



ISTITUTO DI STUDI E ANALISI ECONOMICA

Human capital: theoretical and empirical insights

by

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ABSTRACT

The purpose of this paper is twofold. First, we want to challenge the notion of “human capital” as “education, training and work experience” and suggest that it is the “quality of the workforce” that matters here defined as the set of characteristics that allow workers to function in a specific institutional and historical context. Our main conclusion is that the quality of the workforce is affected by the institutional environment where the workers live and that therefore it can vary across countries and institutional contexts. Second, we want to show the empirical relevance of this last point by testing the extent to which the quality of institutions (here proxied by the Kaufman et al., 2007, governance indicators) can affect the quality of the workforce (proxied by the percentage of the working age population registered in a lifelong learning programme). Our empirical analysis is conducted on a data-set of 11 European countries observed over the period 1997-2006. The results indicate that countries with better governance indicators are also endowed with a more qualified workforce.

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*“There is nothing more difficult to plan, more
Doubtful of success, nor more dangerous to manage
Than the creation of a new system.
For the initiator has the enmity of all who would
Profit by the preservation of the old system, and
Merely lukewarm defenders in those who should gain
By the new one”*

Il Principe (1513), Niccolò Machiavelli

1 INTRODUCTION

In the mainstream economics the notion of “human capital” is a rather established one. Indeed, OECD provides the most complete definition as “all the attributes embodied in individuals that are relevant to economic activity” (OECD, 1998). In spite of the fact there have been attempts within the mainstream literature to define the concept of “human capital” in a more sophisticated way, the literature in this area still thinks of “human capital” as the equivalent of physical capital forgetting that even though there are some similarities between the twos, the process of accumulation of knowledge is deeply different from the process of accumulation of physical equipment.

The purpose of this paper is therefore twofold. First, we want to challenge the notion of “human capital” as “education, training and working experience” and suggest that it is the quality of the workforce that matters defined as the set of capabilities that allow workers to function in a specific institutional and historical context. In other words, we suggest that the decision-making process that is behind the accumulation of human capital at an aggregate level (as it is described by mainstream economics) does not take into account the fact that individuals when deciding whether or not to invest in knowledge respond to the incentives provided by the institutional context. On the contrary, the expression “quality of the workforce” conveys the very basic idea that the capabilities a worker is endowed with are contextual to the environment (s)he is in. For example, a worker living today in a democracy cannot have the same characteristics of workers living 50 years ago in a dictatorship. To support our argument we will use insights from both the Institutional and Evolutionary Economics; more specifically we will consider the work of Commons, Veblen, Ayres and of some more recent Institutionalists such as Hodgson, Lee and Muera. The advantage of using this theoretical framework is that Institutional

economists examine economic activity using simply what Frederic Lee (2002, p. 790) calls “common sense”¹.

Our main conclusion is that the quality of the workforce is affected by the institutional environment where the workers live and that therefore it can vary across countries and institutional contexts. Second, we want to show the empirical relevance of this last point by testing the extent to which the quality of institutions can affect the quality of the workforce. In our paper we consider the quality of the workforce to be a special type of active citizenship as defined by the European Commission (2002, p. 4); in other words, an active citizen is an individual who can contribute to all the aspects of social life and is also capable to find the right job and to make the necessary investments in education and training. Our proxy for the quality of the workforce is the country-level percentage of individuals involved in a lifelong learning programme. Indicators of institutional qualities are sourced from the well-known Kaufmann et al. (2007) data-set on the quality of governance. Our empirical analysis is conducted on a data-set of 11 European countries observed over 1997-2006. The results confirm that institutional quality has an impact on the quality of the workforce as countries with better quality institutions are also the ones with the quality workforce. Paper is organized as follows. Section 2 reviews the institutional economics literature on human capital and knowledge. Section 3 examines the concept of quality of workforce and its relationship with active citizenship. Section 4 describes data and the econometric model while the empirical results are presented in Section 5. Finally some conclusions are offered in Section 6.

2 Human Capital in an Institutional Economics perspective

The classical definition of human capital is provided by the OECD (1998) which defines it as “The aggregation of investments, such as education and on the job training that improves the individual’s productivity in the labour market”. However, this notion is rather restrictive and not always realistic. Indeed, the investment in education not necessarily produces private benefits to the worker

¹ In his words “commons sense” is: a complex set of beliefs and propositions about fundamental features of the world which individuals assume in whatever they do in ordinary life (Lee, 1998, p.28).

in terms of higher wages² but it surely creates positive externalities for the society as whole. Not surprisingly then, every society is willing to invest in education in order to take advantage of its benefits. Moreover, the investment in education can create long-term benefits as *“The structures of physical, human and social capital constrain future production and wealth is always and everywhere a “residuum of past activities”* (Mises L., 1996, p. 506)

However, the possibility that education and knowledge in general can generate positive externalities is not a totally new contribution of modern economic theory. Indeed the Old Institutional Economics, in general, recognised the importance of knowledge (embodied in individuals) for the progress of societies, but refrained from labelling it “human capital”. This is hardly surprising: the Old Institutional Economics³ rejected the association of the word “capital” (meaning “stock, wealth and goods”) with phenomena that are not economic but are grounded in the cultural fabric of the society. Frank Fetter⁴ was one of the staunchest writers against the use of the term capital.

Physical objects of value are not capital, being sufficiently designated as goods, wealth or agents (Fetter, 1930, p. 190).

He gives also an interesting historical derivation of the word capital (Fetter, 1930):

Thus the business as a whole might be thought of either as the sum or fund of purchasing power invested, or as the mass of goods which, although not bought with borrowed funds, embodied the owner’s business fund.

These two types of capital concepts are so distinctive in essential thought and practical application that confusion inevitably resulted from the use of one word to designate both. This confusion occurred not later than the early years of the seventeenth

² The Sixties witnessed an unprecedented growth of papers focusing on the accumulation of “human capital” and its impact on wages (Schultz, 1961; Becker, 1964; Kiker, 1966). In this context, human capital was defined indirectly as: “expenditures on education, training, medical care, [...] produce human, not physical or financial, capital because you cannot separate a person from his or her knowledge, skills, health, or values the way it is possible to move financial and physical assets while the owner stays put” (Becker, 1993, p. 16). Since factors different from education, training and ability may affect the wage profile the validity of the Becker-Mincer human capital approach has been widely tested.

³ The Old Institutional Economics encompasses mainly the contributions of Veblen, Commons and Mitchell, contributors of the American Institutionalism. The New Institutional Economics - terms coined by Williamson (Chavance, 2008, p. 45) - was borne in opposition to the term Old Institutional Economics. While the first recognised the importance of institutions while maintaining the neoclassical modelling, the second uses the “institutions” to criticise neoclassical orthodoxy (Chavance, 2008, p. 45).

⁴ Frank Albert Fetter (1863-1949) was an American economist belonging to the Austrian School.

century, when Cotgrave defined capital in 1611 as ‘wealth, worth; a stock, a man’s principal, or chief, substance.’ Here the idea of ‘worth,’ implying a valuation, is thoroughly mixed with that of substance, no doubt in the sense of material things in possession. ‘Capital’ thus used is a superfluous and confusing synonym of wealth, goods and stock (Frank Fetter, 1930, p. 187).

Schumpeter (1954) rejected the use of an expression such as “human capital” and insisted that the word “capital” should be applied exclusively to financial assets. During the 1960s and 1970s, a vivacious debate started on both sides of the Atlantic on the meaning of the word “capital” (so-called Cambridge controversies, see also Harcourt, 1982). Since then, economists have tried to define the term “capital” more correctly. Joan Robinson (1979) explicitly wrote that the term capital should to be used only when referring to financial assets. Nevertheless, the word “capital” is still used to denote the stock (or reserve) of any productive factor. This happens because in the current economic culture *“even social or cultural problems may be resolved and explained by market forces, valued and exchanged in monetary terms, and invested like financial capital”* (Hodgson, 2001, p. 130).

The connection between the two terms “human” and “capital” is, however, particularly odd. The expression “human capital” is rather ambiguous; indeed it is not clear whether it refers to the number of workers that are the inputs in an aggregate production function or the attributes embodied in workers that allow them to be more productive. Also these attributes are particularly difficult to specify. Not surprisingly then there is no agreed empirical measure of workers’ human capital where the main proxies have been education, training and working experience.

Therefore, we follow the institutional economics literature and prefer to think of human capital as the knowledge embodied in workers acquired from both formal and informal institutions. In our view, knowledge is the main instrument that helps individuals to develop what we call “contextual” capabilities, that is the capabilities necessary to individuals to function in the environment where they live. Indeed, the power and freedom that knowledge can give to individuals, except for the unusual and genial discoveries, can be used only if the institutions allow so.

This view of knowledge as the product of the interaction of formal and informal institutions is obviously consistent with the definition that the old institutionalists gave of knowledge. Consider first Commons. Commons (1964) described labour as the main contribution to the creation of the wealth of the nation. He warned that human beings, and not money or commodities, are the real measure of prosperity of a nation. He always used the term “labour” and

never the expression “human capital”. While studying the local labour market in Wisconsin, Commons first noticed that education can generate positive externalities the whole society can take advantage from. In fact, he emphasised the role that education has in preventing mental degradation, irregular and/or work, pauperism and in creating self-reliant individuals. Given the importance of education, he also questioned the way the provision of education was arranged. In his opinion, firms are not well positioned to be the providers of education. Indeed, he claims that firms had created a separation between the “brain” and the “hands” (Commons J. R., 1964, p. 369) of low-skilled workers, as they need only workmanship: *“What is the part that industrial education should perform in preventing vagrancy, irregular employment, and pauperism? Before we can answer the question, we need to know what kind of industrial education we mean, and what kind of industry it is that needs this education* (Commons J. R., 1964, p. 363).

His answer was that society needs universal education so that *“every boy and girl become a business man... an intelligent worker...a citizen... and must protect his health. All these requirements are common to all occupations, yet no occupation of modern industry teaches them”* (Commons, 1964, p. 379). Universal education, according to Commons, contributes to create better citizens and not to acquire job-specific skills that can be learnt while on the job. Indeed, he observed that workers can become more capable (while learning on the job) in manual jobs and therefore they can move across different jobs and earn higher wages as time goes by.

However, the main contribution of institutional economists is the recognition that the behaviour of individuals cannot simply be explained by the laws of economic rationality but it is the result of the interaction of the individuals with social norms and institutions. Therefore their action may be defined as social action (Muerga, 2007). For instance, Commons (1934, p. 74) suggested individuals are not *“globules of desire”* but *“institutionalized minds”*; they learn the customs and the behaviour that is considered acceptable by the society. In short, they are not passive beings pursuing exclusively their private interest, but they act following laws and social rules (customs and habits) as well. In Commons’ words: *Individuals begin as babies. They learn the custom of language, of cooperation with other individuals, of working towards common ends, of negotiations to eliminate conflicts of interest, of subordination to the working rules of the many concerns of which they are members* (1934, p. 73).

The most important institutional economist, Thorstein Veblen (1919) wrote that the production function is not only a function of capital and labour, but also of the knowledge accumulated over time and passed on from generation to

generation. However, he also suggested that, at any point in time, the stock of knowledge available to a society is a product of its institutions:

But habits of thought are the outcome of habits of life. Whether it is intentionally directed to the education of individuals or not, the discipline of daily life acts to alter or reinforce the received institutions under which men live (Veblen, 1901, p. 121).

Moreover, Veblen, for the first time, introduces the dicotomy between progressive and ceremonial habits where ceremonial habits refer to all those habits that resist to any change to maintain established privileges. This idea will be used later on by Clarence Ayres (1962) to show the importance of technological change against ceremonial habits. He opposed the convention to explain the notion of value in terms of price system, equilibrium and “utility” and introduced the notion of “social medium”: i.e. the environment where an individual lives and where his/her utility is determined⁵. According to Ayres (1962, vi), the evolutionary process of human beings has been driven by two main forces:...*one, progressive, dynamic, productive of cumulative change; the other counter-progressive, static, inhibitory of change* (xiv). In *Toward a Reasonable Society* (1961), he explained the coexistence of scientific (objective) knowledge and socially accepted values rooted in traditions, beliefs, and customs. He considered technology to be a progressive force, which induces individuals to use new instruments. Ceremonial institutions prevent technological change and create barriers such as social stratification, conventions, customs and ideology (Ayres, 1962). The accumulation of knowledge is therefore important not only for individuals but for the society as a whole because it nurtures progressive forces.

The kind of knowledge described by old institutionalists is very different from the specific knowledge advocated by the knowledge-based economy in order to improve labour productivity (Gagnon M. A., 2007). We may say briefly that knowledge is the whole set of information individuals learn from institutional context. People are rational in the sense that they act in the most effective way given the institutional context they are in⁶. Because of the shortcomings of the traditional mainstream economic literature, we suggest a more suitable

⁵ Human capital investment implies without any doubt a financial investment. Every financial investment should ensure a financial return, but in the case of human capital investment, the return is not guaranteed as it depends on the institutional context (including wage bargaining, income distribution etc.). See Bottone G. (2008), *Education in Italy: is there any return?*, WP n. 109, March.

⁶ For example, in a country where corruption is pervasive, people will tend to use bribes when pursuing their private benefit.

expression to denote “human capital”, namely “quality of the workforce”. The concept of quality has an intrinsically historical nature, because it changes over time according to the needs of societies. The expression “quality of workers” wants to capture the capacity of workers to produce a “quality output” (the output with some requested characteristics) thanks to a number of skills and personal capabilities specified, formally or informally, by the employer and by the society.

How we can define quality? The word “quality” reminds of a number of attributes that an object or a person has so to be able to relate to the environment it/(s)he belongs to. In any case, it is a relative concept. Usually, the characteristics needed by workers are specified by a contract or by an informal interview⁷. A more educated and trained worker, however, could not earn a higher wage if the institutional context has a number of formal or informal institutions (collective bargaining, welfare state but also corruption and rent seeking) that cut the link between individual wage and level of education. In other words, the kind of knowledge each society is endowed with varies according to its institutional framework and this induces individuals to develop certain “capabilities” rather than others⁸.

3 Labour quality and active citizenship

Quality of the workforce (or labour quality) is a more comprehensive definition than human capital as it includes not only education but also all the other capabilities (health, longevity, psychological conditions, psychomotor-based skills, cognitive capabilities and social relationships (David and Foray, 2001)⁹) that affect the workers’ productivity. Labour quality can be considered to be part of the more general notion of “active citizenship”, fully explained

⁷ In this case, economic theory offers many solutions to the problems of asymmetric information between employer and employee.

⁸ The idea that “institutions crystallize both knowledge and ignorance” (Chavance, 2008, p. 7) was already suggested by authors of the younger “German historical school” and of the American institutionalism (Chavance, 2008, p. 7).

⁹ An implicit definition of quality of the workforce is given by Gregory Clark (2006) who defines it as the discipline and attitudes toward work shaped by social beliefs and institutions. In other words, historical and cultural patterns are the ground from where formal and informal educational efforts may contribute to the quality of the workforce.

hereafter [European Commission, 2002]. According to this view, public education policies should aim at creating not only a productive worker but also a “quality citizen”, that is, a citizen who participates actively in social, political and economic life (Active citizenship). This view is already present in many policy statements. For instance The European Commission openly declares that: *In a knowledge society education and training rank among the highest political priorities. Acquiring and continuously updating and upgrading a high level of knowledge, skills and competencies is considered a prerequisite for the personal development of all citizens and for participation in all aspects of society from active citizenship through to labour market integration* (European Commission, 2002, p. 4). In other words, as Commons anticipated in 1913, an effective educational system should develop the individual capabilities necessary to be active in all aspects of social life. An individual whose capabilities are well developed will also be economically active and capable of participating into the labour market. However, it is important to recall that this set of capabilities varies across societies according to their formal and informal institutions; not surprisingly we can have institutions that allow individuals to invest in capabilities that can stifle changes and create the conditions for “social necrosis” (see the contribution of Dewey, 1916 who explained the difference between formal and informal education and the importance of the social environment¹⁰). In other words, the propensity individuals have to be active citizens and so to participate into all dimensions of social life is affected by the

¹⁰ It seems useful to quote some important passages from *Democracy and Education* (1916):

Informal education is important but incidental...Formal education allows transmitting from generation to generation all the resources and achievements of a complex society. Hence, one of the weightiest problems with which the philosophy of education has to cope is the method of keeping a proper balance between the informal and the formal, the incidental and the intentional, modes of education...(Chapter 1, par. 3).

When we have the outcome of the process in mind, we speak of education as shaping, forming, moulding activity, that is, a shaping into the standard form of social activity. Just because life signifies not bare passive existence (supposing there is such a thing), but a way of acting, environment or medium signifies what enters into this activity as a sustaining or frustrating condition (Chapter 2, par. 1). A being whose activities are associated with others has a social environment. What he does and what he can do depend upon the expectations, demands, approvals, and condemnations of others....(Chapter 2, par. 2)

For it assumed that the aim of education is to enable individuals to continue their education or that the object and reward of learning is continued capacity for growth. Now this idea cannot be applied to all the members of a society except where intercourse of man with man is mutual, and except where there is adequate provision for the reconstruction of social habits and institutions by means of wide stimulation arising from equitably distributed interests. And this means a democratic society... (Chapter 8, par. 1).

institutional context they are in. This implication can be easily tested using econometric analysis where proxies of the quality of the workforce are regressed on measures of institutional quality.

4 DATA DESCRIPTION

There is a lack of empirical research on the quality of the workforce and of institutions¹¹. The present study aims at investigating the relationship between lifelong learning (as a proxy of active citizenship) and the quality of institutions¹². The measurement of “active citizenship” is obviously difficult, but we have chosen the percentage of individuals involved in lifelong learning programme¹³ as its proxy. Lifelong learning arrangements are considered also to be an indicator of the government’s commitment to the educational and training system, in order to create “active citizenship” as described above. Data on lifelong learning have been sourced from Eurostat (http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/en/trng_III_esms.htm). The quality of institutions has long been debated in economic theory, but empirical contributions have been insufficient and complex (Kaufmann et al., 2007b). The main difficulty in measuring institutional quality arises from the composite definition of institutions, which have a variety of dimensions¹⁴. The data on institutional quality are provided by Kaufmann et al. (2007) [http://info.worldbank.org/governance/wgi/sc_country.asp], who also give a detailed explanation on how variables have been constructed.

¹¹ For estimates of the quality of the workforce in the euro area see: Guido Schwerdt and Jarkko Turunen, Growth in euro area labour quality, ECB wp n. 575, January 2006.

¹² An implication is that in a country where the quality of institutions is poor, citizens may not be interested in acquiring the educational capabilities needed to participate to the social and economic life of the country.

¹³ European Commission (2002, p.4) will later on define “lifelong learning” as: *the overarching strategy of European co-operation in education and training policies and for the individual. The lifelong learning approach is an essential policy strategy for the development of citizenship, social cohesion, employment and for individual fulfilment.*

¹⁴ The set of formal (rules, laws, constitutions) and informal (norms of behaviour, conventions, self-imposed codes of conduct) rules and their enforcement mechanisms, governing and shaping the behaviour of individuals and organizations in society (Straub S., 2000, p. 6). Synthetically, North (1994) considers institutions to be the incentive structure of a society.

The data-set is made of eleven countries (Austria, Denmark, Finland, France, Germany, Italy, Netherland, Norway, Spain, Sweden, United Kingdom), observed over the period 1996-2006. Lifelong learning is measured by Eurostat as the “percentage of persons aged 25 to 64.... who received education or training in the four weeks preceding the survey” over “the total population of the same age group”. The worldwide governance dataset by Kaufmann et al. (2007) includes governance indicators for 100 countries over the period 1996-2006. The indicators are constructed by aggregating data on the perception of governance coming from 31 different sources. The indexes vary between -2.5 and 2.5 where larger values refer to better outcomes. The six dimensions measured by Kaufmann et al. (2007) are:

Regulatory quality (RQ) ability of the government to formulate and implement sound policies and regulations that permits and promotes private sector development.

Control of corruption (CoC): the extent to which elites and private interests exercise public power for private gain, including both petty and grand forms of corruption, as well as capture of the state.

Rule of law (RoL): the extent to which agents have confidence in and abide by the rules of society and in particular the quality of contract enforcement, the police and the courts, as well as the likelihood of crime and violence.

Political stability and absence of violence (PI): perception of likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including domestic violence and terrorism.

Voice and Accountability (VA): the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression and association and free media.

Government effectiveness (GE): the quality of public services, the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

The data on lifelong learning are shown in Figure 1, while the Kaufmann's indicators for our data-set are plotted in Figures 2-6 (see Appendix 1). For both sets of variables, Italy is the worst performer, whereas Sweden and Denmark are the best ones.

The empirical specification we use is rather straightforward:

$$LL_{it} = \alpha_i + \beta_1 GE_{it-1} + \beta_2 PI_{it-1} + \beta_3 VA_{it-1} + \beta_4 CoC_{it-1} + \beta_5 RoL_{it-1} + \beta_6 RQ_{it-1} + u_{it} \quad (1)$$

Essentially our dependent variable (LL) is regressed on the lagged values of the six indexes of institutional quality. The Kaufmann' indexes have been changed in such a way that they are now all positive. We control for endogeneity by introducing the lagged values of the institutional variables. To control for time heterogeneity we also add a set of time dummies. To be able to take into account the specific nature of the dependent variable and the fact that there may be unobserved time-invariant characteristics that could be correlated with the explanatory variables, we estimate a fractional response model for panel data. Papke and Wooldridge (2008) show that in the case of a balanced panel dataset (with few time periods), unobserved time-invariant heterogeneity is controlled for by adding the time averages of all explanatory variables to the fractional probit model. All models are estimated with cluster-robust standard errors. To be able to use this estimator, we will have to use the balanced components of the panel data for the years 2002 to 2006.

5 RESULTS

The marginal effects of (1) are presented in Table 2. The z's have been computed by using cluster robust standard errors. Time dummies have been added to all specifications along with time averages of the independent variables. The estimates from Table 2 give some interesting insights on the relationship between the quality of institutions and the percentage of individuals involved in lifelong learning programmes. First of all, we notice that Voice and Accountability, Rule of Law and the index of Political Stability are significant and have the expected positive sign. Unsurprisingly, Political Stability is one of the institutional characteristics most powerfully and permanently correlated to lifelong learning. Countries that are perceived to be more unstable are also the ones where the individuals are less willing to enter lifelong learning because they run the risk of not being able to reap the benefits of the investment in education later on.

The Rule of Law index is significant and positive as well. This indicator measures the extent to which citizens have confidence in and abide by the rules of society. In a sense, this variable indicates a dimension of "social capital", that is the trust people have in the institutions of the society where they live. If the trust is not sufficiently high, any investment may appear useless to individuals. Equally it is not surprising that the Voice and Accountability index has a positive

impact on lifelong learning. Indeed “Voice and accountability” measures the extent to which the citizens are free to select their government as well participating to the social and political life. Therefore individuals in a society where citizens can freely express their opinions and associate are also more willing to invest in further education as they know the additional knowledge gained through further education can be of some use to the society.

The Government Effectiveness index has a negative sign but it is not significant. This is not surprising: this index captures the quality of the executive and of the civil service and there is no strong reason to believe that the quality of the institutional architecture can affect the willingness of citizens to invest in further education. Equally, the Quality of the Regulatory Environment has a negative sign (but this time it is a significant variable). In other words, if a government can implement sound regulatory policies that can help the development of the private sector does not affect the willingness of citizens to get into lifelong learning programmes, so suggesting that investing in further education is not necessarily driven by the desire to participate into the labour market.

Interestingly enough, the control of corruption index does not seem to have a significant impact on the percentage of individuals getting into lifelong learning suggesting that at least in European countries individuals’ decision of whether or not investing into human capital is not influenced by the presence of anti-corruption policies (of course, this may not be true in developing countries where it is well-known that accumulation of human capital is influenced by the extent of corruption).

One important policy implication from the empirical analysis is that reforms of the educational system may be useless if the overall institutional context creates perverse incentives that do not support the desired outcome. Indeed, just introducing measures to increase the number of individuals involved in lifelong learning may not necessarily have such an effect if the government is perceived to be so unstable that the investment in education will not produce any personal benefit. Also, if a society is characterised by ceremonial institutions (in Ayres’ parlance) it could tend to preserve the existing status quo and the privileges of the existing social groups. In this situation, individuals will be better off by becoming a member of these social groups¹⁵ rather than acquiring additional knowledge.

¹⁵ Italy is a good example where several attempts have been made to reform the educational system but these have always met opposition by all the involved parts (students, teachers, trade unions etc.).

Table 1 Yearly mean of the main variables.

Year	1996	1998	2000	2002	2003	2004	2005	2006
Percentage of individuals involved in Lifelong Learning programmes	9.32	9.40	12.09	11.72	15.42	16.44	17.14	17.26
Regulatory Quality	1.13	1.27	1.45	1.51	1.53	1.53	1.43	1.42
Rule of Law	1.61	1.59	1.64	1.64	1.61	1.62	1.65	1.70
Political Stability	1.00	1.07	1.12	1.10	0.95	0.85	0.83	0.80
Government Effectiveness	1.94	1.79	1.81	1.87	1.84	1.75	1.68	1.63
Voice & Accountability	1.28	1.39	1.39	1.37	1.38	1.59	1.51	1.48
Control of Corruption	1.87	1.90	1.91	1.90	1.90	1.86	1.79	1.80

Sources: Eurostat and Worldbank (http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/en/trng_III_esms.htm; http://info.worldbank.org/governance/wgi/sc_country.asp)

Table 2 Fractional Probit Model. Marginal Effects

Independent Variables	Marginal Effects	z
Political Instability (lagged one period)	0.11	2.66
Government Effectiveness (lagged one period)	-0.016	-0.38
Regulatory Quality (lagged one period)	-0.077	-3.63
Rule of Law (lagged one period)	0.17	1.73
Voice and Accountability (lagged one period)	0.28	3.21
Control of Corruption (lagged one period)	-0.030	-0.52
Constant	0.080	0.56
N	55	

Note: t-ratios computed using cluster robust standard errors. Year dummies and time averages of the independent variables have been added to the specification but estimates are not reported.

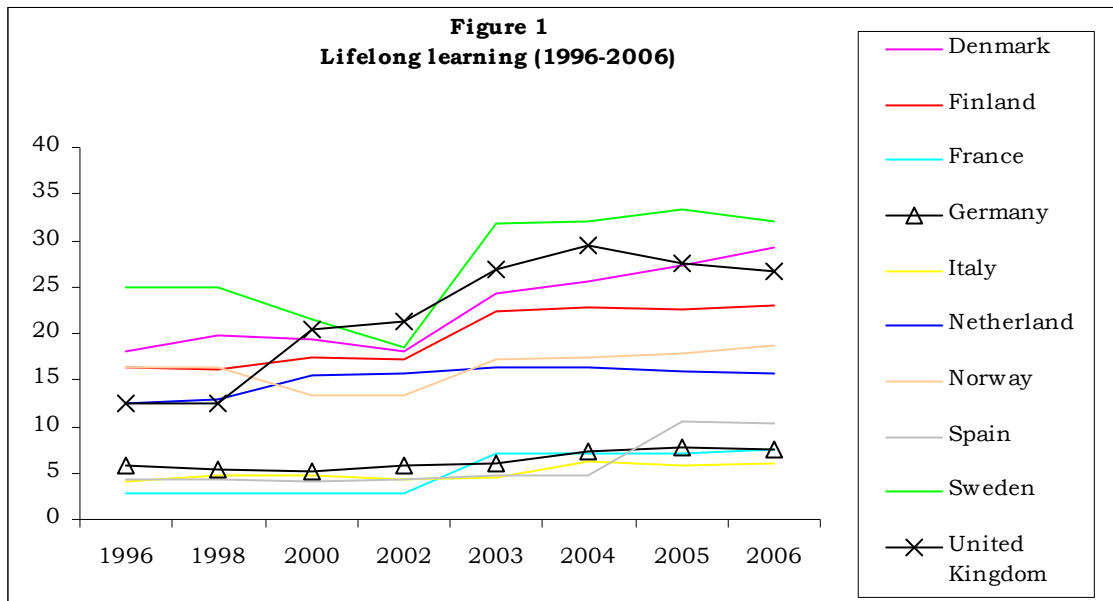
6 CONCLUSIONS

The primary purpose of this paper was to challenge the traditional idea of “human capital” and propose that it is the quality of the workers that matters where this is defined as the set of capabilities that allow workers to function in a specific institutional and historical context. The main implication of our results is that individuals may be willing to acquire additional knowledge if they expect

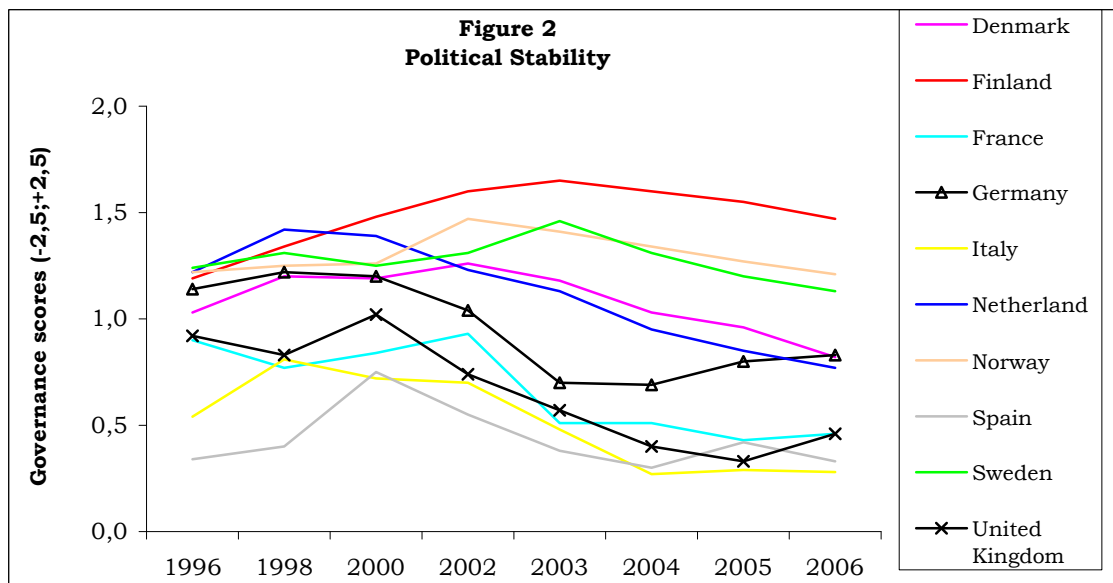
that this additional knowledge will help them to contribute to the society where they live. To support this argument we have used insights from both the Institutional and Evolutionary Economics and drawn the conclusion that the quality of the workforce is affected by the institutional environment where the workers live and that therefore it can vary across institutional contexts.

We have also show that this last point is empirically relevant by testing the extent to which the quality of institutions can affect the quality of the workforce proxied by the country-level percentage of individuals involved in a lifelong learning programme. Indicators of institutional qualities are sourced from the well-known Kaufmann data-set on governance indicators. Our empirical analysis is conducted on a data-set of 11 European countries observed over 10 years (1997-2005). The empirical results confirm our expectations that institutions affect the quality of a country's workforce. Of course the study is not exhaustive and we think additional steps are necessary in two respects: a) first we need to measure "quality of the workforce" and institutional quality more accurately; b) we need also to understand what factors drive the differences in institutional quality across the European countries. Indeed, the available data are far from being complete with respect to the so complex notion of institution that include a lot of unmeasured dimensions (like informal rules, customs, religion, culture etc.) in addition to the governance indicators.

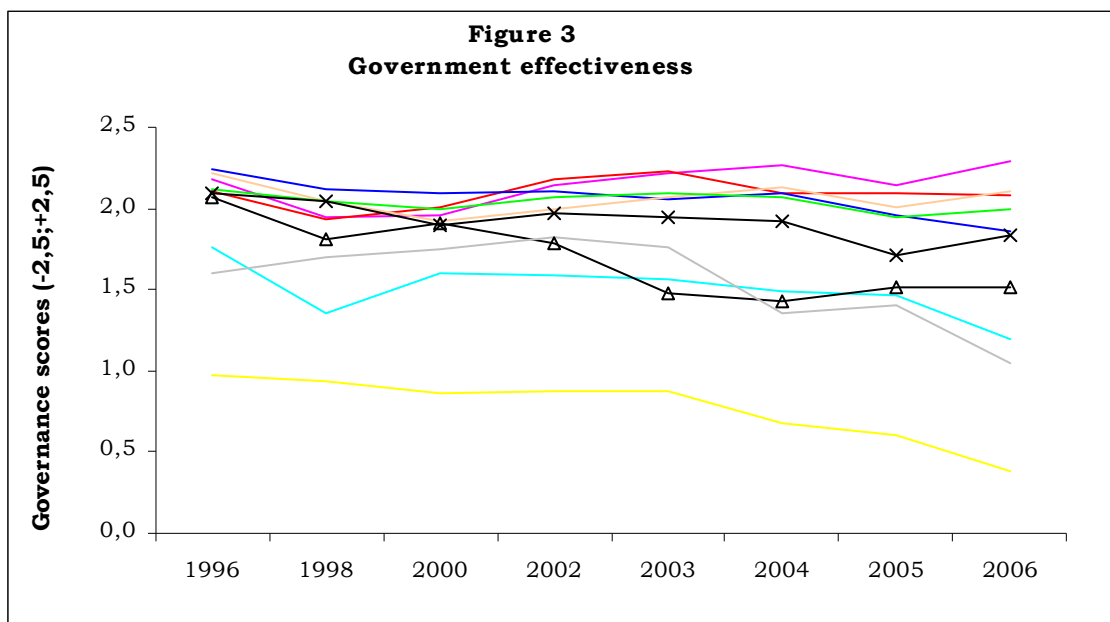
APPENDIX



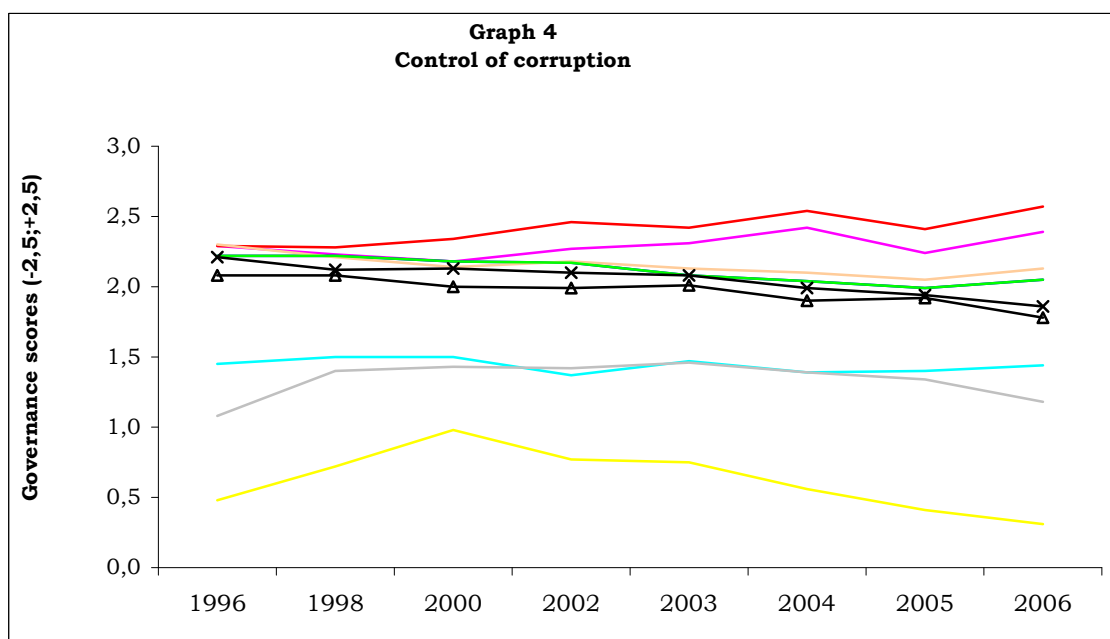
Source: Calculations on data from Kaufmann et al. (2007).



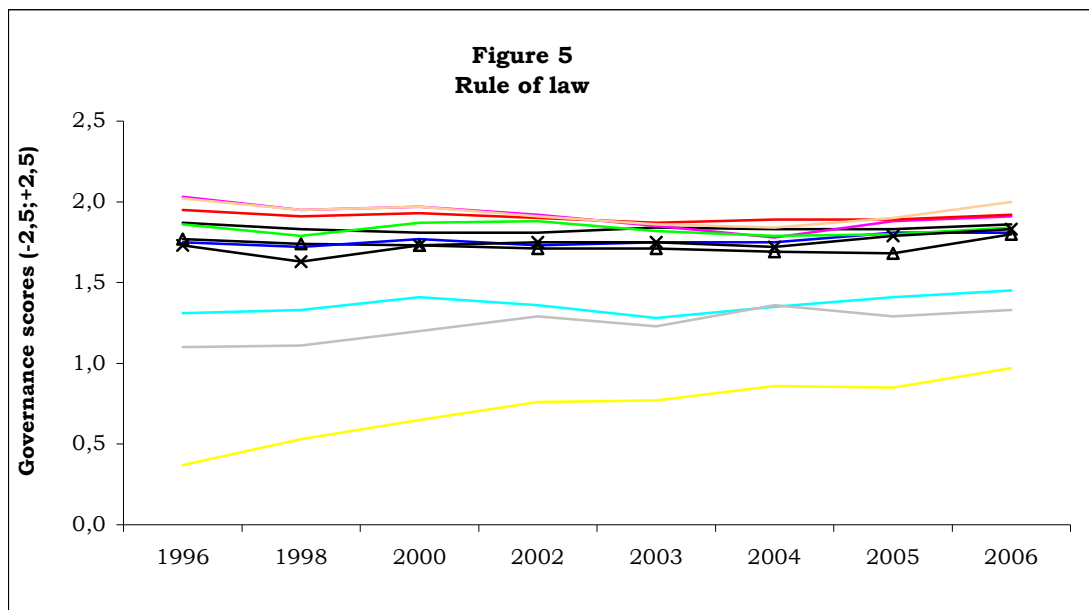
Source: Calculations on data from Kaufmann et al. (2007).



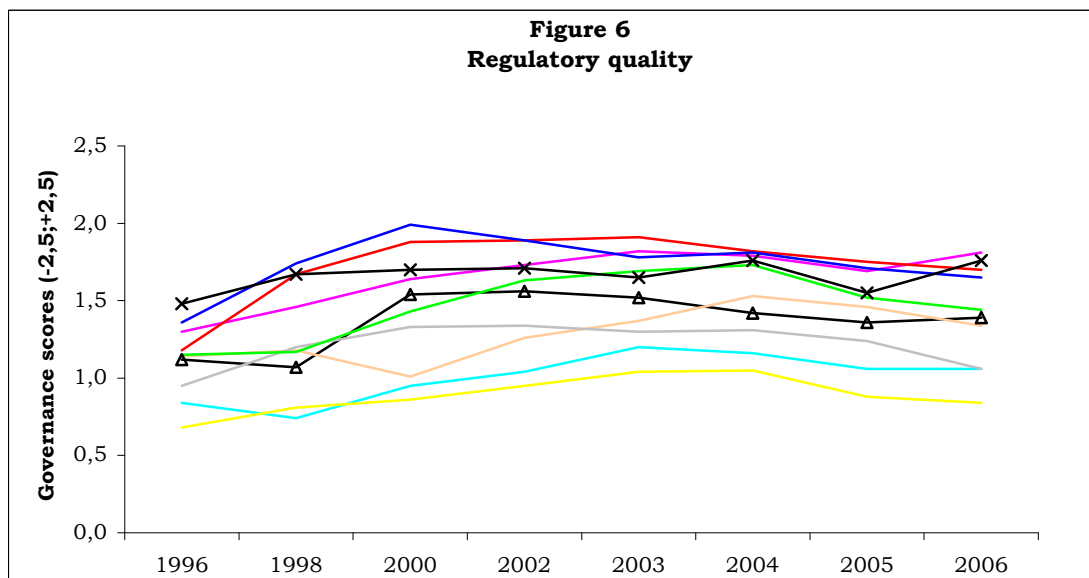
Source: Calculations on data from Kaufmann et al. (2007).



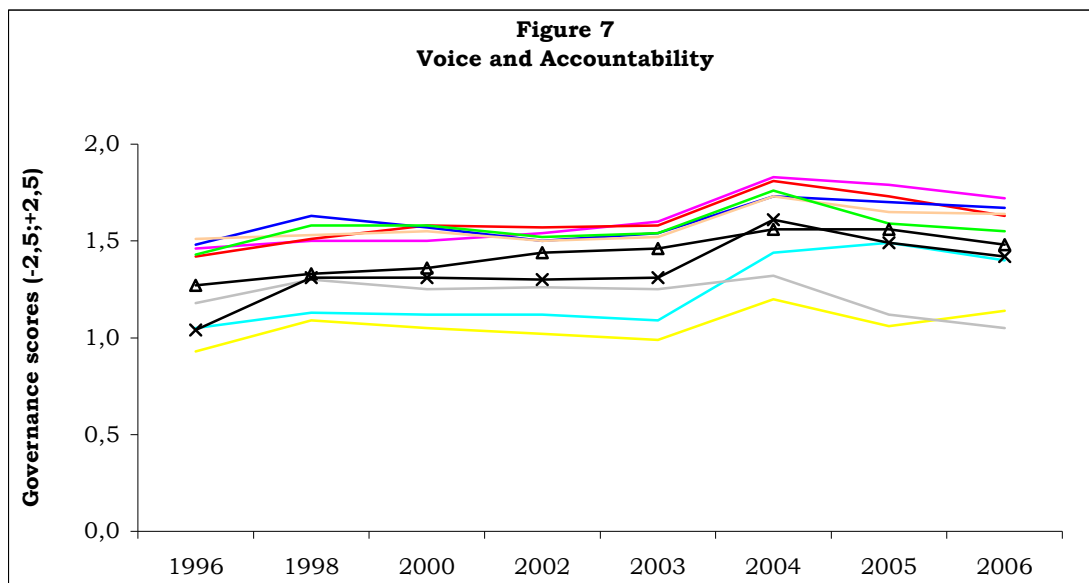
Source: Calculations on data from Kaufmann et al. (2007).



Source: Calculations on data from Kaufmann et al. (2007).



Source: Calculations on data from Kaufmann et al. (2007).



Source: Calculations on data from Kaufmann et al. (2007).

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