

**Khoury Nabil**

**l'École Supérieure de Commerce d'Alger**

**Résumé:** Cet article tente d'estimer l'impact de l'Investissement Direct Étranger (IDE) sur la croissance économique des pays d'accueil en développement, il tente également de mesurer l'impact de l'IDE sur la croissance à travers le canal du capital humain du pays d'accueil. A partir des données en panel de 81 pays en développement, pour la période 1995-2005, nous avons trouvé un impact fort et positif de l'IDE sur la croissance économique. Par ailleurs, nos résultats ne permettent pas de mettre en lumière une complémentarité évidente entre l'IDE et le capital humain cal.

**Abstract:** This article attempts to estimate the impact of Foreign Direct Investment (FDI) on economic growth of developing host countries, and to assess whether FDI interacts with the stock of human capital in host countries to affect economic growth. Using panel data relating to a sample of 81 developing host countries, over the period 1995-2005, we find that FDI has a strong and positive impact on economic growth of developing host countries. Besides, there is no evidence for complementarity between FDI and host country's human capital.

**Keywords:** Foreign Direct Investment, Economic Growth, Human Capital

There is a widely shared view that economic growth pattern is linked to characteristics of economies, such as population growth, industrial base, unemployment rate, investments in physical and human capital, investments in R&D (Research and Development), inflation, development of financial institutions, flows of foreign investments etcetera. In the recent years, the importance of Foreign Direct Investment (FDI) increased remarkably. Many developing countries have launched an « open door policy » toward FDI, in order to attract more FDI and capture hypothetical spillovers of FDI on growth in particular and economic development in general.

Developing countries have offered incentives to encourage FDI in their economies. However, is there economic justification for this kind of policy promotion? There would be if the social returns to FDI exceed the private returns. There is a considerable literature on the impact of FDI on growth in host countries. The endogenous growth theory shows that FDI positively affects growth by decreasing the cost of research and development (R&D) through stimulating innovation. The aim of this paper is to assess for the impact of FDI on economic growth in host countries, relying on panel data from 81 developing countries over the period 1995-2005.

## 2. Theories of economic growth: An overview of the literature

Classical theories of growth (Smith, 1776 ; Ricardo, 1817) focus on trade as the main accelerator of growth. The theory of growth in the neoclassical economics, pioneered by Solow (1956), assumes that economic growth is mainly determined by capital accumulation and exogenous technological progress. Technology embodies new

machinery, new processes, knowledge, know-how and skills. In neoclassical models, technology is assumed to be exogenous to the growth process. Solow (1956) proposes a model where the economy's level of output depends on saving, investment, labor force growth, progress in advanced technologies.

Saving and investment increase capital intensity, and technological progress increases the efficiency of labor. The key determinant of economic growth in Solow's model is labor productivity, measured by the output by worker. One limitation of the Solow model is that it does not provide the determinants of technological change. Solow (1956) assumes that the factors that drive the progress of technology are significantly independent of economic considerations. The theory of growth in the neoclassical economics is built on the concept of diminishing returns. Another limitation in the neoclassical theory of growth is that it is difficult – if not impossible – to describe how the economy's level of output increases when the main process used to describe the increase is a process of decreasing values. The limitations in the neoclassical theory of growth stimulate economists to endogenize technology in a theoretical framework. They have developed the endogenous growth theory that includes a theoretical explanation of technological progress.

The main pioneers in the endogenous growth literature are Harrod (1961), Frankel (1962), Romer (1986) and Lucas (1988). Romer (1986) tries to deal with the problem of diminishing returns by introducing a new factor of production, which is knowledge, in addition to conventional factors of production (capital and labor). Romer (1986) assumes that the knowledge of how to organize production is itself a

factor of production. He also postulates that there are no diminishing returns to knowledge. Romer (1986) builds a theoretical model where economic growth is driven by the accumulation of knowledge. Endogenous growth theory provides a conceptual framework taking account for technological changes and the growth in human capital. It focuses on education, training and new technologies development as the engine of growth. Endogenous growth models focus on the role played by investments in education and R&D, and the impact of policies which stimulate innovation. These models have often four basic inputs: capital, labor, human capital and an index of the level of technology. Endogenous growth models fill the gaps in the neoclassical growth theories by allowing increasing returns to scale, through endogenous technological progress linked to human capital accumulation.

The differences in living standards among nations are explained by Lucas (1993) by the differences in human capital (physical capital is essential but it plays a subsidiary role). Lucas (1993) stresses the importance of education as a catalyst for the economic growth. Finally, the main engine of growth endogenous growth models is the accumulation of human capital.

### 3. Impact of FDI on economic growth: Review of the literature

Hymner (1976) argues that local firms have better information about their domestic market and the economic environment in their country than foreign firms, consequently, if a foreign firm wants to enter the market, it should compensate for the disadvantage. It is most likely that a firm that decides to invest abroad enjoys lower costs or higher productive efficiency than its domestic competitors. In the case of FDI from industrialized to developing countries, it is likely that the higher

efficiency of FDI would result from a combination of advanced skills and more modern technology. FDI may be the main channel through which advanced technology is transferred to developing countries.

According to Ram and Zhang (2002) there is a widely shared view that FDI accelerates host countries' growth through several canals such as: augmenting domestic savings and investment, helping transfer of technology, increasing competition in the host market, increasing exports etcetera. Ram and Zhang (2002) use cross-country data from 85 FDI-recipient countries (both developed and developing countries) over the period 1990-1997. The analysis indicates that the nexus between FDI and the host country's economic growth seems generally positive for the 1990s. The authors do not find evidence of complementarity between FDI and the host country's level of education. Alfaro and al. (2004) examine the links among FDI, financial markets and economic growth, using data from 41 host countries over the period 1975-1995. The authors suggest that FDI plays an important role in contributing to economic growth through financial markets in host countries. The results show that countries with well-developed financial markets gain significantly from FDI.

Balasubramanyam and al. (1996) examine within a new growth theory framework, the role which FDI plays in the growth process in the context of developing countries characterized by differing trade policy regimes (export promoting regime vs. import substituting regime). The authors test the hypothesis advanced by Bhagwati (1978), according to which the beneficial effect of FDI, in terms of enhanced economic growth, is stronger in those countries which pursue an outwardly oriented trade policy (export promoting regime) than it is in those countries

adopting an inwardly oriented policy (import substituting regime). Using data from 46 developing countries, the results provide a degree of support for Bhagwati's hypothesis.

Boresztein and al. (1998) test the effect of FDI on economic growth relying on data on FDI flows from industrial countries to 69 developing countries over the decades 1970-1979 and 1980-1989. The results suggest that FDI is an important vehicle for the transfer on technology, contributing more to growth than domestic investment. However, the FDI spillovers hold only when host country has a minimum threshold of human capital. The authors assume that FDI contributes to economic growth only when a sufficient absorptive capability of the advanced technologies is available in the host country.

#### **4. Empirical model and methodology**

In this section we try to empirically assess the impact of FDI inflows on economic growth of 81 developing countries (table 1 in appendix) over the period 1995-2005. An important contribution of this paper is that it concerns with a large sample and covers a recent decade. This paper tries to extend the analysis of Ram and Zhang (2002) to the period 1995-2005. The aim of this paper is to check if the positive impact of FDI on economic growth observed by Ram and Zhang (2002) over the period 1990-1997, is maintained over the decade 1995-2005. We start with the Ram and Zhang (2002) aggregate production function  $Y = f(K, L, FDI)$  where  $Y$  is aggregate real output,  $L$  and  $K$  are the aggregate inputs of labor and capital, FDI is treated as a quasi input (Ram and Zhang, 2002, p.206).

$$\begin{aligned}
 GPC_{nt} = & b_{0nt} + b_{1nt}LY0_{nt} + b_{2nt}GCF_{nt} + b_{3nt}SCHOOL_{nt} \\
 & + b_{4nt}GPOP_{nt} + b_{5nt}FDI_{nt} + b_{6nt}FDI \times SCHOOL_{nt} \\
 & + b_{7nt}CONTROL_{nt} + w_{nt}
 \end{aligned}$$

GPC: annual rate of growth of real GDP per capita.

LY0: logarithm of real GDP per capita in 1995.

GCF: gross capital formation (as % of GDP).

GPOP: annual growth rate of the population.

SCHOOL: average years of school of the working population.

FDI: Foreign Direct Investment net inflows (as % of GDP).

FDI×SCHOOL: interaction term

CONTROL: control variables.

w: disturbance term.  $b_0$ : constant.

n : index of yeas ( $t = 1, \dots, 11$ ). t : index of countries ( $n = 1, \dots, 81$ ).

Logarithm of real GDP per capita in 1995 indicates the initial income per capita of the host county; it helps us to assess the convergence hypothesis. Gross capital formation (as % of GDP) is proxy for the aggregate inputs of capital. Average years of school of the working population (15 years and above) is a proxy for human capital endowments (Barro and Lee, 2002). Annual growth rate of the population is a proxy for the aggregate inputs of labor. The interaction term helps us to see whether there is complementarity between FDI inflows and human capital in host country. Control variables include: infrastructure endowments (variable INFRA: telephone lines per 1000 population), degree of economic openness (variable OPEN: exports plus imports as % of GDP), inflation rate (variable INF: percentage change in the consumer price index), and the index of political stability (variable

POLIT) calculated by the World Bank (2007b). Methodologically, we refer to the random effect model (panel data estimations) because of the presence of country variables SCHOOL and LY0. All regressions are performed with the statistical software Stata 9.2. Appendix provides the list of sample countries (table 1), data sources (table 2), variable description (table 3), descriptive statistics (table 4), correlation matrix (table 5), panel data estimates (table 6) and instrumental variables estimates (table 7).

We expect a positive effect on economic growth of: Foreign Direct Investment, average years of school, interaction term, gross capital formation, growth rate of the population, infrastructure endowments, degree of economic openness and index of political stability. We expect a negative effect on economic growth of initial real GDP per capita (convergence hypothesis) and inflation rate.

## 5. Empirical results

The purpose of our empirical investigation is to estimate the impact of FDI on economic growth, and to assess whether FDI interacts with the stock of human capital in host countries to affect economic growth. Borensztein and al. (1998) find that in countries with low levels of human capital the effect of FDI on economic growth is negative. Table 6 in appendix reports random effects estimates of our empirical model. The FDI parameter is positive and statistically significant at the level of 5%, this result is robust to different specifications. Foreign Direct Investment has a strong and positive impact on economic growth of developing host countries. This impact seems to be relatively constant; it varies from 0.15 to 0.17, FDI still has a positive impact after controlling for other growth

determinants such as infrastructure endowments, economic openness, inflation rates and political stability.

Including the interaction term between FDI and host country's human capital improves the adjusted  $R^2$ , but the coefficient of the interaction term is not statistically significant. The evidence in favour of complementarity between FDI and host country's human capital is lacking, the interaction term  $FDI \times SCHOOL$  has the wrong negative sign. As Ram and Zhang (2002) suggest it for the 1990s, there is no evidence for complementarity for the period 1995-2005. We note that the wrong negative sign for the interaction term do not conform with Borensztein theory. Namely, the term on FDI is significant and the coefficient on the interaction term is negative; this suggests that FDI enhances economic growth in countries with low educational levels. This counter intuitive result may results from including FDI, educational variable and the interaction term simultaneously.

The initial income term (variable  $LY0$ ) has the expected negative sign. This result gives support in favour of conditional convergence hypothesis. It implies that, on average, countries with low per capital initial incomes are growing faster than those with high initial per capital incomes. Domestic inputs of poor countries appear to be catching up with those of rich countries. In poor countries where capital per worker is low, relatively small investment is required for capital widening. However, in rich countries where capital per worker is high, more investment is required for capital widening and deepening. Consequently, poorer economies would catch up with the richer ones.

The coefficient for the aggregate inputs of capital (variable  $GCF$ ) is positive and robustly significant at the level of 5%. The impact of

domestic investment on economic growth seems to be relatively constant; it ranges from 0.13 to 0.19. Domestic investment is an important component of GDP because it provides an indicator of the future productive capacity of the economy. Furthermore, the education parameter (variable  $SCHOOL$ ) lacks significance and has the unexpected negative sign. This counter intuitive result could be due to the lack of independence of education from other sources of growth. If, for instance, education is fostered together with other policy measures enhancing growth, this results in an omitted variable bias. Besides, the data quality is often a matter of concern. Nearly all data on educational stocks show anomalies like high variability over short periods of time, implausible values or trends.

The population growth parameter is negative and significant at the level of 5%. As Solow (1956) shows it, the higher population growth has a negative impact on per capita economic growth. The argument for the negative impact is: population growth forces economies to use their scarce savings to undertake capital widening rather than capital deepening. Several economic-demographic models of developing countries, focuses on the predicted impact of population growth on economic development. Several models found a very large negative impact of population growth on economic development.

Following Borensztein and al. (1998), we introduce regional dummies for the Sub Saharan Africa countries (SSA dummy) and the Middle East & North Africa countries (MENA dummy). Regression 6.5 (table 6 in appendix) shows that both regional dummies are negative but not significant at the 5% level.

It is important to note that our estimates might be biased by endogeneity issues. It is plausible that FDI responds to higher growth rates in the economy. Theoretically, recent endogenous growth models identify FDI as one of the determinants of growth through its role in technological diffusion. However, the endogeneity of FDI makes it possible that economic growth affects the flow of FDI. Endogeneity could make estimations inconsistent. In this case, there would exist a correlation between FDI and the country specific error term. The endogeneity problem can be solved by introducing instrumental variables. A good instrument would be a variable which is highly correlated with FDI but not with the error term in regressions (Borensztein and al., 1998, p.133).

In order to control for endogeneity problem, we follow Borensztein and al. (1998) and Alfaro and al. (2004), and introduce as instruments the following variables: lagged values of FDI, the log of total GDP and continental dummy for Asian countries. The results of these instrumental variables estimations are reported in table 7 in appendix. Regressions show that instrumental variables estimations give similar results to those obtained by the random effects panel estimation. The FDI parameter is positive and statistically significant at the level of 5%. The interaction term between FDI and human capital has the wrong negative sign, and the coefficient on the interactive term is not significant at the 5% level. In sum, the results of regressions incorporating instrumental variables do not differ significantly from those of the regular regressions (without instrumental variables).

## 7. Conclusion

Since the late 1980s, developing countries have changed their attitude toward Foreign Direct Investment (FDI), because of a widely shared view that FDI can contribute to the development efforts of their economies. Many countries have established both fiscal and financial incentives to attract FDI, and capture hypothetical spillovers of FDI on growth in particular and economic development in general. This paper investigates, within the Ram and Zhang (2002) growth model, the role which FDI plays in the growth process in the context of developing host countries, using panel data relating to a sample of 81 developing host countries, over the period 1995-2005. It also assess whether FDI interacts with the stock of human capital in host countries to affect economic growth. Using panel data relating to a sample of 81 developing host countries, we find that Foreign Direct Investment (FDI) has a strong and positive impact on economic growth of developing host economies.

Furthermore, the evidence in favour of complementarity between FDI and host country's human capital is lacking, there is no evidence for complementarity for the period 1995-2005. Besides, the result gives support in favour of conditional convergence hypothesis. It implies that, on average, countries with low per capital initial incomes are growing faster than those with high initial per capita incomes. Domestic investment has a strong and positive impact on economic growth, while education and population growth have a negative effect.

## Appendix

**Table 1. Country sample (grouped by region)**

| Middle East & North Africa | Sub Saharan Africa | Latin America & Caribbean | Asia         | Eastern Europe |
|----------------------------|--------------------|---------------------------|--------------|----------------|
| Algeria                    | Benin              | Argentina                 | Bangladesh   | Bulgaria       |
| Egypt                      | Botswana           | Barbados                  | China        | Cyprus         |
| Iran                       | Cameroon           | Bolivia                   | India        | (Greek)        |
| Jordan                     | Congo (DRC)        | Brazil                    | Indonesia    | Hungary        |
| Lebanon                    | Congo              | Chile                     | Pakistan     | Malta          |
| Morocco                    | Ghana              | Colombia                  | Philippines  | Poland         |
| Sudan                      | Kenya              | Costa Rica                | Singapore    | Romania        |
| Syria                      | Lesotho            | Dominican Rep             | Sri Lanka    | Estonia        |
| Tunisia                    | Malawi             |                           | Thailand     | Latvia         |
| Turkey                     | Mali               | Ecuador                   | Azerbaijan   | Lithuania      |
|                            | Mauritius          | Salvador                  | Kazakhstan   | Slovakia       |
|                            | Mozambique         | Guatemala                 | Kyrgyzstan   | Slovenia       |
|                            | Niger              | Haiti                     | Tajikistan   | Czech Rep      |
|                            | Rwanda             | Honduras                  | Turkmenistan |                |
|                            | Senegal            | Jamaica                   | Uzbekistan   |                |
|                            | South Africa       | Mexico                    |              |                |
|                            | Swaziland          | Nicaragua                 |              |                |
|                            | Tanzania           | Panama                    |              |                |
|                            | Togo               | Paraguay                  |              |                |
|                            | Uganda             | Peru                      |              |                |
|                            | Zambia             | Trinidad                  |              |                |
|                            | Zimbabwe           | Tobago                    |              |                |
|                            |                    | Uruguay                   |              |                |
|                            |                    | Venezuela                 |              |                |

**Table 2. Data sources**

| Variables                                  | Database and Sources                                              |
|--------------------------------------------|-------------------------------------------------------------------|
| GPC, LY0, GCF, GPOP, INFRA, OPEN, INF, FDI | World Development Indicators<br>World Bank (2007a)                |
| SCHOOL                                     | International Measures of Schooling Years<br>Barro and Lee (2007) |
| POLIT                                      | Aggregate Governance Indicators<br>World Bank (2007b)             |

**Table 3. Variables description**

| Variables  | Description                                            |
|------------|--------------------------------------------------------|
| GPC        | Annual rate of growth of real GDP per capita           |
| LY0        | Logarithm of real GDP per capita in 1995               |
| GCF        | gross capital formation (as % of GDP)                  |
| GPOP       | Annual growth rate of the population                   |
| SCHOOL     | Average years of school of the working population      |
| INFRA      | Telephone lines per 1000 population                    |
| OPEN       | Exports plus imports as % of GDP                       |
| INF        | Percentage change in the consumer price index          |
| POLIT      | Index of political stability of the World Bank (2007b) |
| FDI        | Foreign Direct Investment net inflows (as % of GDP)    |
| SSA dummy  | Sub Saharan Africa dummy                               |
| MENA dummy | Middle East & North Africa dummy                       |

Table 4. Descriptive statistics

| Variable | Obs | Mean   | Std. Dev. | Min    | Max     |
|----------|-----|--------|-----------|--------|---------|
| GPC      | 880 | 2.53   | 4.18      | -17.85 | 37.49   |
| LY0      | 891 | 7.07   | 1.18      | 4.77   | 9.86    |
| GCF      | 891 | 22.32  | 7.53      | 1      | 60.49   |
| GPOP     | 891 | 1.49   | 1.18      | -3.29  | 10.21   |
| SCHOOL   | 858 | 5.51   | 2.15      | 0.76   | 9.84    |
| INFRA    | 888 | 240.93 | 294.58    | 0.37   | 1425.25 |
| OPEN     | 878 | 76.61  | 37.35     | 16.29  | 216.20  |
| INF      | 863 | 15.60  | 52.76     | -100   | 1058.37 |
| POLIT    | 889 | -0.302 | 0.87      | -3.07  | 1.52    |
| FDI      | 889 | 3.47   | 4.37      | -3.02  | 46.024  |

Table 5. Correlation matrix

|           | GPC   | LY0   | GCF   | GPOP  | SCHOOL |
|-----------|-------|-------|-------|-------|--------|
| GPC       | 1.00  |       |       |       |        |
| LY0       | 0.03  | 1.00  |       |       |        |
| GCF       | 0.37  | 0.12  | 1.00  |       |        |
| GPOP      | -0.26 | -0.48 | -0.26 | 1.00  |        |
| SCHOOL    | 0.13  | 0.76  | 0.12  | -0.61 | 1.00   |
| INFRA     | 0.18  | 0.66  | 0.07  | -0.52 | 0.62   |
| OPEN      | 0.19  | 0.29  | 0.30  | -0.36 | 0.41   |
| INF       | -0.21 | -0.11 | -0.17 | -0.02 | -0.02  |
| POLITRISK | 0.19  | 0.47  | 0.25  | -0.42 | 0.40   |
| FDI       | 0.21  | 0.11  | 0.37  | -0.20 | 0.17   |

  

|           | INFRA | OPEN  | INF   | POLITRISK | FDI  |
|-----------|-------|-------|-------|-----------|------|
| INFRA     | 1.00  |       |       |           |      |
| OPEN      | 0.40  | 1.00  |       |           |      |
| INF       | -0.06 | -0.05 | 1.00  |           |      |
| POLITRISK | 0.49  | 0.46  | -0.15 | 1.00      |      |
| FDI       | 0.18  | 0.31  | -0.08 | 0.16      | 1.00 |

Table 6. Empirical results

| Dependent variable GPC: Annual rate of growth of real GDP per capita |                    |                    |                    |                    |                    |
|----------------------------------------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Estimation method: Random Effects - panel estimations                |                    |                    |                    |                    |                    |
| Period : 1995-2005 ; T = 11 ; N = 81 ; total obs : 11×81 = 891 Obs   |                    |                    |                    |                    |                    |
| Explanatory Variables                                                | Equ. 6.1           | Equ. 6.2           | Equ. 6.3           | Equ. 6.4           | Equ. 6.5           |
| LY0                                                                  | -0.361<br>(-2.40)* | -1.137<br>(-3.55)* | -0.366<br>(-2.45)* | -0.948<br>(-3.72)* | -0.854<br>(-2.96)* |
| GCF                                                                  | 0.132<br>(5.69)*   | 0.191<br>(7.89)*   | 0.142<br>(5.97)*   | 0.196<br>(8.00)*   | 0.201<br>(5.02)*   |
| GPOP                                                                 | -1.028<br>(-5.92)* | -0.351<br>(-1.96)* | -1.041<br>(-6.04)* | -0.406<br>(-2.36)* | -1.022<br>(-3.21)* |
| SCHOOL                                                               | -0.031<br>(-0.21)  | -0.262<br>(-1.48)  | -0.170<br>(-1.01)  |                    |                    |
| FDI                                                                  | 0.153<br>(2.98)*   | 0.170<br>(2.13)*   | 0.192<br>(2.44)*   | 0.175<br>(2.48)*   | 0.10<br>(2.05)*    |
| FDI×SCHOOL                                                           |                    |                    | -0.039<br>(-1.81)* | -0.030<br>(-1.62)* | -0.004<br>(0.58)   |
| INFRA                                                                |                    | 0.002<br>(3.57)*   |                    | 0.002<br>(3.61)*   | 0.001<br>(6.02)*   |
| OPEN                                                                 |                    | 0.004<br>(0.60)    |                    | 0.005<br>(0.86)    | 0.021<br>(1.90)*   |
| INF                                                                  |                    | -0.011<br>(-4.77)* |                    | -0.011<br>(-4.82)* | -0.101<br>(-2.96)* |
| POLIT                                                                |                    | 0.024<br>(0.09)    |                    | 0.023<br>(0.08)    | 0.0001<br>(0.52)   |
| SSA dummy                                                            |                    |                    |                    |                    | -0.002<br>(-1.02)  |
| MENA dummy                                                           |                    |                    |                    |                    | -0.018<br>(-0.96)  |
| Constant                                                             | 3.724<br>(2.42)*   | 4.812<br>(2.43)*   | 4.328<br>(2.79)*   | 4.752<br>(2.43)*   | 3.214<br>(2.30)*   |
| Nbr. Obs                                                             | 845                | 816                | 845                | 816                | 816                |
| R <sup>2</sup> adj.                                                  | 0.91               | 0.93               | 0.96               | 0.98               | 0.78               |

Notes: values in parenthesis indicate z-statistic. The sign (\*) denotes statistical significance at the 5% level. The sign (+) denotes statistical significance at the

10% level. SSA dummy: Sub Saharan Africa dummy. MENA dummy: Middle East & North Africa dummy

**Table 7. Instrumental variables estimation**

| Dependent variable GPC: Annual rate of growth of real GDP per capita |                    |                    |                    |                    |                    |
|----------------------------------------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Estimation method: instrumental variables estimation                 |                    |                    |                    |                    |                    |
| Period : 1995-2005 ; T = 11 ; N = 81 ; total obs : 11×81 = 891 Obs   |                    |                    |                    |                    |                    |
| Explanatory Variables                                                | Equ. 7.1           | Equ. 7.2           | Equ. 7.3           | Equ. 7.4           | Equ. 7.5           |
| LY0                                                                  | -0.563<br>(-2.54)* | -0.541<br>(-2.65)* | -0.387<br>(-2.95)* | -0.635<br>(-2.12)* | -0.763<br>(-2.09)* |
| GCF                                                                  | 0.212<br>(3.54)*   | 0.263<br>(3.65)*   | 0.195<br>(4.02)*   | 0.185<br>(3.55)*   | 0.145<br>(3.02)*   |
| GPOP                                                                 | -0.658<br>(-2.65)* | -0.521<br>(-2.02)* | -0.633<br>(-2.54)* | -0.258<br>(-3.65)* | -0.365<br>(-1.96)* |
| SCHOOL                                                               | -0.156<br>(-2.21)* | -0.201<br>(-1.02)  | -0.060<br>(-1.54)  | -0.365<br>(-1.05)  | -0.963<br>(-1.90)* |
| FDI                                                                  | 0.251<br>(3.65)*   | 0.220<br>(4.15)*   | 0.222<br>(2.88)*   | 0.196<br>(3.41)*   | 0.225<br>(3.01)*   |
| FDI×SCHOOL                                                           | -0.301<br>(-1.00)* | -0.235<br>(-1.91)* | -0.205<br>(-0.36)  | -0.112<br>(-0.58)  | -0.269<br>(-1.56)* |
| INFRA                                                                |                    | 0.002<br>(0.32)    | 0.021<br>(0.15)    | 0.006<br>(0.36)    | 0.003<br>(0.58)    |
| OPEN                                                                 |                    |                    | 0.654<br>(1.21)    | 0.632<br>(1.02)    | 0.325<br>(1.00)    |
| INF                                                                  |                    |                    |                    | -0.154<br>(-6.47)* | -0.201<br>(-3.21)* |
| POLIT                                                                |                    |                    |                    |                    | 0.256<br>(0.01)    |
| SSA dummy                                                            |                    |                    |                    |                    | -0.231<br>(-0.54)  |
| MENA dummy                                                           |                    |                    |                    |                    | -0.0001<br>(-0.32) |
| Constant                                                             | 2.871<br>(5.76)*   | 1.402<br>(0.32)    | 3.619<br>(2.31)*   | 2.589<br>(2.55)*   | 2.865<br>(2.39)*   |
| Nbr. Obs                                                             | 855                | 866                | 845                | 816                | 816                |
| R <sup>2</sup> adj.                                                  | 0.89               | 0.85               | 0.80               | 0.89               | 0.91               |

Notes: values in parenthesis indicate t-statistic, we use as instruments: the lagged value of FDI, the log of total GDP and instrumental dummy for Asian countries (Borensztein et al., 1998, p.132). The sign (\*) denotes statistical significance at the 10% level. The sign (+) denotes statistical significance at the 10% level.

## Bibliographic references

- Alfaro L., Chanda A., Kalemli-Ozcan S. and Sayek S. (2001), FDI and Economic Growth: The Role of Local Financial Markets, *Journal of International Economics*, vol.64, pp.89-112.
- Balasubramanyam V.N., Salisu M. and Sapsford D. (1996), Foreign Direct Investment and Growth in EP and IS Countries, *The Economic Journal*, vol.106, n° 434, pp.92-105.
- Barro R. and Lee J.W. (2007), International Measures of Schooling Years and Schooling Quality, *American Economic Review Papers and Proceedings*, vol.86, pp.218-223.
- Bhagwati J.N. (1978), Anatomy and Consequences of Exchange Control Regimes, *NBER Studies in International Economic Relations*, vol.1, n° 10.
- Borensztein E., De Gregorio J. and Lee J.W. (1998), How does Foreign Direct Investment Affect Economic Growth?, *Journal of International Economics*, vol.45, pp.115-135.
- Hymers S.H. (1976), *The International Operations of National Firms: A Study of Direct Foreign Investment*, MIT Press, Cambridge (PHD thesis, MIT, 1960).
- Lucas R.E.Jr. (1993), On the Determinants of Direct Foreign Investment: Evidence from East and Southeast Asia, *World Development*, vol.21, n° 3, pp.391-406.
- Lucas R.E.Jr. (1988), On the Mechanics of Economic Development, *Journal of Monetary Economics*, vol.22, pp.3-42.
- Ram R. and Zhang K.H. (2002), Foreign Direct Investment and Economic Growth: Evidence from Cross-Country Data for the 1990s, *Economic Development and Cultural Change*, vol.51, pp.205-215.
- Romer P.M. (1986), Increasing Returns and Long-Run Growth, *Journal of Political Economy*, vol.94, pp.1002-1037.
- Solow R.M. (1956), A Contribution to the Theory of Economic Growth, *Quarterly Journal of Economics*, vol.70, pp.65-94.
- World Bank (2007a), *World Development Indicators*.
- World Bank (2007b), *Aggregate Governance Indicators*.