The Contribution of Human and Social Capital
to Sustained Economic Growth and Well-Being

Symposium Report by John F. Helliwell[1]

1. The Policy Context

From an HRDC perspective, Avrim Lazar posed three questions:

- Are we investing too much or too little in social capital?
- Can social capital be eroded?
- With what consequences?

He also remarked that there is a policy climate in which evidence has become more important, and ideology less important, in the evaluation of policies and their consequences.

Thorvald Moe set four questions from the OECD's perspective:

- How much more research is required before policy implications start to appear?
- Is there a consensus on definitions?
- If there are policy implications, what are they?
- What should the OECD be doing next in this area, in terms of:
    - conceptual work
    - collection of data

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- policy analysis

2. The Conceptual Framework

The key questions for Session II were:

- How should the concepts of human and social capital be defined and related to each other? Should a distinction be made between social capital and social capabilities?
- How can human and social capital be best measured?
- Are existing theoretical models for explaining economic growth and development adequate in terms of the role they accord to knowledge, human capital and social capital?

2. Keynote: Robert Barro "Education and Economic Growth"

Robert Barro provided an update on his cross-country panel growth studies of the effects of human capital on growth. His latest finding is that test scores do better than his earlier measures of years of schooling. The model is still a growth framework of conditional convergence. This framework implies that poor countries grow faster than rich ones (initial income takes a negative coefficient in growth regressions), if both have the same levels of human capital and other growth determinants. The estimates of the effects of human capital include not only the effects of human capital in increasing the equilibrium level of income, but also its effect on the rate at which countries can import good ideas from abroad, and hence their rate of convergence towards the per capita income levels in the leading countries. Using education measured by years of secondary school attainment, he finds significant effects within the global sample, of a magnitude that matches many studies of rates of return based on microeconomic data, but finds no effect within a more narrowly defined OECD sample. However, he did note that his educational attainment data for many OECD countries are substantially different from the published OECD data for the same countries. Using student test scores, which requires the use of a sample of countries only half as large as the initial global sample, he finds significant growth effects for the science score. If the test scores go up by one standard deviation, the growth rate rises by one per cent per year, before taking into account the convergence effects. One problem with these results is that the test scores are taken towards the end of the growth period. This particular result seems to hold even within a sample that includes only rich countries. Although the science results appear to be more important than either mathematics or reading scores, the country samples are different for the various measures, and different combinations of test scores also produce varying results.

In summary, the current results on the effects of human capital on growth suggest that quality is more important than quantity, and hence that measures of outcomes might prove more fruitful than measures of years of education or resources employed in education. He continues to support the use of multi-country datasets to provide a wider range of outcomes, accepting the possible risk of heterogeneities that might confound the measurement of the effects of education.

2A. Gunnar Eliasson "The Role of Knowledge in Economic Growth"

Gunnar Eliasson started his presentation with a description of the range of changes made in Sweden during the transition to the industrial revolution. During one fifty-year period spanning the start of the 20^{th} century, all of the companies that are now the driving forces of Swedish industry were started. In analyzing this period, he emphasized that in an information-based economy, with agents learning by doing, each business decision is best regarded as experimental in nature. As these experiments proceed, the losers are selected out by failure, and the winners get to keep experimenting. Growth is faster where the selection process is more efficient, avoiding keeping the losers too long, or failing to support the winners through initial problem periods.

For efficient development in a knowledge-based industry, he emphasizes the need for six key types of actors:

1. competent and active customers,
2. innovators capable of integrating the findings and exploiting the new results of R&D,
3. entrepreneurs capable of recognizing opportunities,
4. venture capitalists to finance them,
5. exit markets to facilitate the recycling of equipment from past losers to new winners, and
6. industrialists capable of taking new ideas from the experimental stage into industrial scale production.

Tacit knowledge embodied in organisational and work practices plays an important role in the transformation of competence into economic success.

Eliasson argues that in contemporary Sweden the gaps may relate to inadequate supply of entrepreneurship and venture capitalists. He uses case studies to show that getting all of the components together can make significant contributions to growth at the firm level and at the level of the national economy.

A key point of the paper and presentation is the need to get inside the black box to understand the nature of the markets and firms that govern the pace and efficiency with which knowledge is developed and applied. Behind the aggregates lie very particular institutions that determine how and whether education and knowledge creation have a social and economic payoff.

2B. Michael Woolcock "The Place of Social Capital in Understanding Social and Economic Outcomes"

Michael Woolcock's paper and presentation start with discussion of the historical origins of the use of social capital, followed by a survey of the most important literature and finally an approach to policy implications. The intellectual underpinnings of social capital lie in the roots of sociology, and Woolcock, a sociologist, encourages the use of a relatively narrow definition that is fully consistent with earlier work in sociology. For him, social capital is 'norms and networks that facilitate collective action'. He agrees trust and institutions are important, but would like them to be considered separately. This does exclude some interesting work, but is able to include many important studies of networks. Thus defined, social capital may have negative as well as positive effects. He makes a distinction between what social capital is and what it does; where it comes from rather than what it does. He then distinguishes bonding and bridging social capital, with the family being used by him as an example of bonding, and the rolodex file of addresses as an example of bridging. He adds a third type, denoted ‘linking’ social capital, which provides access to those at different levels and further afield.

Turning to evidence, he started with urban studies showing that crime is less and employment prospects better where measures of social density are greater, after allowing for other factors. Education is a classic case: schools that are community resources, and in which parents are involved, produce not only better outcomes for the students, but also for the communities served by the schools. In public health, higher levels of social capital are correlated with lower mortality from heart disease and infant mortality, lower rates of murder and suicide, and higher levels of self-reported health status. In economic development, innovations diffuse much faster in communities with rich stocks of bridging social capital. Social ties help to support the individual losers, and hence to manage risk more efficiently. Social networks determine where people move and how they succeed when they get there. Communities that are able to work together are also able to coordinate their community resources and make more successful approaches to outside authorities whose support is crucial to their ventures.

On the policy side, he suggests seven areas for possible policy improvement:

1. Make it easier for people to own homes;
2. Invest in more and better public spaces, events, transport and education;
3. Urban planning and architecture should lower commute times, heighten interaction among neighbours, and integrate vocational and residential activities;
4. Have tax policies that lower inequality, and encourage the formation of bridging and linking networks to disseminate what works best in improving living conditions;

5. Improve accountability;
6. Provide better safety nets (pensions and health insurance) and springboards (adult education) for the poor;
7. Require, recognize and reward leadership that listens to and interacts with those at ‘the bottom’. He notes also the value of immersion programmes for executives, and recommends more attention to team building.

In summary, have rigor in definitions, respect for the results of research, and apply the spirit of social capital in the choice of policy directions. The ideas and ideals of social capital can be important not only in understanding the issues of development, but in fostering better understanding among different agents and agencies of expertise. If the concept is instrumental in increasing cross-fertilization among disciplines and methodologies, it will have more than earned its keep.

2C. Tom Schuller “The Complementary Roles of Human and Social Capital”

The central theme of Tom Schuller’s presentation was to underline the complementary nature of human and social capital. Speaking of education as both the seed and the flower of economic and social progress, he argued that the same could equally well be said of social capital. Social capital can be seen as an enabler of the productive use of human and physical capital, with negative examples also available. In the other direction, there are important links from education to social capital, partly by teaching the skills needed for responsible citizenship, but more importantly as a means of increasing self esteem, so necessary to support personal and social capital. He wonders if the human capital metaphor may be running out of steam, requiring a new twist to better establish links between education and economic and social performance.

Turning to the empirical work, he sees a tradeoff between extending the range of what is and can be measured and increasing the precision of use of what is already being measured. He emphasised two areas in particular where existing measures proved to be inadequate:

1. Informal learning
2. Quality of relations in which learning takes place

Although informal learning is agreed to be critically important, the measures of education still depend heavily on formal education. There is also an important link between learning and social capital, as both occupational and social skills are learnt on the job at least as much as in school. Both values and competence are only truly learnt when they are applied. He also stressed the importance of educational quality (consistent with Barro's results) as well as the institutional and social settings in which learning takes place - the family, school and workplace. Finally, he advocates more use of longitudinal studies.

2. Discussion by Jo Ritzen

As first discussant, Jo Ritzen approved the choice of topics, including especially the juxtaposition of human and social capital. He emphasized that education ministers recognize and value the informal social consequences of education in helping people to function well together as a society. He appreciates also the use of data and analysis applicable to both developing and developed countries, in the expectation that a wider range of experience and institutions should provide a better means of identifying structures.

How are things going with human capital? The marginal product of human capital research has been declining. What remains to be done, still, is to develop measures of educational achievement that are rather more refined than years spent in school.

Social capital, by contrast, is still moving fast out of the gate. He noted Robert Barro's inclusion of the rule of law along with human capital in the determination of growth. He noted other development studies have shown significant effects from the rule of law and other less tangible aspects of social capital. Ritzen argues that it is necessary to make clearer distinction between public and private expenditures, since the former are almost entirely wages. Moreover, many public sector workers are also the most highly educated. Achievement test scores are worthy of attention, but may be effectively an East Asia dummy variable. Within Europe, Sweden and the Netherlands have very high science scores but very low growth rates.

Ritzen applauds Eliasson's emphasis on the importance of spelling out the industrial structure more fully before analyzing the linkage between human capital and growth. He thinks Eliasson may be over-emphasizing the role of tacit knowledge.

Turning to Woolcock, he thinks that too strong a separation is made between social capital and its consequences. Ritzen would like the term to refer mainly to those norms and networks that actually can be interpreted as assets.

Turning to Tom Schuller, he noted the importance of a moral dimension in discussions of social capital and social cohesion. He pointed to the emerging debates among educational policy makers in many countries on the meaning of values and the possible role of Government, and of Ministries of Education in particular, in promoting common values within agreed parameters. The issue relates to a possible conflict between freedom of choice and the importance of common values. He also thinks that Schuller, being himself directly involved in continuing education, may have overstated the case for informal education. He supported more research and analysis into the length of initial education.

2. Discussion by Tom Alexander

Tom Alexander noted brain studies that show the enormous plasticity of the brain at early ages, and its continuing ability to maintain learning capacity into old age. Why is the OECD taking an interest in social and human capital? The OECD had an initiating role as well as a responsive one. Dealing first with human capital, he sees some growing concern about the quality of measurements. Dealing with these issues may provide some model for social capital. In 1998 the OECD emphasized a narrow definition of human capital, in order to buttress the case for educational investment. He agrees with Barro that the attainment data are worthy of more effort; the OECD is this year running an achievement test for 15-year-olds, with a three-year survey cycle focusing on a particular domain of proficiency every three years. It is hoped that the resulting data will provide a better basis for assessments of the role of human capital. There is now a wider OECD survey of adult literacy for 20 countries (the International Adult Literacy

Survey) nearing the reporting stage. There is also work going ahead to build multi-faceted measures of competence. He agrees that Tom Schuller's point is important – that there is a temptation to use imperfect data rather than develop better ones.

Turning to social capital, Alexander admired Woolcock's survey, and the clarity of his definitions, but wanted more emphasis on outcomes and possible policy implications.

He agreed with Tom Schuller's emphasis on life-long learning, but noted the many difficulties in assuring that it is available when needed, and ensuring the ease of transfer into and out of the educational streams when the advantages of doing so are greatest.

Tom Alexander appreciated Gunnar Eliasson's emphasis on competence blocks, but is more confident than is Eliasson that these competences can be measured.

2. General Discussion

In discussion, Lars Osberg wondered about the linkages among the different parts of the OECD dealing with these issues. For example, is mobility as good as indicated by the OECD's advocacy of labour market flexibility, or might it threaten social capital and cohesiveness? Thorvald Moe noted that the OECD serves all parts of national governments, and so their work to some extent reflects differences that arise within national governments. That said, he noted convergence within the OECD and in national governments, with emphasis, for example, on employment-consistent social safety nets. Tom Alexander agreed, and sees a trend towards more horizontally managed and consistent treatment of economic and social policy issues. Jo Ritzen said that the same issue arises at the World Bank. The Washington Consensus was in vogue between 1980 and 1985, favouring privatization and deregulation. This led to throwing out old systems, and there is now more attention to what needs to be done to ensure that capacity for change is set in place before the system is shaken by large policy changes. The current policy focus is to combine policy reform with social cohesion. Robert Barro argued that there is a trade-off between the welfare state and economic freedom, with the United Kingdom doing more to increase mobility, and the other main European countries tending to do more to keep the welfare state in place. His opinion was that the UK was right and the rest of Europe was wrong. He also complained that Michael Woolcock's policy recommendations were indeed, as suggested by Lars Osberg, a revival of the traditional welfare state, which Barro regarded as being outmoded.

Bob Putnam noted, in response to Barro, that there is clear distinction to be drawn between an interest in the concept of social capital and whether the observer professes social democratic values.

Barro was asked what he thinks about the literature which suggests a negative relation between income inequality and growth. He replied that, overall, he regarded the evidence as weak, being negative in global samples but not within the OECD, where it may be positive.

Barbara Wolfe emphasized the research showing the importance of the early childhood years, and the lack of much by way of research into the structure and educational content of the pre-school years. She noted that early childhood education is perhaps the most stratified of all, with, in the United States, some head start programmes at one end and private pre-school programmes at the other end.

Mario Cervantes agreed with Eliasson that the study of firms was important in studying the transfers from human capital to growth. Firms that tap into networks of public research, etc., are found to perform better.

Sylvain Côté of the OECD picked up Woolcock’s emphasis on the importance of the right mix among different aspects of social capital. Given the range of regional differences within countries, perhaps the country is too large a unit for analysis.

Edward Glaeser replied to Robert Barro that the network effects of mobility were externalities. Since social capital is higher when people have deeper roots in their communities, mobility that is privately valuable may have negative effects on social capital at the community level. He noted different types of distribution, from taxes to robbery, and sketched some links between them. He also noted that schooling was likely to be the big item in the linkage between social capital and growth.

Robert Haveman queried Robert Barro’s preference for test scores. The depth of test taking, and the range of countries implies a great selection bias for these data. Some bias-producing factors might include urbanization, equality of distribution of education, etc. Is the score after all an East Asia dummy? Barro says that the years of attainment may be even less accurate, but recognized the selection bias. He tries in this context to include factors of the sort described by Haveman. For example, an East Asia variable was not significant, nor was the Freedom House data on democracy.

Eliasson replied to Ritzen that a qualitative description of competence removes the necessity for a distinction between formal and tacit knowledge. When change is rapid, it spills over into the lives of ordinary people. Social capital, social safety nets, and education all contribute to flexibility in the face of change. He argues for more competition and product development in education, and perhaps for the provision of social insurance. The institution that is responsible for the current system, the government, is supposed to reform it. Is this the best model?

Tom Healy noted that one possible definition for social capital would include its positive effects. However, he was more drawn to a tighter definition of the sort advocated by Woolcock. However, he wondered about the exclusion of trust from the definition and its classification as an outcome of social capital. He had thought of social capital as including trust as a norm facilitating collective action as well as social engagement. Given the highly specific and culturally bound nature of social capital in various settings and contexts, some people may accept that social capital, while being important, is hardly measurable at a macro level. He had previously argued that human and social capital were really the same thing, with the norms and networks being manifestations of higher (or more collective) levels of human capital. However, he now accepts that human and social capital need to be clearly separated although they complement and produce each other. The symposium needs to focus more closely on the linkages between social capital and life-long learning.

Takashi Omori asked how best to identify the effects of social capital. There is at least a choice to be made between micro and macro approaches; basing this partly on the frequency with which accounting changes alter the measurement of GDP. Is the international variance of social capital greater or less than internal variance? If the country effects are important, and are related to social capital indicators, then a macro conclusion may be valid. The same could be done at the regional level. He argues that technologies are equally available in all countries.

Richard Roy asked Michael Woolcock if there is a substitution of public systems for the networks otherwise provided by private networks.

In summary, Tom Schuller argued against the use of dichotomies. There is not a contrast to be drawn between the welfare state and the market, since some aspects of the welfare state improve markets and growth and others do not. The ability to manage change is not just a re-stating of the old flexibility debate. There is a real question of how much is learned inside and how much outside school. What may be needed is a methodological deflator to deflate (or inflate) the measures of formal education to account for the informal acquisition of knowledge.

Woolcock confirmed that bonding was indeed among those who are alike, and bridging is among those whose are different. Linking is an add-on. Secondly, social capital should not be brought into the debates about the proper extent of the market. He agrees that policy prescriptions should be based on the data. He argues that social divisions can be destructive of growth, and social capital may be an important part of the story. The social capital perspective is as much about how we are doing things as about what is done. You can ignore the interests of affected but voiceless parties, or include them. The move from blueprints to frameworks implies more concern with getting diverse views together to work out approaches and solutions. The policy prescriptions he advocated should not be seen as representing a particular political perspective, and should be assessed on the basis of their congruence or not with whatever evidence can be brought to bear.

Gunnar Eliasson agreed that even if measurement is impossible, further attempts are to be encouraged. If this includes the micro level and the firm level, so much the better. He wants to continue to define social capital in terms of its functions. A conceptual framework is needed. Finally, in response to the demands from policy-makers, economists are always able to produce policy advice whether or not it is correct. The policy makers should search both for a better research base and to find a wide range of policy viewpoints. This suggests the need for a slow approach to policy implications.

Barro noted that when he started his growth studies, he was told by the World Bank that they were only interested in developing countries. If they were wrong, is it not also right for the OECD countries to pay more attention to the experiences of the developing countries. As for micro versus macro studies, he argued that the central issues of inference arise at both levels. To the extent that policy makers are concerned with growth at the aggregate level, there seems to be no way of avoiding the inclusion of social capital measures into aggregate growth equations. He approves research of the sort that Steve Knack has done on the importance of the rule of law.

Finally, he noted that many of the achievement scores at the adult level, such as the various adult literacy surveys, have the potential for filling the gaps between formal and informal education.

3. Empirical Evidence

The key questions for Session III were:

- What is the evidence for the impact of investment in human and social capital on recent economic growth patterns across OECD countries? Are these likely to be more significant determinants of growth patterns across non-OECD countries?
- Is it possible to account for the returns to different types/levels of human and social capital?
- Is there empirical evidence that investment in human and social capital generates "non-market benefits"? If there is, how can such non-market benefits be integrated into a broader measure of the total social impact of such investments?
- Is there evidence for under-investment in human and social capital from a socially optimal point of view (arising out of externalities and divergences between social and private returns)?

3. Keynote: Robert Putnam "Is Social Capital Declining and Does It Matter?

Networks and norms have high value for those directly involved, and generally have public or external returns. Just as there are diverse forms of physical capital, so are there diverse and non-interchangeable forms of social capital. Issues of aggregation apply to both. In the absence of coherent and valid aggregations, or to aid in the search for them, a high priority for research should be detailed investigation of the nature and consequences of the diverse types of social capital. Do not scorn the importance of a nodding acquaintance, as they have been shown to be materially more likely to aid each other if stricken by a heart attack. Bob Putnam accepts that some forms of social capital, as with physical capital, can have negative consequences.

On the basis of a broad range of evidence he has compiled for his new book, Putnam has concluded that there has been a continual decline in association memberships since 1960, following an even longer and larger rise over the previous sixty years, punctuated by a sharp decline during the 1930s depression. Measures of informal social capital have usually been harder to obtain, since records are not routinely kept. However, recent access to the DDB Needham survey dataset has permitted the documentation of a parallel decline for a broad range of informal measures of social activities. Social trust, which is a close consequence and good proxy for measures of connectedness, shows a similar decline. Social connectedness is a good predictor of philanthropic and altruistic behaviour. The fraction of income that Americans give to charity also peaked in 1960 with a steady decline thereafter.

Social capital tends to be a substitute for other forms of contract enforcement. In 1900 there were 41 lawyers per 100,000 members of the US population, 39 in 1970, and over 70 in the 1990s. This is consistent with the idea that law and hence lawyers are a substitute for trust, which in turn is derived from the strength of interpersonal networks.

Does this decline matter? To answer this question Bob Putnam turned to interstate differences in social capital. Social capital is highest in the North Central region centred on Minneapolis-St Paul, with Baton Rouge at the centre of the low. These interstate differences in social capital are highly positively correlated with educational performance and child welfare, and negatively related to tax evasion, crimes of many types, and mortality.

He emphasized that the relationships linking social capital and other outcomes have been conditioned by the inclusion of many confounding effects, and the causal arrows can sometimes run both ways, but the results to date are so strong and pervasive as to demand further research.

3A. Walter McMahon "The Impact of Human Capital on Non-Market Outcomes and Feedbacks on Economic Development in OECD Countries"

Walter McMahon presented his analysis based on an interactive model of non-market and market outcomes of education. The outcomes include economic growth, population health and growth, democratization, political stability, poverty and inequality, the environment and crime. Although learning on the job is important, the ability to acquire skills and knowledge informally depends a good deal on education acquired formally. He uses gross enrollment rates at various levels of education. His data includes 78 countries. By way of example, he went through his equations for infant mortality and life expectancy. The Freedom House democracy index is modeled as a rising function of income, with an added contribution from education at the secondary level. To illustrate the interactions between education and the selected set of market and non-market outcomes, he presented results from simulation of the full set of equations, making a distinction between the direct and indirect effects where the latter represent the “feedback” effects of various non-market outcomes of education on economic growth. He argues that the indirect effects are externalities. He argues that more than half of the total effects of education are due to induced indirect effects. In his framework, increases in educational investment are followed by continued improvements in the levels and rates of growth of GDP per capita.

3B. Stephen Knack “Trust, Associational Life and Economic Performance in the OECD”

The focus on trust as a key dimension of social capital is linked to the importance of the quality of institutions and governance of societies. Steve Knack’s research makes extensive use of the World Values Survey data using country averages. The key measure he uses is interpersonal trust, as measured by answers to the oft-used question, “Generally speaking, would you say that most people can be trusted, or that you can’t be too careful in dealing with people?” His research deals with the consequences rather than the causes of international differences in the proportion of respondents. To provide some confidence that linguistic differences are not causing international differences in responses, Knack finds that the survey measures are correlated highly with the probability of a lost wallet being returned after being found by a stranger. The cross-country variations in trust were also correlated with survey measures of externally formed estimates of trustworthiness. Turning to his growth equation results, he finds significant support for the trust variable for the full sample of WVS countries, but not for the OECD countries taken as a separate sample. In investment equations, the positive effects of trust on investment are similar for OECD and non-OECD samples.

3C. Serge Coulombe "The Contribution of Human Capital and Urbanization to Canadian Economic Growth"

Canadian regional disparities combine with good data to motivate the use of interprovincial data to study comparative growth, including the effects of human capital and urbanization. Coulombe argues that growth follows a conditional convergence model based on differences in urbanization and one-time shocks for Alberta and Québec. He finds somewhat similar convergence of human capital, as measured by the percentage of males holding at least one university degree. Adding human capital to the interprovincial equation produces an insignificant positive coefficient. The failure to find a significant role for enrolment in the interprovincial growth equation matches the Barro failure to find such an effect among the OECD countries.

3D. Barbara Wolfe and Robert Haveman "Accounting for the Social and Non-Market Benefits of Education"

The Wolfe and Haveman paper assesses the non-market benefits of schooling, including the increased quality and amount of education of one's children, own and family health status, the efficiency of consumer (and other life-style) choices, charitable giving, voting and crime. How is it possible to quantify the extent of possible external effects of education, so as to justify or not the extent of public expenditures on education? Almost every study shows that parental education has a statistically significant positive effect on the educational success of their children, after accounting for many other control variables. Some studies also look for possible effects on these same outcomes from certain measures of neighbourhood social capital. In the studies surveyed, the results are mixed. Finally, the paper attempts an evaluation of the non-market outcomes of education. "Non-market" effects such as health are estimated while controlling for other factors which impact on health (e.g. health or social background). The monetary estimates of such "non-market" effects are made by calculating the cost of "purchasing" the same effects by alternative means to increased education. Their overall estimate is that in the aggregate the non-market outcomes are worth as much as the market outcomes, so that the total return from education is approximately twice as large as the market return.

3E. Doug Willms "Three Hypotheses about Community Effects Relevant to the Contribution of Human and Social Capital to Sustaining Economic Growth and Well-being"

Willms presented theory and evidence relating to his three main hypotheses:

1. Hypothesis of community differences: Communities differ in their social outcomes, even after account is taken of the socioeconomic status of the individuals;
2. Hypothesis of converging gradients: Social outcomes improve with socioeconomic status. The slope of this gradient differs across communities, with the gradients converging at higher levels of socioeconomic status. Thus successful communities are those which have been successful in improving the lot of their least advantaged citizens;
3. Hypothesis of Double Jeopardy: People from less advantaged backgrounds who live in less advantaged communities are especially vulnerable. Thus communities with high levels of

social capital achieve higher average social outcomes and also greater equality of outcomes.

In support of the first hypothesis, the author shows that interprovincial differences in mathematics scores start as early as grade 2. By grade 4, the Québec scores are well above the average, and the Ontario results well below, with these differences persistent until the end of school. The paper goes on to document the author's hypothesis of converging gradients, showing that there is much less interprovincial or interstate difference in test scores for parents who themselves have high levels of education. The slope of the gradient by which the child's score is linked to parents' education is thus flatter in the provinces or states with higher average test scores. Among countries, Sweden has a high and flat gradient, and England a lower and steeper one, mirroring Willms' results for provinces and states. He also notes the importance of getting geography more clearly into the models and estimates. In this way it would be possible to analyze the data on a finer scale, and to see more directly the effects of provincial and national borders. In common with other speakers, he emphasised the key importance of planning longitudinal surveys to enhance the knowledge base over time.

Willms stressed the importance of disciplinary climate, parental involvement and high expectations in raising school and literacy standards. Furthermore, family and community effects are important in raising the literacy of disadvantaged groups. The response of societies and communities to disadvantage is an important determinant of how well they perform in terms of overall literacy. Inter-country and inter-community differences in literacy and skills are related to differences in inequality, supporting the hypothesis of double jeopardy. Differences of literacy and skills among more socially advantaged groups are less across countries and regions than are the corresponding differences for less advantaged groups.

3. Discussion by Gunnar Eliasson

He proposes to comment on individual papers and to look for overarching themes. Some of the data and models are micro, and the rest are macro. Aggregation inherently washes away much of the interesting details and micro-level effects such as organisational and entrepreneurial dynamics are lost. The macro models of McMahon and Coulombe both have convergence effects. What would happen if Silicon Valley were added as a separate region? Looking at all of the papers showing large market and non-market returns to education, he is doubtful about jumping too quickly to the conclusion that more formal education would still be a high return public investment, even taking into account the Wolfe and Haveman result that formal education increases the ability to acquire informal education.

Referring to Willms' paper, with its emphasis on distribution, he wondered if an alternative measure of growth should perhaps be used. He also wondered if there were returns to shifting emphasis from higher education to primary, and from both to the family.
He liked the Steve Knack paper, even though it fell into the less-favoured macro category.

3. Discussion by Richard Harris

Harris is not yet convinced that social capital is a silver bullet, and is awaiting a fuller theoretical and empirical analysis. The attendant spur to interdisciplinary research is much to be welcomed. He saw the Putnam results as possibly running contrary to the international studies, with the risk that measurement may have gotten ahead of theory. In the absence of an underlying theory, policy conclusions would be premature.

Starting with McMahon's paper, he was struck by the long horizons implicit in the equations and the model. At face value, the links from education through non-market outcomes through to economic growth were strikingly important.

Harris is unsure of whether the trust variable captures what others mean by social capital, but likes the Knack result in any case. With respect to the Coulombe paper, Harris wonders if the convergence in education levels may be attributable to federal funding of higher education, and not to any economic growth model. He also thinks that there is room for terms-of-trade effects in other provinces than Alberta and Québec. On the Wolfe and Haveman method of imputing a social effect, he sees problems in identifying the relation used to measure the non-market effects. Finally, with respect to the Willms paper, he wants to know more about reasons for the hypothesis and evidence on converging gradients.

3. General Discussion

In discussion, Robert Barro noted that since 1983 the United States has become the world's number one super power; income growth has been high, and even the crime rate has eventually fallen. And has not the rate of church membership grown in some regions? He also wanted to know why a causal link was presumed between social capital and health status.

JP Cotis noted that there were some sympathetic echoes to the US data in other countries, including rising crime rates, lower participation, and lesser civility in France, for example. If these trends are parallel in other countries, perhaps it cannot be traced to specific elements of US public policy.

Lars Osberg wonders about the use of some indexes, such as that for democracy, without testing for non-linearity, and worries in general about treating ordinal variables as though they were cardinal.

Michael Wolfson wonders if Robert Putnam is willing to combine the diverse measures into a single index. And is it not better to talk about nurturing or growing social capital than it is about investing in it?

Judy Maxwell interprets Putnam as saying that the United States has achieved very high growth at a cost of declining social capital. Is this a sustainable situation? If not, what is likely to be the outcome?

Jean Pierre Voyer posed to Putnam the question, why social capital has fallen by all the measures he assesses. In reply, Putnam gave his pie chart containing his best attempts to explain the causal factors, with 10% due to urban sprawl, about the same amount to longer working hours for both men and women, slightly more to direct television watching, and about half to generational effects, with a third of that being specific to the TV generation. He still has a net

10% up for grabs. A number of changes in American life have reduced social capital in the United States. A similar change took place at the end of the 19th century. It was fixed at the end of the 19th Century by the inauguration, between 1890 and 1910, of most of the organizations that people joined for the next 60 years. As for now, the clock cannot be turned back, but there is a matching need for social entrepreneurship. There may be a role for public policy here, but the main innovations will likely be, as they were in the Progressive Era, in the private sector.

In reply to Lars Osberg, Bob Putnam says that democracy is in no sense a measure of social capital. Similarly, neighbourhood effects do not measure social capital, even though they may be correlated with such measures. In defense of Steve Knack, he noted that trust is correlated to a 0.85 level with other measures of social capital. Hence, in the absence of other cross-national measures of social capital, they may be used without much apology. Indeed, he feels that human capital may be getting the credit for benefits that are really attributable to social capital.

Barbara Wolfe wonders if the drop in club memberships may have been substituted for by workplace relations, at least for women. She also noted that when she lost her wallet in Italy, she was told that during the current scare about bombs, no one would pick up her wallet.

Bob Haveman agreed that education was treated as a privately chosen marketed commodity, with the results needing to be so interpreted. Without this assumption, the issue quickly becomes insoluble. Responding to Gunnar Eliasson, he wondered at the high estimate of on-the-job training costs. If so, then how could one raise the estimate of the combination to 20%

of GDP? Finally, he responded to Putnam's questioning of the Wolfe-Haveman results based on neighbourhood effects. He argued that because these studies use education, and education is so highly correlated with social capital, they could be treated as social capital studies.

In reply, Robert Putnam noted that the simple correlation between stock measures of education and social capital, across states, is about 0.6, while a correlation between current student achievements and the level of social capital is higher.

Tom Healy advertised Jonathan Temple's background survey paper on the effects of social and human capital on growth and economic progress. He noted that for the growth regressions in the paper by Robert Barro for OECD countries, the significant variables were initial income, fertility, physical investment and openness to international trade. The failure of education to appear significantly matched the results of Sala-i-Martin, who ran six million regressions to find that the education variables were among the least significant of the sixty variables in his set of possible independent variables. However, more recent work by two Spanish economists, de la Fuente and Domenech, underlined the importance of data quality and their work showed that measures of educational attainment did appear to have a positive impact on economic growth for OECD countries over a long period of time.

Edward Glaeser agreed that there was a close link between social capital and education, since education teaches the networking skills that are employed in constructing social capital networks. If we believe anything about social capital, it is that externalities are rife. This makes it difficult to compare different types of group membership.

Barbara Wolfe agreed that most education is not privately paid for, so that there can be no direct estimate of willingness to pay.

Steve Knack noted that inequality, ethnic heterogeneity, legal enforcement and education all matter in the generation of trust. Of these, only education can be thought of as a usable policy lever. As for the lack of persistence of growth rates, and the relative stability of measures of trust, there is no alternative to waiting for more data.

Tom Schuller noted that in the UK there were very long work hours at the top and the bottom of the occupational spectrum. The only time-rich are the unemployed who do not have the education and high community levels of social capital that spur community involvement. Those who could contribute are at work, and the rest cannot easily participate. As a real life experiment, what is the effect of the legislation limiting working hours on participation in social arrangements?

In reply, Walter McMahon replied to Gunnar Eliasson that Stanford and Berkeley might belong even more than California. He noted that the Psacharopoulos results quoted by Eliasson related to the developing countries, and not to the OECD, where the relevant margin is in higher education. In response to Richard Harris, he was glad to have support for a structural approach but agreed that the relevant time lags, and the time horizon, were very long.

4. Social Arrangements, Well-Being of Citizens and Economic Growth

The key questions for this and the final session (IV and V) were:

- What are the main international measures of social well-being and progress in developed economies? To what extent are these measures reliably compared with economic growth trends?
- What can Governments do to promote, renew and conserve social capital as well as enhance the skills and competences of various groups?
- Can social policies, to support learning, social engagement and labour market participation, promote economic growth and social well-being?
- Can some types of public social policy impair the development of social capital by supplanting the initiative of families, local communities and other actors?

4. Keynote: Jo Ritzen "Social Cohesion, Public Policy, and Economic Growth: Implications for OECD Countries"

Introducing the discussion, Jo Ritzen noted the necessity of being able to adapt to change, in a context where individual ministers and governments have limited room for manoeuvre. Globalization has increased the speed of access yet identity keeps very local and regional aspects. Institutions need to be built up around a common order. He regards social cohesion as '...a state of affairs in which a group of people (delineated by a geographical region) demonstrate an aptitude for collaboration that produces a climate for change that, in the longer run, benefits all." In his view, social cohesion captures two elements necessary to support economic growth- an inclusive civil society and responsive social institutions. From a communication point of view, Ritzen prefers to use the term social cohesion, thus permitting social capital to have a narrower and more technical definition admitting the possibility of negative external effects. He adopts the view presented earlier by Woolcock, that social capital linkages include those of bonding, bridging and linking types, where they use the latter to connect people from different socio-economic groups.

Social cohesion and social exclusion can be seen as two sides of the same coin. Social exclusion has four main causes: poverty, unemployment, political exclusion and non-sustainable modes of development. Social cohesion is measured, in the literature, by:

-memberships of and participation in, organizations,

-measures of trust,

-performance measures of public and private institutions,

-income distribution measures,

-ethnic heterogeneity, and

-measures of gender discrimination.

On the side of evidence, Ritzen notes that membership trends are up in the Netherlands and Norway, and down in the United States and France. But he sees some of the same problems in countries with rising and with falling membership patterns. He prefers trust, but this is also higher in the Netherlands and Norway than in the United States and France. Where there is a little heterogeneity, there is substantial social cohesion. Where there is much diversity, assuming that institutions are in place to enable it to be properly handled, there are also few problems. The difficulties seem to arise in the middle ground. He interprets the reversal of global convergence as being due to a lack of social cohesion in the developing countries. Social cohesion is not a panacea, and is not a single variable, but it is complex.

4A. Lars Osberg "Comparisons of Trends in GDP and Economic Well-being – the Impact of Social Capital"

Osberg started by noting that even Adam Smith pointed out the importance of accepted modes of responsible conduct. The modern debates and discussions have tended to home in on more precise definitions and to search for quantification. Osberg's own contribution is to quantify extensions to GDP as a measure of economic well-being. He has four basic components: consumption (adjusting for changes in leisure), wealth stocks, and measures of equality and security, with weights of 0.4, 0.1, 0.25 and 0.25 respectively. The measures of equality and security tend for most countries to show increased insecurity. Using the standard weights, well-being actually has been declining in several OECD countries since the 1980s, and for all countries the growth of well-being has been lower than of GDP per capita.

4B. Rod Dobell

Rod Dobell enlarged the scope of the discussion by extending the goals of economic and social policy to include environmental sustainability. He also extended the discussion to include the number, nature, and linkages among the types of organization that interact in the policy-making process. One set of actors in these debates includes civil society organizations. His general point was that the ability of the system to produce flexible policy responses in the face of change depends enormously on the structure and credibility of the groups representing competing interests, plus a widespread agreement on the legitimacy of the process by which decisions are made. He sees a looming social capacity gap in attempts to manage the transition to a sustainable society. Coalitions of civil society interest groups have shown ability to block actions of various sorts, but there is less demonstrated capacity for coalitions to form that are likely to be both effective and to be widely accepted as legitimate. Issues of exclusion and polarization need to be faced head on.

4C. Ed Glaeser "The Formation of Social Capital"

Glaeser presents new research results helping to explain individual decisions to invest in social capital (or social skills). He first notes that most of the variation in measures of social capital take place at the individual level. The cost of investing in social skills equals the marginal time cost of acquiring these skills times wages. Benefits are equal to the sum of market and non-market gains adjusted for the length of expected life span and probability of moving house or job. The private and social benefits typically diverge (as in human capital theory). His model may be interpreted as an extension of human capital theory to social skills or competences facilitating social interaction and collective action. The starting point is the individual where a decision is made to invest in social skills in response to a perception of benefits and costs. In his theory, the returns from investing in local contacts are higher if there is lower probability of moving, and are higher the greater is the number of remaining years of life span. The link between home ownership and social capital represents in part a lower expected probability of moving, coupled with the fact that the value of houses is linked to the quality of the surrounding community, providing the home-owner with greater incentive to invest in social capital. People with more education are far more likely to be involved in their communities. This may be because these are in any event people with longer horizons. The links with education are equally strong for trust and memberships across states and countries. There is a strong downward cohort effect in trust in the United States, but not generally elsewhere. But the effects of education are pervasive across all countries. He finds some linkages between the type of dwelling and the ways in which individuals choose to interact with each other.

4D. Takashi Omori "Balancing Economic Growth with Well-being – Implications of the Japanese Experience"

Takashi Omori noted that Japan had a rich stock of social capital, as measured by mutual trust, that permitted rapid development when the country was first opened to the outside world, and more recently during rebuilding social and economic capacity over the past fifty years. Special features of Japan's stocks of social and human capital included:

-long-term trust,

-stability of employment,

-flexible management,

-importance attached to trustworthiness,

-company-specific skills,

-strong emphasis on team-work and information sharing.

He presented some evidence that Japan's rich stocks of social and human capital became somewhat obsolete at the end on the 20th century, as there were changes in the apparent values of heterogeneity and innovation. Similarly, the pervasiveness of trust may have made regulators lax in the monitoring and upholding of standards ranging from nuclear safety to bank capital adequacy.

In conclusion, he proposed three categories of social capital:

-as an inferior substitute for markets and institutions,

-as a complement to markets and institutions, and

-as a direct foundation for well-being.

4. Commentary by Robert Haveman

Haveman finds himself perplexed by the linkages between social capital and economic performance. He bypasses this, and asks: assuming that social capital is important, how can it be increased? He starts with Ed Glaeser's model. In this way, he proposes to extend the role of a discussant. But first he underlined the value and importance of efforts like those of Lars Osberg which underscore the limitations of GDP per capita as a measure of economic welfare and where both data and argument support the need to develop broader measures of economic well-being. He then turns to Glaeser's modelling of individual choices to gain and apply their social skills to build and maintain social contacts. If anything increases the individual's net benefits from acquiring social skills, there will be more acquired.

Haveman's examples of ways for internalizing the value of, and increasing investment in social skills:

- increase schooling or quality of schooling;
- increase the teaching of social skills in schools;
- reduce the rate of time preference;
- increase available or discretionary time (through reduced hours of work for example);
- reduce ethnic or linguistic heterogeneity (this conflicts with the u-shaped evidence from Ritzen);
- extend the period of payout for social skills;
- enhance the demand for social skills in employment.

He listed several possible trends or policies, along with their likely impacts on private decisions to invest in networks:

- population aging reduces marginal private benefits of investing in social skills;
- increasing income inequality is likely to reduce social capital;
- work-orientated welfare reform has ambiguous effects; (it may increase social capital by encouraging more social interaction through employment but may decrease social capital by reducing discretionary time);
- increased immigration is likely to reduce social capital;
- enriched child care increases social capital;
- decrease in organized religion reduces social capital;
- decrease in two-parent families reduces social capital;
- increased school choice may leave worst off behind (reduces social capital) while increased inter-racial contacts will increase investment;

- internet work reduces social capital.

Implications for OECD research:

- What are the external benefits from the private acquisition of social skills – how does social capital create social benefits for those not directly investing in social skills?
- How can we distinguish those skills with positive and negative externalities (the downside of social capital)?
- Is it worthwhile for individuals to privately invest in social skills if there is no scope for them to use them because community demand for use of social skills is below some threshold level?
- Can moral suasion increase investment in social capital and at the same time boost the marginal private benefit?

4. Discussion by Tom Schuller

Tom Schuller took on the papers one by one. With respect to Ritzen's concept of social cohesion, Schuller thinks that it does not connote enough by way of the active commitment to others. He liked the Ritzen emphasis on the quality of education. He liked the breadth of the Lars Osberg measures, but wondered if they were perhaps so broad that they should be called well-being rather than economic well-being. He also appreciated the Dobell use of involvement, engagement and commitment, and wanted to think about a space where there are divergent and dissenting views set within a context where the process of resolution is accepted as legitimate.

He disagreed with the Glaeser concentration on the individual, especially the presumption that the aged will be less involved in social contacts. However, he supported strongly Glaeser's emphasis on the importance of the physical environment. Omori's paper was uniquely valuable in tracing the trajectory of social capital and economic growth.

Five overall points:

1. Trace different trajectories of social capital, declines as well as growth, and link these to human capital;
2. The need for multi-dimensionality in the analysis;
3. The need to look at work and other environments, and the extent to which they serve to develop human and social capital;
4. The need for empathy as one of the important social skills to be developed;
5. The need to look more closely at the links between human and social capital.

4. General Discussion

In opening the discussion, JP Voyer was uneasy about the narrowness of the scope of Glaeser's model. Robert Putnam agreed with JP Voyer, arguing that the benefits of social skills cannot be obtained without co-ordinating with others. Insofar as there is a coordination problem in exercising social skills, investment would be lower in areas where general levels of social skills are lower. You cannot go to a public meeting, or be the officer of a club, unless the clubs and meetings are there to be joined. Thus the purely micro model is inadequate unless it takes a much more direct view of the environment within which the social networks operate.

Michael Wolfson wonders what is measured by the 60% share, since it does not matter for this whether the rest is in the hands of the rich or the poor. He also wonders about the narrowness of the Glaeser framework. The whole is greater than the sum of the individual parts. The framework needs to be dynamic, interactive, and multi-level. He also wonders if we are celebrating education too much – perhaps there may be as strong a case in favour of zoning, public transit and the scope and nature of urban governance.

L. Cosier argued that if there is interest in the dynamics of change, it becomes necessary to consider multi-level governments, especially when the sub-levels may be operating competitively. Globalization may comprise three phases: travel, finance, and information technology. At this third stage there may be a new series of overlapping types of space. He would also like to see more attention devoted to unpacking the education box, moving from the teaching to the learning mode, and to cumulative learning. Two examples: some OECD research looking at low skills may be a productive line. Second, there is a need to bridge from quantitative research to policy formation, especially in the realm of social capital

Steve Knack is unsure about Ed Glaeser's emphasis on education, and about most or all of Haveman's policy implications.

Philip Hemmings interpolated between Glaeser and Putnam by saying that Putnam is emphasizing the nature of network externalities. Models need to embrace these.

Michael Woolcock sees many private sector agents offering individuals aid in making contacts. Where are the likely externalities? They presumably increase efficiency, since those who know how to relate to others will be able to function better in any context of collaborative action. It is necessary to keep the social aspect of social capital. The emphasis should be on the networks.

Gunnar Eliasson is attracted to the Ritzen notion of social cohesion. He likes the conceptual clarity of the narrow definition, but wants things added. He also likes the individual investment approach in the Glaeser model. He wonders if facts and values were being inappropriately mixed in the Osberg estimates of well-being.

In reply to the commentators, Ed Glaeser took the opportunity to emphasize the economic approach to human and social behaviour. He agrees with Bob Putnam that you cannot build social capital alone, and that both the private and the social returns depend crucially on the presence of other players. The simplified model ignores these, but they are important. Even within associations, there is enough individual decision-making to justify taking an individual-based approach. He argues that you should begin with the logic of individual choice, and then add the social context as and when possible.

Turning to the social cohesion concept, Robert Haveman asked what the link between social cohesion and the older European concept of social solidarity was?

Lars Osberg says that distrust among social groups may be in part due to the inadequacy of using GDP as a measure of economic welfare.

Barabara Wolfe: If so many of the groups that are measured for social capital are exclusionary, how are they likely to contribute to social cohesion, as opposed to their role in building networks for individuals?

Putnam replied that middle-aged white men are not very tolerant, but those who belong to veteran's groups are more tolerant. For almost all categories of groups, those who join turn out to be more tolerant than those who do not.

JP Cotis said that for France, the notion of social capital would fall flat – one more academic construct. He prefers by a great deal the concept of social cohesion, which goes far beyond social capital to extend to a sense of community solidarity. At an employment conference, he was unable to get English colleagues to accept the notion of social cohesion, but it has by now found its way even into the financial press.

Robert Haveman accepts Putnam's evidence that participation in voluntary associations has fallen. But has social participation fallen or risen when you take account of involuntary social participation? He has gone to increasing numbers of department meetings. The team concept is now more dominant in business life. Work plans are discussed and debated, in an involuntary way. Has this increase offset the other, and in what way?

Tom Healy is looking for clarification of the concept of well-being. The big picture is what policy-makers require, but they need to be assured that the right things are chosen and measured. He agrees that matters of inclusion and weighting are to some extent arbitrary. Is it meaningful, whatever the weights, to add up consumption and shifts in the unemployment rate? Is it inevitable, by the construction, that Osberg's measure must grow less fast than GDP or consumption?

Jo Ritzen thinks that game theory should be employed in the analysis of investments in social capital. He still prefers social cohesion, to represent the norms and networks to the extent that they contribute to the ability to adapt to change. He also notes that ethnic diversity is not an impediment to social cohesion if it is appropriately managed. If there are language barriers, then even the choice of concepts should be done in a way that respects the pre-existing concepts and preferences of one's neighbours. Solidarity has a closer relation to income distribution, and is hence not quite so parallel to social cohesion. He notes World Bank research that over historical episodes a larger middle class tends to make a society more flexible. He agrees that the same size of middle class could be accompanied by quite different degrees of inequality between the richest and poorest quintiles.

5. Conference Summary by John Helliwell

The programme included human and social capital, inviting the participants to consider them in parallel. The papers and discussion did so, in some ways, but exposed dramatic differences between them. Indeed, one way of interpreting the results and discussion was that social capital provides new legs for the discussion and analysis of human capital. But that is leaping ahead. Starting at the beginning, the conference was asked to define the key concepts, to summarize the state of knowledge and assess the implications for future research and for policy.

Concepts

How Should Social Capital Be Defined?

Michael Woolcock argues for a crisp and narrow definition of social capital, as referring to "the norms and networks that facilitate collective action". He includes both the networking capacity of the individual as well as the ability of a society's members in general to deal with each other. He accepts, as does Putnam, that social capital thus measured may have good or bad effects when evaluated at the aggregate level, or even as seen by individuals who find themselves caught in networks whose norms they may dislike.

Where does this leave interpersonal trust, so often used as a social capital barometer? If trust is to be defined out of social capital, Gambetta (1988) and others would demand that it be given separate and equal billing. Indeed, much of the theoretical reasoning supporting the idea that social capital may have a payoff in terms of lower transaction costs is based on the fact that trust permits business and social dealings to respond flexibly to changing circumstances and unforeseen events. So would we prefer to speak of social capital and trust as separate analytical constructs, or to see the level of interpersonal trust as being part, and networks as another part, of a slightly broader notion of social capital? Bob Putnam, whose vote should get to count more than others, given his central role in the field, favours Woolcock's narrow interpretation, but is rather more open to the idea of including trust, or rather trustworthiness, as part of the norms. The comments of Tom Healy and Jo Ritzen suggest a similar inclination to keep trust pretty close to the centre of the scene.

When trying to evaluate these apparently competing notions, it is useful to refer to the generic procedures used in constructing capital stocks. One starts with an initial value, adds new gross investment, and subtracts the effects of depreciation and obsolescence. If we are interested in developing aggregate measures, should we not be open to an analogous procedure for social capital? How about sticking with the narrow networks definition at the micro level, and then when aggregating, making distinctions between networks with positive and negative externalities, including the extent to which they validate trust and encourage trustworthy behaviour? This would permit Tom Healy to continue to use the trust plus engagement shorthand for the aggregate measure, while providing some grounds for choosing, and for testing, what sorts of social capital at the micro level are likely to contribute to the value of the aggregate stock.

To provide yet another way of linking trust and social capital, how about this: trust is to engagement as test scores are to years of education. Following the narrow Woolcock definition, trust is not part of social capital, but if social capital is to have good effects, a major channel will be through building and maintaining personal trust. Similarly, the standardized test scores are neither education nor schooling, but are measures of the quality of the knowledge imparted in the schools. Under this interpretation, it is just as legitimate to use trust as a measure of the quality of the system of norms and networks as it is to use test scores to measure the success of an education system. The arguments for preferring scores to education years – i.e. they measure outputs rather than inputs, and take account of the effects of informal as well as formal education – could make one equally inclined to prefer trust to measures of the density of formal networks. Does this conflict with the Jo Ritzen preference for the term social cohesion? The two can perhaps be usefully merged, while recognizing that both carry some baggage from their earlier forays. Social capital may lend itself better to measurement, if we take the trust plus engagement version. Social cohesion attempts to go past the possibilities that some types of social capital, primarily the bonding rather than the bridging types, or, as Steve Knack put it, special interest groups with negative effects of the sort emphasized by Olson (1982) rather than horizontal associations of the sort thought by Putnam (1973) to generate trust and beneficial social ties, can have negative consequences for the society as a whole. Bonding refers to links with people like oneself, while bridging relates to links between those with heterogenous interests and characteristics.

There was general acceptance that human capital ought to include health as well as education, as emphasized by Michael Woolcock. There was evidence presented in several papers that there are important interactions between health and education. The costs of education return their personal and societal benefits over each individual's subsequent healthy years, and as those years increase then so does the present value of the gains from education. It works also in the reverse direction, although less obviously, as higher levels of education apparently lead to higher health status at the individual level, even after controlling for relative and absolute socioeconomic status. However, it was apparent that most of the conference papers dealing with human capital emphasized education. There were many references to the health effects of education, especially among the studies surveyed in the Wolfe and Haveman paper, but usually as examples of the non-market effects of education, rather than as part of human capital itself. There is certainly no requirement that papers dealing with education and its effects should have to cover the health linkages, and there may be no point in insisting that human capital should always be used in its broader form that recognizes health as a fundamental component. On the other hand, the use of the term with a narrower education focus should not be allowed to obscure from view the vitally important role of health in understanding the linkages among education, social capital and economic outcomes.

Conceptual distinction was also made between formal and informal education, with increasing attention likely to be focused on the latter. To understand better the effects of education of both types, there is a need, as emphasized by Gunnar Eliasson, to understand the institutional context within which knowledge is generated, transferred and put to use. The same point could equally well be made about social capital.

Evidence

First, a listing of what may be some generally agreed results on the basis of the studies presented or reviewed for this conference:

- Effects of education on macroeconomic growth are stubbornly difficult to find;
- Indirect effects may be as important as the direct ones;

- Human and social capital may be as closely linked to each other at the micro or individual level as either is to economic and social outcomes at the more macro or aggregate level;

- Both education and social capital have strong linkages to health outcomes, welfare of children, and crime. Indeed, estimates of the overall rates of return on investing in, or nurturing, either education or social capital are likely to flow from the indirect effects, as shown by the survey presented by Wolfe and Haveman;

- There is a strong link from education to social capital at the individual level, most recently in Ed Glaeser's conference paper, but note the need to ensure that these effects are not just relative. In other words, positive associations observed at the individual level may not hold at more aggregate level as changing overall levels of education do not necessarily translate into higher overall levels of social capital (with echoes of the difficulty of making the jump from association between human capital and productivity at the micro to the macro level);

- There is evidence of negative effects of inequality on health, crime, human capital and social capital, although the exact pathways need more spelling out and testing;

- Many of the research methods and issues that have been identified for human capital apply also to social capital;

- Evidence was presented, especially by Gunnar Eliasson and Rod Dobell, that to understand how human and social capital work their magic or not depends vitally on the institutional structures, and the diverging interests, in which they are embedded. (Ed Glaeser makes a similar point when looking at the variation across individuals);

- When modelling the acquisition of social skills, it is important to distinguish between stocks and flows;

- Social capitalists have a mild case of data envy with respect to human capitalists. Some of those already well versed in the education literature were quick to say that the envy was misplaced, given the gaps in coverage and between what was measured and what was needed;

- Finally, Takashi Omori emphasized the possibility that social capital can be not only instrumental, by making markets more efficient and fostering institutions supporting economic growth, but as an end in itself: belonging is its own reward.

Research Gaps to be Filled

Some key questions that require further research before conclusions can be drawn:

To start with an obvious data question, why are different international measures of education so different, even where they are purporting to measure the same concept? Robert Barro’s Table 3 is especially instructive, revealing very large differences between the Barro-Lee and OECD data. For example, the OECD data show that Canada has a population proportion with tertiary education 50% higher than in the United States, while the Barro-Lee dataset shows almost exactly the reverse. The Barro-Lee dataset shows Germans with almost twice as many years of education as does the OECD data, and so on.

To what extent are the effects of education on outcomes relative vs additive or super-additive? The analysis in Ed Glaeser's paper, and in much of the literature, assumes that the effects are additive, with the possibility that there are also positive externalities at the community level. However, Nie et al. (1996) have challenged this assumption, arguing that the effects of education on participation apply only where one's education increases relative to the average level in the community. They argue, by contrast, that for trust, there is, and ought to be, evidence of positive externalities. These are what produce the 'super-additive' effects referred to above. If education has strong effects on participation only in its relative form, then the evidence supporting increases in public education on grounds of positive externalities become much weaker. So the issue raised by Nie et al. needs to be taken seriously. Research reported by Helliwell and Putnam (1999) suggests that when the reference groups are chosen appropriately, there is evidence of positive externalities from education on both participation and trust. Similar research is required for a broader range of linkages among participation, trust, health, and market incomes. The techniques must involve multilevel analysis, of the sort advocated and used by Doug Willms in his conference paper, with both individual level and ecological level effects taken into account.

Once there is sufficient faith in the partial linkages, it will be necessary to assess them in a dynamic context that also recognizes their interdependence. This was, of course, the focus of the research developed and presented by Walter McMahon.

The same research issues arise with respect to participation. Steve Knack's paper provides a start in this direction, as he is searching for ways of distinguishing types of associational linkage that are more likely from those that are less likely to give rise to relative, absolute or super-additive effects; in other words, whether there are likely to be any external effects, and if so, whether they are likely to be positive or negative.

To what extent are nation states suitable units for analysis? Steve Knack argues that nation states differ enough to provide the power to test hypotheses. What there is much less evidence on is how levels of social trust and participation are linked at all across national borders. Since many measures and many studies show that economic and social interactions become sparser as distance increases, and especially where national borders intervene (Engel and Rogers 1996, Helliwell 1998), one would expect to find that there are corresponding differences in the tightness of the various measures of trust and horizontal networks. The reasons and consequences can best be studied with data that contain both geographic and political dimensions, to permit a clearer study of the possible aptness of the analogy between distance and borders as separators, and of the role of different social-capital-type linkages as means of shortening these distances. The policy implications of this will be dealt with separately.

An OECD-specific research issue raised by Steve Knack is the need to explain why OECD samples are much less likely than are more global samples to show positive growth effects from social capital. Robert Barro's results show that the same issue arises for education. Are the levels of social capital and institutional quality among OECD countries sufficiently high that diminishing returns have set in? It may not simply be a consequence of low data quality, since the measures are, if anything, likely to be of higher quality, and to have more comparable interpretations, for the OECD countries. However, de la Fuente and Domenech (2000) argue that removing anomalies in the existing data improves substantially the apparent economic effects of education on economic growth.

There is more linkage between R&D and education than much of the literature so far recognizes, given the high productivity effects of basic research (Griliches 1998, Chapter 4), coupled with the fact that much basic research is done in universities, with the costs charged to education and training, and the benefits attributed to R&D activities done elsewhere. Thus some part of the impressively high direct and spillover returns from R&D are more correctly attributable to the research universities, which are the sources of the trained researchers and most of the fundamental research results.

Once the importance of national borders is recognized, it then becomes natural to consider more explicitly the extent to which measures of human and social capital can have international as well as national spillovers. Coe and Helpman (1995) have done benchmark studies on spillovers from one aspect of knowledge, that measured by cumulated and depreciated R&D spending, but there is little or no comparable work on human and social capital. As Michael Woolcock, Jo Ritzen and others emphasize, where social cohesion is constructed within a nation by means of internal bonding, that the scope increases for a negative fallout for those in other countries. As Rod Dobell emphasizes, the fallout metaphor may be dangerously apt, as acid rain, nuclear fallout and global warming also pay no heed to national boundaries.

On the links between the results for human and social capital, Bob Putnam remarked that in the absence of better international measures of social capital, it is possible that measures of education may be getting the credit for social capital in cross-country studies, given the high correlation between education and social capital. But the burden of the evidence in several papers at this conference is that, at least among the OECD countries, differences in levels of human capital show no significant positive contribution to subsequent economic growth. As already noted, the lack of strong empirical linkages from human capital to growth at the macro level may be due in part to data that are still not up to the job. If this should be a sustained result, it suggests, if Bob Putnam's inference is appropriate, that neither human nor social capital is likely to explain growth effects at the aggregate level. This does not deny the very real possibility that levels of human and social capital should have an influence on the level of measured output, and of course both have been shown to influence a wide range of non-market outcomes. Indeed, that is probably the strongest empirical message from the micro and macro studies described in the papers for this conference – that the main effects of both human and social capital flow, at least in the first instance, through non-market outcomes.

If something is obviously important to human welfare, but has no easily measurable effect on the traditional measure of economic progress, then it may be time to extend the measures of results. This was the burden of Lars Osberg's paper, and the logic behind his advocacy of broader measures of economic well-being. Some of his extensions ran well beyond the economic, but all were clearly candidates for inclusion in more general measures of well-being.

Policy Issues

What can be done to increase the quantity and quality of international social capital, of the sort required to internalize at the global level the spillovers that arise from activities at the national level? Rod Dobell has emphasized the environmental aspects of this, as well as the difficulties of maintaining trust in political institutions when each new institution soon acquires its own interest group base and articulated self-interest.

More generally, how can the production of social and human capital be improved? Evaluation has gone furthest, and experiments are more prevalent, on the educational aspects of social capital. The linkages among health policies, health expenditures, health system management, social capital and health outcomes are increasingly studied, but the best means for policy intervention are still uncertain.

Can policy-makers do more to check in advance to ensure that economic and social policy reforms do not damage the social fabric? Evidence and theory alike show that it is much easier to break down social capital than to build it up. Trust acquired over many years can be shattered very quickly. This is less clear with respect to participation, as Ed Glaeser noted in discussion: Bob Putnam's data show that the pre -1960 increases in US participation were about as rapid as the subsequent declines. The links between inequality and social capital are increasingly studied, but the causes of growing inequalities, and the nature and feasibility of the best policy measures for helpful intervention are not yet known.

Even for the United States, where the long time series of data have permitted the clearest measurement of the decline in social capital, the implications for policy are unclear. In discussion, and in the final chapter of his forthcoming book, Bob Putnam posed the challenge somewhat as follows: What is needed to arrest the decline in connectedness is for the next generation to repeat the institutional innovation of the Progressive Era, recognizing both the constraints and the opportunities imposed by 21st century technologies and lifestyles. Putnam's research shows that television has been a key culprit in the decline of social capital in the United States, through both its content and the time it takes away from more direct human contacts. Television is not about to go away, but there is always scope for changing the content so as to encourage the accumulation of socially useful forms of social capital. If new role models are needed, could Homer Simpson and Arnold Swarzenegger's film characters make plausible volunteers?

When thinking of policies that are friendly to the maintenance and development of social capital, the idea of 'investing in' social capital may make it sound too concrete and too easy to manipulate. Nurturing may well be the better word, as was suggested by Michael Wolfson in the conference discussions.

For other countries the data are much more limited. The efforts of Lars Osberg to develop comparable measures of a whole array of social indicators, as comparable as possible across countries and over time, should be greeted with enthusiasm and encouragement.

Finally, a last contrast between human and social capital. Whatever the difficulties in the design and evaluation of education, there is a genuine policy instrument, or scores of them, right at hand. There are education ministers, and they have tasks and budgets. But make yourself the minister of social capital and who would you talk to when you came to work in the morning? Social capital is itself a bridging concept.

What are the best ways of providing a policy focus to the unmistakable, and long overdue, resurgence of interest in the social and human aspects of development? The first task must be to start building bridging social capital among those concerned with the study and implementation of the full range of economic and social policies. The results reported to the conference show an almost bewilderingly complex set of interdependencies among the various aspects of physical, social and economic health at both the individual and community levels. Research is needed to unravel these complexities, and there are scores of such efforts already underway in several countries. The tougher job will be to keep the policy process sufficiently open and aware to respond to the results of this research, and to foster the sort of experiment that can help to test some of the more promising policy options.

What are the implications for the OECD? The research reported at this conference provides the strongest possible support for the OECD's continuing emphasis on horizontal linkages among policy directorates, and among the corresponding client ministries in national governments. The existence of lively OECD forums, and the provision of trusted pathways for the dissemination of the results of research and policy experiments, should be the lynchpins of the OECD's continuing contributions in this vital area.

References

Coe, D.T., and E. Helpman (1995) "International R&D Spillovers" *European Economic Review* 39(5): 859-887.

De la Fuente, Angel, and Rafael Domenech (2000) "Human Capital in Growth Regressions: How Much Difference Does Data Quality Make?" Discussion Paper 2466, May, CEPR.

Engel, Charles, and J.H. Rogers (1996) "How Wide is the Border?" *American Economic Review* 86(5) (December): 1112-1125.

Gambetta, Diego, ed. (1988) *Trust: Making and Breaking Cooperative Relations* (New York: Blackwell).

Griliches, Zvi (1998) *R&D and Productivity: The Econometric Evidence* (Chicago: University of Chicago Press).

Helliwell, John F. (1998) *How Much Do National Borders Matter?* (Washington, DC: Brookings Institution).

Helliwell, John F., and Robert Putnam (1999) "Education and Social Capital" *NBER Working Paper #* 7121 (Cambridge: National Bureau of Economic Research www.nber.org).

Olson, Mancur (1982) *The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities* (New Haven: Yale University Press).

Nie, Norman H., Jane Junn, and Kenneth Stehlik-Barry (1996) *Education and Democratic*

Citizenship in America (Chicago: University of Chicago Press).

Putnam, R., with R. Leonardi, and R. Nanetti (1993) *Making Democracy Work: Civic Traditions in Modern Italy* (Princeton: Princeton University Press).