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SOCIAL CAPITAL
AND ECONOMIC
GROWTH

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Abstract: It is argued in order to explain large differences in the level of the development and the growth of economies cannot be adequately explained only by looking the traditional inputs of labour, capital and natural resources. The hypothesis is that also the role of social capital needs to be taken into account.

First the concept of social capital is defined and discussed. Then the role of social capital in the development process is explained. Empirical test based on the cross-country data of 27 countries indicates that trust as a component of social capital is an important factor in explaining the differences in the rate of economic growth in this set of countries. This supports the idea that the role of the trust to rules of the economic behaviour has indeed an important role to play in good economic performance. On the contrary the participation index is not statistically significant. This is in contrast with some other, usually micro-based studies where participation has proved to be important in improving the performance of the development projects. The report is part of a VATT research project "Human Capital and Entrepreneurship".

Key words: Economic growth, development, social capital, trust, participation

Tiivistelmä: Artikkelissa väitetään ettei maailman suuria maittaisia kehitys- ja kasvueroja pystytä selittämään pelkästään taloudellisilla muuttujilla kuten työvoiman määrällä, pääomalla ja luonnonvaroilla. On otettava huomioon myös sosiaalisen pääoman määrä.

Kirjoituksessa määritellän ensin sosiaalisen pääoman käsite ja keskustellaan sen eri ominaisuuksista. Tämän jälkeen selvitetään periaatteelliselta kannalta sosiaalisen pääoman roolia talouden kasvu- ja kehitysprosessissa. Tutkimuksen empiirisessä osassa tarkastellaan 27 maan talouskasvua. Sosiaalista pääomaa mitataan luottamus- ja osallistumisindeksien avulla. Tulosten mukaan luottamus sosiaalisen pääoman osana osoittautuu reaali-investointien ohella tärkeäksi selittäjäksi talouskasvussa esiintyville eroille. Sen sijaan toinen sosiaalisen pääoman osatekijä, osallistumisaste, ei osoittaudu tilastollisesti merkitseväksi kasvutekijäksi. Tämä on yhdenmukaista niiden tutkimusten kanssa, joiden mukaan demokratialla ei ole ratkaisevan suurta vaikutusta talouskasvun nopeuteen. Toisaalta tulos on ristiriidassa niiden mikroperusteisten tutkimusten kanssa, joiden mukaan osallistuminen projekteihin lisää merkittävästi projektien onnistumismahdollisuuksia. Tutkimus on osa VATT:n "Inhimillinen pääoma ja yrittäjyys" -tutkimusprojektia.

Asiasanat: Taloudellinen kasvu, kehitys, sosiaalinen pääoma, luottamus, osallistuminen

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1. Social Capital as an Economic Phenomenon

The concept of social capital is attracting increasing interest within research on economic growth and development. However, the concept has not yet quite established itself in economics. Views are also divided on its significance. In this article I examine the concept of social capital and present new empirical findings. The contribution of Professor James Coleman of the US (Coleman 1990) is considered central to the evolution of the concept of social capital. Social capital consists of institutional relations between people. The concept, then, relates to the institutional structure and functioning of society. The empirical significance of the concept was highlighted in the beginning of the 1990s by the research of Professor Robert Putnam (Putnam 1993).

Putnam's research concerned Italy, where the effects of the reforms of the regional administration were monitored over a period of around 20 years. At the beginning of the 1970s a reform of the regional administration was implemented that was identical throughout the country. Putnam observed 20 years later that the results of the reform were very different in different regions. On the whole, northern Italy appeared to have fared better from the reform than southern Italy. How did that come about? According to Putnam, the central explanation is the greater social capital of northern Italy. In Putnam's definition a key role is ascribed to various horizontal social networks and the information spread via them. In northern Italy these networks were more tightly knit and played a more important role than in the south.

I became interested in the concept of social capital when studying differences in levels of income and development between the peoples of the world at the WIDER Institute, the university of the UN. I felt that these enormous differences which – at least at the micro level – are growing all the time cannot be explained away by the application of, for example, Robert Solow's highly popular neoclassical model of economic growth and the related convergence theories (Solow 1956; Swan 1956).

According to the convergence theories, less developed countries gradually attain the income level of more developed countries by dint of the principles of the progressive diffusion of technology, mobility of the factors of production and flexible compensation. Although the neoclassical growth theory has proved to be an extremely useful approach for studying economic growth, it appears entirely

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inadequate as an explanation for present - and why not also past - differences in countries' levels of development. This, I think, also applies to the most recent versions of the neoclassical growth theory, such as the endogenous growth theory as propounded by Robert Lucas (1988), Robert Barro (1991) and Paul Romer (1990). The endogenous growth theory has undoubtedly produced some innovative angles on economic growth in a neoclassical world, but the impression remains that something fundamental is lacking in the analysis.

Perhaps a further stimulus for my interest in the institutional theory came from studying the doctoral thesis of Mika Maliranta, in which he attempts to explain differences in industrial productivity between Finland, Sweden and the US by means of a very thorough application of neoclassical concepts of growth accountancy to microeconomic material concerning company location. This attempt was particularly interesting because it has been very rare to use accurate microeconomic material to explain international industrial productivity differences. The basic problem with Maliranta's study was that even after factoring in all the neoclassical economic definitions, there were still distinct productivity differences between the countries.

The basic problem of the growth and productivity models mentioned above is that they do not assign any role or explanatory power to differences in the institutions of different societies. The reason for this is simply that the institutions are not explicitly acknowledged in the studies. Implicitly of course they are acknowledged, since the so-called institutions of perfect markets are present in the background. In this institutional environment the only relevant data for accountants are market prices. They contain all the necessary information in the economy. But the examples that I cited in the beginning show that such an institutional operating environment appears inadequate to explain even many of the fundamental phenomena in the world around us.

A practicable route out of this impasse is to consider the institutions of our societies in a broader frame than we as economists would normally do in a neoclassical world. But in endorsing this goal we are throwing ourselves open to a major problem: what ought to fluctuate between our institutions or what ought the variables to be?

The history of institutional economics is a long one. Institutions have been written about at length. It is not possible here to look at institutional economics in more depth, but it is possible to speak of the 'old' institutional theory (as expounded by i.a. Thorstein Veblen) and the 'new' institutional theory. I consider that the social capital theory falls within the latter camp.

Economists, too, have recently become increasingly receptive to a new institutional approach. A sure sign of this is the recent award of the Nobel Prize

to Douglass North and Oliver Williamson, both seminal figures in the 'new institutional economics' of economic history and economics, respectively.

A central tenet of institutional economics is that from the point of view of economic efficiency it is not sufficient simply to study the price system. For the price system to function effectively, it is also necessary to have the right institutions.

North in particular has stressed that economic growth and development are very much dependent on the institutions of society (North 1990). Institutions are understood here in a very broad sense, as principles that guide human actions either formally (consisting of legislation or other written precepts) or informally (consisting of culture or customs).

2. The production function of the economy

In its analysis of production, economics has always included land, labour and (man-made) capital. Physiocrats laid particular emphasis on land. In agrarian societies this was only natural. Land remained important for economic classicists, but with industrialisation man-made capital, i.e. machines, equipment, buildings and different physical structures, acquired an increasingly central role in analyses of production and economic growth and development.

Capital and labour were the factors of production defining long-run growth in the most simplified form of the neoclassical Solow-Swan growth model of the 1950s, and in production these factors were mutually and flexibly interchangeable.¹ The choice of the ratio of factors of production was crucially determined by their relative prices: wages and the interest on capital. With the neoclassical growth model, human capital and technological development also became important factors in analyses of growth. However, technological development in particular was an extraneous element in the model, indeed it was ‘manna from heaven’. The model was unable to explain the rise of technology. This weakness was addressed by the so-called new endogenous growth theory in the 1980s. This theory is founded in neoclassical thinking, but attempts to incorporate human capital and technological development in the model.

For physiocrats, but especially for mercantilists, the role of the state in economic development was central. However, ever since Adam Smith economists have stressed the crucial role of the ‘invisible hand’ of the markets in the efficient application of resources. An important element in the neoclassical growth theory has been not only the absence of organisations but also a minimal role for the state. Hence in Solow and Swan’s neoclassical growth model the state does not have any explicit function. Population growth, technology and relative prices regulate the long-run growth of the economy.

The endogenous growth theory, on the other hand, has in a sense rehabilitated the state’s role as an investor in education and a force influencing technological development. At the same time there has been a renaissance in the role of institutions in analyses of economic development. A recent example of this is the world development report of the World Bank (1997a), where the state’s role is considered in a new and multifaceted way. The report concludes that ‘good governance does matter’. The conscientious state supports growth and development.

¹ “In the first instance, capital and labour are the only factors of production” (Swan 1956).

3. Immaterial factors in growth

In the debate on economic growth and development there has been a need for concepts to link the immaterial preconditions of the economy (such as skills, the functioning of institutions, the atmosphere in society) to economic theories so as to complement the material preconditions for production and incorporate them into the scope of the analysis. The concept of human capital is very familiar and an established factor in any debate on economic growth and development.

Human capital comprises both the quantitative dimension of labour employed in production and the pool of knowledge and skills possessed by the labour force. Human capital is tied to the individual: its quantity is dependent on the size of the labour force, and its quality on knowledge and skills which are beneficial for production and which are supplemented by training. What differentiates social capital from human capital?

Social capital has to do with the relations between people. But in such general terms the concept is somewhat paradoxical. On the one hand it is in a sense patently obvious. But on the other hand it is easy to see it in terms that are too broad and vague for it to be used as an explanatory factor in studies of economic development or in a clearly operative sense in political decision-making. Thus the concept needs focusing and we have to get an analytical hold on it.

For various purposes it would be very important to have a uniform definition of the concept of social capital at the international level. With a more precise and consistent definition we could perhaps better understand the role and importance of social capital.

When analysing the production of a modern society it is a good idea to divide capital into the four components

- human capital
- physical capital
- nature capital, and
- social capital.

The concept of social capital is a new element in analyses of production. The attempt by the World Bank to incorporate social capital in the concept of sustainable development is also a new departure. Therefore we ought to consider what the concept of social capital adds to analyses of economic growth and development. Why is the concept of social capital important in this connection?

4. Rules, networks, trust

My interpretation of Robert Putnam is that social capital consists of the operating rules of society, the networks that mediate those rules and the trust of the members of society in the credibility of the rules.

In my opinion this definition is a sound basis for an analytical examination of social capital. Modern institutional economics stresses the importance of reliable rules of conduct as an important element in a well functioning society. Trust in formal or informal rules forms an essential precondition for an efficiently functioning society. The role of networks is emphasised because broad-based networks form channels of communication in society and enable an efficient dissemination of information to the different members of society (North 1990). Society's rules of engagement – be it a formal law or informal rules of conduct – and, according to the new institutional economics, observance or non-observance of these determine the economy's transaction costs. Alongside the costs of production, the level of transaction costs is a key factor affecting the efficiency of the economy.

The new institutional economics stresses the importance of unequivocal ownership rights and clear and binding agreements. These are important elements in the definition of social capital. But as far as I can see no-one has yet succeeded in integrating these different concepts into a homogenous whole. Different researchers ascribe different definitions to social capital. Some researchers focus on vertical and hierarchical relations in society and how well they function. A striking feature of Putnam's work is the great importance given to horizontal networks, including different non-governmental and voluntary organisations (such as the Martta union of rural women and the system of chambers of commerce in Finland, to give just two examples).

Social capital, then, relates to the institutional structure of society. Within this one can focus either on good governance and the social cohesion engendered by this or on the importance of a vigorous culture and a civic society. These factors can foster or hinder the productivity and efficiency of society. Thus one can readily endorse the view of the World Bank that all four of the above-mentioned forms of capital are important from the point of view of long-term sustainable development. Social capital is important for progress, and therefore we should accord it due recognition.

Preliminary calculations by the World Bank underline the importance of social capital. According to these calculations, traditional, man-made capital only constitutes 15 - 36 % of the total capital stock in different countries (in the majority of countries the figure is in the region of 20 %). The remaining 64 - 85 % belongs to the three other categories of capital: human, social and nature

capital. Putting it another way, if we concentrate on machines alone, we are shutting out the bulk of capital from our analyses! Admittedly these calculations still need to be treated with a good deal of caution, but they provide interesting material for further contemplation.

5. Is social capital capital?

It is fundamental to the concept of capital that it is a reserve that can be drawn on at all times in the production process. A further characteristic of capital is that it can be added to by means of investment (the accumulation of capital), and depleted by means of depreciation. How is social capital accumulated and depreciated? At present there is no clear answer to these questions.

In the received analysis of economic ideas, capital, production and income are interconnected – production and income are dependent on the amount of capital committed to production. Then again the value of capital is defined by the income flow that the capital generates. The connections and interdependencies of production, the level of income and capital have to be borne in mind for the analysis to be a cogent one.

There is a clear monetary connection between capital and income, but here we are also interested in capital that cannot be measured in money terms. Let us take by way of comparison the concept of nature capital. After a moment's reflection we realise that the concept of nature capital suffers from the same lack of clarity as social capital. We are not entirely sure how we can add to nature capital or where it belongs. Here too, research is incomplete. The concept of social capital is newer still and we know still less about it than about nature capital. There is a need for a scientific debate on the utility and significance of the concept of social capital. The empirical relevance of the concept also needs to be made more robust. Given that, we also need to inquire what the income is that corresponds to this non-monetary social capital. To extend the example of nature capital, the income generated by clean water, fresh air and beautiful landscapes is by its nature contentment – a mental or psychic income, even though it has no immediate monetary value.

We generally suppose that capital has at least four dimensions:

- capital is a reserve which can be drawn on whenever necessary;
- capital can be accumulated by means of certain mechanisms;
- capital can also be depleted; and
- capital generates income.

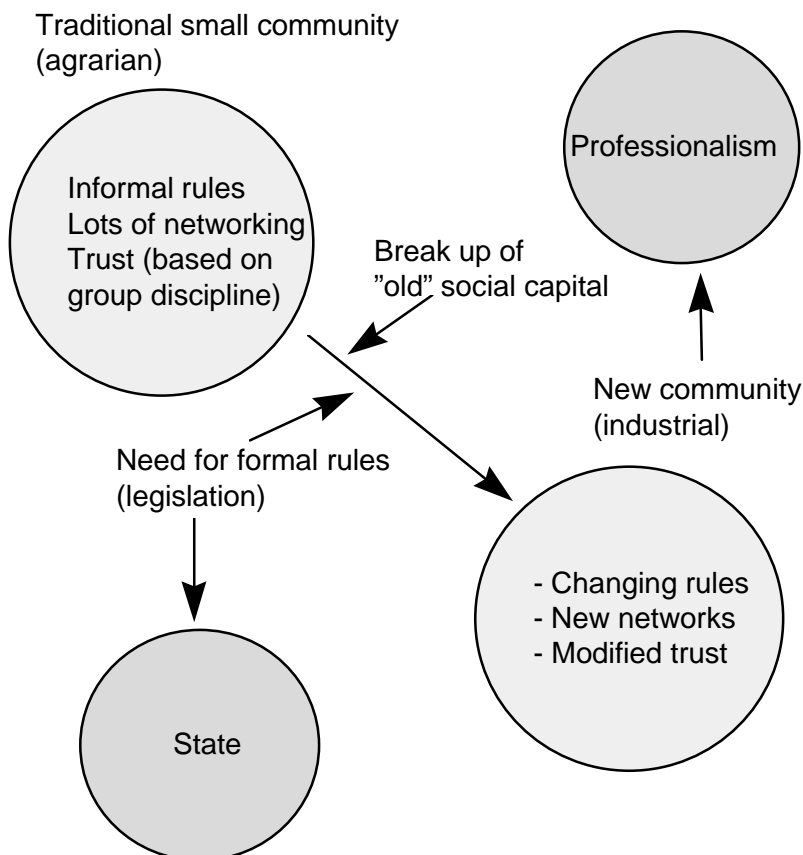
Maintaining the capital reserve at its prior level is crucial for preserving the productive capacity of a company or the economy.

6. The creation of social capital and the process of change

I return to the interpretation set out above of social capital as a set of norms, networks and trust. Presumably one central process by which social capital develops is the industrialisation and urbanisation of society (figure 1). Let us assume that in the traditional society the horizontal communication network is comprehensive, that all members are apprised of the operating rules, even though they are not written down in any formal law, and that there is broad-based trust in the application of the operating rules. It is often imagined that this is the situation in the traditional village society. (Whether this is in fact the case is debatable, but we will not go into that here).

Industrialisation entails a population shift to the cities. Society's operating rules change. The new situation puts relationships of trust to the test. Communication networks change in content, form and number.

Figure 1 Illustration of social capital



In order to cement relationships of trust new formal legislation is required. People's faith in the application of legislation also has to be strengthened. Urbanisation and industrialisation also lead to a segregation of professions. A need for expert knowledge is created and thus the phenomenon that we know as professionalism gains ascendancy in the development of society. The practices and rules of professions gain importance alongside traditional authority. The way in which professionalism operates is highly significant. Is the administrative and expert culture based on public fees and salaries or is it regularly based on corrupt relationships and kickbacks? This can have far-reaching effects on the efficiency of society and the type of social capital, i.e. operating rules, communication networks and trust in the operating rules, that is formed.

7. Empirical evidence of the significance of social capital

Some time ago I wrote on the subject of social capital in the welfare review of Statistics Finland. I made reference to Putnam's work, but I stated that further evidence was required of the empirical significance of the concept (Hjerpe 1997). What is the role of social capital in different societies? Is horizontal social capital, that is to say broad participation by the people, more significant than vertical social capital – communication from the top down? Different components of social capital might be significant in different societies in different ways. What components are most significant of all? Below I make some further observations.

We can find a variety of individual examples of the significance of social capital, or community capital, as it can also be termed. In some societies trust in the rules is largely based on tradition and the culture, in others it may be based on authoritarian application of the law. Singapore springs to mind as an example of the latter. In certain countries it has proved impossible to apply the law despite the efforts of the rulers. Many of Africa's present-day societies provide evidence of this. In such societies the social capital is manifestly weak. In Somalia, for example, the state has relinquished its role completely.

In many development co-operation projects it has been found that the projects fail even though they were carefully planned and much effort was put into their implementation. When an explanation is sought for this, many project leaders say that the most common reason for failure is the general inability of the society to implement and carry out reforms. The project envisaged does not "fit" with the prevailing administrative culture and the society's ways. This could either be because the social capital in the country concerned is weak or the development project was unable to tap into it. Recognition of these problems has led to changes in development aid projects: now a much greater effort is made to involve the beneficiaries in the plan and to get them to participate in the implementation of the project from the earliest stages. Thus the local social capital is better utilised. There is empirical evidence that "participation" increases a project's likelihood of success (Isham et al, 1995).

There is a recent and more concrete example of change in the social capital in Finland. The liberalisation of the capital markets contributed to the development of the Finnish banking crisis in the beginning of the 1990s was a process of change which fundamentally broke up the earlier rules of conduct of the banking sector; the social capital was breached, and this contributed to the outbreak of the crisis. Trust in the old operating rules was ruptured and to that extent the social capital collapsed.

Much of the problems of transition in the Eastern Europe can also be seen as a deterioration of the rules, norms and trust i.e. social capital.

8. The state s credibility and the civic society

In its examination of the role of the state in economic development, the World Bank's annual report (World Bank 1997a) contains much analysis of the significance of the institutions of society. Persuasive evidence is presented that dependable social institutions are a precondition for the state being a credible institution. The credibility of the state, in turn, has a clear impact on economic performance. Credibility increases economic growth and investment.

Credibility was analysed by means of a questionnaire in which companies in 69 countries were asked how credible they felt society's institutions to be. Credibility was measured by five dimensions:

- how unpredictable are legislation and politics
- how unstable is the government
- how secure or insecure is the right of ownership
- how unreliable is the exercise of justice in society
- how significant is corruption.

The replies to these questions were used to construct a credibility index. The OECD countries, with their high level of income, were well in front on credibility. The lowest rankings went to sub-Saharan Africa, Latin America and the ex-Soviet countries of the Commonwealth of Independent States.

Greater credibility was associated with a significantly higher level of economic growth and investment. Corruption was particularly harmful for investment.

The World Bank's latest annual report also highlights the significance of social capital based on the civic society. A study of social capital based on a sample of 1376 Tanzanian households revealed that an increase in the social capital was associated with higher household spending and better standards in schools. Here social capital was measured precisely by studying the interactions between households and their ability to bring about improvements in schools. Thus the focus was on participatory capital. Once again, this finding reinforces the view that advancement of the civic society is also positive for society's economic development.

9. Social capital correlates positively with income level and growth

Trust and income level

I also analysed social capital for the purposes of this article, using a small cross-country sample. I studied the relations between trust, participation, GDP per capita and GDP growth. The sample comprised 27 countries. The trust and participation indices are based on the indices produced by the Inter-university Consortium at the University of Michigan (see Schleifer 1997) (table 1).

The trust index is based on interview studies. Trust is particularly high in the Nordic countries. It is also very high in the United States, Canada and the Netherlands, and fairly high in Switzerland, Japan, Ireland and Iceland. It is considerably lower in central and eastern European countries. The sample includes regrettably few developing countries, but, with the exception of China, trust appears to be considerably lower in these countries.

Figure 2 illustrates that there is a distinctly positive correlation between GDP per capita and the level of trust. China would appear to be very much the exception in this sample. In Europe, too, it is noticeable that certain central and eastern European countries (particularly France) achieve a high per capita level of income with a lower level of trust than for example the United States and the Nordic countries. In this sample the correlation between the trust index and GDP per capita is 0.41. Here China is the outlier: the level of trust is extremely high but the income level is low. There are particular historical reasons for the low income level in China, and therefore in view of our hypotheses perhaps it does not fit all that well with the rest of the sample. If China is removed from the sample, the correlation coefficient becomes considerably higher (0.57).

It should be noted, however, that since no other variables have been controlled for, it is naturally not possible to draw any solid conclusions. Nonetheless the evidence supports the view that high social capital is associated with a high income level.

On the other hand it must be borne in mind that the trust index applied – even if it correctly measures the concept – is only one element in the concept of social capital at hand. The two other elements, clarity of the operating rules and the comprehensiveness of communication networks, are not represented here.

Participation and income level

Figure 3 illustrates the relation between the participation index and the income level. Here too there is a clearly positive correlation, with a correlation coefficient of 0.54. Switzerland appears to be the odd one out in the sample: the participation index for Switzerland is exceptionally high. This is because the practice of referenda used in Switzerland gives a high weighting to the participation index in the construct. (Without Switzerland the correlation coefficient rises to 0.63).

Each of the indices provides an imperfect measurement of social capital, but in our definition both dimensions are contained in social capital. The positive correlation between the participation index and the per capita income level is in line with the hypothesis that social capital is an important production factor.

Figure 2 Relation between GDP and the trust index

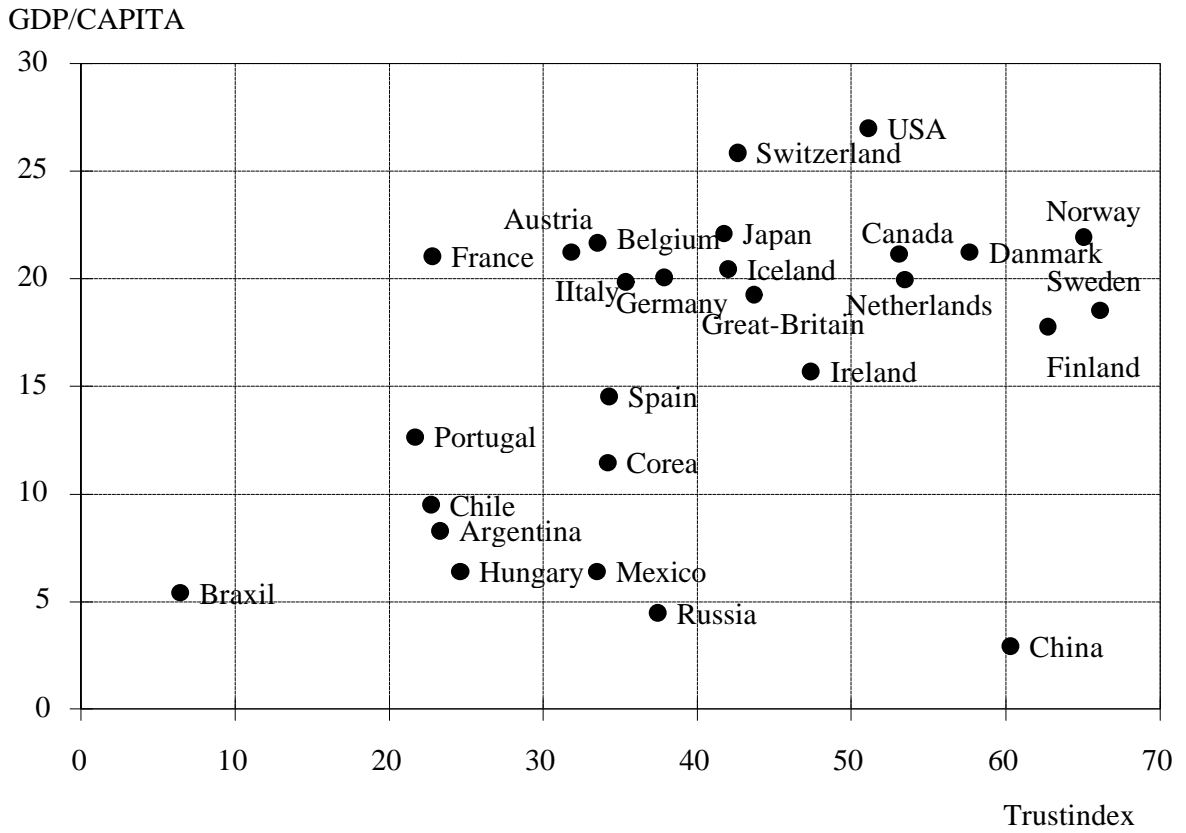


Figure 3 Relation between GDP and the participation index

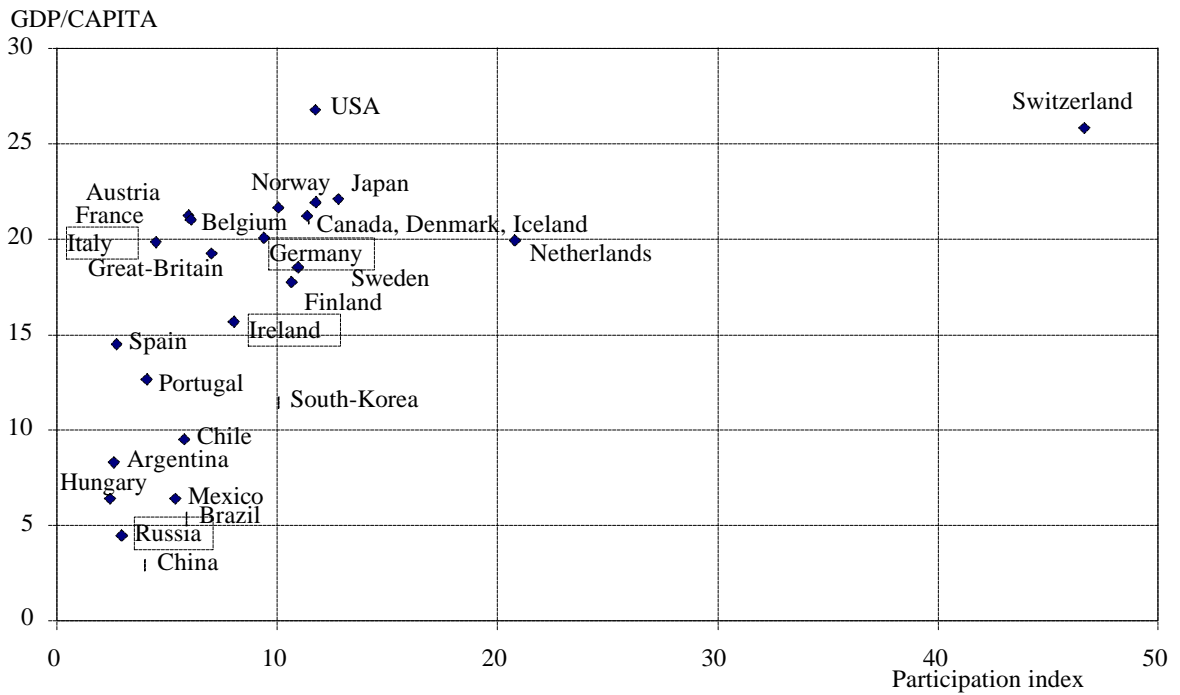


Table 1. GDP per capita, trust and participation indexes in selected countries

Country	GDP per capita ¹⁾	Trust index ²⁾ 1990 - 93	Participation index ²⁾ 1990 - 93 PCP
Argentina	8.310	23.30	2.58
Austria	21.250	31.82	5.97
Belgium	21.660	33.50	10.05
Brazil	5.400	6.45	5.86
Canada	21.130	53.07	11.42
Chile	9.520	22.70	5.77
China	2.920	60.30	3.97
Denmark	21.230	57.66	11.35
Finland	17.760	62.72	10.66
France	21.030	22.79	6.08
Germany	20.070	37.85	9.39
Hungary	6.410	24.58	2.41
Iceland	20.460	42.00	11.35
Ireland	15.680	47.36	8.04
Italy	19.870	35.30	4.49
Japan	22.110	41.70	12.79
South-Korea	11.450	34.17	10.06
Mexico	6.400	33.45	5.37
Netherlands	19.950	53.47	20.80
Norway	21.940	65.05	11.74
Portugal	12.670	21.67	4.07
Russia	4.480	37.45	2.94
Spain	14.520	34.24	2.70
Sweden	18.540	66.10	10.94
Switzerland	25.860	42.60	46.64
UK	19.260	43.68	7.01
USA	26.980	51.06	11.72

¹⁾ Source: World Bank, GDP by purchasing power parity in USD.

²⁾ Source: Schleifer (1997), Inter-university Consortium for Political and Social Research, University of Michigan.

Social capital and growth

Using the same sample, I also looked into the impact of the capital of trust and participation on economic growth. My initial regression calculations indicate that the trust index has a positive impact on growth (table 2). The factors affecting

growth in the analysis were: GDP per capita, the level of investment (gross investment in relation to GDP), an education variable, being the proportion of the age group in tertiary education, and the proportion of foreign trade of GDP as an indication of the openness of the economy. These variables are taken from the World Bank's latest publication on development indicators (World Bank 1997b). The participation and trust indices are the same as above. Since Switzerland appears to be an exception as far as the participation index is concerned I also performed the calculations without Switzerland. The coefficient obtained by the participation index and its statistical significance do not appear to be materially affected, whether Switzerland is included or not. In neither case does the participation index explain growth with statistical significance. Therefore the table does not report results where the participation index is included.

Table 2 GDP factors affecting growth

	<i>Variable</i>	<i>Coefficient</i>	<i>Mean error</i>	<i>t-value</i>
	GNPPC	-0.392	0.618	-0.634
	INVRA	0.254	0.047	5.399
	OPENN	0.004	0.010	0.440
	TRIED	0.008	0.017	0.452
	TRUST	0.046	0.021	2.220
	C	-3.848	2.075	-1.854
R ²	0.672	Mean value of dependent variable		3.069
Adjusted R ²	0.590	Standard deviation of dependent variable		2.180
Mean error of regression	1.395			
Durbin-Watson stat	1.968			
LOG(GNPPC) = logarithmic GDP/capita				
INVRA = gross investment/GDP				
OPENN = exports/GDP				
TRIED = proportion of age group in tertiary education				
TRUST = trust index				
C = constant term				

The GDP per capita variable has a negative effect on growth. This is consistent with numerous other empirical studies of growth. Those countries that have achieved a high level of income appear to grow somewhat more slowly. In this sample, however, the coefficient is not statistically significant, hence the result is inconclusive. The same can be said for the education variable: preconceptions

would say that education has a positive impact on growth, but the coefficient is not statistically significant. The investment rate, on the other hand, seems to have a strong and statistically significant effect on growth in all the tests. There is an interesting finding for the subject at hand: the trust index receives a statistically significant coefficient. The impact of the participation index, on the other hand, is insignificant and the sign also appears to be wrong. This result, however, is consistent with the analysis of Barro and Sala-i-Martin (1995) in that their variable describing law and order received a statistically significant value, whereas the value of the democracy variable was to some extent inconclusive. Our result could be interpreted as indicating that trust, in the sense of adherence to the rules, would appear to be important in conjunction with a high level of investment. Or: investment is high because the level of trust is also high and these factors are interrelated so that the level of trust reinforces the investment climate in the economy.

10. How can change in the social capital be managed?

The level of social capital can in fact change all the time as a general consequence of the evolutionary process in society without any individual person being able to influence it very much.

The political culture of a country and the upbringing and education of children are presumably very important forms of action by which significant influence can be exerted on the accumulation of social capital. On the other hand, social conflicts and wars fatally destroy social capital, rapidly and possibly for a very long time. Yugoslavia is an example of this.

New research findings, references to which have also been made here, reinforce my impression that fluctuations in social capital explain divergences in development and shifts in the pace of development.

My conviction is that social capital carries great significance for the long-run growth and development of societies. The first steps have been taken in the empirical verification of this argument. At any rate it is already evident that important links exist between the institutions of society and economic development. Future research will have an interesting and important task in being more specific in describing and quantifying these links. This is also needed in order to make the whole concept operationally and politically useful and interesting. Research on this is already currently being conducted at the World Bank and the goal appears to be to obtain some quantitative values for the importance of social capital. Whilst we await new findings, however, we could tentatively consider the following hypotheses.

The level of social capital evidently varies greatly between different countries. This is significant for the development of trade relations between different countries, for example. Differences in social capital could hinder the growth and development of trade. Some form of social capital also explains the differences in development between countries, and also why some countries progress and others do not.

Putnam's research indicates that the social capital can be very different in different regions of the same country. This observation could help to explain regional development differences.

Parts of the social capital will change very quickly, whereas other parts may be very long-term by nature. A sudden change in the economic operating rules, for example a rapid liberalisation of the capital markets, may also increase uncertainty as to which operating rules are dominant in society. The result could be insecurity and an increase in distrust. Certain cultural aspects may be very

deeply ingrained and persist from one generation to another. It is these aspects that historical researchers often emphasise.

In defining sustainable development we should also bear in mind that the different forms of capital can be substituted for one another. For example, by increasing social capital perhaps the use of nature capital could be partially reduced.

Thus we should seek to understand better the interactions between social capital and other forms of capital in order to find a more durable basis for the long-run sustainable development of society.

References

- Barro, Robert (1991):* Economic Growth in a Cross Section of Countries. The Quarterly Journal of Economics, vol. 106, s. 407 - 444.
- Barro, Robert J., and Xavier Sala-i-Martin (1995):* Economic Growth. Mc-Graw Hill, Inc., New York.
- Coleman, J. S. (1990):* Foundations of Social Theory, Cambridge, Mass.: Harvard University Press.
- Hjerppe, Reino (1997):* Sosiaalinen pääoma - tutkimisen arvoinen käsite, Hyvinvointikatsauksia n:o 1/1997, s. 26 - 29.
- Isham, Jonathan, Deepa Narayan and Lant Pritchett (1995):* Does Participation Improve Performance? Establishing Causality with Subjective Data. The World Bank Economic Review, vol. 9, no. 2.
- Lucas, R. E. (1988):* On the Mechanics of Economic Development. Journal of Monetary Economics, vol. 22, n:o 1, s. 3 - 42.
- North, D. (1990):* Institutions, Institutional Change and Economic Performance. New York: Cambridge University Press.
- Putnam, R. D. (1993):* Making Democracy Work. Civic Traditions in Modern Italy. Princeton (N. J.): Princeton University Press.
- Romer, Paul, (1990):* Endogenous Technological Change. Journal of Political Economy, vol. 98, s. 71 - 102.
- Shleifer, Andrei (1997):* Government in transition. European Economic Review, vol. 41, n:ot. 3 - 5.
- Solow, Robert (1956):* A Contribution to the Theory of Economic Growth. The Quarterly Journal of Economics, vol. 70, s. 65 - 94.
- The State in a Challenging World, World Development Report 1997, The World Bank. Oxford: Oxford University Press, 1997.*
- Swan, T. W. (1956):* Economic Growth and Capital Accumulation, The Economic Record, vol. 32, n:o. 63, s. 334 - 361.