ECONOMIC AND SOCIAL DETERMINANTS OF HUMAN DEVELOPMENT: A NEW PERSPECTIVE

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ABSTRACT

The aim of this work is to determine the factors affecting development, not only the economic ones, which play a central role in economic literature, but also social. To do so we have used a wide sample of countries and have estimated a panel data for 171 of those that have been members of the United Nations (UN) for a period of 16 years (from 1995 to 2010 inclusive). The results obtained allow us to conclude that fight against poverty, provision of basic infraestructure, and investment in greater democracy, greater stability and less corruption, have, in all cases, a positive effect on human development in these countries.

KEY WORDS

Human development, institutionalism, poverty, inequality.

JEL CODES

I1, I2, I3, O1

1. INTRODUCTION

Development, especially in its economic dimension, has aroused a lot of interest amongst economists. Many theories have been put forward and the main schools of economic thought have all attempted to elaborate their own explanatory theories about development and underdevelopment. In this paper we attempt to answer the question: What are the factors, both economic and social, that lead to greater or less human development? To do so we have used a panel data for 171 countries belonging to the United Nations (UN) for a period of 16 years (from 1995 to 2010 inclusive) and we have jointly estimated a range of variables, including socio-economic, geographic, historic, demographic, infrastructural and institutional, in order to be able to evaluate the influence of each of them, being this one of the main novelties of this paper. Although there are many works which try to explain the effects of the variables used here on the economic and social development, there is no work which does it using all the variables. So, to our understanding, the novelty of this study lies in the use of a model which jointly aims to explain the impact of these variables on human development. In fact, unlike other empirical analyses made of the determining factors of economic growth, this study uses the human development index as dependent variable, so we do not only analyze the economic side of development, but principally the social one.

Amongst the results obtained we can single out, in first place, that fight against poverty, improvement of health level, promotion of R&D expenditure, provision of basic infrastructure and birth control are key elements to increase the countries human development. Likewise, the institutional analysis shows that more investment is needed to enhance democracy, increase political stability and reduce corruption.

This study is structured as follows: after this introduction, in section 2 the literature on empirical analysis of the determinants of economic development is revised. In section 3 a data table model is applied to 171 member countries of the United Nations to determine the different variables that affect human development and, finally, in section 4 we present our conclusions.

2. HUMAN DEVELOPMENT AND ITS CONDITIONING FACTORS

Although studies of economic growth have tended to focus on factors such as the investment in physical capital (neo-classical model based on the Solow model), population growth, human capital or research and development (endogenous development), recent studies (new geography and human development) emphasize the heterogeneity of growth and suggest that the effects of policies and institutions vary systematically between one country and another depending on historical, political and structural conditions (Rodrik, 2007; Hausman et al., 2008). Theoretical developments have been accompanied by a growing number of empirical studies. Initially research centered on the question of economic convergence or divergence, as this provided a test for the validity of the two main theories of growth (neo-classical and endogenous growth theories). Finally, the focus has shifted towards finding the factors that determine economic growth. Seminal studies in this field were made by Kormendi and Meguire (1985), Grier and Tullock (1989), and, above all, Barro (1991). This second wave of empirical studies has been aided, on the one hand, by the spectacular development of indicators, above all qualitative, that has led to larger and richer databases, and on the other, by more advanced statistical and econometric techniques

(above all cross sectional data and panels data) which allow the identification of the determinants of economic growth with greater precision and confidence.

Within this new current of studies, in the last few years a great part of research has placed an emphasis on studying the reasons for the differences between countries in terms of certain non-economic factors that play a crucial role in economic results (Arvanitidis et al., 2007). As such the new institutional economics has brought to the forefront the important function of institutions (Mathews, 1986; North, 1990; Shirley, 2005) and economic sociology has underlined the importance of socio-cultural factors (Granovetter, 1985; Knack and Keefer, 1997). Political science has centered its explanations on political factors (Lipset, 1959; Brunetti, 1997) whilst others emphasize the role played by geography and demography (Brander and Dowrick, 1994; Kalemli-Ozcan, 2002; Gallup et al., 1999). Within the new institutional economics the empirical evidence stressing institutional quality above growth has reached the following classification for different institutional dimensions: civil liberties, political rights, economic freedom, corruption, social capital, political instability and institutional infrastructure.

Economic freedom has been the institutional characteristic with the highest level of consensus amongst researchers, showing a significant and favourable impact on economic growth and individual income (De Vanssay and Spindler, 1994; Gwartney et al., 1999; Cole, 2003). Some also find that such impact is superior to that brought about by civil liberties and political rights (Hanke and Walters, 1997; Gwartney et al., 1999; Stroup, 2007), and depends on the level of development of a country (Islam, 1996).

On the other hand, the institutional aspects that have caused the greatest discrepancies have been those of democracy and political rights. As such we find works

that consider democracy as an obstruction to economic growth (Bhagwati, 1966; Huntington, 1968; Olson, 1982) whilst others find that democracy has a beneficial global effect on economic development (Scully, 1988; Gwartney et al., 1999; Rigobon and Rodrik, 2005) which also promotes a more equitable distribution of wealth (Hanke and Walters, 1997) and protects growing economies from negative external shocks (Rodrik, 1999). Acemoglu et al. (2014) point out that democracy has a positive effect on the GDP because encourages the investment, increase the schooling and reduce the social unrest. Others, nevertheless, find that said relationship is neither significant nor robust (Barro and Sala i Martin, 1995; De Haan and Siermann, 1995; Alesina et al., 1996; Ali and Crain, 2002). On the other hand, Sen (1999) states that democracy and economic growth are not linked and need not to be incompatible. In fact, if Sen's definition about development as freedom is adopted, that is, a suitably broad definition that incorporates not only economic indicators but also freedoms like human and political rights, social opportunities, transparency guarantees and protective security, then democracy must lead to development.

With regard to civil liberties it is generally observed that the estimated effect on growth is positive (Kormendi and Mequire, 1985; Scully, 1988; Barro 1996) if not always significant or robust (Barro and Sala i Martin, 1995; Ali and Crain, 2002).

As for the variables of corruption and political instability, the theoretical literature accentuates the pernicious effects that corruption has on economic growth as it discourages private investment (Mauro, 1995; Del Monte and Papagni, 2001), affects government spending by reducing the amount destined to education (Mauro, 1997), reduces the effectiveness of spending on public investments (Del Monte and Papagni, 2001), limits the development of small and medium sized businesses (Tanzi and Davoodi, 2002) and hinders innovation (Varsekelis, 2006). Political instability creates

uncertainty and threatens property rights, acting thus as a disincentive to investment (Rodrik, 1991; Alesina and Perotti, 1994; Pearson and Tabellini, 1994), and promotes unproductive activity such as rent seeking and corruption (Murphy et al., 1993; Schleifer and Vishny, 1993). Furthermore, it is associated with slower growth and lower levels of investment (Barro, 1991; Alesina et al., 1996; Easterly and Levine, 1997; Fosu, 2001). These results are especially relevant for developing countries, most of which have high levels of corruption and political instability.

With regard to social capital, analysis indicates it to have a positive relation with economic growth (Coleman, 1990; Putnam, 1993; Boix and Posner, 1996 or Kenworthy, 1997, amongst others).

Finally, those studies that have used aggregate institutional variables coincide in indicating that these have a significant impact on economic growth (Knack, 1991; Kaufmann et al., 1999; Easterly and Levine, 2003). Some authors suggest that this effect is produced both by a greater effectiveness in allocating resources (Olson et al., 2000) as well as through higher investment levels in physical capital (Faruk et al., 2006) and human capital (Hall and Jones 1999). Furthermore, such infrastructure protects growth from external negative shocks (Rodrik, 1999) and reduces growth volatility (IMF, 2003).

Apart from institutional factors there are diverse socio-cultural factors that can affect growth (Granato et al., 1996; Inglehart and Baker, 2000; Landes, 2000; Zak and Knack, 2001; Barro and McCleary, 2003). Amongst such factors, trust is the most important. Trust within the economy creates greater incentive for investment in innovation, the accumulation of physical capital and in human resources, all of which lead to economic growth (Knack and Keefer, 1997).

The relation between political factors and economic performance was first examined by Lipset (1959), provoking a number of further studies that concluded that the political environment played an important role in economic growth (Kormendi and Meguire, 1985; Scully, 1988; Grier and Tullock, 1989; Brunetti, 1997; Lensink et al., 1999; Lensink, 2001). Researchers often evaluate the political environment via variables such as political stability and the level of democracy. The basic argument is that political stability reduces uncertainty, promotes investment and, finally, leads to economic growth.

The important role played by geography in economic growth has been recognized for some time now. Nevertheless, it is not until recently that geographic factors have been modeled and formalized (Gallup et al., 1999). Researchers have used numerous variables, such as latitude, the proportion of land in proximity to the coast, average temperatures and rainfall, soil quality and the ecology of diseases (Hall and Jones, 1999; Easterly and Levine, 2003; Rodrik et al., 2004). There has been a series of recent empirical studies (Sachs and Warner, 1997; Bloom and Sachs, 1998; Masters and McMillan, 2001; Armstrong and Read, 2004) which affirm that natural resources, climate, topography and coastal proximity all have a direct impact on economic growth, affecting productivity, economic structure, transport costs and competitiveness. Nevertheless, others (for example, Easterly and Levine, 2003; Rodrik et al., 2004) arrive at the conclusion that geographical effects are dominated by the institutional framework.

The relation between demographic and economic growth has attracted a lot of interest in recent years. Amongst the most frequently used variables in these studies we find: demographic growth, population density, population composition and migration. These seem to play a predominant role in economic growth (Kormendi and Meguire, 1985; Kelley and Schmidt, 1995, 2000; Barro, 1997; Bloom and Williamson, 1998). It

is found that high population growth has a negative effect on economic growth, given that it influences investment, the behavior of savings and the quality of human capital. Population density, on the other hand, has a positive relation with economic growth as a result of greater specialization and diffusion of knowledge. Nevertheless, other studies find no significant results between economic growth and demographic tendencies (Grier and Tullock, 1989; Pritchett, 2001).

Once presented a summary of the empirical evidence on the impact of the different types of determinants (economic and non-economic) on growth, the need arises to indicate with clarity the contribution that each determinant has in a country's economic and social development, so that greater importance and attention can be given to those that have more significant weight. As such this present work aims to contribute to the study of the determining factors that influence human development, taking as its base the already established theoretical and empirical knowledge, and introducing institutional, geographic, historical, demographic and social factors alongside with purely economic ones.

3. MODEL

We use a linear model in this study in order to explain economic and social development via a heterogeneous set of determinants that includes economic, social, geographic and demographic variables, as well as others that reflect physical infrastructures and institutional variables. The sample used introduces novelties owing to its width of scope, given that we have analysed the cases of 171 countries, that is to

say, 89% of the member states of the United Nations: countries that offer an adequate vision of the differences existing with regard to economic and social development, dictatorial regimes, democratic, communist and capitalist systems, distinct historical processes, and geographic, demographic and social differences.

The time period under study has a limited availability of information, fundamentally for the institutional variables. Even so we have been able to generate a panel data model for a period of 16 years, from 1995 to 2010. In this sense, the use of a panel data to study institutional determinants is a novelty given that the majority of empirical studies use cross sectional data, as institutional indices are of relatively recent creation, and it has been impossible up to now to have a series of more than 10 years available for some of these figures. In this way we have been able to analyse 2,736 observations for each variable used. In addition, the use of panel data allows control over individual heterogeneity, providing data with a greater degree of variability and a higher level of co-linearity amongst the regressors. It also allows the study of dynamic adjustment processes, the identification and measurement of effects that are not detectable using pure cross-sectional data or time series, and the construction and comparison of models of behavior that are more complex than those possible with simpler data.

3.1 Data

The variables we have used are given below in table 1:

(TABLE 1)

3.2 The model

We have estimated a linear model, through the estimators of *Feasible Generalized Least Squares* (FGLS), *Panel Corrected Standard Errors* (PCSE) and *Robust Generalized Method of Moments* (RGMM) for dynamic panel data. At the time of choosing these estimators a series of tests was carried out in order to determine the most efficient, in accordance with the variables used.

In first place, we applied the *Lagrange Multiplier Test* for random effects. The value obtained for chi squared (χ^2) led to rejection of the null hypothesis, making the use of Ordinary Least Squares (OLS) for random effects model preferable to the pooled model (pooled OLS) – that is to say, the usual OLS estimator.

Secondly, we carried out a similar test in order to determine whether the estimator for fixed effects was also better than the pooled model. The *F* test for the significance of fixed effects showed that, effectively, it is preferable to use the fixed effects estimator.

In the third place, the Hausman test was used to decide between random and fixed effects. The value of "χ^2" obtained allows us to reject the null hypothesis, which is to say, the difference between the coefficients of random and fixed effects is clearly systemic, making it convenient to use fixed effects. This result confirms the thesis of Judson and Owen (1999), who argue that the estimation of fixed effects is the most common and appropriate option for economic growth models, because in these models the effects are often dependent on the explanatory variables and the sample of countries is not usually formed randomly.

In the fourth place, the Wooldridge test was carried out. This test demonstrated that the model has an autocorrelation problems. Finally, the modified Wald test proved that the model is heterocedastic. In order to solve this, the two best estimators are *Feasible Generalized Least Squares* (FGLS) and *Panel Corrected Standard Errors* (PCSE). Although, Beck and Katz (1995) demonstrated that the standard errors of PCSE are more precise than those of FGLS, as the authors showed that when N>T (as is the case where N = 171 and T = 16), and that FGLS should not be used, we decided however to use both models, in order to check the robustness of the model.

Also, regarding the possible existence of an endogeneity problem in the economic variables and the other social and demographic variables, we decided to use the GMM estimator (Arellano and Bond, 1991) for dynamic panel data in its robust version due to the presence of heterocedasticity. We used the lagged economic and social variables as instruments, and the exogenous variables. The comparison of the results obtained through this estimator with those obtained with FGLS and PCSE once again allows the analysis of the model´s robustness.

We have undertaken 3 different estimates depending on the used estimator (FGLS, PCSE and robust GMM) of the following model:

$$DEVELOPMENT_{it} = \alpha + \beta_1 INFLATION_{it} + \beta_2 OPENNESS_{it} + \beta_3 INVESTMENT_{it} + \beta_4 ODA_{it} + \beta_5 MORTALITY_{it} + \beta_6 R\&D_{it} + \beta_7 UNEMPLOYMENT_{it} + \beta_8 TOT_{it} + \gamma_1 GINI_{it} + \gamma_2 POVERTY_{it} + \gamma_3 POPULATION_{it} + \gamma_4 ISLAND_{it} + \gamma_5 COLONY_{it} + \gamma_6 WATER_{it} + \gamma_7 INTERNET_{it} + \theta_1 IEF_{it} + \theta_2 ICL_{it} + \theta_3 IPR_{it} + \theta_4 ICC_{it} + \theta_5 IPS_{it} + \eta_i + \delta_t + \mu_{it} \quad (1)$$

where,

DEVELOPMENT measures the level of development reached for the country in question using the Human Development Index; *INFLATION* is the rate of inflation; *OPENNESS* is the level of openness to trade, that is: imports plus exports measured against the GDP; *INVESTMENT* gives the percentage of gross investment against the GDP; *ODA* is official aid given to development; *MORTALITY* is the infant mortality rate; *R&D* is the level of spending on research and development; *UNEMPLOYMENT* is the rate of unemployment; *TOT* gives the terms of trade; *GINI* is the Gini index; *POVERTY* is the percentage of the population that lives with less than two dollars a day; *POPULATION* is the rate of demographic growth; *ISLAND* is a dummy variable that takes the value 1 if the country is an island. *COLONY* is a dummy variable that takes the value 1 if the country was a European colony during some part of the 20^{th} century; *WATER* measures the percentage of the population with improved access to water supply; *INTERNET* gives the proportion of internet users; *IEF* is the index of economic freedom; *ICL* is the index of civil liberties; *IPR* is the index of political rights; *ICC* is the index of control of corruption; *IPS* is the index of political stability; the variable η_i gives non observed individual effects specific to each country but constant in time and δ_t measures non observed temporal effects that are variable in time but identical to all countries.

3.3 Results

After estimating this model using FGLS, PCSE and robust GMM, verifying the global significance of the model used and, in the case of the GMM estimator, checking that the instruments are valid through Hansen Test, we obtained the following results, as set out in Table 2.

(Table 2)

The first conclusion that one finds on observing the mentioned table is that the results do not vary substantially, whichever estimator is used (FGLS, PCSE or robust GMM). This enables us to affirm that the model used is robust. In addition, the R^2 is close 0,90 so the quality of adjustment is very good, and Hansen Test gives a value greater than 0.05, so that the instruments used in the dynamic model are valid.

With regard to the values obtained, in most cases they were as expected a priori. Thus, in table 2, we see that the quality of health service, as approximated by the *infant mortality rate*, impacts negatively and significantly on development, which implies that improving health services and, consequently, lowering the infant mortality rate, would lead to greater economic and social development, as other authors claim (Bloom et al., 2004; Strittmatter and Sunde, 2013). Likewise, with regard to *spending, both public and private, in research and development (R&D)*, the result obtained is the expected one a priori, since the human development improves as the countries dedicate more resources to research. In this sense, Fagerberg et al. (2010) argue that developing countries should invest more in innovation due to its positive effects on the economic development.

As for the *rate of inflation,* its value is hardly significant, so we cannot conclude that those countries which register higher price growth rates have a lower social and economic development. In fact, there is much controversy about the question if the inflation has a positive or negative effect on economic growth. Thus, authors such as Barro (1990), and Bruno and Easterly (1998) assert that inflation negatively affects the economic growth. However, other authors such as Paul et al. (1997) don't find a causal

relationship between inflation and economic growth, and Faria and Carneiro (2001) who claim that inflation has no effects on economic development in the long term. Even, Fischer (1993) affirms that there is a weak relationship between inflation and economic growth. On the other hand, the estimated coefficient for the *investment* variable also shows no conclusive result, given that it is hardly significant, which is probably because private investment is not directed at increasing the social wellbeing of the population. In this sense, Anwer and Sampath (1999) don't find a positive relationship between investment and economic development for all the countries in the sample used. With regard to the *unemployment rate,* the regressor obtained is significant, with no relevant changes with regard to the estimator used. As such we can affirm that unemployment has a negative impact on economic and social development. Although the are authors (Acemoglu, 1997) who establishes a positive correlation between unemployment and economic growth without a social planner, there are others (Bean and Pissarides, 1993) who assert otherwise, that is to say, unemployment has a negative effect on economic development. According to these authors, an increase in the unemployment rate will imply a decrease in the total amount of savings (of the economy as a whole) available for investment, which therefore leads to a decrease in the growth rate.

The result obtained for *Official Development Assistance* is highly surprising, as both the negative value of the sign and its significance suggest that this type of aid impacts negatively on the objective that it is aiming to achieve, that is: to increase the level of development in those countries that receive it. Nevertheless, as stated by some authors (Alesina and Dollar, 2000; Kuziemko and Werker, 2006), development aid is usually given by donor's geostrategic consideration, which may not be extended to recipient countries for developmental purposes but rather to build and sustain political allegiances (Fleck and Kilby, 2006). This causes the aid is not effective at promoting

growth (Rajan and Subramanian, 2008). Likewise, we have to bear in mind that in the sample used (171 countries), the already developed countries and a great part of developing ones do not receive any aid, which distorted the effect of this variable.

The negative sign of the variable *trade openness* and its highly significance allow us to check that a greater dependence on the external sector involves an obstacle to development of the countries. As Yanikkaya (2003) suggests, trade barriers have a positive impact on economic growth, particularly in developing countries. Gries et al. (2009) claim that trade openness has not to be promoted in less developed countries because it has a null effect on economic development. And this is not due to, contrary to what might be supposed a priori, the *terms of trade*, since this impacts negatively on development, as we can see in table 2. In fact, although some authors (Deaton, 1999; Bleaney and Greenaway, 2001; Barro and Sala-i-Martin, 2005) agree on the positive effect of the terms of trade on the economic growth, however others claim the contrary (Batra and Pattanaik, 1971; Bhagwati and Brecher, 1980; Anam, 1988; Baland and Francois, 2000) Maybe, this is because that it is not so important that the price of a country's exports improve in relation to its imports, but rather that the country is sufficiently competitive to sell more goods and services to the external world than it buys from it, as Amate and Guarnido (2011) conclude.

With regard to the effect of inequality in income distribution, as measured by the *Gini index*, on human development, the zero significance does not allow us to obtain a clear conclusion about it. In fact, there is controvery in the economic literature in this regard. Thus, inequality may have a negative effect on economic development (Alesina and Perotti, 1996; Piketty, 1997; Galor and Moav, 2004). But there are authors who defend that inequality may have a positive impacto n economic growth (Lazear and

Rosen, 1981; Barro, 2000). Likewise, the relationship between inequality and growth may be nonlinear, as in the theoretical model of Benhabib (2003), in which increases in inequality from low levels provides growth-enhancing incentives, while increases past some point encourage rent-seeking and lower growth. However, the negative sign and significance of the estimator for the variable *poverty* allows us to assert that poverty is adverse to economic and social development, as claimed by other authors (Afzal et al., 2012). So, to diminish the percentage of poor, living on less than two dollars a day, should be one of the main aims of the economic policy of all countries.

With regard to *demographic growth*, the negative sign of the estimated coefficient allows us to conclude that those countries with higher rates of demographic growth have lower levels of development, being significant in the three estimates undertaken. This result is consistent with findings from Heady and Hodge (2009), who warn about the adverse effects of population growth on economic development.

The geographical circumstance of being an island has not supossed an obstacle to human development. On the contrary, this fact acts as a stimulus to find solutions to overcome this supposed geographic obstacle, and this translates into greater human development. Although Briguglio (2004) states that many factors such as small size, insularity, remoteness and proneness to natural disasters render these economies very vulnerable to forces outside their control, other authors as Easterly and Kraay (2000) assert that small states, specially islands, have on average higher income and productivity levels than large states, and grow no more slowly than large states. With regard to the effect of the important historical factor of *having been a colony of a European country* in relatively recent times (20^{th} century), the results of our estimation

show that it has had a negative effect on human development, as Heldring and Robinson (2012) also conclude for the case of Africa.

The estimation of those variables describing the state of a country's physical infrastructure yields a surprising result a priori, since the negative sign and significant result obtained for the estimator of the variable *Internet* shows that new technologies do not improve development, possibly because in less developed countries access to these technologies is not extended across all social levels. In fact, as Kenny (2003) argues, less developed countries appear less prepared to benefit from the opportunities that the Internet does present, because they lack the physical and human capital, along with the institutions required, to exploit the e-economy. Likewise, Lee et al. (2005) reported that information and communications technologies development contributes to economic growth in many developed countries and newly industrialized countries, but not in developing countries. However, the positive sign and highly significant result of the estimator for the variable *water* reveals that the *improved access to water supply* is an incentive to human development. So, covering basic needs is more important for social and economic development than providing better technologies, as defended by Streeten et al. (1981), and Freeman and Weber (2009).

With regard to the effect of institutional quality on human development, the positive indicator of the *Economic Freedom Index* suggests that there is a positive relation between this factor and human development, thus the protection of property rights, lower levels of corruption and strong fiscal policy have a positive effect on human development. This result agrees with those obtained by De Vansaay and Spindler (1994), Gwartney et al (1999) and Cole (2003).

With regard to the *Civil Liberties Index* a positive coefficient is obtained. As this indicator is defined in such a way that those countries with greater civil liberties have a lower index, we can affirm that greater freedom of religion, press and association do not imply greater levels of development, as concluded by other authors as Barro and Sala i Martin (1995), and Ali and Crain (2002), who find a non-significant relationship between civil liberties and economic development. Even, Helliwell (1994) claims that civil liberties impact negatively on economic growth. On the other hand, the negative sign estimated for the *Political Rights Index* allows us to affirm that democracy is a necessary condition for human development, given that those countries where there are free and impartial elections and a plurality of political parties are the ones that show higher levels of development, as indicated by the work of Scully (1988), Gwartney et al (1999), Rigobon and Rodrick (2005) and Acemoglu et al. (2014).

As regards to the *Corruption Control Index*, the positive sign of this estimator shows that there is a positive relation between this indicator and development. As this indicator is defined in such a way that the higher its value the lower is a country's level of perceived corruption, we can conclude that corruption has a negative effect on human development. This result confirms the conclusions of Mauro (1995) and Del Monte and Papagini (2001). Likewise, the positive sign and highly significant result of the coefficient of the *Political Stability Index* shows that political instability is an obstacle to economic and social development of the countries, agreeing with other authors as Barro (1991), Rodrik (1991), Murphy *et al*. (1993), Shleifer and Vishny (1993), Alesina and Perotti (1994), Pearson and Tabellini (1994), Alesina et al. (1996), Easterly and Levine (1997), and Fosu (2001).

4. CONCLUSIONS

In this study we have tried to determine the factors which affect development, not only economic, but also human and social. To do so we have used the human development index as dependent variable. The results obtained allow us to conclude, firstly, that the improvement of health level, as well as the promotion of R&D expenditure must be the main focuses of any development policy. Likewise, the official development aid has to be rethought as it is not achieving its aims. This assistance is having no positive impact on human development in those countries that receive it. In fact, donors' interests take precedence over the needs of recipients countries. Moreover, institutional quality is essential to the aid effectiveness in the promotion of economic development. Thus, the most corrupt governments don't receive less assistance but even more (Alesina and Weder, 1999). In this sense, the role played by institutions is very important for human development, and democracy plays a large part in this. Those countries that wish to increase their level of development must first increase their level of democracy. Corruption, on the other hand, has a negative impact on human development, and, as such, an effective fight against corruption should be a prime aim of a country's economic policy. Political stability is the third institutional factor which determines human development. Periods of political instability, from which both underdeveloped and developing countries have frequently suffered, has also been a big obstacle to development in these countries.

It should be emphasised that the reduction of poverty has to be one of the main objectives in the economic policies and in the official development aid, since one of the greatest problem of the countries both rich and poor, is poverty. Although the economic literature has focused almost exclusively on the analysis of the effect of economic

growth on poverty reduction, this work shows that poverty also implies a serious handicap for economic development, so the greater the percentage of poor people in the population leads to lower development in the country in question.

Many countries, particularly the developing and less developed, have had to base their strategy of economic development on opening up their economies and increasing their dependence on the external sector. This, however, has had no impact on the level of human development, but quite the contrary. Similarly, demographic growth, especially in less developed countries, has involved an obstacle to human development, so the birth rate must also be controlled to improve the development in these countries.

Infrastructures also play an important part in development, being the provision of basic infrastrutures a key element to achieve the human development of the countries. Covering the needs of water supply is more important than the provision of new technologies, because less developed countries are less prepared to benefit from the positive effects new technologies have.

Therefore, in summary, economic and social development requires policies which improve institutional quality through the implementation of higher levels of democracy, the achievement of a greater political stability and the fight against corruption. It will allow investment and official development aid to be more effective in meeting their goals, which should be to drive countries' economic and social development, through the reduction of poverty, the improvement of basic infrastructure and the increase of health levels.

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TABLE 1. TAXONOMY OF MODELED VARIABLES

NATURE	DENOMINATION	DESCRIPTION
Economic	**Human Development Index**	Dependent variable used to measure economic and social development. Calculated in function of four criteria: Gross National Income per capita, life expectancy at birth, mean years of schooling and expected years of schooling. Source: *Human Development Report*, UNDP.
	Inflation	Measured by the annual growth of the Consumer Price Index. Source: *International Financial Statistics,* IMF.
	Openness	Defined as the importance of exports plus imports relative to the GDP. Source: *Center for International Comparisons of Production, Income and Prices,* University of Pennsylvania.
	Investment	Measures gross investment over the GDP. Source: *Center for International Comparisons of Production, Income and Prices,* University of Pennsylvania.
	Official Development Assistance	We use the net official aid for development per capita, which consists of disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions, and by non-DAC countries to promote economic development and welfare in countries and territories in the DAC list of ODA recipients. Source: *World Development Indicators*, World Bank.
	Spending on R&D	Percentage representing both private and public spending on research and development against the GDP. Source: *World Development Indicators*, World Bank.
	Unemployment rate	Refers to the share of ther labor force that is without work but available for and seeking employment. Source: *World Development Indicators*, World Bank.

	Terms of trade	Calculated as the percentage ratio between the price of exports and the price of imports. This variable is expressed in base 100, taking the year 2000 as reference point. Source: *World Development Indicators*, World Bank.
	Income distribution	We have used the Gini index to measure inequalities in the income distribution. This indicator varies between 0 and 100. A Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality. Source: *Eurostat* y *World Development Indicators*, World Bank.
	Poverty	Percentage of the population that live with less than two dollars a day. Source: *World Development Indicators*, World Bank.
Demographic	**Infant mortality**	Measure of the probability per 1,000 that a newborn baby will die before reaching age five. The infant mortality rate is used here as a proxy variable for the quality of the health service. Source: *World Development Indicators*, World Bank.
	Demographic growth rate	Annual rate of population growth. Source: *World Economic Outlook Database*, IMF.
Geographic	**Island countries**	Dummy variable that takes the value of 1 if the country is an island and 0 if not. This variable allows us to analyze if islands have advantages or hindrances with regard to development.
Historic	**Colonies**	Dummy variable that takes the value of 1 if the country was a European colony in the 20th century and 0 if not. This variable allows us to evaluate if European colonialism is a determining factor in the underdevelopment of these countries.
Infrastructures	**Water**	A measure of the percentage of the population using an improved water source. The improved drinking water sources includes piped water on premises (piped household water connection located inside the user's dwelling, plot or yard), and other improved drinking water sources (public taps or standpipes, tube wells or boreholes, protected dug wells,

		protected springs, and rainwater collection). Source: *World Development Indicators*, World Bank.
	Internet	The percentage of individuals who have used the Internet (from any location) in the last 12 months. Internet can be used via a computer, mobile phone, personal digital assistant, games machine, digital TV, etc. Source: *World Development Indicators*, World Bank.
Institutional	**Economic freedom**	*Economic Freedom Index:* annual index elaborated by the *Research Institute Heritage Foundation/Wall Street Journal* which includes evaluations of trade policies, Government tariffs, Government intervention in the economy, monetary policy, flow of capital and foreign investment, foreign activity, financial activity, price and wage control, property rights and black market activity and regulation. This index varies between 0 and 100. The closer the index to 100, the economic freer the country is.
	Civil liberties	*Civil Liberties Index*: index elaborated by the NGO *Freedom House* which includes evaluations of religious freedom and freedom of the press, Rule of Law, human and economic rights and rights of association. This index takes values from 1 to 7, in where a value of 1 represents the freest and 7 the least free country.
	Political rights	*Political Rights Index:* index elaborated by the NGO *Freedom House* which includes evaluations of free and impartial elections, plurality of political parties, significant opposition, military regimes and self-determination for minority groups. This index takes values from 1 to 7, in where a value of 1 represents the freest and 7 the least free country.
	Corruption	*Control of Corruption Index:* Index belonging to the *Aggregate Governance Indicators* which measures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests The Control of Corruption Index, in percentile rank terms, goes from 0 (very corrupted) to 100 (not corrupted at all). Source: *World Bank*.

Political Stability	Index of Political Stability and Absence of Violence/Terrorism belongs to the *Aggregate Governance Indicators* and quantifies the perceptions of the likelihood that a government can become unstable or be overthrown by unconstitutional or violent means, including terrorist acts. This index, in percentile rank terms, goes from 0 (lowest political stability) to 100 (highest political stability). Source: *World Bank*.

Source: Compiled by Authors.

TABLE 2: RESULTS OF THE ESTIMATIONS

	FGLS	PCSE	ROBUST GMM
Constant	0.68*** (35.03)	0.68*** (28.75)	0.53*** (9.20)
Inflation	0.00002 (1.61)	0.00002 (1.36)	0.00001 (0.18)
Openness	-0.0001*** (-3.57)	-0.0001** (-2.27)	-0.00001 (-0.91)
Investment	-0.0001 (-0.83)	-0.0002 (-1.11)	-0.0005 (-1.45)
Official Development Assistance	-0.0006*** (-4.28)	-0.0006*** (-3.43)	-0.001*** (-3.25)
Infant mortality	-0.001*** (-14.25)	-0.001*** (-10.35)	-0.0002 (-0.67)
Spending on R&D	0.02*** (9.59)	0.02*** (9.61)	0.02*** (2.95)
Unemployment	-0.0004 (-1.08)	-0.001*** (-2.99)	-0.001 (-0.98)
Terms of trade	-0.0002*** (-3.41)	-0.0003*** (-4.40)	-0.0004*** (-4.01)
Income distribution (Gini)	-0.00005 (-0.33)	-0.0001 (-0.34)	0.0001 (0.22)
Poverty	-0.002*** (-21.99)	-0.002*** (-15.89)	-0.003*** (-10.84)
Demographic growth	-0.02*** (-10.84)	-0.01*** (-6.98)	-0.01*** (-3.56)
Island	0.03*** (6.38)	0.02*** (3.94)	0.02** (2.25)
Colony	-0.04*** (-7.73)	-0.04*** (-5.86)	-0.03*** (-2.63)
Water	0.0006*** (5.37)	0.0006*** (3.95)	0.002*** (4.27)

Internet	-0.001*** (-10.95)	-0.001*** (-10.26)	-0.001*** (-9.68)
Economic Freedom Index	0.001*** (7.19)	0.002*** (6.02)	0.001*** (3.47)
Civil Liberties Index	0.01*** (7.85)	0.01*** (6.42)	0.02*** (4.99)
Political Rights Index	-0.007*** (-5.29)	-0.007*** (-4.32)	-0.01*** (-3.91)
Control of Corruption Index	0.009** (3.17)	0.01*** (3.23)	0.007 (0.82)
Political Stability Index	0.01*** (5.98)	0.01*** (5.44)	0.01*** (3.14)
Number of observations	**2736**	**2736**	**2736**
R^2		**0.90**	
Hansen Test			**0.96**

* Significant to 10%. ** Significant to 5%. *** Significant to 1%.