

Short-run and Long-run Effects of Institutional Quality on Foreign Direct Investment: Evidence from Developed and Developing Countries

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Abstract. The aim of this paper is to estimate the effects of institutional quality on FDI inflows for a panel of 140 developed and developing countries, over the period 1996-2021. Referring to the ARDL model, we proposed to identify short-run and long-run effects. The main results show a positive and significant long-run effects of various indicators of institutional quality on FDI inflows; the impact of institutional quality on FDI is greater than that of trade and infrastructure quality. IDEs' sensitivity to institutional quality is more important for developing countries than for developed countries. The short-run effect is, in all cases, insignificant; this result is explained by the slow adjustment of individual behavior and society to institutional changes.

From the six indicators of institutional quality used, the results show an important long-run impact of Regulatory Quality and Rule of Law. Thus, efforts to improve institutional quality are necessary to stimulate FDI inflows in the long-run; institutional reforms must favor, particularly, the ability of the government to formulate and implement sound policies and regulations, confidence in the rules of society, respect of contract enforcement and property rights.

Keywords: Institutions, FDI, Economic Development, ARDL.

JEL Classification: C2, F21, O1, O43, O57.

1. INTRODUCTION

The 1990s registered a spectacular increase in world FDI flows. During this decade, FDI flows are multiplied by 6.6 to reach, for the first time, 1356 billion dollars in 2000. After a slight decline in the early 2000s, world FDI flows regained their upward trend between 2006 and 2019, with a record of 2050 billion dollars in 2015 and 2016. Due to the confinements imposed in the world as a consequence of COVID-19, world FDI flows fell by 35% between 2019 and 2020. This drop has caused a collapse in investment flows to crucial sectors for sustainable development goals in developing countries; the decline is estimated at 54% in infrastructure and health, 49% in agriculture and 35% in education (UNCTAD, 2022).

Between 2020 and 2021, world FDI flows increased by 77%, from 929 billion dollars to 1650 billion dollars; in 2021 these flows exceeded their pre-COVID-19 level. It should be noted that this increase is characterized by an unequal distribution. Indeed, 75% of FDI growth is directed towards developed countries; for this region, FDI in 2021 is three times higher than its level in 2020. On the contrary, a stagnation of FDI in the least developed countries is observed; this stagnation is

worrying because of its negative effects on the main sectors of sustainable development (UNCTAD, 2022).

In reality, the unequal distribution of FDI is not a recent phenomenon. Although it is decreasing, dispersion has characterized the distribution of FDI between countries and regions for, at least, four decades. Indeed, the share of world FDI oriented to developed countries was 66% to 86% between 1980 and 1995, compared to 14-34% for developing countries. Between 2005 and 2020 the share of FDI oriented to developing countries has doubled from 33% to 66%. The unequal distribution of FDI is more remarkable between the African region and the OECD countries; these two regions represent the same demographic weight, i.e. 18% of the world population. Indeed, between 1980 and 2000, the share of world FDI oriented to OECD countries was 70% to 90%, compared to 0.7-1.6% for the African region. Between 2005 and 2020, the African region was able to attract only 2% to 5% of world FDI flows compared to 35-65% for OECD countries (Fig. 1).

The unequal distribution of FDI is explained, in part, by openness and proximity. Indeed, a significant share of FDI in the OECD area is between countries linked by regional trade agreements and between countries that are geographically proximate. Most European countries, generally, receive a higher amount of FDI from European Union countries than from elsewhere; Canada and Mexico receive most of their

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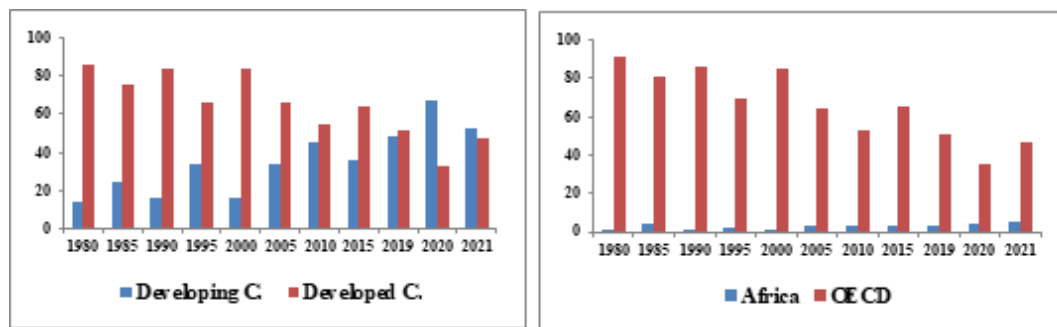


Fig. (1). FDI flows (% of world flows).

FDI from the United States; the Pacific riparian countries tend to receive more FDI from the United States and Japan than from other OECD countries.

Some studies estimate that the unequal distribution of FDI is a source of the divergence of growth trajectories; FDI is considered a catalyst for development. FDI is the source of positive sectoral externalities and the diffusion of knowledge from the multinational enterprise to workers in domestic enterprises in the same sector (Caves, 1974). Findlay (1978), taking into account spillover effects, shows that FDI promotes technological progress in the host country. FDI contributes to stimulate technology diffusion and capital accumulation (Kurul, 2017; De Mello, 1999 and Borensztein et al., 1998) and to reduce the savings-investment gap characterizing developing economies (Sabir and Khan, 2018 and Pegkasn, 2015).

FDI is supposed to be an important source for economic modernization, technology transfer, productivity improvement, growth, and poverty reduction (Chenaf-Nicot and Rougier, 2016; Aurangzeb and Stegnos, 2014; OECD, 2002 and Lipsey 2001). Sabir et al. (2019) estimate that many developing countries in various regions of the world have benefited since 1990 from technology and knowledge, capital accumulation, productivity improvement, and growth due to FDI inflows.

Promoting the FDI inflows is, therefore, a strategic objective to encourage development. Countries should aim to put in place factors that incite FDI inflows. The economic literature lists several determinants of FDI attraction. Some works have focused on the importance of natural resources endowment and the availability of factors of production; the OECD (2002) estimates that these factors explain a large part of the FDI inflows oriented to Africa (especially in the oil industry). Asiedu (2006), Goswami and Haider (2004), and Globerman and Shapiro (2002) focus on market size to exploit economies of scale. Dunning (2001) identifies the availability of natural resources, the quality and price of inputs, and infrastructure that facilitate production and promote the profitability of investment. Fedderke and Romm (2006) focus on government policies and the quality of economic and political institutions.

Some studies have discussed the relationship between institutional quality and FDI; various arguments are presented without reaching a clear conclusion. The relationship between institutions and FDI is positive; good institutions contribute to reduce risks and costs and promote transparency

and political stability (Saha et al., 2022; Saad, 2021; Polycheni and Theodore, 2020; Sabir and Qureshi, 2020 and Hea-Jung, 2018). The relationship is, rather, negative; a corrupt environment helps to reduce the burden of bureaucracy and provide fast and efficient public services (Swaleheen and Stansel, 2007 and Méon and Sekkat, 2005) and strict enforcement of regulations acts as a tax limiting FDI inflows (Saha et al., 2022). Other works find that institutions have no significant effect on FDI (Asiedu, 2002; Harms and Ursprung, 2002 and Noorbakhsh et al., 2001).

The purpose of this paper is to examine the relationship between institutional quality and FDI. The econometric specification adopted is the ARDL, applied for a sample of 140 countries over the period 1996-2021. For the whole sample and the two sub-samples of developed and developing countries, we propose to identify short-run and long-run effects. Section two is a literature review. Section three presents the data and descriptive statistics. Section four discusses econometric methodology. Section five presents the results and interpretations. Section six is a conclusion.

2. LITERATURE REVIEW

Institutions are defined by the rules of the game in a society or, more formally, the humanly devised constraints that shape interactions; they structure the motivations that promote exchanges between people, in political, social and economic domains (North, 1990). Institutions consist of both informal constraints (taboos, customs and traditions), and formal rules (constitutions, laws and property rights).

North (1991 and 1990) suggests that good institutions stimulate economic activity by reducing uncertainty and transaction and production costs. Bad institutions lead to spending more time and resources to obtain the necessary authorizations or to access public services. In this sense, North (1991) considers that if property rights are poorly protected and the enforcement of contracts is difficult, the risk premium would be high and economic activity would be discouraged.

Some authors share North's (1991 and 1990) conclusions. They show that the divergence in growth paths across economies is explained, in part, by differences in their institutional qualities (Acemoglu and Robinson, 2012; Acemoglu et al., 2006 and North and Thomas, 1973). Krueger (1974) considers that in the presence of bad institutions, the legal system does not function efficiently; in this case, the regulatory burden in the hands of bureaucrats acts as a rent-seeking device through paperwork and other harassment tools; insti-

tutional inefficiency is self-perpetuating and results in a welfare loss due to bad incentives: agents are incentivized to seek rents than to produce. In contrast, good institutions lead to a reduction in information asymmetry, transaction costs and risk; these are the necessary conditions for a favorable investment and growth environment (Ho and Michaely, 1988; Cohen et al., 1983 and Williamson, 1981).

Continuing with these analyses, part of the economic literature has aimed to study the relationship between institutions and FDI. Overall, these studies have shown that, since the 1990s, FDI has been strongly influenced by institutions (Sabir and Qureshi, 2020; Paul and Jadhav, 2019; Asamoah et al., 2016; Burger et al., 2016; Masron and Nor, 2013; Walsh and Yu, 2010; Gani, 2007 and Bevan et al., 2004). Institutional quality is a central factor that investors place at the forefront when deciding which country to invest in (Bevan et al., 2004 and Dunning, 1998). Many developing countries are, thus, incentivized to conduct the necessary institutional reforms to promote FDI inflows (Ali et al., 2010).

Globerman and Shapiro (2002) find that the positive effect of good institutional quality on FDI is greater than that of the human development index and the infrastructure index. Bureaucracy, administrative barriers, corruption, and political instability are considered factors limiting FDI (Gastanaga et al., 1998); Wei (2000) estimates that these factors act as an additional cost to investors.

Asiedu (2005) considers that small countries or those lacking natural resources can stimulate their FDI inflows by improving their institutions. Good institutional quality can be a more important comparative advantage than endowment of material resources (Saad, 2021 and Hea-Jung, 2018). In this sense, despite the abundance of natural resources and labor, political instability and high taxation have severely limited the African region of FDI inflows (Abere and Akinbobola, 2020; Blonigen and Piger, 2014 and OECD, 2002).

It should be noted that the relationship between institutions and FDI appears to be independent of the characteristics of the sample studied (size, level of development, degree of heterogeneity, and geographic location). Indeed, the relationship is positive for a large panel of countries (Carril-Caccia et al., 2019; Buchanan et al. 2012 and Globerman and Shapiro, 2002), for developing countries (World Bank, 2018; Kurul and Yalta, 2017 and Lucke and Eichler, 2016), for developed countries (Sabir et al., 2019), for Central Asian countries and the ASEAN region (Ullah and Khan, 2017), for Asia and Latin America (Gani, 2007), and for the MENAT¹ region (Polyxeni and Theodore, 2020 and Okafor et al., 2017). In these works, the political regime and institutional characteristics (political stability, government intervention, bureaucratic procedures, and property rights) are estimated to be important determinants of FDI.

Tun et al. (2012), for a panel of 77 countries over the period 1981-2005, show that good institutional quality reduces uncertainty and the cost of business and, therefore, promotes FDI. This conclusion is shared by Buchanan et al. (2012) who find, for 164 countries over the period 1996-2006, that

poor institutions would have increased costs and discouraged FDI.

Sabir et al. (2019), for a sample of 59 developing and 89 developed countries studied over the period 1996-2016, estimate different effects for various indicators of institutional quality on FDI. Overall, they show that good institutional quality is necessary for FDI attraction; the magnitude of institutional effects is larger for developed countries than for developing countries.

Polyxeni and Theodore (2020) consider that the increase in FDI registered by the MENAT region between 2002 and 2006 is attributed, in part, to the political reforms adopted. This finding corroborates the results of Méon and Sekkat (2004), who suggest that improvements in institutional quality favored FDI inflows to the MENAT region during the period 1990-1999. Polyxeni and Theodore (2020) note that, since 2011, the MENAT region has registered lower FDI attractiveness than countries in Europe and Central Asia; the weak performance of the MENAT region is explained by conflicts in some countries in the region (Syria, Libya, and Yemen, in particular) and by significant corruption that was beginning to negatively affect the business environment (Okafor et al., 2017).

Bouchoucha and Benammou (2020) and Kurul and Yalta (2017) show that low corruption and high government effectiveness have helped foster FDI inflows in Asian and African countries; government effectiveness reflects perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

Saha et al. (2022) for a panel of 28 lower-middle-income countries in six different regions over the period 2002-2018 show a positive effect of control of corruption and regulatory quality on FDI; regulatory quality reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. The estimated effect magnitude of regulatory quality is larger than that of the control of corruption. The estimated positive effect confirms that found by Sabir et al. (2019); the positive effect is explained by the fact that an improvement in these indicators (control of corruption, in particular) leads to lower production costs. The results also estimate that the voice and accountability indicator contributes to promoting FDI only if GDP per capita exceeds a threshold level equal to 7.76. The results of Saha et al. (2022) find no significant effect of government effectiveness and political stability on FDI.

Busse and Hefeker (2007), for a sample of developing countries over the period 1984-2003, show that political stability is a significant determinant of FDI. The positive relationship between political stability and FDI is explained by Fazio and Talamo (2008) by assuming that FDI, by its nature as a long-term investment, cannot be stimulated in a context of menace and violence. Political stability, by helping to reduce violence and crime and improve productivity, is a necessary condition for continued investment activity in the host country (OECD, 2002); foreign investors prefer to invest in coun-

¹ MENA region plus Turkey.

tries where the government is more stable and policies are more transparent (Brada et al., 2006 and Alesina et al., 1996).

Siddharthan (2009) considers the perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media (measured by the voice and accountability indicator) to be necessary for the foreign investor to secure his rights; these freedoms are important to ensure a favorable climate for attracting FDI. Mengistu and Adhikary (2011), Ali et al. (2010), and Hoff and Stiglitz (2005) find that perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence (measured by the rule of law indicator) promote FDI by helping to protect future investment returns.

For regulatory quality, many studies suggest that it is necessary to encourage FDI inflows. Various arguments are presented; high regulatory quality avoids policies that control prices and restrict capital inflows (Fazio and Talamo, 2008), promotes transparency, ensures good shareholder protection and reduces information asymmetry (Contractor et al., 2020).

The positive effects of government efficiency on FDI are justified by the fact that it helps to reduce bureaucracy and save time for the establishment of FDI in the host country. Chen and Jiang (2022) consider that high government efficiency ensures that the host country can provide complete and efficient public services to support the development of foreign firms. An efficient government means that foreign capital faces fewer restrictions and political pressures in the host country and its returns will be more sustainable (Peres et al., 2018).

Focusing on the role of corruption, Dunning (1993) argues that it acts as a tax; corruption not only reduces FDI inflows, but also contributes to changing their types. Some bureaucratic regulations are the result of widespread corruption and are not intended to correct market distortions or protect investors (Alam et al., 2006). Widespread corruption promotes uncertainty and creates ambiguity about the predictability of returns (Mengistu and Adhikary, 2011 and Sabri, 2008). Investors are discouraged to invest in countries where institutions encourage corruption, nepotism, and bureaucracy, because these factors increase the cost of business (Bouchoucha and Benammou, 2020; Kurul and Yalta, 2017; Masron and Nor, 2013; Buchanan et al., 2012 and Mengistu and Adhikary, 2011). In this sense, Hakimi and Hamdi (2017) emphasize the importance of control of corruption in attracting FDI; their study covered 15 economies in the MENAT region during the period 1985-2013 and concluded that corruption is a factor discouraging FDI inflows. The authors suggest that implementing anti-corruption measures could attract more foreign investors. These findings are consistent with the results retained by Helmy (2013), for 21 MENAT economies studied during the period 2003-2009, retaining corruption as the main constraint to FDI.

It should be noted that Ali et al. (2010) consider that institutional quality cannot be identified by a single indicator; to study the impact of institutional quality on FDI, it is im-

portant to refer to a set of indicators reflecting various aspects of institutions. Sabir et al. (2019), Sayari (2019), and Kurul (2017) constructed a composite indicator (using PCA) that captures the six governance indicators; the authors show a significantly positive effect of the composite indicator on FDI.

Ali et al. (2010), for a panel of 107 countries over the period 1981-2005, estimate that the effect of institutional quality on FDI is greater than that of infrastructure quality. The authors note that institutions do not have a significant impact on FDI oriented towards the primary sector; on the contrary, the impact is significantly positive on FDI oriented towards the manufacturing and services sectors. The results obtained by Ali et al. (2010) conclude that if the country aims to attract FDI to the primary sector, it must promote the quality of infrastructure and reduce taxes; the effects of these factors on FDI oriented towards the primary sector are greater than institutions; however, the latter are crucial for attracting FDI to the manufacturing and services sectors.

The main results obtained by Ali et al. (2010), concerning the relationship between institutions and the sectoral distribution of FDI, are shared by many studies (Ramasamy and Yeung, 2010; Busse, 2004 and Spar, 1999). Schulz (2009), for 44 developing countries during 1993-2003, finds that institutions have different effects on sectoral FDI: the effect is significantly positive on FDI oriented to manufacturing and services; it is insignificant for FDI oriented to the primary sector. Ahmad et al. (2018) and Shah et al. (2016), examining the short-run and long-run effects of institutional quality on FDI in Pakistan, show that in the long run institutional quality is a significant determinant of FDI inflows oriented towards the manufacturing and services sector; no effect is detected for FDI oriented towards the primary sector. A similar conclusion is reached by Saikia (2021) by showing that FDI oriented towards manufacturing and services is attracted more by countries with good institutional quality.

Asiedu (2002), conclude that FDI inflows oriented toward the primary sector (mainly the oil sector) are independent of political instability; the author explains this because the anticipated returns of investment in the oil sector greatly exceed the anticipated risks of political instability. A similar conclusion is reached by Paul and Jadhav (2019), Doytch (2021), Jiang and Martek (2021), Blanco et al. (2019) and Li et al. (2017).

However, it should be noted that there is no consensus on the effect of institutions on FDI; this issue is widely discussed. Some consider that the effect of institutions on FDI are dependent on specific characteristics of the economy; others assume that the sign and magnitude of this effect is largely dependent on the sample, the nature of the data and the econometric specification (Chakrabarti, 2001). In this sense, Barassi and Ying (2012) estimate a nonlinear relationship between corruption and FDI; they conclude that a certain level of corruption favors FDI inflows; this result is explained by the fact that corruption contributes to accelerate bureaucratic procedures, which constitutes an implicit subvention for firms. Chen and Jiang (2022), for a panel of high-income countries over the period 2005-2020, find that the effects of institutions on FDI are strongly favored by trade openness and industrial structure.

Another category of studies concludes that institutions have no effect on FDI (Asongu et al., 2018; Asiedu, 2002; Harms and Ursprung, 2002; Noorbakhsh et al., 2001 and June and Singh, 1996). Ali et al. (2010) explain the absence of positive and significant effects of institutional quality on FDI by the fact that some of these studies refer to small sample sizes. The explanation advanced by Ali et al. (2010) shares the conclusion reached by Campos and Kinoshita (2003); the latter point out that the effect of a particular variable may be underestimated in a small sample if that variable has limited variation. Since institutional indicators show limited variation over time, then their effects can only be identified in a large panel size. Peres et al. (2018) find that the absence of institutional effects on FDI inflows is verified, generally, for developing countries; this result is explained because these countries are characterized, generally, by poor institutional structure.

Other works consider that poor institutional quality can promotes FDI inflows; thus, a corrupt environment can reduce bureaucracy and provide fast and efficient public services (Swaleheen and Stansel, 2007 and Méon and Sekkat, 2005). High corruption attracts foreign investors who prefer corrupt regimes (Adam and Filippaios, 2007). Saha et al. (2022) find that when regulations are strictly enforced, FDI inflows decrease; strict enforcement of regulations is considered a tax. In this sense, foreign investors prefer developing countries because legislation is not strict, leading to a higher profit margin (Staats and Biglaiser, 2012).

3. DATA AND DESCRIPTIVE STATISTICS

The aim is to analyze the short-run and long-run effects of institutional quality on FDI, for a panel of 140 countries² over the period 1996-2021. We propose to identify the short-run/long-run effects for developing and developed countries. We note that institutional quality is measured by the six governance indicators adopted by the World Bank. Other control variables are also included; the Mobile variable is introduced as an indicator of infrastructure quality (Sabir et al., 2019). Data definitions and sources are presented in the Table 1.

Table 1. Definitions and Sources of Data.

Variable	Definition	Source
FDI	Foreign Direct Investment, net inflows (% of GDP).	WDI
Lgdp	GDP per capita, in logarithm.	
G	General government final consumption expenditure (% of GDP).	
Inf	Inflation, GDP deflator (annual %).	
Trade	Sum of exports and imports of goods and services (% of GDP).	
Mobile	Mobile cellular subscriptions (per 100 people).	
Institutional Quality (IQ)		

² 83 developed countries and 57 developing countries. For the list of countries, see table A1-Appendix.

CC	Control of Corruption.	WGI
GE	Government Effectiveness.	
PS	Political Stability and absence of violence.	
RQ	Regulatory Quality.	
RL	Rule of Law.	
VA	Voice and Accountability.	

The descriptive statistics (Table A2-Appendix) shows significant volatility of inflation, trade and Mobile for all samples. An unequal distribution of FDI is observed between developed and developing countries; FDI inflows for developing countries, as a percentage of GDP, is less than 50% of that for developed countries. A remarkable difference is observed between these two groups in relation to indicators of institutional quality. Indeed, the six indicators used indicate that developing countries have a significant deficit in institutional quality. These observations suggest that good institutional quality may be necessary to attract FDI.

4. ECONOMETRIC SPECIFICATION

The model to be estimated is as follows:

$$FDI_{it} = f(Lgdp_{it}, G_{it}, \overset{Mobile_{it}}{IQ_{it}}, Trade_{it}, Inf_{it}) \quad (1)$$

Assuming linearity of the function, the equation (1) has the following structure:

$$FDI_{it} = \alpha_0 + \alpha_1 Lgdp_{it} + \alpha_2 G_{it} + \alpha_3 Mobile_{it} + \alpha_4 IQ_{it} + \alpha_5 Trade_{it} + \alpha_6 Inf_{it} + \varepsilon_{it} \quad (2)$$

In equation (2), the index "t" denotes the year of observation and "i" denotes the country. We note that the entire sample of 140 countries is decomposed in two subgroups according to the World Bank classification: 57 developing countries and 83 developed countries (table A1-Appendix).

For the three samples (entire, developing and developed countries) the covariance matrix shows the absence of any correlation between the independent variables, except the correlation between institutional quality variables (table A3-appendix).

In our empirical study, we refer to the ARDL approach in panel data. This approach is proposed by Pesaran et al. (1996) and modified by Pesaran et al. (2001). It allows us to identify the short-run and the long-run effects, even if the variables have not the same order of integration. Thus, the essential condition is that the variables are stationary in levels, i.e. I(0), and/or that they are stationary in first differences, i.e. I(1). Then, the ARDL approach allows removing the problems related to omit variables and autocorrelation problems between variables (Bardi and Hfaiedh, 2021).

Before estimating our model, it is useful to test the stationarity of the variables retained as necessary conditions. Thus, all variables have upward or downward trends and exhibit breaks. To test the stationarity of the series, we used various unit root tests. In particular, we used the tests of Levin et al. (2002), Im et al. (2003), ADF and PP. Using different types of tests can be advantageous to avoid the power loss noted

when each cross-sectional variant is close to the unit root. Since the ARDL model does not apply to series exceeding an integration order of 2 (I(2)), we apply unit root tests to ensure that the series are I(0), I(1) or I(0) and I(1) (Pesaran et al., 1996; Pesaran et al., 2001 and Bardi and Hfaiedh, 2021).

The table A4-Appendix list the results of the unit root tests. Examination of stationarity shows that all variables, except Mobile, are stationary in level (integrated of order zero I(0)). These variables admit a unit root from which they present a stability of the statistical distribution. Economically it can be said that they do not present sudden changes throughout the study period. On the other hand, the variable Mobile is stationary in first difference (integrated of order one I(1)). In summary, we note that our variables are integrated I(0) and I(1).

To apply the ARDL model, it is necessary that the variables are cointegrated. Table A5-Appendix presents the results of the cointegration test of Pedroni (2004). The Pedroni test shows that the data contain significant explanatory power, in addition we have four statistics, out of seven, indicating the

rejection of the null hypothesis of non-cointegration. In this set of four statistics, we find the Panel-ADF and the Statistics group of the ADF, considered as the most reliable statistics by Pedroni (2004) and that co-integration increases the predictive power of the data. In our results, the null hypothesis of no cointegration is rejected at the 1% level by the ADF-panel statistic and the group-ADF statistic. Cointegration test of Pedroni (2004) conclude that there is a long-term relationship between the variables retained in our analysis.

5. RESULTS AND INTERPRETATIONS

In this section we present the estimation results of the ARDL model applied to the entire sample, as well as the sub-samples of developed and developing countries. The estimation results mainly present the short-run and long-run effects of six institutional quality indicators retained by the World Bank. For all estimations we referred to the Akaike information criterion to select the optimal ARDL model. The estimation results are reported in Table 2.

Table 2. Estimation results of ARDL Model.

	Whole		Developed		Developing			Whole		Developed		Developing	
	Long Run Coefficients							Long Run Coefficients					
	Coef	Pro	Coef	Pro	Coef	Pro		Coef	Pro	Coef	Pro	Coef	Pro
G	-0.095	0.000	-0.142	0.000	-0.059	0.001	G	-0.069	0.000	-0.157	0.000	-0.009	0.575
Lgdp	0.221	0.298	0.351	0.334	0.550	0.011	Lgdp	0.521	0.036	1.127	0.036	1.235	0.000
Mobile	0.007	0.000	0.003	0.060	0.004	0.001	Mobile	0.003	0.005	0.009	0.000	-0.002	0.137
Inf	-0.006	0.011	-0.003	0.460	-0.004	0.029	Inf	-0.002	0.089	0.069	0.000	-0.002	0.189
Trade	0.035	0.000	0.009	0.000	0.030	0.000	Trade	0.033	0.000	0.009	0.003	0.036	0.000
CC	0.689	0.000	-0.008	0.958	0.866	0.000	PS	0.398	0.000	0.353	0.021	0.426	0.000
	Short run coefficients							Short run coefficients					
	Coef	Pro	Coef	Pro	Coef	Pro		Coef	Pro	Coef	Pro	Coef	Pro
D(FDI(-1))	0.058	0.120	0.195	0.006	0.115	0.061	D(FDI(-1))	0.004	0.895	0.037	0.389	0.044	0.499
D(FDI(-2))	0.049	0.094	0.105	0.055	0.133	0.001	D(FDI(-2))	-	-	0.031	0.439	0.110	0.005
D(FDI(-3))	-	-	0.117	0.001	-	-	D(FDI(-3))	-	-	-	-	-	-
D(G)	-1.667	0.073	-2.603	0.073	-0.036	0.755	D(G)	-1.135	0.085	-2.700	0.074	0.056	0.617
D(Lgdp)	-30.66	0.145	-41.11	0.157	6.878	0.073	D(Lgdp)	-13.71	0.370	-63.39	0.079	9.220	0.022
D(Mobile)	-0.015	0.773	0.006	0.949	0.006	0.773	D(Mobile)	-0.012	0.788	-0.014	0.843	-0.017	0.498
D(Inf)	-0.046	0.712	0.039	0.894	0.010	0.616	D(Inf)	0.005	0.967	-0.127	0.605	0.020	0.221
D(Trade)	-0.021	0.738	-0.050	0.643	0.040	0.043	D(Trade)	-0.008	0.889	-0.043	0.681	0.050	0.033

D(CC)	-	0.834	0.159	0.971	-	0.286	D(PS)	0.408	0.743	2.789	0.255	0.092	0.880
	0.472				2.880								
C	0.847	0.354	4.363	0.011	-	0.000	C	-	0.087	-	0.042	-	0.000
					3.710			1.544		3.147		9.495	
CointEQ01	-	0.000	-	0.000	-	0.000	CointEQ01	-	0.000	-	0.000	-	0.000
	0.730		0.915		0.761			0.663		0.715		0.669	
	Whole		Developed		Developing			Whole		Developed		Developing	
	Long run coefficients							Long run coefficients					
	Coef	Pro	Coef	Pro	Coef	Pro		Coef	Pro	Coef	Pro	Coef	Pro
G	-	0.000	-	0.000	-	0.000	G	-	0.000	-	0.000	-	0.000
	0.069		0.153		0.059			0.112		0.205		0.069	
Lgdp	1.117	0.000	-	0.183	1.254	0.000	Lgdp	0.467	0.021	0.321	0.407	0.744	0.001
			0.492										
Mobile	-	0.808	0.009	0.000	-	0.215	Mobile	0.005	0.000	0.005	0.000	0.003	0.014
	0.000				0.001								
Inf	-	0.007	-	0.051	-	0.011	Inf	-	0.008	-	0.597	-	0.019
	0.005		0.009		0.005			0.007		0.003		0.005	
Trade	0.025	0.000	0.053	0.000	0.027	0.000	Trade	0.036	0.000	0.012	0.000	0.036	0.000
RL	0.984	0.000	0.601	0.010	0.950	0.000	RQ	0.805	0.000	0.761	0.000	0.768	0.000
	Short run coefficients							Short run coefficients					
	Coef	Pro	Coef	Pro	Coef	Pro		Coef	Pro	Coef	Pro	Coef	Pro
D(FDI(-1))	0.048	0.206	0.069	0.259	0.077	0.219	D(FDI(-1))	0.048	0.199	0.112	0.073	0.076	0.251
D(FDI(-2))	0.061	0.030	0.050	0.321	0.111	0.004	D(FDI(-2))	0.051	0.083	0.059	0.279	0.123	0.003
D(FDI(-3))	-	-	0.071	0.029	-	-	D(FDI(-3))	-	-	0.075	0.053	-	-
D(G)	-	0.094	-	0.113	0.032	0.757	D(G)	-	0.064	-	0.089	-	0.965
	1.738		2.698					1.826		2.845		0.005	
D(Lgdp)	-	0.125	-	0.142	6.534	0.257	D(Lgdp)	-	0.067	-	0.068	6.926	0.109
	37.89		56.87					45.14		85.14			
D(Mobile)	-	0.476	0.026	0.737	-	0.904	D(Mobile)	-	0.856	0.029	0.759	-	0.478
	0.038				0.003			0.010				0.021	
D(Inf)	0.025	0.851	0.129	0.691	0.010	0.632	D(Inf)	0.139	0.189	0.102	0.554	0.014	0.416
D(Trade)	-	0.658	-	0.366	0.040	0.078	D(Trade)	-	0.728	-	0.545	0.053	0.027
	0.035		0.128					0.027		0.078			
D(RL)	1.328	0.766	4.865	0.526	-	0.367	D(RQ)	4.847	0.234	10.64	0.179	-	0.321
					1.757							1.230	
C	-	0.000	7.260	0.000	-	0.000	C	-	0.287	4.062	0.006	-	0.000
	6.029				9.081			0.973				5.415	
CointEQ01	-	0.000	-	0.000	-	0.000	CointEQ01	-	0.000	-	0.000	-	0.000
	0.734		0.825		0.714			0.727		0.849		0.726	
	Whole		Developed		Developing			Whole		Developed		Developing	
	Long run coefficients							Long run coefficients					
	Coef	Pro	Coef	Pro	Coef	Pro		Coef	Pro	Coef	Pro	Coef	Pro
G	-	0.000	-	0.000	-	0.195	G	-	0.000	-	0.000	-	0.012
	0.134		0.147		0.021			0.077		0.143		0.044	

Lgdp	0.310	0.095	-0.745	0.068	1.656	0.000	Lgdp	-0.576	0.019	-0.088	0.789	-0.947	0.001
Mobile	0.008	0.000	0.019	0.000	-0.001	0.372	Mobile	0.011	0.000	0.005	0.000	0.013	0.000
Inf	-0.010	0.001	0.024	0.001	-0.003	0.091	Inf	-0.008	0.007	-0.012	0.001	-0.006	0.014
Trade	0.047	0.000	0.020	0.000	0.040	0.000	Trade	0.039	0.000	0.011	0.000	0.039	0.000
VA	0.817	0.000	0.302	0.312	0.900	0.000	GE	0.833	0.000	-0.340	0.028	1.004	0.000
	Short run coefficients							Short run coefficients					
	Coef	Pro	Coef	Pro	Coef	Pro		Coef	Pro	Coef	Pro	Coef	Pro
D(FDI(-1))	0.039	0.306	0.025	0.571	0.084	0.232	D(FDI(-1))	0.044	0.316	0.175	0.014	0.094	0.279
D(FDI(-2))	0.035	0.222	0.013	0.742	0.088	0.039	D(FDI(-2))	0.059	0.061	0.105	0.074	0.127	0.011
D(FDI(-3))	-	-	-	-	-	-	D(FDI(-3))	-	-	0.100	0.010	-	-
D(G)	-1.794	0.057	-3.000	0.055	0.051	0.655	D(G)	-1.679	0.070	-2.729	0.061	0.131	0.251
D(Lgdp)	-43.59	0.069	-76.13	0.055	7.939	0.059	D(Lgdp)	-40.54	0.084	-64.71	0.061	6.896	0.236
D(Mobile)	-0.012	0.801	-0.000	0.996	-0.025	0.369	D(Mobile)	-0.034	0.509	-0.026	0.795	-0.036	0.234
D(Inf)	0.046	0.731	0.065	0.775	0.014	0.461	D(Inf)	-0.002	0.985	0.046	0.884	0.019	0.231
D(Trade)	-0.009	0.880	-0.039	0.687	0.046	0.036	D(Trade)	-0.013	0.854	-0.045	0.713	0.054	0.021
D(VA)	2.312	0.721	4.480	0.680	-0.661	0.588	D(GE)	0.278	0.930	-0.656	0.912	0.910	0.620
C	0.013	0.988	10.88	0.000	-14.03	0.000	C	6.704	0.000	8.303	0.000	8.700	0.000
CointEQ01	-0.713	0.000	-0.736	0.000	-0.732	0.000	CointEQ01	-0.707	0.000	-0.883	0.000	-0.733	0.000

We note that “CointEQ01” is the coefficient of the cointegration equation; it is the speed of adjustment. In all estimations, “CointEQ01” is significant at 1% level; this result confirms that the variables are integrated; the independent variables jointly influence FDI in the long run. The magnitude of the coefficient (between -1 and 2) indicates that equilibrium is reached with decreasing fluctuations.

For the control variables, the main results confirm, on the whole, the conclusions adopted by the literature. Indeed, general government final consumption expenditure and inflation would have discouraged FDI inflows; on the contrary, Trade and Mobile (indicator of infrastructure quality) would have favored FDI attractiveness.

In the long-run, the results show that a better institutional quality improves significantly the attractiveness of FDI, whether for entire sample, developed and developing countries. For the whole sample, the long-run effect of institutional quality on FDI inflows is between 0,398 (for Political Stability) and 0,984 (for Rule of Law). The impact of institu-

tional quality on FDI is greater than that of trade and infrastructure quality. This result confirm that obtained by Ali et al. (2010) and Globerman and Shapiro (2002) estimating an effect of institutional quality on FDI greater than infrastructure quality.

We note that the sensitivity of FDI inflows for all indicators of the institutional quality, in the long-run, is more important for developing countries than it for developed countries; this result can be explained by the fact that developing countries are characterized by a structural deficit in terms of institutions; thus the marginal effect of an improvement in institutional quality on FDI would have been greater.

The indicators of institutional quality that are the greatest impact are Rule of Law and Regulatory Quality; their effects on FDI flows are, respectively, 0.601 and 0.761 for developed countries and 0.950 and 0.768 for developing countries; these results indicate that efforts to improve good governance are necessary to stimulate FDI inflows in the long-run; institutional reforms must favor, particularly, the ability of

the government to formulate and implement sound policies and regulations, confidence in the rules of society, respect of contract enforcement and property rights.

Overall, results confirm those of Bouchoucha and Benamou (2020), Contractor et al. (2020) and Sabir et al. (2019) that consider that transparency, good shareholder protection and low information asymmetry are necessary to attract FDI. Similarly Fazio and Talamo (2008) assume that the regulatory quality encourages FDI flows by avoiding policies aimed at controlling prices and restricting capital movements.

The short-run results estimate, for all samples and for all institutional quality indicators, a non-significant effect of institutional quality on FDI inflows. The non-significant effect on the long-run can be explained by the slow adjustment of individuals and society to institutional changes.

6. CONCLUSION AND RECOMMENDATIONS

Many studies propose that Foreign Direct Investment is necessary for growth; they consider it as an important factor for development. The FDI is a source of positive sectoral externalities; it contributes to stimulate technology diffusion and capital accumulation. The aim of many countries, mainly developing countries, is to encourage their attractiveness of FDI.

The purpose of this paper is to verify that institutional quality can be a necessary condition to encourage the FDI inflows. Referring to ARDL model, we proposed to identify short-run and long-run effects of institutional quality on FDI inflows for 140 developing and developed countries over the period 1996-2021.

APPENDIX

Table A1. List of Countries.

Developed Countries				Developing Countries		
Albania	Colombia	Iraq	Oman	Angola	Indonesia	Philippines
U. A. Emirates	Costa Rica	Iceland	Panama	Burundi	India	West Bank & Gaza
Argentina	Cyprus	Italy	Peru	Benin	Iran, Islamic Rep.	Rwanda
Antigua & Barb.	Germany	Jamaica	Poland	Burkina Faso	Kenya	Sudan
Australia	Denmark	Jordan	Portugal	Bangladesh	Kyrgyz Rep.	Senegal
Austria	Dominican Rep.	Japan	Paraguay	Bolivia	Cambodia	Sierra Leone
Azerbaijan	Ecuador	Kazakhstan	Romania	Bhutan	Lebanon	El Salvador
Belgium	Spain	Korea, Rep.	Russian Fed.	Cameroon	Sri Lanka	Eswatini
Bulgaria	Estonia	Lithuania	Saudi Arabia	Congo, Dem. Rep.	Morocco	Chad
Bahamas, The	Finland	Luxembourg	Singapore	Congo, Rep.	Madagascar	Togo
Bosnia & Herz.	Fiji	Latvia	Slovak Rep.	Comoros	Mali	Tajikistan
Belarus	France	Moldova	Slovenia	Algeria	Mongolia	Tunisia
Belize	Gabon	Mexico	Sweden	Egypt, Arab Rep.	Mozambique	Tanzania
Brazil	United King.	North Maced.	Seychelles	Ghana	Mauritania	Uganda
Barbados	Georgia	Malta	Thailand	Guinea	Niger	Ukraine

The main results show a significant and positive long-run effect of institutional quality on FDI attractiveness; this effect is more important than those of trade and infrastructure quality. The effect of institutional quality on FDI is greater for developing countries than for developed countries. This result is explained by the structural deficit in governance that characterizes developing countries. The results show, too, insignificant effects of institutional quality on FDI in the short-run, due to the slow adjustment of individuals and society to institutional changes.

On the whole, the results confirm those obtained by other authors (Saha et al., 2022; Saad, 2021; Polyxeni and Theodore, 2020; Sabir and Qureshi, 2020, Hea-Jung, 2018, Ali et al., 2010 and Globerman and Shapiro, 2002); the main conclusions propose that higher institutional quality contributes to reduce risks and costs, promote transparency and productivity and ensure political stability (Saha et al., 2022; Saad, 2021; Polyxeni and Theodore, 2020; Sabir and Qureshi, 2020 and Hea-Jung, 2018).

In the light of these results, it is recommended that good governance be encouraged to increase the attractiveness of FDI. Developing countries are invited to focus on the ability of the government to formulate and implement sound policies and regulations, confidence in the rules of society, respect of contract enforcement and property rights; these elements are more than necessary for greater FDI attractiveness. It is also important to recommend to developing countries aiming to attract FDI to invest in improving the quality of infrastructure and to reduce bureaucracy.

Brunei Daruss.	Greece	Mauritius	Turkmenistan	Gambia, The	Nigeria	Uzbekistan
Botswana	Guatemala	Malaysia	Turkiye	Guinea-Bissau	Nicaragua	Vietnam
Canada	Hong Kong	Namibia	Uruguay	Honduras	Nepal	Zambia
Switzerland	Croatia	Netherlands	United States	Haiti	Pakistan	Zimbabwe
Chile	Hungary	Norway	South Africa			
China	Ireland	New Zealand				

Developed Countries are High income and Upper-middle income ; Developing Countries are Low income and Lower-middle income

Table A2. Summary and Descriptive Statistics.

Whole Sample. 140 Countries. 3088 Observations												
	FDI	Lgdp	Mobile	Trade	G	Inf	CC	GE	PS	RQ	RL	VA
Mean	5.48	11.50	76.94	86.38	15.58	8.63	0.01	0.07	-0.07	0.11	0.00	0.00
Max	449.08	18.99	319.42	442.62	39.45	2630.12	2.45	2.42	1.75	2.25	2.12	1.80
Min	-117.42	5.50	0.00	0.026	0.91	-30.19	-1.64	-2.13	-2.50	-2.24	-1.91	-2.25
Std.Dev	18.19	2.37	49.88	55.58	5.25	55.10	1.04	0.99	0.94	0.94	1.00	0.96
Developed Countries. 83 Countries. 1852 Observations												
	FDI	Lgdp	Mobile	Trade	G	Inf	CC	GE	PS	RQ	RL	VA
Mean	6.90	11.19	92.16	99.18	17.21	5.74	0.52	0.59	0.36	0.62	0.49	0.43
Max	449.08	17.42	319.42	442.62	39.45	1014.01	2.45	2.42	1.75	2.25	2.12	1.80
Min	-117.42	6.44	0.00	0.026	2.44	-30.19	-1.60	-2.08	-2.50	-2.20	-1.83	-2.25
Std.Dev	22.99	2.15	47.74	64.09	4.85	25.40	1.01	0.89	0.78	0.82	0.95	0.90
Developing Countries. 57 Countries. 1236 Observations												
	FDI	Lgdp	Mobile	Trade	G	Inf	CC	GE	PS	RQ	RL	VA
Mean	3.35	11.97	54.14	67.20	13.13	12.98	-0.73	-0.70	-0.73	-0.66	-0.73	-0.65
Max	46.27	18.99	175.33	186.46	31.34	2630.12	1.66	0.79	1.28	0.40	0.65	0.59
Min	-37.17	5.50	0.00	0.75	0.91	-27.04	-1.64	-2.13	-2.50	-2.24	-1.91	-2.12
Std.Dev	5.22	2.60	44.01	30.84	4.86	81.18	0.48	0.49	0.77	0.46	0.48	0.58

Table A3. Correlation Matrix.

Whole Sample. 140 Countries												
	FDI	G	Lgdp	Inf	Trade	Mobile	CC	PS	VA	GE	RL	RQ
FDI	1.00											
G	0.02	1.00										
Lgdp	-0.04	-0.20	1.00									
Inf	-0.01	-0.09	-0.02	1.00								
Trade	0.30	0.09	-0.09	-0.03	1.00							
Mobile	0.09	0.22	0.00	-0.09	0.31	1.00						
CC	0.11	0.45	-0.07	-0.10	0.35	0.37	1.00					
PS	0.13	0.39	-0.08	-0.10	0.40	0.32	0.77	1.00				
VA	0.10	0.36	-0.06	-0.11	0.18	0.31	0.78	0.68	1.00			

GE	0.12	0.42	-0.06	-0.11	0.37	0.42	0.93	0.75	0.78	1.00		
RL	0.13	0.44	-0.05	-0.11	0.35	0.39	0.95	0.78	0.82	0.95	1.00	
RQ	0.14	0.40	-0.08	-0.12	0.38	0.43	0.89	0.73	0.82	0.93	0.93	1.00
Developed Countries. 83 Countries												
	FDI	G	Lgdp	Inf	Trade	Mobile	CC	PS	VA	GE	RL	RQ
FDI	1.00											
G	-0.01	1.00										
Lgdp	-0.05	-0.06	1.00									
Inf	-0.01	-0.08	-0.05	1.00								
Trade	0.28	-0.06	-0.07	-0.01	1.00							
Mobile	0.06	0.09	0.10	-0.13	0.26	1.00						
CC	0.08	0.35	0.06	-0.13	0.25	0.23	1.00					
PS	0.11	0.30	-0.02	-0.08	0.32	0.17	0.76	1.00				
VA	0.07	0.29	0.08	-0.14	0.04	0.11	0.73	0.62	1.00			
GE	0.09	0.29	0.06	-0.15	0.27	0.27	0.93	0.73	0.72	1.00		
RL	0.11	0.36	0.07	-0.16	0.26	0.25	0.94	0.78	0.77	0.95	1.00	
RQ	0.10	0.26	0.08	-0.17	0.29	0.27	0.88	0.68	0.76	0.92	0.93	1.00
Developing Countries. 57 Countries												
	FDI	G	Lgdp	Inf	Trade	Mobile	CC	PS	VA	GE	RL	RQ
FDI	1.00											
G	0.03	1.00										
Lgdp	0.03	-0.24	1.00									
Inf	-0.02	-0.08	-0.03	1.00								
Trade	0.37	0.17	-0.02	-0.03	1.00							
Mobile	0.08	0.10	0.02	-0.05	0.16	1.00						
CC	-0.05	0.26	-0.03	-0.09	0.08	0.11	1.00					
PS	0.12	0.10	0.05	-0.11	0.30	0.10	0.49	1.00				
VA	0.03	0.00	-0.03	-0.10	-0.03	0.14	0.41	0.36	1.00			
GE	-0.01	0.14	0.04	-0.11	0.14	0.22	0.71	0.39	0.42	1.00		
RL	-0.02	0.14	0.01	-0.12	0.03	0.15	0.80	0.48	0.56	0.78	1.00	
RQ	0.08	0.11	-0.05	-0.14	0.15	0.19	0.54	0.35	0.57	0.69	0.70	1.00

Table A4. Unit Root Test.

		Level											
		FDI	G	Lgdp	Inf	Trade	Mobile	GE	RQ	RL	PS	VA	CC
Levin, Lin & Chu t*	Stat.	-16.27	-4.82	-9.83	-95.92	-9.96	-3.25	-5.79	-7.29	-6.87	-9.81	-8.69	-5.21
	Prob	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Im, Pesaran and Shin W-stat	Stat.	-19.03	-7.07	-5.13	-44.26	-9.08	1.75	-4.99	-6.55	-5.55	-9.19	-8.99	-4.67
	Prob	0.00	0.00	0.00	0.00	0.00	0.96	0.00	0.00	0.00	0.00	0.00	0.00

ADF - Fisher Chi-square	Stat.	920.52	478.78	566.77	2295.10	541.31	314.25	439.73	453.78	440.69	537.00	599.98	410.46
	Prob	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00
PP - Fisher Chi-square	Stat.	944.32	455.59	856.73	3481.14	495.76	1359.10	415.71	452.14	447.59	521.56	516.59	400.49
	Prob	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		First Difference											
		FDI	G	Lgdp	Inf	Trade	Mobile	GE	RQ	RL	PS	VA	CC
Levin, Lin & Chu t*	Stat.						-19.14						
	Prob						0.00						
Im, Pesaran and Shin W-stat	Stat.						-14.59						
	Prob						0.00						
ADF - Fisher Chi-square	Stat.						724.55						
	Prob						0.00						
PP - Fisher Chi-square	Stat.						771.30						
	Prob						0.00						

Table A5. Pedroni Cointegration Tests.

	Series: FDI G Lgdp Mobile Inf Trade CC							Series: FDI G Lgdp Mobile Inf Trade PS						
	Whole		Developed		Developing			Whole		Developed		Developing		
	Common AR Coef. (within-dimension)							Common AR Coef. (within-dimension)						
	Stat	Pro	Stat	Pro	Stat	Pro		Stat	Pro	Stat	Pro	Stat	Pro	
Panel v-Stat	-4.19	1.00	-3.19	0.99	-2.71	0.99	Panel v-Stat	-3.89	1.00	1.58	0.05	-4.05	1.00	
Panel rho-Stat	8.00	1.00	6.42	1.00	5.26	1.00	Panel rho-Stat	8.69	1.00	4.95	1.00	2.12	0.98	
Panel PP-Stat	-4.65	0.00	-2.10	0.01	-3.64	0.00	Panel PP-Stat	-4.04	0.00	-6.40	0.00	-	11.28	0.00
Panel ADF-Stat	-6.44	0.00	-3.63	0.00	-4.74	0.00	Panel ADF-Stat	-8.88	0.00	-9.89	0.00	-	10.52	0.00
	Individual AR Coef. (between-dimension)							Individual AR Coef. (between-dimension)						
	Stat	Pro	Stat	Pro	Stat	Pro		Stat	Pro	Stat	Pro	Stat	Pro	
Group rho-Stat	12.37	1.00	9.34	1.00	8.21	1.00	Group rho-Stat	9.43	1.00	7.28	1.00	5.38	1.00	
Group PP-Stat	-7.75	0.00	-4.97	0.00	-7.16	0.00	Group PP-Stat	-	0.00	-	0.00	-	21.14	0.00
Group ADF-Stat	-8.01	0.00	-5.58	0.00	-5.04	0.00	Group ADF-Stat	-	0.00	-	0.00	-	11.61	0.00
	Series: FDI G Lgdp Mobile Inf Trade RL							Series: FDI G Lgdp Mobile Inf Trade RQ						
	Whole		Developed		Developing			Whole		Developed		Developing		
	Common AR Coef. (within-dimension)							Common AR Coef. (within-dimension)						
	Stat	Pro	Stat	Pro	Stat	Pro		Stat	Pro	Stat	Pro	Stat	Pro	
Panel v-Stat	-4.93	1.00	0.66	0.25	-4.28	1.00	Panel v-Stat	-4.65	1.00	-1.23	0.89	-4.24	1.00	
Panel rho-Stat	6.33	1.00	5.22	1.00	2.85	0.99	Panel rho-Stat	8.54	1.00	4.99	1.00	2.45	0.99	
Panel PP-Stat	-9.33	0.00	-6.24	0.00	-	0.00	Panel PP-Stat	-4.11	0.00	-6.46	0.00	-	0.00	

					11.21								11.90	
Panel ADF-Stat	-19.07	0.00	-15.70	0.00	-7.50	0.00	Panel ADF-Stat	-8.08	0.00	-11.47	0.00	-9.50	0.00	
Individual AR Coef. (between-dimension)							Individual AR Coef. (between-dimension)							
	Stat	Pro	Stat	Pro	Stat	Pro		Stat	Pro	Stat	Pro	Stat	Pro	
Group rho-Stat	9.24	1.00	6.77	1.00	6.00	1.00	Group rho-Stat	9.39	1.00	6.84	1.00	5.79	1.00	
Group PP-Stat	-32.53	0.00	-22.87	0.00	-18.79	0.00	Group PP-Stat	-32.38	0.00	-26.20	0.00	-18.32	0.00	
Group ADF-Stat	-17.42	0.00	-14.99	0.00	-8.92	0.00	Group ADF-Stat	-17.68	0.00	-13.89	0.00	-10.94	0.00	
Series: FDI G Lgdp Mobile Inf Trade VA							Series: FDI G Lgdp Mobile Inf Trade GE							
	Whole		Developed		Developing			Whole		Developed		Developing		
Common AR Coef. (within-dimension)							Common AR Coef. (within-dimension)							
	Stat	Pro	Stat	Pro	Stat	Pro		Stat	Pro	Stat	Pro	Stat	Pro	
Panel v-Stat	-7.07	1.00	-3.72	0.99	-4.53	1.00	Panel v-Stat	-6.73	1.00	-3.66	0.99	-3.25	0.99	
Panel rho-Stat	10.56	1.00	5.43	1.00	3.18	0.99	Panel rho-Stat	6.60	1.00	4.09	1.00	2.53	0.99	
Panel PP-Stat	-2.33	0.00	-5.09	0.00	-10.45	0.00	Panel PP-Stat	-10.55	0.00	-8.92	0.00	-11.01	0.00	
Panel ADF-Stat	-9.07	0.00	-8.60	0.00	-9.89	0.00	Panel ADF-Stat	-21.19	0.00	-15.02	0.00	-10.27	0.00	
Individual AR Coef. (between-dimension)							Individual AR Coef. (between-dimension)							
	Stat	Pro	Stat	Pro	Stat	Pro		Stat	Pro	Stat	Pro	Stat	Pro	
Group rho-Stat	9.54	1.00	6.70	1.00	6.22	1.00	Group rho-Stat	9.11	1.00	6.83	1.00	5.55	1.00	
Group PP-Stat	-33.06	0.00	-24.45	0.00	-19.61	0.00	Group PP-Stat	-33.35	0.00	-23.90	0.00	-19.85	0.00	
Group ADF-Stat	-18.42	0.00	-14.61	0.00	-10.56	0.00	Group ADF-Stat	-18.03	0.00	-15.13	0.00	-10.38	0.00	

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