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Impact of FDI on Welfare in Transition Economies: A System-Generalized Method of Moments Analysis

Impact des IDE sur le Bien-être dans les Economies en Transition : Méthode d'analyse des moments généralisés en système

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Abstract

The purpose of our research is to conduct a detailed analysis of the main determinants of the impact of FDI on welfare in host countries in transition. Our work is intended to contribute theoretically to the introduction of new hypotheses, which should allow for a better identification of the factors determining the impact of FDI on welfare in transition countries, and empirically to the improvement, identification, and more accurate measurement of the externalities produced by FDI. From a practical perspective, our analysis has a dual importance: firstly, it further guides research on welfare in transition countries and, secondly, it supports the theories that FDI is an essential source of complementary financing for these countries, so that the results of our study can serve as a tool to support government public policies.

Keywords: FDI; Welfare; transition economies; growth; CEE countries.

Résumé

L'objectif de notre recherche est de réaliser une analyse détaillée des principaux déterminants de l'impact des IDE sur le bien-être dans les pays d'accueil en transition. Nos travaux visent à contribuer, d'un point de vue théorique, à l'introduction de nouvelles hypothèses permettant une meilleure identification des facteurs déterminant l'impact des IDE sur le bien-être dans les pays en transition, et, d'un point de vue empirique, à l'amélioration, à l'identification et à la mesure plus précise des externalités générées par les IDE. D'un point de vue pratique, notre analyse revêt une double importance : d'une part, elle oriente la recherche sur le bien-être dans les pays en transition et, d'autre part, elle étaye les théories selon lesquelles les IDE constituent une source essentielle de financement complémentaire pour ces pays, de sorte que les résultats de notre étude puissent servir d'outil d'appui aux politiques publiques.

Mots-clés : IDE ; bien-être ; économies en transition ; croissance ; PECO.

Introduction

In recent years, macroeconomic stability, particularly in the CEE countries, has tended to improve, as have economic growth rates. Therefore, it is important to determine whether the observed growth can be systematically linked to an increase in FDI inflows during the transition period. The objective of this article is to study the nature of the relationship between FDI and the level of economic well-being and to provide an empirical examination of this link. Our contribution will be to address these questions in the specific context of certain transition economies. Therefore, and more precisely, the main objective of this study is to highlight the role of FDI in Tunisia, Egypt, and the CEE countries (Bulgaria, Croatia, Romania, Slovenia, Hungary, the Czech Republic, Estonia, Latvia, Lithuania, Slovakia, and Poland) by examining its contribution to economic welfare. This study is a further effort to better understand the impact of FDI on 13 transition economies and considers the potential channels through which this impact occurs.

Empirical analyses concerning the impact of FDI on well-being in transition countries are lacking. Our work aims, also, to fill this empirical gap by proposing, based on original databases, an estimate of this impact on economic and social well-being in these countries and its evolution over more than two decades (1998-2018).

The importance and originality of our study stem from the perspective of macroeconomic variables, no other study has considered the explanatory variables included in this study, including macroeconomic, political, and institutional variables. To conduct our analysis, we selected the period from 1998 to 2018, which are years of particular socioeconomic importance for these countries, using the system-wide generalized method of moments.

This article is composed of 4 sections, a first section will be reserved to a description of the sample, a second section to the literature review, a third section to the empirical study and finally the fourth section is reserved to the interpretation of the results.

1. Description of the sample: A Literature Review

Over the past decade, many CEE countries have experienced a significant increase in their economic growth. This increase was not primarily related to domestic investment. Nebojsa & al. (2014) argue that since the CEE countries have been trying to catch up with the EU, it has been necessary to achieve higher GDP growth rates.

The transition economies in our sample generally began their transformation into young democracies and market economies with well-developed skills and reasonable infrastructure.

From an institutional perspective, CEE countries are very different from both developing and industrialized countries.

Bosanac & Požega's (2016) analysis of the effects of FDI on economic growth in transition countries shows that the most important motivations for FDI inflows were access to new markets and the acquisition of equity interests through privatization. So the FDI plays an important role in influencing the performance of Central European transition countries.

The study by Fifeková & Nemcová (2015) shows that during the period analyzed, FDI inflows as a percentage of GDP were significantly higher in the V4 countries than in the old Member States, with the inflow into the V4 countries dependent on the effectiveness of the economic reforms implemented in each country.

2. FDI and Welfare in Transition Countries: A Literature Review

In this literature review, we attempt to demonstrate that FDI has an impact on the economic well-being of transition countries, particularly through mechanisms or channels through which FDI transmits its impact on growth, as well as well-being, which we have learned from the literature include the absorptive capacity of the recipient country; human capital development (Borensztein & al, 1998).

There are numerous empirical studies describing the role of different factors or channels in transmitting the impact of FDI, in transition economies Mateev & Tsekov (2014) including transition-specific factors Mateev, (2012), economic development Henriot, (2005), the exchange rate regime (Aubin & al. 2006), and wage gaps (Bevan and Estrin, 2004).

Studies on transition countries, including the countries in our sample, show a positive relationship between FDI and economic growth, a key determinant of economic well-being. (Lyroudi & al. 2004 ; Hetes et al. 2009, Gursoy & Kalyoncu's 2013 Asteriou & al 2005 Aleksynska et al 2003.), Socoliuc & al. (2016). Similar studies include those by Shah & Samdani (2015) showing that one of the main determinants of economic growth in transition economies over the last quarter century has been FDI., a similar result is implied by the Hanousek & al. (2011) study for emerging markets. These FDIs boost the job market, and increase productivity, determining factors for genuine long-term growth, arguing in favor of a positive impact of FDI on well-being.

One channel of this impact is indeed the human capital quality, component of welfare. The study by Sinto & Maqsood (2015) shows a positive correlation between human capital and economic growth.

The conclusion of the Seyoum & al (2015) study, remains robust to the estimation of the positive impact of FDI on real GDP growth and employment; and consequently on well-being. The results of Albassam's (2014) study, show that increasing FDI levels has a positive effect on GDP per capita and reduces unemployment. This result is consistent with the results reported by other similar studies, deducing that FDI has a positive influence on controlling the unemployment rate, and consequently on welfare.

The assessment of well-being should not be limited to monetary indicators; other social and environmental indicators should be added, such as autonomy, equity, health and social cohesion, democracy, education; in this case, we are talking about the quality of growth and the sustainability of progress.

Acemoglu & Robinson (2006) argue that differences in economic institutions are the cause of differences in economic development. Institutional quality has been recognized as one of the key determinants of growth and a channel through which FDI can influence the host country's economic performance; therefore, the introduction of this variable into our analysis was inevitable.

The role of FDI in the new growth theory is important because technological progress is central to the endogenous growth model. FDI is likely to stimulate growth and is identified as a driver of economic development, as it has a positive effect on capital accumulation by increasing investment and promoting total factor productivity in recipient economies, due to technology transfers and spillover effects (Seyoum & al., 2015)

FDI inflows are an important vehicle for achieving desirable levels of economic growth, when absorptive capacity is sufficient through better development of human capital and institutional and physical infrastructure.

Particular attention has been paid to the endogenous growth theory, which has led us to conclude that FDI has a stronger positive impact on economic growth in countries with higher levels of education. This should be a stimulus for public policies focused on improving the quality of life and welfare. Analyzing the role of FDI in economic growth from the perspective of a newly industrialized economy shows that FDI drives production efficiency and modifies the equilibrium state of the host country's production frontier; we believe this result readily applies to a transition country. Empirical models are generally based on an augmented Cobb-Douglas production function. The results of these analyses suggest the importance of the absorptive capacity of host economies in the assimilation of transferred advanced technologies. Kosztowniak (2014).

Aleksynska & al. (2003); in their analysis of the FDI-economic growth relationship, show that human capital exhibits complementary synergies in transition economies. Bengoa & Sanchez (2003) and Borensztein & al. (1998) have demonstrated that, in developing countries, the level of human capital plays a very important role in stimulating the impact of FDI on growth.

Campos (2002) hypothesizes that initial human capital endowments in transition economies easily exceed any threshold before FDI has a positive impact on growth. Human capital can be an important vector for technology diffusion, and the effects of FDI on growth depend on the level of human capital in the host country

The main hypothesis is that transition economies have the necessary level of physical and human capital resources, but lag behind developed countries in terms of technology (Buckley & al., 2002). AIso countries with a minimum stock of human capital, in conjunction with an efficient financial market mechanism, can absorb FDI more efficiently and gain significantly in terms of economic growth rate and welfare. Alfaro & al. (2006).

Several economists have identified a very significant positive impact of FDI on the growth of transition countries and on welfare. These FDIs increase domestic investment in transition countries and in Central and Eastern Europe, Lovrincevic & al. (2005) boost the job market, improve competition, and increase productivity Djankov & Hoekman (2000) and efficiency of domestic investments Barro & Lee (1994) and increase welfare through technology transfer Blalock, & Gertler, (2008).

FDI has a positive impact on well-being; it boosts the unemployment rate and increases the average wage of workers, and consequently improves living standards Iryna Y. K et al. (2015), and it contributes to government efforts to reduce or at least control unemployment rates Albassam (2014).

3. FDI and Welfare in Transition Countries: An Empirical Study

3.1. Data Collection and Analysis

3.1.1. Data

We used the World Bank databasenand National Accounts Data, World Bank's WDI. and OECD National Data Files, World Bank Open Data https://databank.banquemondiale.org/database) and OECD statistics. In addition, for education data, we referred to the Barro Lee Database (Barro-Lee Dataset).

This study included aggregates expressed in current US dollars, converted from national currencies using the annual official exchange rates determined by the World Bank (WDI Report).

In addition, we used Stata 13 software for data analysis.

3.1.2. Explanatory Variables

We will seek to demonstrate that FDI has a positive impact and a significant relationship with economic well-being. The literature review allowed us to identify several variables that could have a direct impact on economic well-being, particularly in the context of transition countries. These variables include per capita income and general government spending, population growth, the quality of institutions, the quality of human capital, and gross fixed capital formation, and will represent our explanatory variables.

Table 1: Description of variables affecting well-being and the expected signs of their coefficients

The Variables	Description	Abbreviation	H_0
Welfare	Household final consumption expenditure per capita	$Wel_{i,t}$	
Foreign Direct Investment Flows	Net FDI flows per capita	fdi_{it}	ß1
Standard of living and income	Gross national income per capita	$gnic_{i,t}$	ß2
State weight	General government expenditure per capita,	$ggec_{i,t}$	ß3
Institutional Quality and Governance (WGI)* political stability	Political stability governance indicator,	$gips_{it}$	ß4
(WGI)** of the role of the law,	Governance indicator of the role of law	$girl_{it}$	ß5
(WGI)*** corruption control	Corruption Control Governance Indicator	$gicc_{it}$	ß6
Population and population growth	The population growth rate	pgr_{it}	ß7
Quality of infrastructure/Physical capital	Gross Fixed Capital Formation per capita	$gfcf_{it}$	
Development and quality of human capital	Barro-Lee educational attaintements	$Blee_{it}$	

Source : The author

The two main variables of interest used in this study include FDI flows and consumption expenditures of these countries, measured in per capita terms given the growing consensus in the development literature regarding the use of consumption as a better measure of economic welfare.

The analysis of the relationship between consumption and welfare reveals that, unlike income, consumption is indeed considered a more appropriate indicator of a country's welfare. Bhagwati & al. (1987); Blalock & Gertler (2008), and Balcao (2001), use consumption as a proxy for

welfare, with the tacit assumption that improved consumption leads to improved welfare. In our work, we therefore use household final consumption expenditure per capita obtained from national accounts. The consumption measure used in this study comes from the World Bank. The World Bank defines household final consumption expenditure as the market value of all goods and services, including durable products (such as cars, machinery, and personal computers), purchased by households. It excludes housing purchases but includes imputed rent for owner-occupied housing. It also includes payments for permits and licenses for non-profit institutions.

3.2. Methodology

3.2.1. Hypothesis

Based on the assumption that improving well-being is a key element of economic development, and that in transition countries, FDI is an essential component in promoting this development. This study tests the hypothesis that "an increase in foreign direct investment flows improves well-being."

We have indeed considered panel data to be the most appropriate method.

3.2.2. The Generalized Method of Moments (GMM) for Dynamic Panels

The generalized method of moments (GMM) is a dynamic estimation method, whether in difference or system. The latter has the advantage of resolving problems of simultaneity bias, reverse causality, and omitted variables. Therefore, we chose a system GMM estimation on a dynamic panel for our model.

A dynamic model is a model in which one or more lags of the dependent variable are included as explanatory variables. Our model may raise endogeneity issues related to the presence of significant effects of the component variables on certain explanatory variables. An endogenous variable is both explanatory and explained.

The generalized method of moments on a dynamic panel by Blundell and Bond (1998), addresses the endogeneity problem by using a series of instrumental variables that involve introducing the lags of the variables. This use of lagged variables presents the advantage of this method over other instrumental variable methods.

3.3. Estimation Methodology: The Model

To answer the question of whether FDI promotes welfare in transition countries, the study uses the econometric model below. In this model, the presence of the lagged dependent variable precludes the use of standard econometric techniques. We use the dynamic panel generalized method of moments, which allows us to control for specific individual and temporal effects and

to mitigate the endogeneity bias of the variables. It is well known that the GMM method provides consistent and efficient estimates in the presence of arbitrary heteroscedasticity.

There are two types of estimators:

(a) the Arellano and Bond (1991) estimator or difference-based GMM and

(b) the system GMM estimator.

Note that the use of these two estimators assumes quasi-stationarity of the equation variables in terms of level, and the absence of autocorrelation of the residuals.

In the Arellano and Bond (1991) estimator, the strategy to address a potential omitted variable bias related to specific effects is to differentiate equation (2) in terms of level.

The results allow us to conclude that FDI flows improve welfare in transition countries.

To further test the robustness of the estimates, we estimate the model with additional data on the explanatory variables, including gross fixed capital formation (gfcf) and human capital development. The results of these estimations are shown in Tables 2.

The objective of this study is to determine whether increased FDI flows improve welfare. By providing a comprehensive analysis of the effects of FDI on economic welfare in the CEE countries, Tunisia, and Egypt, regression provides a better understanding of this relationship. To answer this question, we assume that the expected value is a linear function of FDI flows, income, and other explanatory variables.

Our dependent variable in the model is economic well-being proxied by per capita consumption.

The equation of our econometric model is as follows:

$$Wel_{i,t} - Wel_{i,t-1} = (\alpha - 1)\, Wel_{i,t-1} + ß_1\, ide_{i,t} + ß_2\, gnic_{i,t} + ß_3\, ggec_{i,t} + ß_4\, gips_{i,t} + ß_5\, girl_{i,t} + ß_6\, gicc_{i,t} + ß_7\, pgr_{i,t} + u_i + v_t + e_{i,t} \quad (1)$$

Where Wel it represents a measure of well-being in country i in period t, the proxy of which is: household current consumption expenditures per capita

Idei,t: net FDI flows per capita, in current US dollars, in country i during period t,

$gnic_{it}$: Gross national income per capita, in country i during period t.

$ggec_{it}$: General government expenditure per capita, in country i during period t.

$gips_{it}$: The governance indicator of political stability, in country i during period t.

$girl_{it}$: The governance indicator of the rule of law, in country i during period t.

$gicc_{it}$: the corruption control governance indicator, in country i during period t,

pgr: the population growth rate in country i during period t,

ui: the country-specific effect,

v_t: the time-specific effect,

e_{it}: the error term,

i : is the country index, t: indicates the period (year)

ß1, ß2, ß3, ß4, ß5, ß6, ß7 are the correlation parameters of the explanatory variables, respectively:

ß1: correlation parameter of $ide_{i,t}$

ß2: correlation parameter of $gnic_{i,t}$

ß3: correlation parameter $ggec_{i,t}$

ß4: correlation parameter of $gips_{i,t}$

ß5: correlation parameter of $girl_{i,t}$

ß6 Correlation parameter of $gicc_{i,t}$

ß7 Correlation parameter of $pgr_{i,t}$

And the results are shown in Table 2.

Equation (1), which is equivalent to a growth equation, can be rewritten as follows:

$$Wel_{it} = \alpha\, Wel_{i,t-1} + ß_1\, ide_{i,t} + ß_2\, gnic_{i,t} + ß_3\, ggec_{i,t} + ß_4\, gips_{i,t} + ß_5\, girl_{i,t} + ß_6\, gicc_{i,t} + ß_7\, pgr_{i,t} + u_i + v_t + e_{i,t} \quad (2)$$

In the Arellano and Bond (1991) estimator, the strategy for addressing potential omitted variable bias related to specific effects is to differentiate equation (2) at the level. We obtain the equation:

$$Wel_{i,t} - Wel_{i,t-1} = \alpha\,(Wel_{i,t-1} - Wel_{i,t-2}) + ß_1\,(ide_{i,t} - ide_{i,t-1}) + ß_2\,(gnic_{i,t} - gnic_{i,t-1}) + ß_3\,(ggec_{i,t} - ggec_{i,t-1}) + ß_4\,(gips_{i,t} - gips_{i,t-1}) + ß_5\,(girl_{i,t} - girl_{i,t-1}) + ß_6\,(gicc_{i,t} - gicc_{i,t-1}) + ß_7\,(pgr_{i,t} - pgr_{i,t-1}) + (v_t - v_{t-1}) + (e_{i,t} - e_{i,t-1}) \quad (3)$$

First difference eliminates the country-specific effect and therefore the bias of time-invariant omitted variables. By construction, the error term (e i,t - e i,t-1) is correlated with the lagged difference variable (Wel i,t-1 - Wel i,t-2).

The first differences of the model's explanatory variables are instrumented by the lagged values (in level) of these same variables. The goal is to reduce simultaneity bias and the bias introduced by the presence of the lagged difference dependent variable on the left-hand side.

Under the assumption that the model's explanatory variables are weakly exogenous (they may be influenced by past values of the growth rate but remain uncorrelated with future realizations of the error term) and that the error terms are not autocorrelated, the following moment conditions apply for the first difference equation.

$$E\,[Wel_{it-s}\,.(e_{i,t} - e_{i,t-1})] = 0 \text{ pour } s > ou = 2\ ;\ t = 3,\ldots T \quad (4)$$

$$E\,[X_{it-s}\,.(e_{i,t} - e_{i,t-1})] = 0 \text{ pour } s > ou = 2\ ;\ t = 3,\ldots T\ ;\ X \text{ are explanatory variables.} \quad (5)$$

The problem with this estimator is that it suffers from weak instruments, which lead to considerable bias in finite samples, and its precision is asymptotically low. More specifically, the lagged values of the explanatory variables are weak instruments in the first-difference equation. Moreover, differentiating the level equation eliminates inter-country variations and only accounts for intra-country variations. The system GMM estimator overcomes this limitation. It combines the difference equation with the level equation. The first-difference equation (Equation 3) is estimated simultaneously with the level equation (Equation 2) by GMMs. In the level equation, the variables are instrumented by their first differences. Blundell and Bond (1998) tested this method using Monte Carlo simulations. These authors found that the system GMM estimator is more efficient than the difference GMM estimator. The bias is greater when the variables are persistent over time, when the specific effects are large, and when the time dimension of the panel is small. Therefore, we opted for the system GMM estimator.

For the level equation, we use additional moment conditions, assuming that the explanatory variables are stationary.

$E [(Wel_{i,t-s} - Wel_{i,t-s-1}). (u_i + e_{i,t})] = 0$ pour $s=1$ (6)

$E [(X_{i,t-s} - X_{i,,t-s-1}). (u_i + e_{i,t})] = 0$ pour $s=1$ (7)

The above moment conditions (4 to 7) combined with the generalized method of moments allow us to estimate the model coefficients.

To test the validity of lagged variables as instruments, Arellano and Bond (1991), Arellano and Bover (1995), and Blundel and Bond (1998) suggest the Sargan/Hansen overidentification test. By construction, the error term in the first difference is correlated at the first order, but it should not be correlated at the second order. To test this hypothesis, these same authors suggest a second-order autocorrelation test of the errors in the difference equation (AR2).

Thus, we tested our dynamic model in panel data, adopting the GMM system method developed by the authors cited above, with two-stage estimations following the methodology proposed by Windmeijer (2005) to promote its robustness.

A first estimation is carried out under the assumption of no correlation of the errors and their homoscedasticity. Next, the vector of residuals from this first estimation is used to consistently estimate a variance-covariance matrix of errors in a second estimation step.

In this second step, the assumption of no correlation of errors and their homoscedasticity is verified.

Note that this method addresses the potential problem of endogeneity of the explanatory variables with the variable to be explained, especially since in our model, the explanatory

variables are macroeconomic in nature, hence the risk of reverse causality with welfare. The system GMM method also addresses the potential bias linked to the possible correlation between the "country fixed effects" and the error term. This avoids a correlation problem between this term and the explanatory variables.

4. Interpretation of the results: Model estimation using the GMM method in the system of Blundell & Bond (1998)

The results of the model estimation using the GMM method in the system of Blundell and Bond (1998) confirm our choice of sample, model, and estimation method.

Table 2: Estimation of the model using the GMM method in the Blundel & Bond system (1998)

	Two-step results of GMM in system	Robustness test regression results
Wel(-1)	0.0336** (5.88)	0.0261** (2.01)
Ide	0.3314** (3.01)	0.2863** (3.29)
gnic	0.0771** (2.89)	0.2034 (0.70)
ggec	0.9688** (9.24)	0.7957** (3.83)
Gips	0.7359 (0.38)	0.4151 (0.96)
Girl	-0.1266** (-3.93)	-0.8710 (-0.89)
Gicc	0.4512** (4.17)	0.7818** (1.77)
Pgr	-2.789 (-0.68)	-3.111 (-0.95)
gfcf	-	0.7744** (5.46)
blee	-	1.3383** (4.68)
Sargan Test (p-value)	0.9756	1.000
AR(2) Test (p-value)	0.1282	0.4377

*****, **, * significant at 1%, 5% and 10% respectively; values in parentheses are Student's t-tests**

Source: The author

The results of the table using the system GMM do not allow us to reject the hypothesis of the validity of the instruments used (the p-value of the Sargan test is well above 5%) and the hypothesis of the absence of second-order autocorrelation (the p-value of the Arellano and Bond

AR(2j) test is above 5%). Thus, we first confirmed the validity of the lagged variables as instruments, and then verified the absence of correlation of the errors and their homoscedasticity.

In addition, we were able to identify the following significant results:

4.1. The effect of net FDI flows per capita on welfare ß1

Foreign direct investment or net FDI inflows measures net investment inflows to acquire a lasting management stake (10% or more of the voting shares) in a company operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of profits, other long-term capital, and short-term capital (as reported in the Balance of Payments report). (IMF's "International Financial Statistics").

Our model results show that a 1 % change in net FDI flows per capita is associated with a 0.3314% increase in welfare, at a 5% significance level. The robustness regression test confirms the correlation between the two variables, since a 1 % change in the independent variable (FDI) is accompanied by a 0.2863% increase in the dependent variable, at the same 5% significance level.

The relationship between FDI and well-being in the 13 countries, appears to be positive and significant, stipulating that for transition countries, having acquired a certain absorptive capacity, the impact of FDI on welfare is positive.

4.2. The effect of gross national income per capita on well-being gnic ß2

Measured by gross national income per capita, associated in the literature with higher economic growth, which is why the expected sign for its impact on welfare is positive and significant. Most well-being indicators include the income dimension.

Our model estimates show that a 1 % change in gross national income per capita is associated with a 0.0771% increase in welfare, at a 5% significance level. However, the robustness regression test does not confirm the correlation between the two variables at the same 5% significance level.

This result is consistent with our intuition that any increase in per capita income by improving the standard of living would increase economic and social well-being and would positively impact the effect of FDI on the host country's level of economic development.

4.3. The Effect of General Government Expenditure per Capita on Welfare (ggec ß3)

A 1 % change in general government expenditure per capita is associated with a 0.9688% increase in welfare, at a 5% significance level. The robustness regression test confirms the

correlation between the two variables, since a 1 % change in the independent variable (ggec) is accompanied by a 0.7744% increase in the dependent variable, at the 5% significance level.

This variable measures the weight of the state. It is the total central government expenditure expressed per capita. It includes both current and capital (development) expenditures and excludes loans less repayments. (Source: World Bank). The results show that public spending has a positive effect on well-being, because it improves the quality of public services, and therefore necessarily improves economic well-being.

4.4. The effect of the political stability governance indicator on GIPs well-being: ß4

A 1% change in the political stability governance indicator is associated with a 0.7359% increase in well-being. The robustness regression test confirms the correlation between the two variables, since a percentage change in the independent variable (gips) is accompanied by a 0.4151% increase in the dependent variable.

For the purposes of our study, we opted for the WGI (World Governance Indicators) as a measure of institutional development. In relation to the theme of our research, we will limit ourselves to the three main indicators: Political Stability and Absence of Violence, Rule of Law, and Control of Corruption.

The robustness regression test confirms the positive correlation between the two variables. Our result is consistent with that of Shah & Samdani, (2015) on the D-8 countries.

4.5. The effect of the rule of law governance indicator on welfare: ß5

A 1 % change in the rule of law governance indicator is associated with a 0.1266% decrease in welfare, at a 5% significance level. The robustness regression test does not confirm the correlation between the two variables.

The role of the law is an essential ingredient in establishing the principles of equity, social justice, and social peace. These latter elements are essential sources of well-being. For Barro,1996 "increases in the standard of living tend to generate a progressive increase in democracy. Conversely, democracies that were established without prior economic development prove fragile." This paradox could explain the lack of a link between the rule of law and well-being in these transition countries.

4.6. The effect of the corruption control governance indicator on welfare (gicc): ß6

A 1% change in the corruption control governance indicator is associated with a 0.4512% increase in welfare, at a 5% significance level. The robustness regression test confirms the correlation between the two variables, since a percentage change in the independent variable

(gicc) is accompanied by a 0.7818% increase in the dependent variable, at the same 5% significance level.

This result is consistent with existing literature providing evidence of the negative impact of corruption on FDI inflows and economic growth Azam & Khairuzzaman (2013).

4.7. The effect of population growth rate, pgr: ß7

A 1% change in the population growth rate is associated with a 2.789% decrease in the growth rate of per capita consumption. The robustness regression test demonstrates a correlation between the two variables, since a 1% change in the independent variable (pgr) is accompanied by a 3.111% decrease in the dependent variable. However, this relationship between these two variables is not statistically significant.

This means that changes in the population growth rate have no real impact on well-being.

4.8. The effect of gross fixed capital formation per capita on well-being

The robustness test regression confirms the correlation between gross fixed capital formation per capita and well-being, since a change of 1% in the independent variable (gfcf) is accompanied by of a 0.7818% increase in the dependent variable, at the same 5% significance level. This relationship is therefore not only positive but also significant.

Infrastructure quality is one of the dimensions in all measures of social progress. By using GFCF per capita, we confirm the results of studies on the nature of the relationship between quality infrastructure and well-being Azam & Khairuzzaman (2013).

4.9. The Effect of the Barro-Lee Measure: Education Level on Well-being

The robustness regression test confirms the correlation between education level and well-being, since a 1% change in the independent variable (Blee) is accompanied by a 1.3383% increase in the dependent variable, at the 5% significance level.

Our final explanatory variable refers to the quality of human capital, measured by the annual education level of the population aged over 25. All alternative indicators for measuring social progress include education as a dimension of well-being. Our empirical results corroborate and justify the inclusion of this dimension.

Our model is also revealing because the quality of human capital has a significant positive effect on well-being. A high level of human capital positively stimulates the impact of FDI on growth in transition countries.

Conclusion

This study examined the effects of FDI on welfare in transition countries using GMM system estimation techniques. Our sample consists of 13 countries, which implemented various reforms

to ensure their transitions. Our work allowed us to answer a key question regarding the impact of FDI on economic welfare.

Our study supports the case for FDI, which is an integral part of the economic growth process by bridging the structural gap between savings and investment, increasing productivity, transferring technology, creating employment opportunities and motivating domestic investors. Furthermore, this study makes an effort to analyze the effect of institutional variables, on FDI and economic well-being, and therefore, will contribute significantly to the literature by using a unique portfolio of variables.

Our empirical study represents a major contribution to the body of empirical analysis. The study showed that FDI has a positive and significant effect on economic well-being in transition countries. These results can be explained by the fact that transition countries are characterized by development gaps compared to developed countries. To this end, convergence plays a key role and is the basis of our argument.

The results of our empirical model estimation, corroborate the results of our theoretical analyses. The relationship between FDI and well-being in 13 countries, including the Central and Eastern European countries, Tunisia, and Egypt, appears to be positive and significant. The positive relationship in our estimate between gross national income per capita, or general government expenditure per capita and well-being shows that a better standard of living and the quality of social and physical institutional infrastructure would positively impact the effect of FDI on the host country's level of economic development, and corresponds to a higher level of well-being.

The extent to which FDI will positively impact the growth of transition countries depends primarily on the establishment of an economic environment capable of absorbing the effects brought by FDI.

Our results have strong policy implications for the group of less developed European countries, Tunisia, and Egypt, where government efforts should aim to create stable political and institutional environments, as well as appropriate incentives for foreign investors.

ANNEXES

Annexe 1 : Output de Stata de l'Estimation du modèle :

Wel it = ß 0 + ß 1 ide it + ß 2 gnic it + ß 3 ggec it + ß 4 gips it + ß 5 girl it + ß 6 gicc it + ß 7 pgr it + µ it

par la méthode de GMM en système de Blundel & Bond (1998)

Statistiques descriptives
summarize wel ide gnic ggec gips girl gicc pgr blee gfcf

Variable	Obs	Mean	Std. Dev.	Min	Max
wel	260	6566.779	4056.796	750.7932	20754.52
ide	260	2013.142	25114.97	-7454.356	405105.5
gnic	260	10012.45	6105.23	1230	25540
ggec	260	4257.186	2837.556	267.1991	13755.62
gips	260	.4805385	.583768	-1.64	1.3
girl	260	.4630385	.4695726	-.66	1.37
gicc	260	.2462692	.463802	-.78	1.51
pgr	260	.143	.1678	-.581	.295
blee	260	10.66388	1.77608	5.36	13.03
gfcf	260	2477.989	1592.349	174.257	8091.758

Matrice des corrélations

correlate wel ide gnic ggec gips girl gicc blee gfcf
(obs=260)

	wel	ide	gnic	ggec	gips	girl	gicc	pgr	blee	gfcf
wel	1.0000									
ide	-0.0501	1.0000								
gnic	0.8089	-0.0396	1.0000							
ggec	0.7941	-0.0210	0.9715	1.0000						
gips	0.5108	0.0253	0.5863	0.6015	1.0000					
girl	0.6132	-0.0078	0.7243	0.7097	0.7419	1.0000				
gicc	0.5783	0.0062	0.6282	0.6255	0.7042	0.8834	1.0000			
pgr	0.5894	0.4212	0.3891	0.0741	0.5213	0.1211	0.3331	1.0000		
blee	0.6146	0.0270	0.6956	0.6907	0.7090	0.6808	0.6148	0.0541	1.0000	
gfcf	0.7174	-0.0326	0.9115	0.8964	0.5988	0.7390	0.6551	0.0781	0.6973	1.0000

xtdpdsys wel ide gnic ggec gips girl gicc, lags(1) twostep artests(2)
System dynamic panel-data estimation Number of obs = 247
Group variable: identifian~s Number of groups = 13
Time variable: anne
Obs per group: min = 19
avg = 19
max = 19

Number of instruments = 180 Wald chi2(8) = 75.96
Prob > chi2 = 0.0000

Two-step results

```
        wel |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+----------------------------------------------------------------
        wel |
        L1. |   .0336544   .0057235     5.88   0.010     .0392942    .0474365
            |
        ide |   .3314891   .1101292     3.01   0.003     .0120151    .2096334
       gnic |   .0771175   .0863855     2.89   0.022     .2464389    .5621951
       ggec |   .9688568   .1048979     9.24   0.000     .7632607    .8844535
       gips |   .7359712   1.936766     0.38   0.705    -.3082356    .1298021
       girl |  -.1266417   .0322243    -3.93   0.003    -.1439377   -.1340470
       gicc |   .4512846   .1082217     4.17   0.041     .6477159    .7835022
        pgr | -2.7892108  4.1017805    -0.68   0.389    -1.997341    .1667112
      _cons |   .9485002   5.579412     0.17   0.865    -.0685415    .0839849
------------------------------------------------------------------------------
Warning: gmm two-step standard errors are biased; robust standard
        errors are recommended.
Instruments for differenced equation
        GMM-type: L(2/.).wel
        Standard: D.ide D.gnic D.ggec D.gips D.girl D.gicc D.pgr
Instruments for level equation
        GMM-type: LD.wel
        Standard: _cons

. estat abond

Arellano-Bond test for zero autocorrelation in first-differenced errors
  +----------------------+
  |Order |  z     Prob > z|
  |------+---------------|
  |   1  |  -1.34  0.1802 |
  |   2  |-1.5213  0.1282 |
  +----------------------+
   H0: no autocorrelation

. estat sargan
Sargan test of overidentifying restrictions
        H0: overidentifying restrictions are valid

        chi2(172)    =  8.709387
        Prob > chi2  =    0.9756
```

Régression du test de robustesse

```
xtdpdsys wel ide gnic ggec gips girl gicc gfcf blee, lags(1) twostep artests(2)

System dynamic panel-data estimation         Number of obs      =       247
Group variable: identifian~s                 Number of groups   =        13
Time variable: anne
                                             Obs per group:  min =        19
```

```
                                      avg =        19
                                      max =        19

Number of instruments =    182            Wald chi2(10)       =     25.41
                                          Prob > chi2         =    0.0000

Two-step results
------------------------------------------------------------------------------
       wel |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------+------------------------------------------------------------------
       wel |
       L1. |   .0261035   .0129868     2.01   0.044     .0069189    .0151518
           |
       ide |   .2863321   .0870310     3.29   0.048     .1154376    .2161772
      gnic |   .2034398   .2906282     0.70   0.891    -.1381118    .1131232
      ggec |   .7957662   .2077399     3.83   0.000     .3886035    1.202929
      gips |   .4151997   .4324996     0.96   0.338    -.2429063    .1490230
      girl |  -.8710991   .9787630    -0.89   0.375    -.3857511    .0952796
      gicc |   .7818646   .4417314     1.77   0.076     .8375665    .9264603
       pgr | -3.1112367  3.274986    -0.95   0.112    -3.012234    .2655682
      gfcf |   .7744372    .141959     5.46   0.000     .4962026    1.052672
      blee |  1.3383789   .2859784     4.68   0.088     1.7886112    1.956952
     _cons |   .5322626   .9504689     0.56   0.576    -.2892445    .1541358
------------------------------------------------------------------------------
Warning: gmm two-step standard errors are biased; robust standard
       errors are recommended.
Instruments for differenced equation
      GMM-type: L(2/.).wel
      Standard: D.ide D.gnic D.ggec D.gips D.girl D.gicc D.pgr D.gfcf D.blee
Instruments for level equation
      GMM-type: LD.wel
      Standard: _cons

. estat sargan
Sargan test of overidentifying restrictions
      H0: overidentifying restrictions are valid

      chi2(172)    =  2.049235
      Prob > chi2  =    1.0000

. estat abond

Arellano-Bond test for zero autocorrelation in first-differenced errors
 +---------------------+
 |Order |  z     Prob > z|
 |------+---------------|
 |   1  |-.84125  0.4002 |
 |   2  |-.77602  0.4377 |
 +---------------------+
```

H0: no autocorrelation

Annexe 2 : Output de Stata de l'Estimation du modèle :
gpibc it = α gpibc it-1 + ßX it + u i + v t +e it
par la méthode de GMM en système de Blundel & Bond (1998)

Statistiques descriptives

summarize gpibc ide ggec gips girl gicc pgr blee gfcf

Variable	Obs	Mean	Std. Dev.	Min	Max
gpibc	260	3.474481	3.883468	-14.269	13.018
ide	260	2013.142	25114.97	-7454.356	405105.5
ggec	260	4257.186	2837.556	267.1991	13755.62
gips	260	.4805385	.583768	-1.64	1.3
girl	260	.4630385	.4695726	-.66	1.37
gicc	260	.2462692	.463802	-.78	1.51
pgr	260	.143	.1678	-.581	.295
blee	260	10.66388	1.77608	5.36	13.03
gfcf	260	2477.989	1592.349	174.257	8091.758

correlate ide ggec gips girl gicc pgr blee gfcf
(obs=260)

	ide	ggec	gips	girl	gicc	pgr	blee	gfcf
ide	1.0000							
ggec	-0.0210	1.0000						
gips	0.0253	0.6015	1.0000					
girl	-0.0078	0.7097	0.7419	1.0000				
gicc	0.0							
062	0.6255	0.7042	0.8834	1.0000				
pgr	0.4212	0.0741	0.5213	0.1211	0.3331	1.0000		
blee	0.0270	0.6907	0.7090	0.6808	0.6148	0.0541	1.0000	
gfcf	-0.0326	0.8964	0.5988	0.7390	0.6551	0.0781	0.6973	1.0000

xtdpdsys gpibc ide ggec gips girl gicc pgr, lags(1) twostep artests(2)

System dynamic panel-data estimation Number of obs = 260
Group variable: identifian~s Number of groups = 13
Time variable: anne
Obs per group: min = 19
avg = 19
max = 19
Number of instruments = 180 Wald chi2(8) = 74.66
Prob > chi2 = 0.0000

Two-step results

gpibc	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
gpibc						
L1.	-.0115965	.0016782	-6.91	0.022	-.0333965	-.0412397
ide	.3122562	.0889618	3.51	0.008	.0120157	.0136224
ggec	.0662139	.0259662	2.55	0.072	.3364389	.5521951
gips	.7532171	.1026181	7.34	0.002	.5562607	.6931535
girl	-.1359712	.4386167	-0.31	0.665	-.1182356	-.1211021
gicc	.2362811	.0451780	5.23	0.031	.6797159	.7521502
pgr	-2.1145637	.5058764	-4.18	0.389	-1.8931418	-1.6683112
_cons	.8156202	5.437468	0.15	0.777	-.0685415	.0839849

Warning: gmm two-step standard errors are biased; robust standard
errors are recommended.
Instruments for differenced equation
GMM-type: L(2/.).gpibc
Standard: D.ide D.ggec D.gips D.girl D.gicc D.pgr
Instruments for level equation
GMM-type: LD.gpibc
Standard: _cons

. estat abond

Arellano-Bond test for zero autocorrelation in first-differenced errors

Order	z	Prob > z
1	-1.88	0.1511
2	-1.4823	0.1211

H0: no autocorrelation

. estat sargan
Sargan test of overidentifying restrictions
H0: overidentifying restrictions are valid

chi2(172) = 8.702596
Prob > chi2 = 0.831561

Régression du test de robustesse

xtdpdsys gpibc ide ggec gips girl gicc pgr gfcf blee, lags(1) twostep artests(2)

System dynamic panel-data estimation Number of obs = 260
Group variable: identifian~s Number of groups = 13

```
Time variable: anne
                                     Obs per group:  min =       19
                                                     avg =       19
                                                     max =       19

Number of instruments =   182                Wald chi2(10)      =     29.13
                                             Prob > chi2        =    0.0000


Two-step results
------------------------------------------------------------------------------
       gpibc |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       gpibc |
         L1. |  -.0261035   .0043578    -5.99   0.014    -.0169177   -.0151522
             |
         ide |   .2963321   .0127126     4.29   0.038     .1224376    .1861772
        ggec |   .0791165   .0247634     3.13   0.044     .3811591    .4029291
        gips |   .7151997   .0283219     3.96   0.018     .2429063    .2590230
        girl |  -.1710991   .0015227    -0.89   0.335    -.4457511   -.4552796
        gicc |   .2918646   .0080846     2.77   0.076     .8255665    .8711603
         pgr | -2.0133697   .0591930    -2.94   0.112    -3.0122342  -2.9956821
        gfcf |   .6632372   .1195021     5.55   0.003     .4777026    .4832172
        blee |  1.3383789   .2859784     4.68   0.088     1.7886112    1.956952
       _cons |   .4318726   .1366685     3.16   0.056     .2592521    .2767358
------------------------------------------------------------------------------
Warning: gmm two-step standard errors are biased; robust standard
         errors are recommended.
Instruments for differenced equation
        GMM-type: L(2/.).gpibc
        Standard: D.ide D.ggec D.gips D.girl D.gicc D.pgr D.gfcf D.blee
Instruments for level equation
        GMM-type: LD.gpibc
        Standard: _cons

. estat sargan
Sargan test of overidentifying restrictions
        H0: overidentifying restrictions are valid

        chi2(172)    =  2.58961
        Prob > chi2  =  1.0000

. estat abond

Arellano-Bond test for zero autocorrelation in first-differenced errors
  +----------------------+
  |Order |  z     Prob > z|
  |------+---------------|
  |   1  |-.88236  0.3912 |
```

```
|  2  |-.73102  0.1217 |
+----------------------+
 H0: no autocorrelation
```

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Abbreviations:

FDI: Foreign Direct Investment

CEE: Central and Eastern European Countries

OECD: Organization for Economic Co-operation and Development

IMF: International Monetary Fund

WB: World Bank

EU: European Union

DC: Developing Countries

GDP: Gross Domestic Product

EMU: Economic and Monetary Union

UNCTAD : United Nations Conference on Trade and Developement