Effects of FDI and Trade Openness on Economic Growth in Morocco

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Abstract— *Recent theoretical developments argue that the standard model of economic growth needs to be enriched by introducing other factors that can explain variations in aggregate output. This paper moves in this direction by introducing some variables from the external sector as possible explanatory factors for economic growth per capita in the Moroccan case. In particular, this paper focuses on studying the effect of trade openness and foreign direct investment flows on economic growth. However, this paper does not limit itself to estimating the two variable isolated effects, but proposes their interactive impact. One of the limitations of the new study in this field is that they have made less effort in order to understand better how foreign direct investment and the liberalization of trade can explain the variation in the pace of economic growth. The economic growth affected by foreign direct investment is probably due to one of the trade regimes adopted. Countries with liberal trade regimes could do better to attract foreign direct investment and use economic development as a catalyst. A liberal trading regime will establish a learning-generating investments environment that is symbiotic with human capital and new FDI technology. Also, transparency in trade could improve access to larger markets and, therefore, likely help attract more direct investment. In the trade liberalization sense, FDI can significantly engage in contributing to the transfer from developed countries to developing countries, new technology and innovation and thus stimulate transactions in exchange and improve the growth of economic. By the introduction the openness for trading and FDI as variables explanatory into a model of increased and improved development and using recent time series analysis techniques during 1970-2005, we obtained empirical results that seem interesting. As variables are taken in isolation, neither FDI nor trading openness is statistically significant in the estimated model. We can also see the cumulative impact of FDI and the liberalization of trade has been favorable and very important statistically. Our empirical results suggest that FDI per capita may stimulate Morocco's economic growth if it is accompanied by trade liberalization. Against the background restrictions on exchange, it appears that the inflow of foreign currency could not revive the process of long-term economic growth.*

Keywords— FDI, Trade openness, Economic growth, Morocco.

I. INTRODUCTION

Although the extra agricultural value accounts for just about 15% of the total GDP, Morocco's economic growth is characterized by its sharp fluctuations and its tendency to depend heavily on rain. Also, economic growth in morocco remains weak in the context of slow industrialization and insufficient technological development. Low and fluctuating economic growth combined with a poor income distribution has led to increased poverty and regressive human development. While it's the normal model of growth assumes that capita and labor are likely both to make up the bulk of the growth of national economies, it is also important to consider other explanatory variables' role in determining changes in aggregate output. Those are some factors that need to be considered following the existing theoretical basis and characteristics of each country. The recent domestic growth theory focuses on the foreign direct investment, FDI, as a variable driving economic growth, among the explanatory variables. Although the role of foreign trade has received economists' attention, less it was performed to truly understand how foreign trade liberalization will interact to clarify the change in the rate of economic development. Depending on the regime of trade implemented in a specific country, FDI will possibly improve economic development, countries with free trading regimes are better able to attract and use FDI as a catalyst for economic development.

A system of liberal exchange could build an environment of investment that is educational and symbiotic with intellectual capital and fresh capital technologies brought about by the FDI. Also, trade opening improves access to bigger sizes markets and could therefore help attracting more FDIs. Under the framework of liberalizing trade, the FDI could make a strong contribution transfer of modern technologies and innovations to developed and developing countries, thereby accelerating trade activities and reinforcement of economic development.

The interactive effects, because of these considerations, foreign direct investment and trade transparency needs to be given more attention to economic development, especially in Morocco, which participates in a comprehensive trade Program for liberalization and other institutional reforms and wants to attract more. And this article follows the line of research.

The general aim is to understand the effects, analytically and empirically, of the interaction between the trade regime and the foreign exchange on economic growth in Morocco. The end of this article is structured as following.

The second Section provides review of the critical literature on the interactive effect of FDI and trade openness on economic growth.

Section 3 describes the state of foreign exchange and foreign trading in Morocco.

Section 4 deals with the structure in terms of definition and methodology. In Section 5, the empirical results are set out, and in Section 6, an attempt is made to formulate some consequences and assumptions for strategy.

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II. CRITICAL EXAMINATION OF THE LITERATURE

Most recent literature has always been focused isolated on the effects of foreign trade and foreign direct expenditure on economic development. Recent research has used the theory of endogenous growth to explore the relationship between foreign exchange, foreign direct investment, and development. They suggested that is export-oriented business climate that could be a catalyst to attract FDI, although foreign trading and FDI are helping to expand. The expansionary effect of foreign exchange on development may be more significant in countries with freer administration of trade. It is possible that a liberal trade regime will produce an environment conducive to learning and accompanying capital of human and new technologies due to FDI. Also, openness to exchange gives access to large markets, thereby attracting more FDI. Therefore, these studies suggest that FDI and foreign trade interact in the direction of strong economic growth. The nature, however, and effect interaction on growth in various liberal trades regimes is more likely to generate a learning-friendly environment and support for human capital and new technology due to foreign direct investment. Also, trading opens up access to large markets and thus attracts more FDI. Therefore, it seems that these studies suggest that FDI and foreign trade interact against strong economic growth. The essence of such contact, however, and its nature impact on growth in different countries is primarily an empirical.

Foreign trading allows for most of host countries to attain rate of investments higher than the level of savings domestic. Even more critical is that FDI is an important channel for the transfer of modern technology and innovation. However, the positive effects of the impact of foreign direct investment on growth depend on the regime for Policy on Trade.

The point of starting for analysis within this framework is called ' Hypothesis Bhagwati ' that FDI profits are likely to be small and even more negative within a trade regime for replacement imports compared to a trade policy. We are focused on export advertising. FDI can even harm growth in a trade-restricted environment.

New immersive studies approach effect of foreign trade and foreign direct investment have used regularly comparative analyzes across the country with all their limitations as quantitative approaches. Therefore, the need for systematic time series analyses is greater focusing on unique to nation experiences to enrich knowledge in this area. The study of the interactive impact of foreign trade and FDI on economic growth through time series analyses, it is essential to examine how the regional regime for trade works and how a region of free trade flows the FDI (Value, 2004). A restricted free trade regime aimed at achieving stimulus neutrality may be higher than a government restricting trade, especially for IED gains. In a liberalized trading system like that, FDI can operate in a relatively distorted environment. This also generates expansion of goods in international product lines that are sustainable and export-oriented. Besides, companies benefiting from an export promotion regime would not be limited by the domestic market's size and achieve economies of scale through increased penetration of international markets. FDI is also an important channel for disseminating research and development including capital development, from developed to developing countries. FDI can probably generate technology diffusion to host countries in many ways, mainly through the training of local staff, the improvement of production standards for companies located upstream and downstream of the industrial structure, and strengthening local entrepreneurs' competitiveness. Moreover, foreign investors involvement in the production efforts can create demonstration effects to the benefit of local businesses, particularly in terms of technological options, management practices, etc. Technologically advantageous changes necessitate a calm investments environment, that in turn is linked to trade liberalization. In a more liberal business side, a foreign customer may have beneficial side effects because, in such circumstances, foreign trade is mainly of interest to industries where the host country has a comparative advantage over it. Local companies can use great potential to compete with foreign firms and thus improve productivity.

Although current theoretical literature foretells FDI could likely interact with the liberalization of trade in order to accelerate growth of the economy, the empiric studies continue be limited to analyzing insulated effect of FDI and foreign trade for economic growth. There has also been more effective and needed a better understanding of the combined impact of FDI and business opening. Our article aims to fill the gap within this research area by better understanding how the interplay between foreign direct investment and trade openness affects economic growth per capita.

III. FDI AND FOREIGN TRADE: MOROCCO

Long-term available data show that Moroccan exports and imports have grown steadily. Between 1977 and 2002, exports increased by about 11. 3% compared to 9. 1% of imports and 8. 8% of GDP at current prices. The growth of exports was faster in the 1980s (13. 8%) compared to the 1990s (only 7. 8% between 1991 and 2002).

In the short-term, Exports, however, were more volatile and more dependent droughts and other external shock, such as the fluctuation in hydrocarbon price and the main country trading partners.

The trades balance, also measured by the sum of exports and imports as a percentage of GDP, increased from 41% in 1977 to 54% in 2002 and 62% in 2005, reflecting a relatively large adjustment to the world economy (see Appendix 3, Graph 6). Exports increased to 21% of GDP in 2002 compared to 12% in 1977. Although growth in exports has always been higher than imports, the coverage of exports and imports of around 66% in the year 2002, compared to 44% in 1977, Morocco shows trading balance remains the structural sufficiency. This can only reflect the weaknesses of the Moroccan's system production and its susceptibility to exogamic shocks. However, Morocco has achieved good results showed that the MENA region did not use foreign trade and FDI as leverage in contrast to economic development to leading countries such as Chile, Malaysia and Slovakia. European Union has also the enlargement towards the East and intense global competition, especially from India and also China, threaten the competitiveness of regional countries. In a

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recent interview with the magazine of Morocco 'Economist", Patric Aratus estimates that the low level of exchanges between North African countries (Morocco and Tunisia especially) mainly due to the low level of direct investment in the regions. It also shown a significant portion of trade is still depending on flows of IED. Interactive impact of direct investment and foreign trade deserves more than empirical research. Efficiency in exports of industrial products, representing more than 50% of total exports, reflecting the gradual shift of exports of primary products to higher value of added products.

In addition to the opening of trade, the country of Morocco is the only one of the countries of the MENA that receive more of foreign direct investment. In the year 2003, for example, Morocco attracted 90 investments projects out of a total number of 275 projects implemented in the region of MEDA, it's like more than € 3 billion. The start of the IED in Morocco began in the second half of the 1980s, especially after the 1983 abolition of the Dahiro of Moroccanization, which was issued 10 years earlier. However, FDI did not grow until the early 1990s after the implementation of the privatization process, macroeconomic stabilization and the improvement of the private sector. Over a period of ten years, Morocco has become one of the most important African countries attracting more and more foreign direct investment (10% of foreign direct investment from the European Union to the Mediterranean countries). The record FDI received was recorded in 2001 for an amount of 3248 million euros, representing 8. 5% of GDP thanks to the acquisition of Maroc Télécom by Campania Vivendi (2.3 billion euros) and the contribution of Campania Téléphonica to the capital of MidiTélécom of 180 million euros (see Appendix 3, Graph 5). In 2002, foreign direct investment was relatively modest (around 1. 3% of GDP), while in the following years, since 2003, there has been a significant revival of direct investment, mainly thanks to the investment of the Spanish company FADESA in the amount of 1. 5 billion euros. For the tourist complex construction of eight hotels and the supply of FDI especially from the Gulf countries.

IV. THE CONCEPTUAL AND METHODOLOGICAL FRAMEWORK

An empirical study of the factors of economic growth in a chosen country is based on the most famous constant model of growth:

$$Y = f (A, L, K) \qquad (1)$$

The symbol Y refers to the actual 'GDP', the symbol A refers to productivity in the sum of the factors of production, L and K refer to the workload and the capital stock, it is more essential to attach and note that, a captures the total productivity factor when the two production inputs' growth is not taken into account (K & L). According to our new endogenic theory of growth, the endogenous economic factors is determined by A. Because FDI available data on FDI are not fully captured the additional investments by foreign firms, It will not be possible to separate local and foreign items from total internal investment. However, assuming a reasonably coherent methodology for assessing FDI over the period, what can realize the Impact of FDI on economic growth overall

factor of productivity (A). Based on the hypothesis of Bhagwati, it also appears to be reasonable that the FDI impact on A depends on the regime of trade policy. Therefore, who can introduce a proxy variable for the Trade opening (TO) into the equation:

$$A = g(FDI , FDI * TO) \qquad (2)$$

Substitution of (2) in (1):

$$Yt = g(FDIt, FDIt * TOt , Lt , Kt) \qquad (3)$$

Considering isolated impact on economic growth of trade openness, we introduced too as an explanatory statement variable 3. To consider Moroccan economies and specificities, we estimated that drought cycles could impact economic growth4. From then on, we finally introduced a proxy for the drought (SC), which gives:

$$Yt = g(FDIt , TOt , FDIt * TOt , Lt , Kt , SCt) \qquad (4)$$

On foreign trade impact on economic growth, which has shown that opening up trade has a positive and significant impacts on growth through speeded up accumulation of capital, improved remittances, also improved macroeconomic policy. Mansouri has shown that drought cycles play a key role in undermining private consumption and investment in Morocco. Given that these two components of private expenditure are shareholdings in GDP, drought is expected to slow down economic growth. Who should note that Mansouri approved the drought estimation due to a dummy variable with values ranging from 0 to 8 depending on the growth rate of cereal yield per hectare.

Where y (in lower case) is now the real GDP per head and SC, the inverse of cereal yields per hectare is a proxy for drought.

The variables specified above are measured as follows:

- GDP measures y at the constant of prices in per capita, i.e., nominal GDP divided by the GDP deflator, all about the overall volume of the country's population (see appendix 1, graph 1);
- FDI is the gross value of foreign direct investment flows (see annex 3, graph 5);
- TO is the sum of exports and imports of goods as a proportion of GDP (see Appendix 3, Graph 6) ;
- The interaction between FDI and foreign trade is estimated by the product of the variables FDI (as a proportion of GDP) and TO (i.e., the exchange from the product (FDI/GDP)* too));
- L is being measured by total labor force volume (see Appendix 2, Chart 3);

We consider inverse cereal yield to be a good representative for drought, because agricultural production in Morocco is heavily concentrated in the production of cereals, which is very sensitive to the rainfall. (the evolution of cereal yield growth in Annex 3, graph 4).

Here is the final mode and it can be presented as follows:

$$Log(y_t)= \alpha_0 + \alpha_1 .fdi_t + \alpha_2 .to_t + \alpha_3 .fdi_t * to_t + \alpha_4 . fcf_t$$
$$^{(?)} \quad (\quad) \qquad ^{(?)} \qquad ^{(?)} \qquad ^{(+)} \qquad\qquad (5)$$
$$\alpha_5 .Log \ L_t + \alpha_6 . Log \ SC_t + \eta$$
$$^{(+)} \qquad\qquad ^{(-)}$$

Where αi (i ϵ {0, 1, 2…6})refers to the estimated parameters , and the lower case variables indicate that they are expressed as

a percentage of GDP, Log is a natural logarithm., ht is the random variable and the other variables are already defined.

Analyzing the interactive impact of FDI in an empirical way and business opening, we chose to use the equation 5 evaluated between 1970 and 2005 during which we have the data. Estimates and testing are based analysis of modern series time (station tests, integrated tests, correction error models, cause tests (short and long-term cause tests), etc.).

V. EMPIRICAL RESULTS

Our empirical analysis's starting point is the 'Augmented Dickey-Fuller' (ADF) applied to the introduced variables in the equation (5). The tests ADF (Table 1) shows the variables Log(Y), Log(L), To, and Fcf are integrated one-will order to the other variables of the model.

To work with level variables, they must all be stationary. If they do not stand still, who must collect them? To test the degree of variability stability, we use the enhanced unit root test in the same way as Fuller (1976) and Dickey 1981). The difference between the Dickey-Fuller (DF) and the Dickey-Augmented Fuller (DFA) tests is that the DFA test considers the autocorrelation of errors if it exists. If the null hypothesis of a root (non-stationary) is rejected, a time series can be regarded as zero-order integrated, i.e. I (0), in level; otherwise, the time series is not stationary in class, but it can be standing in the 1st difference. If the variables are integrated in the same order, for example, I (1), they can be co-integrated. The coin integration test will then be used to determine if this is the case. Johansen (1988, 1991) developed the coin integration strategy and Johansen and Jusilius (1990). Based on the maximum procedure probability and the tracking test, this new approach is particularly preferable when the number of variables in the model exceeds two due to the possibility of multiple coin integration vectors (Gonzalo, 1994). If the variables are co-integrated, what should specify the behavior of economic growth in the form of an error correction model.

The variable Log (SC) stagnates sharply as a substitute for drought does not come as an intuitive surprise, mostly since the grain yield per hectare in Morocco was subject to strong fluctuations in the reporting period. Besides, ADF tests (not reported here) on the first differences in transient variables in levels have shown that these first differences are stationary, suggesting that these variables are integrated into order 1.

TABLE 1: Test of ADF of the variables introduced in 5 equation

Variable	Number of delays	t-statistics	Mackinnon value at 1%.	Mackinnon value at 5%.
Log(Y)	1	-2,30	-4,24	-3,54
Fdi	0	-6,37	-4,24	-3,54
TO	0	-3,01	-4,24	-3,54
TO*fdi	0	-5,55	-4,24	-3,54
fcf	1	-2,98	-3,62	-2,94
Log(L)	2	-2,89	-3,62	-2,94
Log(SC)	0	-6,95	-3,62	-2,94

NB : The linear trend and constant are statistically significant, and neither the continuous nor the linear trend in the ADF equation is statistically significant.

As shown in the results in Table 2, Johansen's tests reveal that the four non- stationary level variables (i.e., *Log(Y), fcf, Log(L),* and *too*) are co-integrated. Therefore, within the

framework of the model's reparametrization, in addition to the error correction period (here estimated by the coefficient associated with the level delay-dependent variable) 7, we introduced the non-stationary variables measured with first differences and the other variables measured with levels.

TABLE 2: Currency adaptation test of integrated variables in series 1

Eigen Value	Likelihood Ratio	VC at 5%.	VC at 1%	Cointegration ?
0,58	60,95	53,12	60,16	Yes
0,29	30,07	34,91	41,07	No
0,22	17,58	19,96	24,60	No
0,21	8,62	9,24	12,97	No

NB: The constant is statistically significant in the cointegration equation, but it is statistically insignificant in the VAR used in the cointegration test. The number of delays is 1.

The final model, which is re-evaluated after the statistically insignificant variables have been eliminated, can then be written as follows:

$Log (y_t) = 0,97.fdi_t*to_t +0,006. \Delta(fcf_t) + 0,005. fcft_{-1} + 0,16. Log(L_{t-2})$

(3,2)   (4,0)   (4,81)   (3,16)

$- 0,08.Log(SC_t) – 0,66.Log(Y_{t-1}) + 0,29.Log(Y_{t-2})$

(-9,40) (-7,55)   (3,70)   (6)

The T-statistics are in brackets $R2 = 0,87$; $R2$ adjusted = 0,85.

F-statistic = 32,05 (probability = 0,0000001). Durbin-Watson statistic = 2,05. White's: number of observations $X R2$ = 36 (probability = 0,42). Residue the test normality: Jarque-Béra = 0,93 (the probability = 0,63). Test of Chow Prediction (for 2005): F-statistic = 0,015 (the probability = 0,91); likelihood log ratio = 0,019 (the probability = 0,89).

As it is indicated in the equation (6) above, empirical results have shown that, according to the conventional growth model, coefficients that are associated with Log (L) and Fcf are expected to show positive signals of capital and labor impact per capita economic growth. In Morocco. Since the main difference in the variable Log (L) is not statistically significant and eliminated from the final equation, the labor force's size affects per capita growth only in the long run. In contrast, it is affected by fixed capital—both in the short and long term. According to our model, an increase in the gross fixed capital formation of one percentage point of GDP would, in the long run.

The error correction model is specified as an equation where the dependent variable is measured in the first difference. The explanatory variables are measured in the first differences if they are first-order integrated and in level, if they are level-stationary (zero-integrated order). The error correction time is estimated by the coefficient associated with the delayed remainder of the co-integrating equation. For practical reasons to evaluate the short circuit in the short and long term, we, like Hendry, repaired the model by estimating the error correction expression using the coefficient associated with the level delay-dependent variable. Eight an increase in real GDP per capita of 1. 35% and that an increase in the workload by 1%, in the long run, would lead to a rise in real GDP per capita by 0. 43%. As expected, the drought, roughly from inversely, grain yield per hectare has a negative impact on economic growth. in the Moroccan case. According to our

estimates (Equation 6), a 50% reduction in cereal products (as in 1997) would cause a 4 percent reduction in economic growth per capita.

Another critical empirical result is that the *FDI* variable, which who\ eventually eliminated from the equation, had a negative but statistically insignificant coefficient. Simultaneously, the positive impact of the interaction between FDI and trade openness was not statistically significant. (*FDI*to*) on per capita economic growth is corroborated by estimates and tests (equation 6). This does not mean that, in the case of Morocco, FDI does not affect output growth. Indeed, our empiric results have shown that FDI flows have a spillover effect on economic growth *per capita* in a situation accompanied by trade liberalization. According that, our estimates and testing, an improvement in the interaction between FDI and trade liberalization of one percentage point would increase the per capita economic growth rate of about 0.97 percentage points when the trade regime is approximated in our case. It's also by the sum of exports and also imports of goods as a share of GDP. This shows that FDI flows and trade liberalization interact with each other to determine per capita the growth of economy. Still, this combined effect seems to require more time to boost real output *per capita* because the variable measuring the interaction between FDI and the liberalization of trade is stationary at the level. That, consequently, its short-term impact proves non- operational.

The long-term effect of a non-stationary level variable is obtained here by dividing the coefficient associated with this variable (in lagged value) by the opposite of the sum of the coefficients associated with the lagged values of the dependent variable expressed in level.

Since the variable *FDI*to* is highly stationary, we have introduced it as a level in equation (6).

Thus, unlike the non-stationary explanatory variables whose long-term impact must be estimated by passing through the coefficients associated with their lagged values and the coefficients associated with the lagged values of the dependent variable (see the previous footnote), the long-term impact of the variable *FDI*to* is obtained directly from its coefficient estimated in equation (6), having a value of 0.97. From then on, we can write:

Proxy for the per capita economic growth rate. The variables FDI and to expressed as ratios of GDP, not as percentages of GDP, an increase of FDI*to by one percentage point is equivalent to d $(fdi* to) = 0,01$, and then d $(dLog(y))$ $= 0,0097$, equivalent to a change in per capita economic growth rate of 0.97 percentage points.

VI. ECONOMIC POLICY IMPLICATIONS AND CONCLUSIONS

The economic implications of policy that we can deduce from our empirical point of view investigations it seems to be so important. The benefit for Morocco from the positive effects of FDI on economic growth, the country's trade transactions should continue to be oriented toward further liberalization. Within the framework of the Euro-Mediterranean free trade area that will come into force from 2012 and the Morocco-US free trade area already under

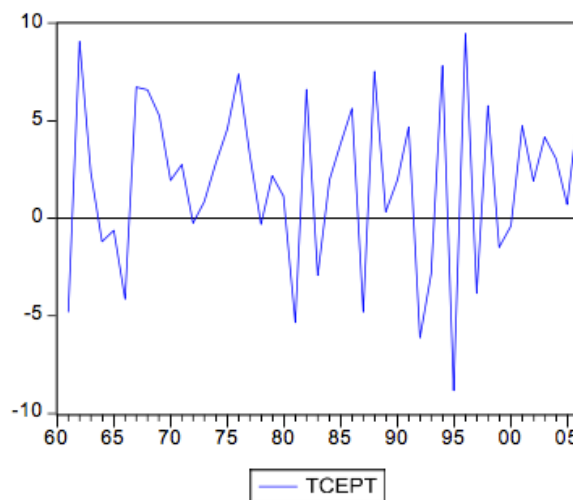way, FDI flows to Morocco are expected to contribute to economic growth, especially in the long term.

For Morocco to benefit from technology transfer and the resulting spillover effects, FDI should be encouraged, but it should be accompanied by trade openness. In an environment of trade restrictions, FDI flows could not be a real catalyst for long-term economic growth.
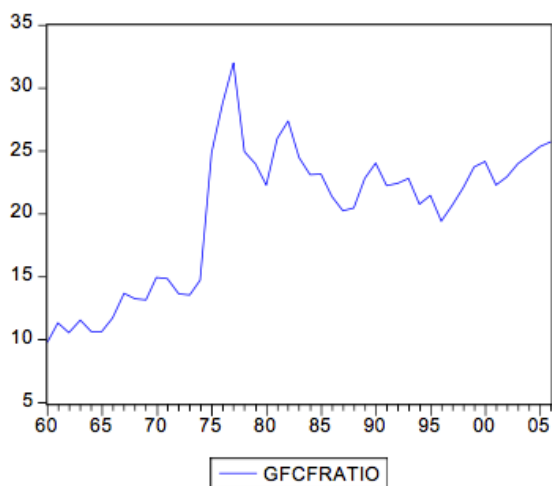
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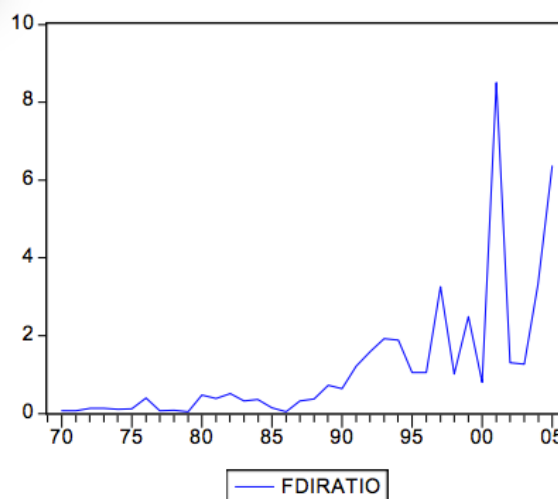Appendix 1 ; Economic growth per capita in Morocco (1961-2006)

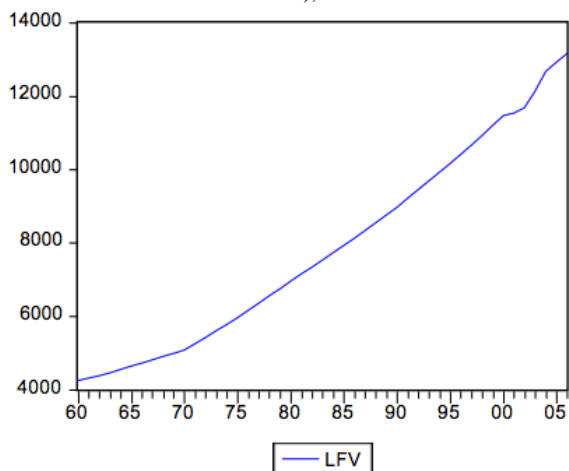Graph 1: Economic growth rate per capita (TCEPT) in Morocco (%), 1961-2006

Appendix 2: Evolution of gross fixed capital formation and labor force
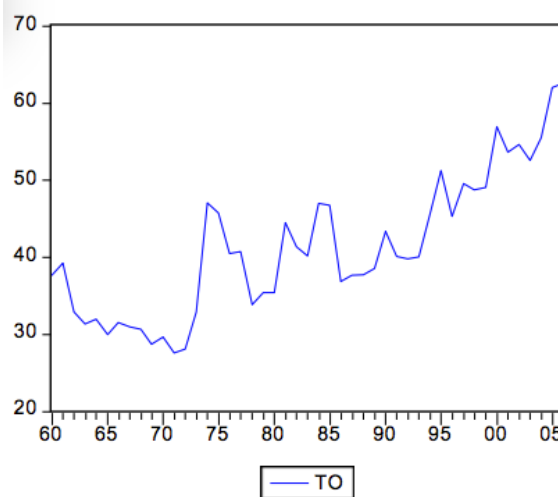Graph 2: Evolution of gross fixed capital formation (GFCF) in Morocco (%GDP), 1960-2006

Graph 3: Change in Labor Force Volume (LFV) in Morocco (in thousands), 1960-2006

Appendix 3: Trends in cereal yields, FDI and trade openness
Graph 4: Cereal yield growth (CYG) in Morocco (%), 1962-2005

Graph 5: Evolution of FDI in Morocco (%GDP), 1970-2005

Graph 6: Evolution of Trade openness (To) in Morocco (%), 1960-2006

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