Human Capital and *Capabilities* as Leading Variables for Growth: a Comparative Analysis among Emerging and Transition Economies.

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1. Introduction

One of the most important variables indicated nowadays by many economists as a crucial factor for fostering economic growth is human capital, which to some extent corresponds to education (Romer, 1986; Lucas, 1988; Levine and Renelt, 1992; Barro and Sala-i-Martin, 1995; Barro, 1998; Goel and Budak 2006). Empirical evidence, within certain limits, confirms such an assumption. However, there are many cases of countries in which education does not lead to economic growth or does not seem a crucial variable for growth (Easterly and Rebelo, 1993; Lodde, 2000). Therefore something else has to be explained. The paper attempts to bridge three theoretical approaches to the problem of economic development, using the concepts of (1) human capital, (2) capability approach, (3) social capital. The common features of these three different approaches are the *institutions* of a country and the *collective actions* of economic agents, whose continuous interactions shape its economic development .

I argue that education alone is no longer sufficient as a crucial variable for growth. I assume that it must be seen in conjunction with the *capabilities* of people and specifically that it is the interaction between these two factors, which is crucial. That is, people need to be provided with a set of opportunities, with political rights, social rights and freedoms, which give them substantial occasions of doing and being and therefore of expressing their knowledge in the way they wish (Sen, 1985). If this were possible the results would be twofold: from one point of view, people would be happier and enjoy a better quality of life; from another, they would be more productive in the workplace with positive effects on labour productivity and economic growth.

I will try to verify such an assumption through a regression analysis on large sample of Emerging and Transition Economies (ETEs), each of which experienced great transformation over the past 15-20 years. Hence, it is possible to observe a huge variation in terms of human capital, institutional change, *capabilities* and economic growth within these ETEs . In order to capture the variable "capability" endowment, I used a political institution, i.e., the World Bank indicator of

pluralism and democracy, the index known as Voice&Accountability. My hypothesis is that interaction between Voice&Accountability and education produces effective Human Capital, which itself then has a positive impact on GDP. Data on education are represented by the variable education index (UNDP 2007), which is a combination of primary, secondary and tertiary education levels. However, since economic growth is a complex process that occurs as a result of several socio-economic variables, it is necessary to include other factors. Therefore my model includes, alongside Human Capital, two other socio-economic variables: the percentage of public expenditure on health and education; the access to improved sanitation (which is an indicator of an effective and functioning health system); and one indicator of social capital: the number of *International non-governmental organizations* (INGO) in each country in the sample. Very often in the literature, the level of social capital in a country is approximated to the presence of non-governmental organizations. In fact, countries where people are more willing to create associations, to build networks, to cooperate in volunteer organizations are countries which enjoy a higher level of trust and therefore higher levels of social capital (Putnam, 1993; Kornai *et al.*, 2004; Sabatini 2008).

The results are very interesting. Interaction between education and Voice&Accountability, in association with the other socio-economic variables listed above, lead to a higher GDP per capita throughout the sample considered. Nevertheless, some questions still remain unanswered, or need further investigation, such as the mechanisms which allow for an accumulation of human capital and an analysis of "informal" human capital, i.e., the general level of knowledge among people, which is not accumulated through schooling but through experience.

The paper continues as follows: Section 2 gives some definitions concerning human capital, capabilities, institutions and social capital. These are the elements that will be used in my model. Section 3 tries to explore briefly the mechanisms through which *formal* human capital is accumulated. Section 4 presents the theoretical model of economic growth used. Section 5 tests the model and analyses the results. Section 6 presents some conclusions. concludes the paper.

2. Human capital, capabilities and institutions

Human capital and capabilities are strongly linked with institutions; institutions are needed in order to expand human capabilities and appropriate institutional policies are necessary in order to create a skilled labour force, education and diffusion of knowledge. However, institutions need to be oriented towards providing opportunities both to the poor and to people in general. Values and social norms such as equality, solidarity and co-operation shape formal institutions and public choices. Moreover, it has been shown that human capital can be improved and fostered more

effectively when policies and institutions are introduced at the local level (Etzkowitz, 1997; Gunasekara, 2005). At local level, the so-called *Triple Helix* model made up by cooperation between University-Firms-Public institutions, is the main tool for the creation of networks, social capital, human capital and knowledge.

As regards capabilities, these are also affected and enlarged by institutions (Sen, 1985). In fact, institutional policies, the consequence of prevalent norms and institutions, allow for improvement of the basic capabilities for human development, such as leading long and healthy lives, being knowledgeable and having a decent standard of living. If basic capabilities are not achieved, many choices are simply not available and many opportunities remain inaccessible (UNDP, 1999). A better endowment of capability will allow people to create a wider range of choices and to improve their skills too. These skills are work competences, education outcomes and knowledge in general; all these would be better disseminated in society and therefore would be more effective as functional variables in a development process.

The attempt to bridge education and capabilities with institutions and social capital can be very fruitful, and can provide a better explanation of the controversial results very often obtained by economists when they put in relationship human capital and economic growth. In fact, education need to be first produced, then disseminated, then acquired and finally used. This is an evolutionary process which need not only investments in education and school enrolment. It needs also (1) people capability to exploit education; (2) cooperation, networks and trust (i.e., social capital) for knowledge diffusion and (3) right institutions to provide with appropriate incentive for human capital accumulation.

The graph below tries to explain these relationships and the mechanisms for human capital accumulation. It highlights also the dominant role of an institutional framework and of collective actions which provide with the necessary rules and organizations for people to accumulate knowledge. Such institutions and collective actions affect both people opportunities (or capabilities), and education incentives and investments in relevant socio economic dimensions (such as school, universities, health etc). A society endowed with a higher love of social capital will have a sustained flow of knowledge and circulation of innovation. This would allow people to acquire better education and to transform formal education in effective and operational human capital. On the contrary a society which does not have a consistent level of social capital will have more difficulty first of all to realize the importance of education and secondly to acquire better level of it. Moreover, the transformation of the formal education, in this case, in effective and operational human capital through flow of knowledge and innovation would be more difficult because the process of circulation of knowledge would be inhibited by lower levels of social capital.

Figure 1. Human capital, capabilities and institutions
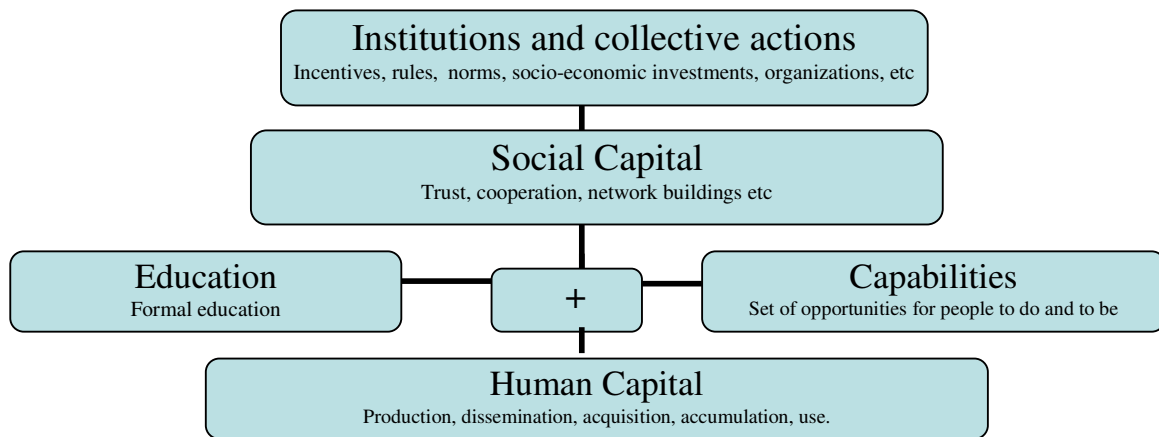
Source: author

2.1 Human capital

Starting from endogenous models of growth, more and more economists include schooling in their own growth models. Romer (1986), following on from the the seminal works of Young (1928), Kaldor (1957) and Arrow (1962), imputed increasing economic returns of scale to the level of knowledge in the community. An improvement in the skills of workers increases, the final outcome, *ceteris paribus*, simply because skilled workers are more productive. Knowledge is strictly connected to school and education. Lucas (1988) directly associated human capital with "learning by schooling" and "learning by doing", allowing human capital to become reproducible. Physical capital, integrated into this definition of human capital, is part of a cumulative and reproducible process that avoids decreasing returns of scale.

Empirically, this model was followed by, among others, Levine and Renelt (1992), Barro and Sala-i-Martin (1995) and Barro (1998), who showed that convergence between countries is conditional on improvements over time in secondary school enrolment. Moreover, empirical studies show that high education levels are positively correlated with appropriate reform processes in transition and emerging economies (Goel and Budak 2006). At the same time, neoclassical economists argue that human capital accounts for only a fraction of cross-country income differences (Hendricks 2002). Furthermore, in neoclassical cross-country analysis, reverse causality, according to which growth causes schooling, seems to be more important (Bils and Klenow, 2000). In my model, education, expressed by the variable "education index" as an average between the years 2000-2007, contributes to economic growth only when it is in *interaction* with people capabilities, as captured by a political institution that indicates pluralism and democracy, i.e.,

the World Bank indicator *Voice & Accountability*[1]. I assume that a higher endowment of people capability gives substantial value to education and improves the effectiveness of human capital, which in turn leads to higher GDP per capita. In fact political rights, participation, freedom and democracy would allow people to accumulate capabilities and so acquire more opportunities of doing and of being.

Political institutions and public policies are tools that support people by giving access to economic opportunities, and therefore, in the end, they are crucial to the accumulation of knowledge (Jones and Hall, 1999). On the one hand, public policies are necessary in order to provide general education, training programmes and incentives for firms to invest in education and training programmes. These policies would be likely to increase the level of human capital with positive spill over effects on economic growth. On the other hand, another side workers are more likely to achieve greater benefits in a country where political institutions, such as participation and freedom, are secure than in a country where these variables are violated. However, in order to for these opportunities to be substantial, they need to be supported by social rights, giving people equal access to resources, to schools, to training programmes and then to better jobs. For this reason, my regression model will introduce a social institution, i.e., public expenditure on health and education.

2.2 Capability

The idea that the GDP is an absolute and reliable measure of development has been widely criticized by development economists (Morris, 1979; Sen, 1985; Noorbakhsh, 1996). A great deal of empirical evidence shows that, both in developing and in developed economies, some countries have relatively high GDP per capita but very low indicators of socio-economic development, such as literacy, access to drinking water, rate of infant mortality, life expectancy, education, etc. This is partly due to the fact that wealth is unequally distributed. Vice versa, there are cases of relatively low GDP per capita and high indicators of socio-economic development in countries where income is more equally distributed (Ray 1998)[2]. In other words, average GDP is not always a good proxy

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[1] Word Bank indicators of democracy such as voice and accountability are very useful in comparing political institutions of countries at global level.

[2] For instance, Guatemala has a GDP per capita that is higher than Sri Lanka but inequality is much higher in Guatemala. Development indicators are much better in Sri Lanka than in Guatemala. Life expectancy (years): 72 compared with 65; infant mortality rate (per 1000): 18 compared with 48; access to safe water (% of pop.): 60 compared with 62; adult literacy rate (%): 89 compared with 54 (UNDP, 1995). Examples like this are numerous and non-perfect correlation between GDP and development indicators can be observed even in industrialized countries where there are more resources to distribute. For instance, Ireland has the highest GDP per capita after Luxemburg yet its non-income dimension indicators i.e., education and life expectancy are lower than Italy or Portugal (UNDP 2006). Saudi Arabia has a GDP per capita which is higher than many transition economies such as Poland Czech Republic, Hungary etc, but its non-income dimension indicators are lower. USA has an income per capita which is much higher than most of the countries in the world, yet life expectancy of black American citizens is lower than in China or in the Indian State of

for well-being. A capability approach takes such a deficiency into account. People provided with human capabilities, i.e. the range of things that people can do or be in life (UNDP, 2008), will reach a more advanced stage of human development. Human development is a process that allows for an environment in which people enjoy long, healthy and creative lives (UNDP, 1990). Human development is a better measure of well-being; it is defined as a process that enlarges people's choices, achieved by expanding human capabilities and functioning (UNDP, 1990). It is measured using the Human Development Index (HDI) of the United Nations Development Programme (UNDP)[3]. One of the three elements of the HDI is education, perceived as a combination of primary, secondary and tertiary educational levels. I use this variable in my model to measure the education levels in the sample countries.

The core idea maintained in this paper is that those countries that have experienced an increase in human capital (and in all likelihood in human development), will have sustained economic growth as a consequence of an expansion of people capabilities. In order to reach a better level of capability endowment, both appropriate institutions and investments in specific socio-economic dimensions need to be put forward. Investments in human development increase both aggregate demand and effective quality of life. A better quality of life will generate a better and more skilled labour force, with consequent positive effects on economic growth, as shown by Barro (1998) who used improvements in life expectancy from the 1960s to the 1990s as an explanatory variable in growth regressions.

Institutions guide public choices and in turn these reinforce political institutions. A country in which public policies give substantial incentives for firms to accumulate human capital and for workers to learn, train and study, will increase its level of knowledge with benefits to people *capabilities* and therefore to economic development (Sen, 1999). My assumption concerning political institutions is: that a country which is governed more democratically and where political institutions are oriented towards freedom, guarantees people participation and political rights, is a country where citizens can have some power and can lobby those who govern. Consequently public decisions in such a country would be oriented more towards collective benefit than would be the case in a country where the level of democracy and freedom is less marked. The country that enjoys better democracy, freedom and political rights would extend people capabilities more easily than a

Kerala. As a result of all these contradictions and exceptions, the UNDP taxation of Human Development Indexes and GDP rank is not at all coincident (UNDP, 1999).

[3] The UNDP Human Development Index is a composite index, ranking between 0-1. It is the combination of two non-income dimensions of people's lives and one income dimension. The first one is life expectancy at birth, which also reflects infant mortality. The second one is educational attainment, which is a combination of primary, secondary and tertiary educational levels and the adult literacy rate. The third element is an adjusted GDP index which reflects income per capita measured in Purchasing Power Parity (PPP) at US$ (UNDP, 1990).

country where these rights are restricted. Such a restriction would cause a lower level of human capital (and of human development) and lower economic growth.

Such an assumption is represented by the figure 2, which identifies a so-called capability curve, which is determined by the level of political institutions and the level of guarantees of democracy and freedom enjoyed by the people. Starting from a positive level of capability at point A, characterised by a positive endowment of capability - initially even in the most authoritative country people have some level of capability - the curve shows a positive trend. However, the level of political rights increases faster than the level of capabilities because, even if countries guarantee some political rights, the level of capabilities grows more slowly since it depends also on effective public policies supporting social rights. Nevertheless, in an advanced stage, political pressure and democratic lobbying can stimulate those who govern to take public decisions, which will have collective benefits in social terms. This would affect positively the trend of capabilities, which would now grow faster than political rights from point B to point C. After C, the level of political rights would grow at a very slow rate. However during this period people's capabilities can increase because participation is very high, democracy is well developed and the number of social rights that can be distributed by governors is also an important factor. Many countries among today's developed economies can be identified as being in this situation. Most developing economies fall short of point B and many emerging and transition economies stay between point B and point C. Point B represents a crucial one in the sense that countries that manage to overcome it, can experience a process of institutional change with positive effects on capability and thence on development.

Figure 2. The Capability curve
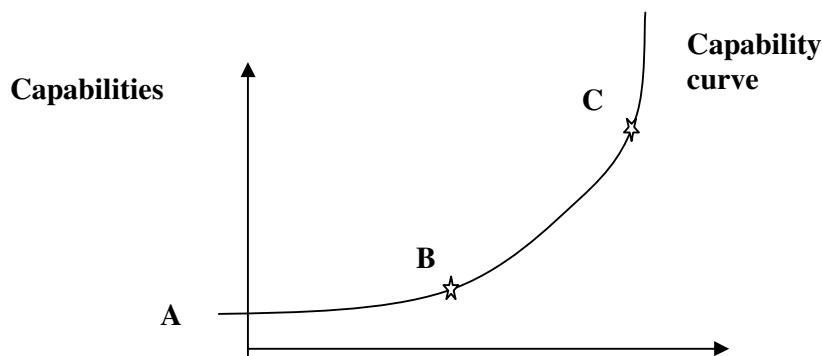
Institutions: *freedom, participation, democracy, social rights*

2.3 Institutions and social capital

Many studies have shown that institutions and good governance matter to economic organization and rising productivity (i.e., Knack and Keefer, 1995; Olson et al 1998; Jones and Hall 1999; Acemouglu et. al., 2001; etc). Institutions are generally defined as "the rules of the game". A more sophisticated definition is "a set of social rules that structure social interactions" (Knight 1992, p. 2). If we accept this definition, then the explanation of development should be consistent with that of Kuznets (1965, p. 30): "the transformation of an underdeveloped in to a developed country is not merely the mechanical addition of a stock of physical capital: it is a thoroughgoing revolution in the patterns of life and a cardinal change in the relative powers and positions of various groups in the population". Consequently, in order for institutions to change, the prevalent social rules need to be changed too.

Institutions also shape collective actions and therefore determine public choices, policies, and organization (Olson, 1982). In this context institutions emerge as an important guide for investments in such socio-economic dimensions as heath and education. They limit what is right and what is wrong, what is appropriate and what is useless. They determine strategies and trajectories of changes. This is particularly important in countries which are experiencing deep transformations and which are affected not only by formal institutional change but also by informal rules.

In emerging economies, informal economic institutions (i.e. uncodified and prevalent social rules[4]) can be very resistant to change and inertia may occur. This is one of the most important problems inhibiting development. Institutional policies and an active role of the State are therefore needed in order to favour cultural change and to foster development. As Sen (1999: 9) emphasised, "a broad approach of this kind permits simultaneous appreciation of the vital roles, in the process of development, of many different institutions, including markets and market-related organizations, governments and local authorities, political parties and other civic institutions, educational arrangements and opportunities of open dialogue and debate (including the role of the media and other means of communication)".

Formal and informal institutions that have an implicit level of trust, respect for agreements and for agreed rules, cooperative relations between agents, mutual confidence among the parties to an economic transaction, exchange of information and circulation of knowledge, all lead to a higher level of *social capital* (Raiser, 1999; Kornai *et al*., 2004; etc). More and more economists focus on the relationship between social capital and economic growth In fact, relationships of trust, loyalty,

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[4] Cf. Hodgson (2006).

behavioural norms, cooperation, respect, a certainty in economic relations and other similar factors seem mirror the intensity of economic relations, of economic exchange, of the self-reinforcement of rules and contracts, and of information and knowledge circulation. For better performance, an economic system needs all these elements, which can be defined "immaterial factors".

These "immaterial factors" also define the dimension of "social capital", which impacts significantly and positively on human capital accumulation and on productivity. In fact, these factors eliminate or reduce problems due to phenomena of adverse selection and moral hazard, lack of information, uncertainty, rent-seeking and free-riding (or opportunism). A higher level of trust may cause an increase in investment and/or higher education, an improvement in economic relations (Arrow 1975), the overcoming of risk (Olson 1982), the promotion of social interactions and, therefore, the creation of networks that allow for the flow of knowledge, the exchange of information, the cooperation between agents and the creation of more productive clusters of innovation and of knowledge[5]. Therefore, the differences in these factors can create strong differences in the productivity and output of a country (Olson et al 1998).

3. Human capital accumulation and productive systems

The role of human capital with respect to an increase in productivity and competitiveness of the productive systems is twofold: from one side, it is identified with the increment in productivity derived from the competences of the workers as productive factors employed in the production processes of each firm; from another side, it appears as a complex of externalities, which favour the rate of innovation, or technological progress within the whole system. Both these dimensions end up within the perspective of local systems, which can also be understood as Regional Innovation Systems; this defines a territory that is characterized by a set of institutions and knowledge about skilled human capital, which is available to the productive system (Gunasekara, 2005). Within such a territory, the so-called *Triple Helix* model, involving cooperation between University-Firms-State, is the main tool for the creation of networks, human capital and knowledge (Etzkowitz, 1997).

Public policies and good governance can play a crucial role within the so called *Triple Helix* model where University-Firms-State have to cooperate in order to create and disseminate human capital and innovation. Social capital in this context stimulates cooperation processes, increases exchanges and the intensity of economic relations, stimulates the sharing of technologies and knowledge, reduces information asymmetries, and reduces transaction costs to the great advantage

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[5] The case of Italian industrial districts is a good example, which proves the direction of the relationship ($\uparrow$ trust $\uparrow$ Innovation $\uparrow$ human capital $\uparrow$ productivity) (Becattini 1979). There is a growing literature focusing on social capital in transition economies, which confirms this relationship (see Raiser 1997; Raiser *et al.* 2001; Kornai *et al.* 2004; etc.).

of productivity. Moreover, both the following factors, endogenous dynamics such as "learning by doing" (Lucas 1988) and the spread of innovation and knowledge due to the interaction between agents, are relevant. These factors are stimulated by geographic proximity and by different types of network (Von Hipple, 1994, Loasby 1999, Boschma and Klossterman 2005).

People investing in human capital will benefits from their jobs later than those not investing in human capital. Labour productivity will be lower in the second case because skilled workers are usually more productive than unskilled. However people do not always have sufficient resources to invest in advanced education. Therefore the State and to the firms must make the effort to guarantee advanced education and training to less skilled people through means of a partnership.
In this way people will become more educated, human capital will grow and person capabilities, i.e. opportunities, will increase as a direct consequence of externalities coming from knowledge, with advantages for both individuals and society as a whole.

Public choices that provide general education, contribute to an improvement in the level of human capital. However, this is no longer sufficient by itself. Training on the job, incentives for firms to invest in education, and for workers to follow educational and training programmes, all seem to be crucial not only to the accumulation of human capital but also to the avoidance of long term unemployment. Moreover, education needs to be accessible to everybody and people should find good reasons to learn. Human capital is not only the product of learning at school. As Romer (1986) has already demonstrated, this is also one outcome of a process of "learning by doing",. This means that policies should be also oriented towards the dissemination of knowledge, and that firms need both to practise and to use new skills and new ideas acquired through innovation (Antonelli, 2005). In order for this to happen a circular process between innovation and investments needs to be put forward, as proposed by Kaldor (1957) Innovation and new ideas come mainly from new investments, which in turn, very often, are the bearers of further new ideas.

4. A new model of economic growth

The idea of this paper is that economic growth occurs mainly as a result of the interaction between capabilities and education, which makes human capital more effective. In turn, capabilities are themselves enhanced by institutions. The link between institutions and capability derives from an interconnection between the thoughts of Sen and Neale. The latter is an "old institutionalist" in the sense that he follows the tradition of some old institutional economists such as Veblen, Mitchel and Commons in stating that "*most of what people do is governed by institutions of their society*"

(Neale, 1988, p.230). Institutions shape and channel individual choices. Choices are determined to a large extent by what we want to do (wishes), and in turn, this is affected by capabilities, that is the range of opportunities available to people in their lifetime.

To sum up, institutions shape individual choices, which are determined by the relationship between wishes and capabilities (or opportunities). Institutions effectively enlarge capabilities, by the way in which they structure political rights (freedom, democracy, participation) and social rights (public recourses for collective purposes). Public investments in socio-economic dimensions such as education (but also health, mobility, housing, etc) improve people's range of choices and enlarge their chances to increase their living standards. Therefore, a model of economic growth would be described by the following scheme:

Institutions → *Capabilities* → *Human Capital* → *Economic Growth*

The interaction between wishes and opportunities (or capabilities) described above is in fact a relationship between freedom and social rights. I would argue that freedom is a necessary condition to improve living standards. However, it is not a sufficient condition. Freedom needs to be associated with social rights, supported by institutions and public investments in socio-economic dimensions, otherwise one could have the situation exhibited by many former Soviet Republics where development worsened with the disappearance of many opportunities. Today, in the worst performing transition economies, in the best case scenario, people have acquired, a political voice but no social rights that would allow them to improve their choices and therefore their living standards.

Hence, on the one hand, people need to be free, meaning that they need to make choices based on their wishes. On the other hand, their choices need to be socially feasible. They need to live in a country where opportunities are available. What they can offer (skills, goods, knowledge, etc) needs to be feasibly in demand. Infrastructures and investments, which would allow for such an exchange, are therefore crucial. Institutions should make this feasible, and should support political and social rights in order to shape actions with positive collective benefits.

Sen (1999: 38) highlights five instrumental freedoms relevant to attaining higher levels of human development: they are: (1) political freedoms (2) economic facilities (3) social opportunities (4) transparency guarantees and (5) protective security. Each of these instrumental freedoms is embedded in an institutional framework and therefore needs specific institutions to make them effective.

De Muro and Tridico (2008) argue that institutions have a vital role in *directly* promoting and enhancing people capabilities. As Sen (1999, p. 16) pointed out, it is self-evident that institutional arrangements such as democracy and human rights are directly relevant to the fundamental human capability of being able to participate effectively in the political choices that govern one's life; and institutions such as social safety nets are directly relevant to the fundamental capabilities of vulnerable groups to have good health, be adequately nourished and able to get adequate shelter. In other words, such institutions "are *directly* important on their own, and do not have to be justified *indirectly* in terms of their effects on the economy".

At the same time better endowment of capabilities create benefits for the economy via improvements in human capital. The more accessible is education, the better will be the dissemination of knowledge, and this could have positive spill over effects on the economy. In fact, one of the main problems with education is the fact that there is not always a direct relation with economic growth. Empirical evidence is controversial. On the one hand, higher levels of education are considered to be one of the basic and fundamental conditions for growth (OECD, 2004). On the other hand, there are several cases of countries or regions where, despite high levels of education, economic growth does not occur (Easterly and Rebelo, 1993; Lodde, 2000).

In my model, education is in interaction with capabilities. That means that where capabilities are developed, the level of education becomes higher and more effective and human capital and knowledge are more efficiently disseminated. In fact, a higher level of capability not only gives people easier access to school, but also, since capabilities are an outcome of an institutional process, brings about an increase in political and social rights; a higher level of capability also means a positive dissemination of knowledge. This would be crucial in order to make education more effective and useful as well as for the process of economic growth.

5. The Empirical Analysis: tests and results

The main hypothesis adopted in the model is that economic growth is a complex issue, which is a consequence of the simultaneous presence of several socio-economic variables. In particular, the interaction between education and capabilities, as explained above, improves the effectiveness of human capital, which in turn leads to higher GDP per capita. However, the latter also needs an investment in such socio-economic dimensions as health and education access to improved sanitation, and a society with a high level of social capital, captured, in my model, by the presence of *International non-governmental organizations*.

In order to test such a hypothesis I applied an OLS regression model to a sample of 50 Emerging and Transition Economies (ETEs), which during the past 15-20 years had experienced a great transformation and a huge variation in the variables included in the analysis. The econometric model adopted aims to show such a causality in the equation below:

$$\text{GDP} = a + \underbrace{(Bi*\text{Soc.Capital} + \underbrace{(Bj*\text{Soc.Inst.})}_{\text{Institutional Framework}}) + Bz*(\overbrace{\text{Edu}*\text{V\&A}}^{\text{Capabilities}}}_{\text{Social Capital and Socio-economic variables} \quad \text{Human capital}}) + e$$

<div align="right">(1a)</div>

The variables in this equation are consistent with the ones described in figure 1, which demonstrates the need for an institutional Framework providing the necessary and appropriate rules, investments and formal education. Economic growth is the product of the simultaneous presence of these variables.

More explicitly the equation above would take the following form in my model:

$$\text{GDP 2007} = a + (B1*\text{INGO} + B2*\text{Exp.Edu\&Health} + B3*\text{AccSanitation}) + B3*(\text{Edu}*\text{V\&A}) + e$$

<div align="right">(1b)</div>

The Education index in 2006 (Edu) is a combination of primary, secondary and tertiary education levels and is a value ranking between 0 and 1. In my model it represents the level of education in a country, although limited in giving only an indication of schooling, and ignoring the component of 'learning by doing' at work. The education index measures a country's relative achievement in both adult literacy and in combined primary, secondary and tertiary gross enrolment. First, an index for adult literacy and one for combined gross enrolment are calculated. Then these two indices are combined to create the education index, with two-thirds weight given to adult literacy and one-third weight to combined gross enrolment (UNDP, 2006).

The *Voice and Accountability Index*[6] (V&A), as an average between 2000-06, is a measure of "various aspects of the political process, civil liberties and political rights, measuring the extent to which citizens of a country are able to participate in the selection of governments." Such an indicator, being also a proxy of democracy, is very good for understanding the power of people to influence public choices and therefore to gain collective benefits from public policies. People from

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[6] Voice and Accountability indexes rank between 2.5 and -2.5. This is one of the six World Bank governance indicators presented in *Governance Matters VII;* they are composite indices created from several hundred variables derived from 32 different data providers. The variables used in calculating the final indices are comprised of expert opinions, such as Freedom House's Level of Freedom indicator, surveys, such as Transparency International's Corruption Perceptions Index, and "hard" data, like the percentage of government revenues generated by trade-related taxes.

countries with higher levels in the Voice and Accountability Indexes, are likely to enjoy more opportunities and therefore are better capability endowed than others.

International non-governmental organizations (INGO) index shows the average number of international non-governmental organizations that have either member organizations or individuals in each country in 2000-03[7]. According to Resolution 288 of the Economic and Social Council of the United Nations, "any international organization which is not established by intergovernmental agreement shall be considered as a non-governmental organization." (Resolution 1296). According to many scholars, the presence of INGO is highly correlated with high level of social capital in a country (Putnam, 1993; Kornai *et al.*, 2004; Sabatini 2008).

Access to improved sanitation (AccSanitation) measures the total proportion of the population in 2004   with access to improved sanitation facilities, expressed as a percentage. Improved sanitation includes any of the following excreta disposal facilities: connection to a public sewer, connection to a septic tank, pour-flush latrine, simple pit latrine, ventilated improved pit latrine, pit latrine with slab, and composting toilet. Improved sanitation facilities are more likely to be sanitary than unimproved facilities, but are not a direct measure of 'basic' sanitation--facilities, which are "considered the lowest-cost options for safe, hygienic and convenient facilities that prevent the user and his or her immediate environment from coming into contact with human excreta."[8]

Finally the variable government expenditure in education and health, average 2000-06[9], (Exp.Edu&Health) is the sum of *Public education expenditure as a percentage of GDP* in Education and Health. It shows current and capital public expenditure on education and health, plus subsidies for private education, as a percentage of Gross Domestic Product. Data generally excludes foreign aid for education and may exclude spending by religious schools, which play a significant role in many developing countries. Public education and health expenditure allows an assessment of the priority a government assigns to an education and health system relative to other public investments. Education expenditure also reflects a government's commitment to investing in human capital development, while the health expenditure reflects the government's commitment to

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[7] Source: Center for the Study of Global Governance (London School of Economics). 2004. *Global Civil Society 2004/5*. H. Anheier et al., eds. London: Sage. Available online at:
http://www.lse.ac.uk/Depts/global/yearbook04chapters.htm.
[8] A poor water supply and sanitation system can lead to a number of diseases, including diarrhoea, intestinal worms, and cholera. Examples of an unimproved sanitation system include: open pit latrines, public or shared latrines, service or bucket latrines (where excreta are manually removed), hanging latrines, flush to elsewhere (street, yard, open sewer, ditch, river, etc.), and no facilities. Source (World Health Organization (WHO) and United Nation's Children's Fund (UNICEF), 2006)
[9] Source: The World Bank. 2008. *2008 World Development Indicators Online*. Washington, DC: The World Bank. Available at: http://go.worldbank.org/U0FSM7AQ40.

investing in human development. Both these dimensions are essential for the HDI. Therefore in my model this variable expresses the orientation of countries towards social institutions that are fundamental to a better level of capabilities.

In the model below, first of all I regressed the GDP level in PPP (2007) against Education index (2006), Voice and accountability index (average 2000-06), the number of International Non Governmental Organisations in 2003-03 (INGOs), access to improved sanitation (2004), and government expenditure in education and health (average 2000-06).

Table 1 – Regression Analysis

OLS model - Obs 50			
Dependent Variable: GDP-PPP 2007			
I Regression without interaction		II Regression with interaction	
Variables	Coeff.	Variables	Coeff.
INGO avg. 2000-03	1.137** (.5086678)	INGO avg. 2000-03	1.023*** .544391
Gov.Exp_Edu&health 2000-06	3.457*** (1.885069)	Gov.Exp_Edu&health 2000-06	3.740** 1.701059
Access_Improv.Sanitat_2004	4.911*** (2.944658)	Access_Improv.Sanitat_2004	6.031** 2.73767
Education Index 2006	**7.221 (4.435548)**	**Edu* Voice&Accountability**	**3.920* (.7941148)**
Voice&Accountability.2000-06	3.163* (.6362513)	Constant	.2642 (2.149)
Constant	5.039 (3.638322)		
R-squared 0.7151		**R-squared** 0.6968	
Mean dependent var 10015.88		Mean dependent var 10015.88	
Prob(F-statistic) 0.000000		Prob(F-statistic) 0.000000	

Source: own elaboration. Significance level at * = 1%, ** = 5%. Robust Standard errors in parenthesis, controlled for eteroskedasticity after White tests[10]

The first regression does not yield satisfactory results, and in fact the Education index is not significant. However, when the education variable, in the second regression, appears in interaction with Voice&Accountability (a very good proxy for people capability) then the model appears to be satisfied. Moreover, as shown in the table below, multicollinariety problems among the variables can be excluded.

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[10]White's general test statistic (Regression I) : 15.14188 Chi-sq(20) P-value = .7682. White's general test statistic (Regression II): 3.743811 Chi-sq(14) P-value = .9968.

Table 2 - Multicollinearity test, variables of Regression II

Variable	VIF	1/VIF
INGO avg. 2000-03	1.42	0.702573
Gov.Exp_Edu&health 2000-06	1.31	0.761770
Access_Improv.Sanitat_2004	1.27	0.785792
Edu* Voice&Accountability	1.25	0.797169
Mean VIF	1.32	

Source: own elaboration

Hence the predicted model (equation 1) is satisfied, and would take the explicit form of the equations below:

$$GDP2007 = \alpha + \beta_1 \cdot NGO + \beta_2 \cdot GovExpEduHealth + \beta_3 \cdot AccessSanit + \beta_4 \cdot (\text{Edu} * \text{Voice} \& \text{Account}) + \varepsilon$$

$$GDP2007 =$$
$$.6642 + 1.023 \cdot NGO + 3.740 \cdot GovExpEduHealth + 6.031 \cdot AccessSanit + 3.920 \cdot (\text{Edu} * \text{Voice} \& \text{Account}) + \varepsilon$$

The most interesting result of this model is, I think, the statistical significance of the variable Edu*Voice&Accountability, which has a very strong and positive impact on GDP, with a coefficient equal to 3.920. It means that within the model represented in Regression II, in a multivariate correlation, and together with other positive values of the variables *INGOs, access to improved sanitation (2004)* and *government expenditure in education and health* (average 2000-06)*, interaction between *Education* and Voice&*Accountability* would consistently improve the explanatory power of the model. In fact the Education variable is not significant when it appears in the model without interaction with Voice&Accountability (Regression I). As the graph below shows, correlation between the GDP in 2007 and the interaction variable Edu*Voice&Accountability is very strong. Most of the countries, which are represented in the graph below, would be scattered following a trend of higher values of education and Voice&Accountability and higher GDP per capita.

Figure 3 – Scatter plot GDP and Edu*Voice&Accountability
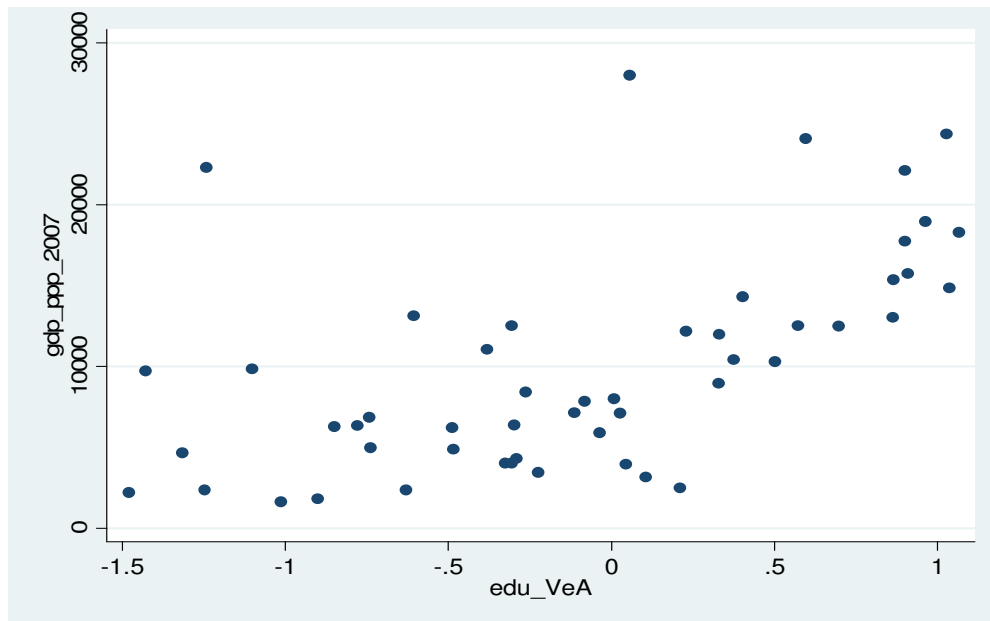
Source: author

6. Conclusion

The general aim of the paper was to bridge three theoretical approaches to the complex issue of economic development, i.e, the human capital theories, the capability approach, the social capital dimension. These three approaches are linked by institutions and institutional policies implemented by all countries to shape the social interactions of economic agents.

The paper shows the dynamics between education and capability, which lead to a more effective level of human capital when these two variables interact with each other. In turn, I found that such levels of human capital, associated with a high level of social capital, an investment in socio-economic dimensions, such as health and education, and easier access to improved sanitation (an indicator of an effective and functioning health system) yield a higher GDP per capita among the sample of 50 Emerging and Transition Economies.

A higher endowment of people capability gives substantial value to education and improves the effectiveness of human capital. In fact, citizen possession of political and social rights, participation, freedom and democracy would also allow for the accumulation of additional capabilities, which would provide more opportunities of doing and being through easier access to education and to knowledge.

Moreover, I argued that social capital is a non-economic source of good economic performance. All the social values and norms that impose respect, such as the common acceptance

of certain rules and principles, cooperation, the conviction of the honesty and the reliability of other agents, the respect for rules and agreements, the conviction that the another agent would not cause damage, have a very positive effect on productivity. They encourage cooperation, increase economic exchange and economic relations, stimulate sharing of technologies and knowledge, reduce rent seeking and free-riding (opportunism), and reduce transaction costs with great advantages for innovation and the accumulation of human capital. In such a context, institutions and institutional policies are crucial in order to provide incentives for people, to shape behaviour and to engender the accumulation of knowledge. Hence *institutions* create the substance for a framework, which would both manage the process of economic growth and provide effective education, to the positive advantage of social capital and to people's opportunities to lead long, healthy and creative lives.

Appendix. Source: UNDP, WB, IMF, online database, various years

Country	gdp ppp 2008	Voice_acc 00-05	Edu index 2006	gov exp heath 2001-06	gov exp edu 2001-06	access impr sanitation	NGOavg 2000-03	hdi 2006
Albania	5886	-0,04	0.886	2.04	2.09	91	778	0,79
Algeria	6347	-1,05	0.743	2.07	5,1	92	1062	0,73
Argentina	11985	0,35	0.946	4.15	3.08	91	2898	0,873
Armenia	4879	-0,54	0.903	1.06	3.02	83	515	0,77
Azerbaijan	6280	-0,96	0.881	0.19	2.01	54	397	0,76
Belarus	9732	-1,49	0.958	4.28	6.01	Na	776	0,8
Bolivia	3937	0,05	0.885	3.51	6.04	46	1195	0,702
Botswana	12508	0,73	0.783	2.41	9.07	42	674	0,58
Brazil	8949	0,37	0.888	3.02	4.00	75	3221	0,802
Bulgaria	10274	0,54	0.930	4.04	5,4	99	2138	0,826
Chile	13030	0,94	0.918	2.39	3.04	91	2185	0,869
China	4644	-1,55	0.849	1.07	2,5	44	2775	0,778
Colombia	6378	-0,34	0.875	6.02	4.07	86	1985	0,78
Croatia	14309	0,44	0.915	6.02	4.04	100	100	0,85
Czech Rep	22118	0,96	0.938	6.03	4.04	98	3236	0,895
Ecuador	7145	-0,13	0.877	2	1.00	89	1324	0,77
Egypt	4953	-1,01	0.731	2.04	3,9	70	1960	0,712
Estonia	18969	1,00	0.964	3.18	5.01	97	1543	0,87
Georgia	4010	-0,34	0.909	1.04	3.01	94	685	0,75
Hungary	18277	1,11	0.960	5.04	5.04	95	3487	0,879
India	2469	0,33	0.638	0.19	3.08	33	33	0,621
Indonesia	3454	-0,27	0.834	0.18	1.00	55	1893	0,71
Israel	24097	0,63	0,947	4.41	6.09	Na	3222	0,937
Kazakhstan	9832	-1,14	0.966	1.44	3.02	72	498	0,77
Kyrgyzstan	1813	-0,98	0.919	2.03	4.09	59	267	0,71
Latvia	15350	0,90	0.961	3.14	5.01	78	1323	0,85
Lithuania	15738	0,94	0.968	3.54	5.02	Na	1459	0,87
Macedonia,TFYR	7850	-0,09	0.879	6	3.05	Na	683	0,8
Malaysia	12536	-0,36	0.848	1.41	6.02	Na	1950	0,815
Mexico	12177	0,26	0.879	2.18	5.04	79	2805	0,831
Morocco	4000	-0,58	0.563	1.07	6.08	73	1366	0,63
Pakistan	2361	-1,28	0.492	0.04	2.06	59	1554	0,549
Peru	7092	0,03	0.885	2,1	2.07	63	1771	0,777
Philippines	3153	0,12	0.887	1.02	2.07	72	2049	0,773
Poland	14836	1,09	0.952	4.03	5.04	Na	3584	0,872
Romania	10431	0,41	0.914	3.07	3.03	Na	2392	0,82
Russian Federat.	13116	-0,65	0.933	3.02	3.05	87	3087	0,807
Saudi Arabia	22296	-1,52	0.815	2.29	6.08		1074	0,787
Slovakia	17730	0,97	0.928	4.51	4.02	99	2084	0,87
Slovenia	24356	1,06	0.969	6.03	6.00	Na	1996	0,92
South Africa	12500	0,83	0.840	3.04	5.04	65	2817	0,66
Tajikistan	1610	-1,13	0.896	0.29	3.04	51	195	0,69
Thailand	8000	0,01	0.886	1.52	4.02	99	1902	0,78
Tunisia	6859	-0,97	0.766	2.05	7.03	85	1233	0,77
Turkey	8417	-0,32	0.824	5.03	4.00	88	2365	0,767
Turkmenistan	4300	-0,32	0.907	2.50	3,9	62	156	0,76
Ukraine	6212	-0,51	0.956	3.05	6.03	96	1590	0,784
Uzbekistan	2192	-1,66	0.890	2.04	9,4	67	376	0,72
Venezuela	11060	-0,43	0.886	2.01	3.07	68	1878	0,794
Viet Nam	2363	-1,54	0.810	1.06	1,8	61	868	0,719

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