flows induced by the important privatization operations that occurred irregularly since 1993.

- the coefficient of the severity of trade regime is positive and suggests that a reduction of 2 percent of the effective tariff induced by a more liberalized trade policy would require nearly one percent depreciation of the real exchange rate.

- the coefficient of the ratio investment to GDP is of the expected sign and high. This could reflects the fact that investment has a high import content in Morocco. Capital goods imports represent nearly 60 percent of total investment (exc. housing and construction) and 22 percent of total imports. Moving the investment ratio from current level of 23.8 to 28 percent GDP in 2004 as was scheduled in the five-year plan 2000-04 (Ministère du plan, 2000) would have appreciated the real exchange rate by about 6 percent.

- the supply shock coefficient has the expected signs. A 10 percent decline of the value added of the primary sector caused by drought would depreciate the real exchange rate by 2.4 percent.

The short-term dynamic adjustment of the real exchange rate (the second step of Engle-Granger method) is analyzed through the following error-correction equation:

\[
\text{Dependent variable: } \Delta \text{(REER)}
\]

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>FINREQ</th>
<th>Δ(NEER)</th>
<th>E(-1)</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.069</td>
<td>0.382</td>
<td>0.430</td>
<td>-0.185</td>
<td>0.014</td>
</tr>
<tr>
<td>1.82</td>
<td>3.60</td>
<td>3.81</td>
<td>-3.22</td>
<td>1.77</td>
</tr>
</tbody>
</table>

This specification was retained after conducting a search procedure involving a recursive process of eliminating variables with lowest and non significant t-statistics. The equation explains 82 percent of the dynamics of the dirham.
The fiscal policy parameter is of the expected sign and high, indicating that an increase in the public financing needs appreciates the real exchange rate at the short term. The monetary policy variable fails largely to pass the Student-test. This could be due to the fact that historically the fiscal deficit have been largely monetized and was hence an important source of money creation until the mid-1990's.

The results show also that a nominal devaluation of the dirham has a positive effect on the real exchange rate. The magnitude of this impact is somewhat important as 43 percent of the nominal devaluation pass through to the real exchange rate during the first year. This fall within the range of the estimated parameters for other developing countries. Mongardini (1998) estimated a coefficient of 0.35 for Egypt, Baffes et al. (1999) found 0.30 for Côte d'Ivoire while Edwards (1994) found values in range of 0.47-0.70 for a group of developing countries.

The coefficient of the error-correction term, which measures the speed of the adjustment of the real exchange rate to its equilibrium level, is estimated at -0.19, which is lower than those found for other developing countries. The elimination of 50 percent of a shock to the real exchange rate would take three and half year. The slow adjustment could suggest the existence of significant price and wage rigidities in Morocco. D- The derivation of the exchange rate misalignment

For the estimation of the equilibrium real exchange rate, we need to extract the permanent components of the fundamentals variables. Following Elbadawi (1994) and Baffes et al. (1999), we use the Beveridge-Nelson (B-N) method to decompose data on the fundamentals into permanent and transitory components by estimating ARIMA(p,1,q) for the fundamentals with the Box-Jenkins procedure. For some fundamentals (TOT and prod-diff), the first difference is a white noise, so we choose to use, instead, a 5-year moving average, which allows for a large part of temporary shocks (nearly 60 percent) to dissipate.

Figure 5 shows the ERER for the dirham while figure 6 reports the corresponding misalignment. It's interesting to note that the computed ERER reproduces well the main episodes of Moroccan economy. The build-up of the debt crisis that burst in the early 80's was reflected in a real overvaluation of about 15 percent during the second half of 1970's. The realignment of the dirham in the early 80's was possible through active exchange rate policy coupled with a more restrictive trade policy. The stabilization program, multiple debt rescheduling agreements and the 9.5 percent devaluation in 1990 resulted in the undervaluation of the dirham in late 1980's and early 1990's. However, the overvaluation reappeared in 1998, reaching 9 percent in 2000 as the main European currencies, and since 1999, euro sharply depreciated. Reflecting a 5 percent devaluation and a record current account surplus of 4.8 percent GDP, the dirham was in a virtual equilibrium in 2001 before showing undervaluation of nearly 4 percent in 2002 and 2003 as the external position continued to improve strongly with current account surpluses of about 4 percent of GDP and important foreign capital inflows.

III- ESTIMATING THE EXCHANGE MISALIGNMENT USING CGER APPROACH

The CGER methodology was developed by the IMF (1997) to reinforce its assessment of the exchange rates in the industrial countries. The methodology has been then extended to evaluate the exchange rate misalignment in the developing countries. Paiva (2001) has used this methodology to gauge the exchange rate misalignment for Costa Rica.
The CGER approach involves three steps: (i) calculation of the underlying current account consistent with the economy and its partners evolving at their potential output levels, (ii) determination of the target current account from a separate model that is consistent with sustainable levels of the fundamentals and (iii) derivation of the exchange rate change needed to adjust the underlying current account with the target.

A- The calculation of the underlying current account

We use a detailed partial-equilibrium model of the Moroccan balance of payments which is based, in its current account part, on disaggregated trade equations along with equations for migrants' remittances and travel receipts which are two main components of Moroccan BOP current account, as they represent on average, respectively 14 and 18 percent of total current transactions credit during 1993-2003.

Data for potential output for industrial countries are taken from the IMF WEO Database. We used a weighted average of the potential outputs where the weights represent the relative share in Morocco's exports. It's interesting to note that the main trading partners economies (mainly European countries) were evolving below their potential output since 1992, which could explain a significant part of the deceleration of the Moroccan exports growth.

A potential output for Morocco is estimated using the Hodrick-Prescott (HP) procedure for non agricultural GDP. We prefer not to apply the HP procedure on total GDP as this method doesn't assume an irregular component in the decomposition of the series and (ii) the total GDP is highly volatile due to irregular agricultural production.

The application of HP method to non-agricultural GDP shows no existence of output gap in 2003 (fig 7). The potential output growth is estimated at only 3.2 percent during the last decade. This is too low when compared to the average growth for other developing countries and with regard to the high urban unemployment rate (nearly 20 percent). This shows the other limit of HP method when the variable deviates from its normal level for a long period. Indeed, non-agricultural GDP growth has been, since the beginning of the 90's, around 3-3.5 percent reflecting structural rigidities. In this case, it's recommended to use the production function approach to estimate the potential output. However, the lack of detailed and reliable data prevents its use in the case of Morocco. We use instead the desired and sustainable GDP growth required to reduce unemployment and poverty. It's estimated at 5.5 percent per year.

Using these values and the prevailing exchange rate, we estimate the underlying current account at 3 percent of GDP for the medium term.

B- The derivation of the structural current account balance

The norm level for the current account is derived from a saving-investment model, developed at the IMF, which assumed that the main determinants of the saving-investment in the medium term, include the level of development, the demographic structure and the structural fiscal position.

We retained the following specification estimated by Chinn and Prasad (2000) through a cross-section regression using data for 48 developing countries:

\[ CA = 0.259 \times \text{govt. budget balance} + 0.039 \times \left( \frac{\text{Net foreign assets}}{\text{GDP}} \right) + 0.268 \times \text{relative income squared} - 0.055 \times \text{relative dependency ratio (young)} + 0.037 \times \frac{\text{broad money}}{\text{GDP}} + 0.034 \times \text{terms of trade volatility} \]

Where relative dependency ratio (young) is the population under 15 / population between 15 and 65
As shown by the equation, government budget balance is positively related with the current account balance. Interestingly, the coefficient of the initial net foreign assets position is positive while one would have expected it to be negative as a country with significant net foreign liabilities have to run current account surpluses in order to pay off its debt (transfer effect). Chinn and Prasad (2000) suggested that the positive relationship observed for the developing countries could indicate that countries that tended to run current account deficits tend to be countries that have better access to international financial markets. Isard et al. (2001) estimated that it could partially reflect the contribution to the current account, of the net income on the net foreign position. The positive sign of the parameter of the relative income squared captures the notion that countries at low stages of development tend to be capital importers and run then current account deficits. The equation indicates also that higher relative dependency ratio are associated with larger current account deficits. The financial deepening, as proxied by the ratio of broad money to GDP, has a positive effect on the current account. Finally, the volatility of terms of trade is positively correlated to current account indicating that households tend to save more, for precautionary reasons, in face of more volatile terms of trade.

Using this equation of the saving-investment norm for developing countries, we proceed to the derivation of the medium-term current account for Morocco.

For the government budget balance, we refer to Sarr (2004) who reports that the authorities have indicated their commitment to reduce the deficit to 3 percent of GDP by 2009. Sarr (2004) found that this scenario would reduce the debt ratio to 64 percent.

We find a structural deficit of 3.1 percent of GDP. Its comparison with the underlying current account suggests that there is no misalignment of the dirham.

IV- REMITTANCES, PRIVATISATION PROCEEDS AND EQUILIBRIUM REAL EXCHANGE RATE

The two methods agree in the absence of exchange rate misalignment in Morocco and even show slight undervaluation of the dirham during 2002-2003. This reflects the strong improvement in the net external position of Morocco despite the slowdown of the GDP growth and an ailing export sector.

The following table reports the contribution of each factor in the variation of the equilibrium real exchange rate between 2000 and 2003. This is useful in order to identify the main variables that caused the appreciation of the equilibrium real exchange rate and the resorption of the misalignment between 2000 and 2003.

It shows that the equilibrium real exchange rate has borne depreciation pressures induced by more liberalized trade policy and low productivity. These pressures were more than offset by the appreciation effects from the increase of the net foreign liabilities, the improvement of the terms of trade and the decline of the investment to GDP ratio.

What is interesting to note is the very high contribution the productivity of the ratio of net foreign liabilities to GDP, reflecting the improvement of this ratio by 33 percent of GDP between 2000 and 2003. Hence the importance of analyzing the factors that drove the increase of the net foreign liabilities.

As shown in table 5, theses factors are: remittances, foreign direct investment and interests on external debt.
Remittances

In 2001, the migrants' remittances increased by 60.5 percent. This expansion was thought to reflect, at that time, mainly the one-off impact of the introduction of the fiduciary euro on January 1, 2002 which had lead both residents and Moroccan resident abroad to exchange accumulated cash holdings of the euro area currencies ahead of the introduction of the euro. However, although the remittances did decline by 14 percent in 2002, they were still higher by historical norm, representing 8 percent of GDP, 2 percent higher that the average observed during 1996-2000. In 2003, remittances increased by 9.5 percent and represented 8.3 percent of GDP.

In a recent study, Bouhga-Hagbe (2004), using a long run relationship equation found that solidarity, attachment to homeland and economic growth in the countries of residence could be the main long-run determinants of workers’ remittances in Morocco. While these findings confirm previous studies on the role of solidarity as a motive for remittances in Morocco, it didn't capture the impact of migration dynamics on the remittances as number of migrants hasn't been accounted for in the equation.

In an analysis of the evolution of remittances in Morocco, Zouhar and Chouqui (2004) found a strong relationship between the migration dynamics and the evolution of remittances and their composition by country of origin.

During 1990's, the population of Moroccan nationals in the traditional countries destinations as France, Netherlands, Belgium and Germany either stabilized or decreased, reflecting the decline of migration flows to these countries mainly those linked with family-reunification reasons. At the same time, we note important migration flows of Moroccans to new countries, particularly Spain and Italy. The Moroccan population in Italy and Spain, which wasn't significant in the early 1980's, was multiplied by more than six-fold between 1990 and 2000 (fig 8).

This reflected in the evolution and the composition of remittances during 1982-2000 (fig 9):

- the share of traditional emigration countries (France, Belgium, Netherlands and Germany) in total remittances to Morocco shows, since the early 1990's, a declining trend and decreases from 85 percent in 1990 to 64 percent in 2000. This reflects a decrease by 6.1 percent or 967 DH millions of the remittances from these countries between 1992 and 2000.
- At the same period, remittances from Italy, Spain, United-States and United Kingdom, increased by more than three-fold or 4 423 DH millions. Its share increases from 5 percent in the early 1990's to 25 percent in 2000.

The point here is that the importance of remittances in the future will depend significantly on the magnitude of the migration flows.

Foreign direct investment

Following the liberalization of foreign investment in the beginning of 1990's, FDI has seen its importance growing. In 2003, FDI reaches 2.4 US$ billions, representing 5.5 percent of GDP.
The evolution of FDI was, however, marked by the privatization operations. During the periods 2001-03, the total FDI amounted to 5.8 US$ billions and privatization proceeds accounted for 61 percent of total FDI. (see fig10).

On annual average, the FDI was about 1.1US$ billions (2.9 percent of GDP) during 1993-2003, of which more than 50 percent are linked to privatization and concessions operations. Hence, as the stock of potential public enterprises to be eventually privatized is diminishing, the question raises if the level and importance of FDI could be maintained at levels observed in the past. On another hand, one could estimate that ongoing structural reforms undertaken by Morocco could induce new FDI of about 0.5 percent of GDP which adds to the historical level (excluding privatization proceeds), that is 1.4 percent of GDP.

External debt

The central government external debt declined from 57.6 percent of GDP in 1993 to 18.8 percent of GDP in 2003. This decline was accompanied by a decrease of the share of external debt in total public debt from 65 to 27.2 percent of GDP in 2003, reflecting the government's policy of substituting domestic debt for foreign debt.

These developments, along with a decline in world interest rates, led to the decline in the interest charges on the external debt from 5 percent of GDP in 1993 to 1.3 percent in 2003 and a negative net resource transfers (loan disbursement – amortization) of 1207 US$ millions per year during the period 2001-03 against 450 US$ millions in the period 1993-2000.

The room of maneuver to pursue in this direction is limited as it would imply at mid-term, assuming the desired 3 percent budget deficit, that the share of external debt will be 15 percent of GDP. The domestic debt will represent, then, 85 percent at medium term, 12 percent higher that in 2003, which could exert a crowding effect on private sector. One would expect that the net public resource transfers should turn into positive at the mid term. For instance, a scenario that will seek to stabilize the share of external debt in total debt at its current level, necessitates a positive net public resource transfers of about 500 US$ million and will induce an increase of 0.5 percent of GDP of interest burden on external debt.

Had remittances, FDI and interests on external debt been, during 2001-03, at the levels observed during 1990's, the net foreign liabilities would have been in 2003, 26 percent of GDP lower than the current value and the equilibrium real exchange rate of the dirham would have to depreciate by 2 percent while actually it appreciated by 7 percent between 2000 and 2003.

Alternatively to the above counterfactual scenario, we consider a forward-looking scenario which incorporates the following assumptions:

- the investment rate would be at 28 percent of GDP which corresponds to the desired investment rate for the authorities.
- the effective tariff rate would be at about 5 percent at medium term as a result of the ongoing implementation of FTA with European Union and other countries.

Taking into account these elements in the equation 9 shows that the equilibrium real exchange rate of the dirham would depreciate by 10 percent, assuming other things equal.
CONCLUSION

Using two model-based techniques, we found that, since 2002, the real exchange rate of the dirham is undervalued. This situation reflects the sharp improvement in the Morocco's external position as witnessed by significant BOP current account surpluses and stock of foreign reserves equivalent to external public debt.

In this context, the existing exchange regime, which consists of pegging the dirham to a basket of the main partner's currencies, prevent the dirham from appreciating in a context marked by important foreign currency inflows (mainly linked to remittances and FDI).

These findings, while exonerating the exchange rate from being a cause of low growth and not sufficiently dynamic export sector, should lead us to consider other factors that could explain the low economic performance.

As suggested by the competitiveness reports (Ministère de l'Industrie et du Commerce), these factors could be the high level of taxes, the judiciary system, complicated administrative procedures and smuggling.

In a forward-looking scenario, we find that bringing the investment rate to the desired level consistent with a 5 percent GDP growth at the mid-term and the ongoing implementation of the FTA with the UE will exert significant depreciation pressures on the equilibrium real exchange rate of the dirham.
REFERENCES


ENDNOTES

1 The share of the manufacturing value added in GDP in the developing countries increased from less than 20 percent in 1980 to near 25 percent in 2000 (UNIDO, 2004). See also Ito (1998) and UNCTAD( 1994) on the importance of Manufacturing sector for growth.

2 The statistics of unit labor costs in the manufacturing sector of Morocco were calculated by Zouhar and Lezar(2002) using annual survey data from the ministry of industry and trade.

3 During 1991-2001, the labor productivity, as measured by the value-added of the manufacturing sector per employee, increased annually by 7.6 percent in Poland, 8.9 percent in South Korea.

4 Using a gravity model, Blavy (2001) found that intra-regional trade in the Mashreq is below expected levels which were estimated 236 percent above actual levels, after controlling for economic and demographic size, and distance between partner countries.

5 The competitive industrial index is based on the manufacturing value added, manufacturing exports per capita, industrialization intensity and export quality (UNIDO, 2004).

6 We consider for each product, the main export markets for Morocco and derive the weights which gauge the intensity bilateral competition and the competition in the third markets (see Zanello and Desruelle, 1997).

7 Due to the volatility of the agricultural production, the use of total GDP is not appropriate.

8 For more details see Sharer, 1997

9 from Nashashibi, 2002

10 A free trade agreement was concluded with the United States in March 2004. Under the agreement more than 95 percent of industrial tariff lines will become duty-free immediately, with the remainder phased out over 9 years. The agreement includes broad commitments to open services markets. Most of ordinary agricultural tariffs will be phased out over 15 years. Morocco, Egypt, Jordan, and Tunisia signed an agreement in February 2004 toward the creation of a Euro-Mediterranean free trade area by 2010. The accord calls for the lifting of trade barriers on industrial goods in two years and on agricultural products in five years.

11 Baffes et al. (1999) used a dummy variable for drought for the case of Côte d’Ivoire. As, in the case of Morocco, the frequent droughts are of different severity, the use of agricultural production seems more appropriate.

12 For an analysis of the relationship between an expansionary fiscal policy and the exchange rate see Penati (1983)

13 for an exposition of the Engle-Granger “two-step” method, see Baffes et al. (1999).

14 Baffes et al. (1999) found that an improvement of 10 percent of terms of trade appreciates the real exchange rate by 3 percent in the case of Côte d'Ivoire and 4 percent for Burkina Faso. Nabi and Véganzonès-Varoudakis (2002) estimated the parameter of terms of trade at 0.24 in a panel regression for a sample of 53 countries.

15 see 2004 Article IV Consultation-IMF Staff Report and Statement by the Executive Director for Morocco for an exposition of the main reforms undergone by Morocco.

16 Agenor and El Aynaoui (2003) enumerated some institutional factors that may hinder real wage flexibility in Morocco. These factors are minimum wage regulation, complicated firing regulations and trade unions with strong bargaining power.


18 When using total GDP, the results show an output surplus in 2003 of 2.3 percent. This is due to the good harvest in that year that comes after disappointing successive years. The HP method is not appropriate when there significant and irregular exogenous shocks that affect the series, in this case the weather conditions. The application of HP method to non-agricultural GDP show no existence of output gap surplus in 2003.

19 for an exposition of this method and its comparison with HP technique, see Giorno et al. (1995) and De Masi (1997).


21 In Morocco, the significant improvement in the net foreign assets reflected in the full of the negative net income from 4.6 percent of GDP on average during the first half of 1990's to 2.6 percent in 2001-03.
Using household surveys for 1998/99, Bourchachen (2000) has found that the remittances transferred by Moroccans resident abroad to their families reached 5 DH billions, representing 22 percent of total remittances. This allows to reduce the poverty rate from 23.2 to 19 percent.

The analysis of the remittances by country of origin is not relevant after 2000 due to the euro effect and to the difficulty to breakdown the cash receipts between euro area countries.

One source of the future migration flows is the potential of family reunification in the new emigration countries particularly Spain and Italy.

The issue of diminishing privatization proceeds, along with the reduction of import duties are the main concerns in the fiscal policy management at the mid-term (see Chorfi, 2003).
Table 1: GDP (PPP) per capita of Morocco relative to selected emerging countries

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tunisia</td>
<td>69%</td>
<td>66%</td>
<td>56%</td>
</tr>
<tr>
<td>Turkey</td>
<td>69%</td>
<td>60%</td>
<td>57%</td>
</tr>
<tr>
<td>Thailand</td>
<td>107%</td>
<td>64%</td>
<td>56%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>325%</td>
<td>253%</td>
<td>170%</td>
</tr>
<tr>
<td>Chili</td>
<td>64%</td>
<td>49%</td>
<td>39%</td>
</tr>
<tr>
<td>Developing countries (Median)</td>
<td>85%</td>
<td>97%</td>
<td>89%</td>
</tr>
</tbody>
</table>

Source: IMF WEO DATABASE 2004

Table 2: Unit Root Tests

<table>
<thead>
<tr>
<th>Variable</th>
<th>Dickey-Fuller</th>
<th>Phillips-Perron</th>
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<tbody>
<tr>
<td></td>
<td>Trend</td>
<td>Diff</td>
</tr>
<tr>
<td></td>
<td>stationary, I(0)</td>
<td>stationary, I(1)</td>
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<tr>
<td>Log of Real effective exchange rate (REER)</td>
<td>-1.2043</td>
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<td>Log of Terms of trade (TOT)</td>
<td>-2.1148</td>
<td>-5.5417</td>
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<tr>
<td>Log of Productivity differential (Productivity)</td>
<td>-1.3140</td>
<td>-2.7812</td>
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<td>Net foreign liabilities (NFL)</td>
<td>-1.1351</td>
<td>-2.1187</td>
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<tr>
<td>Net private capital flows (NPCF)</td>
<td>-1.8806</td>
<td>-5.2320</td>
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<tr>
<td>GDP to Real exports and imports (CLOSE)</td>
<td>-0.2220</td>
<td>-4.0852</td>
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<tr>
<td>Trade restrictiveness (TRADEREST)</td>
<td>0.0599</td>
<td>-3.1339</td>
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<tr>
<td>Ratio of Investment to GDP (INVEST)</td>
<td>-2.8469</td>
<td>-4.1127</td>
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<tr>
<td>Ratio of public consumption to GDP (PUBCON)</td>
<td>-2.1609</td>
<td>-3.6454</td>
</tr>
<tr>
<td>Log of Real value-added of Primary sector (AGRVA)</td>
<td>-1.1290</td>
<td>-6.4917</td>
</tr>
</tbody>
</table>

Critical Values

<table>
<thead>
<tr>
<th></th>
<th>ADF</th>
<th>PP</th>
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<tr>
<td>1%</td>
<td>-3.6422</td>
<td>-3.6353</td>
</tr>
<tr>
<td>5%</td>
<td>-2.9527</td>
<td>-2.9499</td>
</tr>
<tr>
<td>10%</td>
<td>-2.6148</td>
<td>-2.6133</td>
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</tbody>
</table>

Table 3 : Cointegration results

Series: REER TOT PRODUCTIVITY NFL NPCF TRADERESTIV INVEST AGRVA

<table>
<thead>
<tr>
<th>Eigenvalue</th>
<th>Likelihood Ratio</th>
<th>5 Percent Critical Value</th>
<th>1 Percent Critical Value</th>
<th>Hypothesized No. of CE(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.969187</td>
<td>279.3237</td>
<td>156.00</td>
<td>168.36</td>
<td>None **</td>
</tr>
<tr>
<td>0.818595</td>
<td>174.9291</td>
<td>124.24</td>
<td>133.57</td>
<td>At most 1 **</td>
</tr>
<tr>
<td>0.728499</td>
<td>123.7185</td>
<td>94.15</td>
<td>103.18</td>
<td>At most 2 **</td>
</tr>
<tr>
<td>0.647556</td>
<td>84.60485</td>
<td>68.52</td>
<td>76.07</td>
<td>At most 3 **</td>
</tr>
<tr>
<td>0.470703</td>
<td>53.31892</td>
<td>47.21</td>
<td>54.46</td>
<td>At most 4 *</td>
</tr>
</tbody>
</table>

*(**) denotes rejection of the hypothesis at 5%(1%) significance level
Table 4: Contribution of economic fundamentals to the equilibrium real exchange rate change (2000-2003)

<table>
<thead>
<tr>
<th>Economic Fundamental</th>
<th>Elasticity</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log of Terms of trade (TOT)</td>
<td>0.243</td>
<td>32.0%</td>
</tr>
<tr>
<td>Log of Productivity differential (PRODUCTIVITY)</td>
<td>1.463</td>
<td>-21.7%</td>
</tr>
<tr>
<td>Net foreign liabilities (NFL)</td>
<td>0.282</td>
<td>157.6%</td>
</tr>
<tr>
<td>Trade restrictiveness (TRADREST)</td>
<td>0.139</td>
<td>-83.9%</td>
</tr>
<tr>
<td>Ratio of Investment to GDP (INVEST)</td>
<td>1.402</td>
<td>27.2%</td>
</tr>
<tr>
<td>Log of Real value-added of Primary sector (AGRVA)</td>
<td>-0.244</td>
<td>-11.2%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Table 5: Morocco's balance of payments (1996-2003)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current account</td>
<td>0.3%</td>
<td>-0.2%</td>
<td>-0.4%</td>
<td>-0.5%</td>
<td>-1.4%</td>
<td>4.8%</td>
<td>4.1%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Trade Balance</td>
<td>-6.0%</td>
<td>-5.6%</td>
<td>-6.5%</td>
<td>-6.9%</td>
<td>-9.7%</td>
<td>-8.9%</td>
<td>-8.5%</td>
<td>-9.9%</td>
</tr>
<tr>
<td>Exports, FOB</td>
<td>18.8%</td>
<td>21.1%</td>
<td>19.9%</td>
<td>21.3%</td>
<td>22.3%</td>
<td>21.1%</td>
<td>21.7%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Imports, FOB</td>
<td>-24.8%</td>
<td>-26.6%</td>
<td>-26.4%</td>
<td>-28.2%</td>
<td>-32.0%</td>
<td>-30.0%</td>
<td>-30.2%</td>
<td>-29.8%</td>
</tr>
<tr>
<td>Services, net</td>
<td>2.6%</td>
<td>2.2%</td>
<td>2.4%</td>
<td>3.2%</td>
<td>3.4%</td>
<td>5.6%</td>
<td>5.4%</td>
<td>5.8%</td>
</tr>
<tr>
<td>of which tourism receipts</td>
<td>4.6%</td>
<td>4.3%</td>
<td>4.9%</td>
<td>5.5%</td>
<td>6.1%</td>
<td>7.6%</td>
<td>7.3%</td>
<td>7.4%</td>
</tr>
<tr>
<td>Income, net</td>
<td>-3.4%</td>
<td>-3.5%</td>
<td>-2.9%</td>
<td>-2.8%</td>
<td>-2.6%</td>
<td>-2.5%</td>
<td>-2.0%</td>
<td>-1.7%</td>
</tr>
<tr>
<td>of which interest on external debt</td>
<td>-3.6%</td>
<td>-3.5%</td>
<td>-2.9%</td>
<td>-2.7%</td>
<td>-2.6%</td>
<td>-2.2%</td>
<td>-1.7%</td>
<td>-1.3%</td>
</tr>
<tr>
<td>Transfers, net</td>
<td>7.0%</td>
<td>6.6%</td>
<td>6.5%</td>
<td>6.1%</td>
<td>7.4%</td>
<td>10.5%</td>
<td>9.2%</td>
<td>9.4%</td>
</tr>
<tr>
<td>of which remittances</td>
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<td>5.6%</td>
<td>5.5%</td>
<td>6.5%</td>
<td>9.6%</td>
<td>8.0%</td>
<td>8.3%</td>
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<td>1.2%</td>
<td>0.6%</td>
<td>4.8%</td>
<td>-0.3%</td>
<td>5.7%</td>
<td>-1.8%</td>
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<td>of which FDI, net</td>
<td>0.9%</td>
<td>3.2%</td>
<td>0.9%</td>
<td>3.9%</td>
<td>1.1%</td>
<td>8.0%</td>
<td>1.3%</td>
<td>5.2%</td>
</tr>
<tr>
<td>Reserve accumulation</td>
<td>0.8%</td>
<td>1.7%</td>
<td>0.7%</td>
<td>4.6%</td>
<td>-1.2%</td>
<td>11.4%</td>
<td>1.8%</td>
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<tr>
<td>Errors and omissions</td>
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<td>0.7%</td>
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<td>0.3%</td>
<td>0.5%</td>
<td>0.9%</td>
<td>-0.6%</td>
<td>-0.9%</td>
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Fig 1: GDP and Primary sector growths (1971-2003)

Fig 2: Real effective exchange rate of the dirham (1990-2003)

Fig 3: current account, investment, domestic saving and net factor payment as percentage of GDP (1980-2003)
Fig 4: The real exchange rate of the dirham and its determinants (1969-2003)
Fig 8: population of Moroccans nationals in the main emigration countries

Fig 9: composition of the remittances by country of origin (1982-2000)

Fig 10: Foreign direct investment and the privatization proceeds (1993-2003)
Page 11

Dependent variable: REER

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<tr>
<th></th>
<th>TOT</th>
<th>PRODVT</th>
<th>NFL</th>
<th>NPCF</th>
<th>TRADREST</th>
<th>INVEST</th>
<th>AGRVA</th>
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Table 4: Contribution of economic fundamentals to the equilibrium real exchange rate change (2000-2003)

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<td>Log of Terms of trade (TOT)</td>
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<td>Log of Productivity differential (PRODUCTIVITY)</td>
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<td>Net foreign liabilities (NFL)</td>
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<td>Trade restrictiveness (TRADREST)</td>
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<td>Ratio of Investment to GDP (INVEST)</td>
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<tr>
<td>Log of Real value-added of Primary sector (AGRVA)</td>
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<td>-11.2%</td>
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<tr>
<td>Total</td>
<td></td>
<td>100,0%</td>
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</table>

Fig1 : GDP and Primary sector growth(1971-2003)

Value added of primary sector (left scale)

GDP (right scale)