Commentary

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The range of material presented in this session was much wider than I expected. There are some very daring approaches and overall, enjoyable papers. Given this, the most challenging task of the editor and the organizers of the symposium must be to bring all this material together into a coherent whole. I will try to contribute something here. First of all a common conceptual framework is needed that takes you down to the micro level and embodies sufficient dynamics to serve as building blocks in a model of economic growth. It does not have to be a formal model. That would be impossible. But the conceptual framework must be helpful in interpreting all the formal models presented in this session in a coherent fashion. This is, in fact, not as demanding as it sounds, and it really must be considered an urgent task for economists to address. But you must then, I repeat, begin at the micro level, this is my argument, and then link upwards to macro and policy parameters. In fact, why not start with a micro version of Marshall´s industrial district. If you allow dynamic agents to populate Marshall´s essentially static industrial district (his problem was to accommodate increasing returns in the Walrasian system) you will have what you need to endogenize economic growth. If you start with Marshall´s original static story and aggregate you will come up with new growth theory. Marshall´s analysis of industrial economics problems, hence, would be a very useful starting point for integrating the seemingly very disparate papers of this session and of this conference. This was the argument of my paper for this conference so I cannot resist repeating it here.

Most of the models presented are, in fact, micro-models, with two or three macro ones. My first argument is that if you aggregate to the macro level, you leave the level where economic behavior and dynamics occur, where the entrepreneurial initiatives are taken and where individuals have to cope with unpredictable change in their environments. This is where both *human* and *social* capital are needed. All this washes out with aggregation and you wind up relating aggregates to one another that cannot even be expected to be stable. Given the micro studies presented in this session you do not have to be satisfied with macro econometrics. Furthermore, the details of the micro studies presented should be useful in interpreting (or maybe reinterpreting) the results of the macro studies. I will illustrate how. The interesting Wolfe-Haveman paper can be very useful for such reinterpretations.

Walter McMahon's model applies new growth theory to a variety of countries. It is typical macro, and there is no other way at this stage to do international comparisons. Serge Coulombe's model, is especially interesting because it covers the provinces of Canada in an integrated fashion. Some aspects of this model, in fact, relate directly to a number of the micro studies presented at this conference. Both models feature catch up or convergence properties in the long-run. The way the models are formulated I would, however, expect to see convergence in the very long-run by prior assumption. For instance, regarding Coulombe's model, in all the estimates he finds that growth relates negatively to the initial level of income; that is part of the convergence property of the model. My question for Serge is: to what extent is this result there by prior assumption or is it an empirical result that depends on the fact that only Canadian provinces have been studied, a result that might have come out differently with a different set of provinces? What would have happened if you had plugged in a California type economy in Canada? What will this model tell us about the New Economy that many expect is emerging out of new technology and California type entrepreneurship? I find these questions interesting because the answers really have to be looked for at the entrepreneurial micro level of the economy. The macro relationships only measure ex post outcomes, and they may be in error if the econometric model specification forces convergence on the data.

Now introduce the notion of a Marshallian industrial district and allow the entrepreneurs in it a free play. The positive sum game implied in the new growth theory model will require competence on the part of actors and be a tough environment for all. It becomes natural to distinguish between *human* capital moving the entrepreneurs and leading firms and individuals in a competitive game on the one hand, and some other kind of capital, embodied in individuals and the environment, supporting the individuals in their attempts to cope successfully with the consequent unpredictable and arbitrary change. Let us call that other kind of capital *social capital* and proceed to characterize it. It obviously has something to do with welfare and distribution.

Douglas Willms observes (in his paper) that successful countries or communities have been successful in bolstering the social outcome of their least advantaged citizens. I am not exactly clear what he means by that. It would suggest that maybe we should use a different measure of growth than the standard one used by Willms. This is necessary if we are concerned about the distribution and its consequences, something recognized explicitly in Lars Osberg´s paper for another session of this conference. Walt McMahon also looked at distribution, but indirectly. He studied a number of distributional outcomes in terms of their indirect effects on the growth outcome, but he didn’t look at them as the final outcome itself.

Knowledge matters critically in all papers. Knowledge is commonly assumed to be the outcome of schooling or education. Hence, it becomes natural to plug educational inputs (notably measured formal education) into the macro model. However, if you do not explicitly model the ways education is transferred into useful human and social capital you easily come out with very strong policy implications that are not empirically correct. Schooling is what really matters; such is the standard argument. Hence, more money for schools will boost educational production functions and solve all economic and social problems. Educators and policy makers in the past arrived very rapidly at that conclusion and it was based on solid econometric evidence from not well specified macro models. Let us look carefully at some micro evidence presented in the interesting Wolfe-Haveman paper which demonstrates that schooling influences a lot of dimensions of the human character and that some of these dimensions feed back on the incidence of schooling itself. What does this mean for the interpretation of macro models that cannot be explicit on the dynamics of human interaction with the formal schooling system, and for policy? It may not even be clear that more schooling is what you need, even though this may appear to be the conclusion from macro models.

I found the Wolfe and Haveman paper about the non-market benefits from school very useful for model reinterpretations of this kind, besides being very enjoyable reading. They observe that public schooling accounts for up to 7% of GNP in some of the countries, and much less in other countries. This means that school is a dominant resource user in some countries, notably the wealthy industrial countries. I would add here that education properly defined is much more that formal education, including informal education, parent upbringing and on-the-job training and learning including very large resources devoted to the corporate classroom. So essentially a lot of valuable time and other resources are being spent on education, in schools proper, on the job, and all throughout the life cycle of and individual. What Wolfe and Haveman did not consider is that early schooling develops a "platform" that makes further learning more efficient, and that this is another non-market benefit of public schooling. We use the concept of a platform for further learning and intellectual retooling at my department at the Royal Institute of Technology (KTH) in Stockholm to study the effects of more or less well organized life long learning. We know from a number of studies that you get more access to education and training on-the-job if you have a good platform for learning to begin with. The better that platform the more profitable you become as an object for educational and training investments and for your access to on the job training resources. Education, hence, is very important for the overall allocation of both educational resources and competence in the economy. That is an important economic and social benefit, which I think should be included in the discussion of non-market benefits of education. I should also repeat that education, hence, draws considerable resources. It, therefore, becomes important to understand how the output of school is composed (the product) and produced. The whole issue about the product of school is something that I would like to read more about in Bob and Barbara’s paper. The way they relate their results to a number of non-market benefits should make it possible to tell a lot more about the way schools should be organized.

Also, there could be some sort of underlying third selection factor in this kind of results, because people with particular qualities receive more years of schooling; we have seen that in some other studies. Another point argued in Douglas Willms’s paper is the importance of family life. Bob and Barbara mention in their paper that education has to begin early on. It has to begin with the parents, perhaps even in the previous generation, because of the long time needed to build, for instance, attitudes. An appropriate question to Barbara and Bob should be: “Should kids be removed from bad family environments?”

The story does not end here. In fact, health appears to be the critical factor explaining both the level of education, the ability to learn, the ability to hold a job, overall income and, hence, the distribution of income.

Douglas Willms´ three hypotheses were very interesting, especially the implications they have for patterns of spending on education, and on the allocation of competence in the economy. Much of the investment in general schooling comes from public spending. What does this mean for the under- and over-investment hypothesis? If I remember it correctly, Psacharopoulos, in one of his studies, concluded that there was over-investment in higher education and under-investment in primary and secondary education, so maybe society would benefit from shifting resources to the lower end. His results come from data from the developing economies, but the current discussion in the rich industrial economies on the state of education and the usefulness of very long education suggests that a further inquiry into these matters might turn out interesting and controversial results. Essentially, perhaps that shift could go all the way to the family level, somehow making sure that kids get a good family background. That is one conclusion I believe Willms' paper leads to. Event though we may be principally against such authoritarian approaches to family life we should remember that they have been practiced within and around the former Soviet empire. Even Sweden had a spell of those ambitions, especially around the 1940s, with results that do not look good today.

Finally, there is Steven Knack's paper on trust. It belongs to the category of papers attempting to measure the impossible, but his results are useful because they raise important problems, in this case the importance to build trust in the country, or a good reputation that lowers transactions costs in the economy. This policy task is similar to the ambitions of firms to develop a brand name, the value of which is in fact measured in the stock market. This branding problem at the national level is a fact of life and a very acute problem in the formerly planned economies trying to develop a market economy.

Finally, back to the measurement (of capital) problem. The result emerges that individuals need a particular own capital or societal infrastructure capital to be capable of coping with unpredictable and arbitrary change in their local environments. Such unpredictable change comes out as a theoretical result when you leave the intellectual domains of the static neoclassical model and shift your attention to a dynamic version of Marshallian economics, or what I prefer to call an *experimentally organized economy*. In this theoretical economy, which is much closer to the real economy than the neoclassical model, you need human capital to cope with the unpredictable change and "insurance" broadly defined. This alone is a good reason to introduce a narrowly defined social capital which is both embodied in the individual and part of the institutional infrastructure of the economy and that supports the individual socially in weathering change in his or her "arbitrary environment". I do not argue that this is all there is to social capital, but to me it makes sense to begin with something that can be fairly well defined and that is measurable in a sense similar to human capital before the difficult task of measuring the impossible is attempted.