Social Policy, Inequality and Productivity

Social Policy and Productivity Growth: What Are the Linkages?

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INTRODUCTION

The equity versus efficiency argument has been the bread and butter of economic policy and social policy discussions since the emergence of the modern welfare state in the post-Second World War period. In virtually all aspects of policy, the twin goal of promoting economic progress and promoting social justice stands as a hallmark of the modern industrial democracy. By the late 1960s the general view was that a conflict existed between the efficiency objective and the equity objective, nicely summarized in Okun's famous 1975 book, *Equality and Efficiency: The Big Tradeoff*.[1] In the 1990s a new debate has emerged covering similar, although conceptually different, ground. Productivity growth is widely regarded as the major long-run determinant of per capita income growth in industrial countries. Over the last two decades, economists have been preoccupied with understanding the sources of productivity growth, and slow productivity growth in Canada has been a major policy concern for several years. Prior to the mid-1980s, traditional economic analysis focused on the static effects of economic policy — the so-called size-of-the-pie effects. For example, when looking at the impact of taxes on labour supply, the analysis was concerned with the one-time effect an increase in wage taxes could have on the labour supply, rather than its effect on long-run economic growth. However, it is evident that, in the longer term, how fast the pie grows is more important. The reason is simple: a small change in long-term growth rates — on the order of 1.0 percent, or even less — has dramatically larger consequences than a similar percentage change in GDP. This explains the emphasis put, in both research and policy, on understanding the factors leading to higher, or lower, productivity growth, as opposed to other factors that do not have permanent consequences on growth. Social policy might well be one factor that has an impact on growth. The expansion of the welfare state was heavily dependent on strong economic growth in the 1950s and 1960s. The fiscal repercussions of slow productivity growth, which had set in by the mid-1970s and were evident in a debt and deficit build-up by the mid-1980s, raised concerns about the sustainability of heavy social spending. For both of these reasons, the dynamics of social policy became inevitably linked with the issue of economic growth.

That growth depends on productivity is not a fact in serious dispute; but the long-run sources, or ultimate determinants, of productivity growth are not completely understood. At the most general level, this is Adam Smith's question: What are the sources of the wealth of nations? At a more restricted level, there is agreement on the proximate sources of productivity growth — new investment, human capital formation, new technology and product innovation. What drives these factors in an economy has been accounted for largely by economic determinants — that is, those impinging directly on investment, innovation, education and trade, which appear to have a direct and medium-term impact on productivity growth. However, recent research has put forward the hypothesis that social factors may also be a major determinant of productivity growth. Social factors would include the distribution of income and wealth in an economy, the range of social policy interventions including health, education, labour market regulation and a variety of income support programs. These social policies may be defined to include the tax-transfer system, which finances the social budget. The implications of this change of perspective are potentially quite powerful in making a case for social policy. If it could be established that social determinants are a quantitatively major factor in productivity growth, then the traditional efficiency-equity tradeoff may not exist. Social policies to promote equity could also be defended on grounds that they simultaneously increase economic growth. The tradeoff is replaced by a virtuous circle in which equity-enhancing policies also promote economic growth. This paper provides a critical evaluation of these arguments.

The paper present a survey of the evidence and debate on the social determinants of productivity in the context of the Canadian productivity debate. It examines both the basic theoretical arguments and the evidence advanced by economists, and their relationship to what might be called modern social policy. Not all social policy is directly motivated by equity considerations. In particular, modern social policies in the area of education and health focused on promoting the growth of human capital represent one category where both the evidence and debate on the growth effects are qualitatively different from those in other areas of social policy.

It is instructive to consider the context in which this often heated, and at times politically loaded, debate surrounding the impact of social policy on economic growth has taken place. Three trends have been driving the wider debate in industrial countries — all of which are noticeable in Canada. First, the slow growth in Europe, particularly of employment, had led many to put the blame on the welfare state.[2] "Eurosclerosis" became the term employed to describe the slow growth and poor employment record of a number of European countries through the 1980s and early 1990s. A parallel debate in the Scandinavian countries has led many to the conclusion that the Scandinavian welfare state had similar consequences. Assar Lindbeck's critique is one of the most well-known (see Lindbeck 1975, 1995). Part of the European record was the perception that generous social programs were a major factor responsible for the poor growth record. This debate was fuelled in part by the famous *OECD Jobs Study* (1994) and an attack by all OECD governments on the growth of debt and deficits in the mid-1990s. It may well be that the factors behind the slow employment growth in Europe ultimately have little to do with long-term productivity growth; but in the popular debate, the impacts of the European welfare state on productivity, employment and fiscal policy tend to get lumped together. Canada is typically viewed as somewhere between the United States and Europe on the welfare state spectrum, so that these arguments have likewise played out here.

A second major element, of more recent origin, is the debate on the "new economy" in the United States in contrast with the slow growth in Europe. The long and extraordinary economic expansion in the United States throughout the 1990s was accompanied by high employment and strong productivity growth. While the sources of this growth remain a matter of discussion, the new economy hypothesis claims that it is driven by the impact of innovations in the information, communications and telecommunications fields, giving rise to an entirely new phase of economic development — the so-called Third Industrial Revolution. Prior to the recent surge in growth, beginning in the mid- to late-1970s but continuing into the 1980s, there was a significant rise in market income inequality in the United States and the United Kingdom. These trends have subsequently shown up in most OECD countries, including Canada, but in Europe particularly it appeared that inequality was not increasing to the same degree. The acceleration of growth in the United States during the 1990s led some to infer that inequality contributed to growth. The divergent US and European growth patterns in the 1990s have brought the charge that the redistributive and labour-market policies responsible for Eurosclerosis have also prevented Europe from experiencing the growth benefits of the new economy. Economic growth and the preservation of equality as seen through this debate appear to be conflicting goals, reinforcing the old view that equity and growth are in opposition with one another.

Thirdly, an intellectual challenge to the existence of an equity-efficiency tradeoff emerged at about the time that the Eurosclerosis debate began. In the mid-1980s economists began to seriously rethink the sources of economic growth, which led to both the New Growth Theory[3] and a large empirical literature on the determinants of growth and productivity. The development of new data sets for a large number of developing and developed countries allowed researchers to pose new and interesting questions about the sources of growth. Much if not all of the intellectual impetus to discover links between social factors and growth is found in this literature on cross-country growth comparisons. In the early 1990s a number of researchers identified a robust negative empirical correlation between measures of inequality and economic growth — lower inequality would be associated with higher growth. Other researchers began to look for other policy determinants of growth, many of which bear directly or indirectly on the issue of social policy, such as education and fiscal policy. Lastly, a voluminous literature has emerged on the rising wage inequality in advanced industrial countries over the last two decades. While not directly about productivity and social policy, the wage inequality issue figures prominently in the productivity-social policy debate, for a simple reason. Much of this literature adopts the opposite perspective — what is driving inequality is economic growth, which in turn is driven by technological change. From this perspective, understanding the consequences of any policy intervention on inequality and growth requires an understanding of the complex interaction between technological change and productivity growth, and its implications for wages and employment.

My purpose in this paper is to try to make sense of these often seemingly contradictory pieces of theory and evidence linking social policy to economic growth. Essentially the paper looks at two areas of research: the growth and inequality debate, and the small but growing literature on the policy determinants of economic growth. To provide the context for this discussion, the paper also includes some background material on economic growth, productivity and social policy in OECD countries.[4]

By way of a caveat, the paper is focused specifically on issues that are pertinent to Canada, or at least to countries like Canada — those with a democratic, high-income, small, open OECD economy. Nothing in what follows is meant to prescribe what development strategies are, or are not, appropriate for the developing world. The paper does not discuss the other main objectives of social policy that are not directly related to growth. Lastly, the paper does not discuss two areas of social policy that do have growth effects but are not directly related to the productivity issue. These are: the effects of social security reform on savings — a very active debate driven by the aging population issue; and the effects of labourmarket regulation on employment, which have been extensively discussed since the release of the *OECD Jobs Study*.[5]

My main conclusion is in the form of a non-conclusion. This is one case where strong policy conclusions are well ahead of both theory and evidence. Neither provides conclusive support for the proposition that either (a) policies directed at reducing inequality will increase productivity growth, or (b) increased social spending will raise productivity growth. Both advocates and opponents of such policies will find little comfort in these conclusions: advocates, for the obvious reason that they are left in the position of dealing with the charge that equity and efficiency are often conflicting goals; opponents, because the evidence is often sufficiently indecisive to leave ample room for a priori reasoned arguments to the contrary. Lastly, it should be stressed that most of the research is relatively recent. It is entirely possible that the balance of evidence will shift one way or the other as new studies are published.

SOME BACKGROUND: PRODUCTIVITY GROWTH AND SOCIAL POLICY

Productivity Growth: Concepts and Framework[6]

Economic growth is measured as an increase in real economic output per person at the national level and is generally regarded as reflecting four factors:

- capital accumulation
- employment growth relative to population growth
- external market factors
- productivity growth

Of these four factors, productivity growth has generally been found the most important for industrial countries. However, all the other factors can play an important role at various times. For example, a sudden increase in the fraction of the population that is employed would have substantive effects on growth for a few years. Moreover, a strict additive decomposition of these four factors could easily lead to incorrect inferences as to what is driving growth. For example, an increase in productivity growth caused by the availability of new technologies can lead to greater investment, which has an additional knock-on effect on the growth rate. Causality can also run the other way — investment can carry spillover effects through improved knowledge flows, leading to higher productivity.

The *productivity* of an economic activity is defined by economists as the ratio of an index of outputs to an index of inputs. It can be defined at the level of an individual performing a certain task, a plant producing a particular good, a firm carrying out a diverse set of economic activities, an industry, or an entire country. Productivity goes up when you can get more output with the same inputs. The definition of productivity hinges critically upon how one measures the inputs and the outputs. In the economic literature, the starting point is a production function depicting a microeconomic relationship at a point in time and mapping input to outputs. So we write, for example:

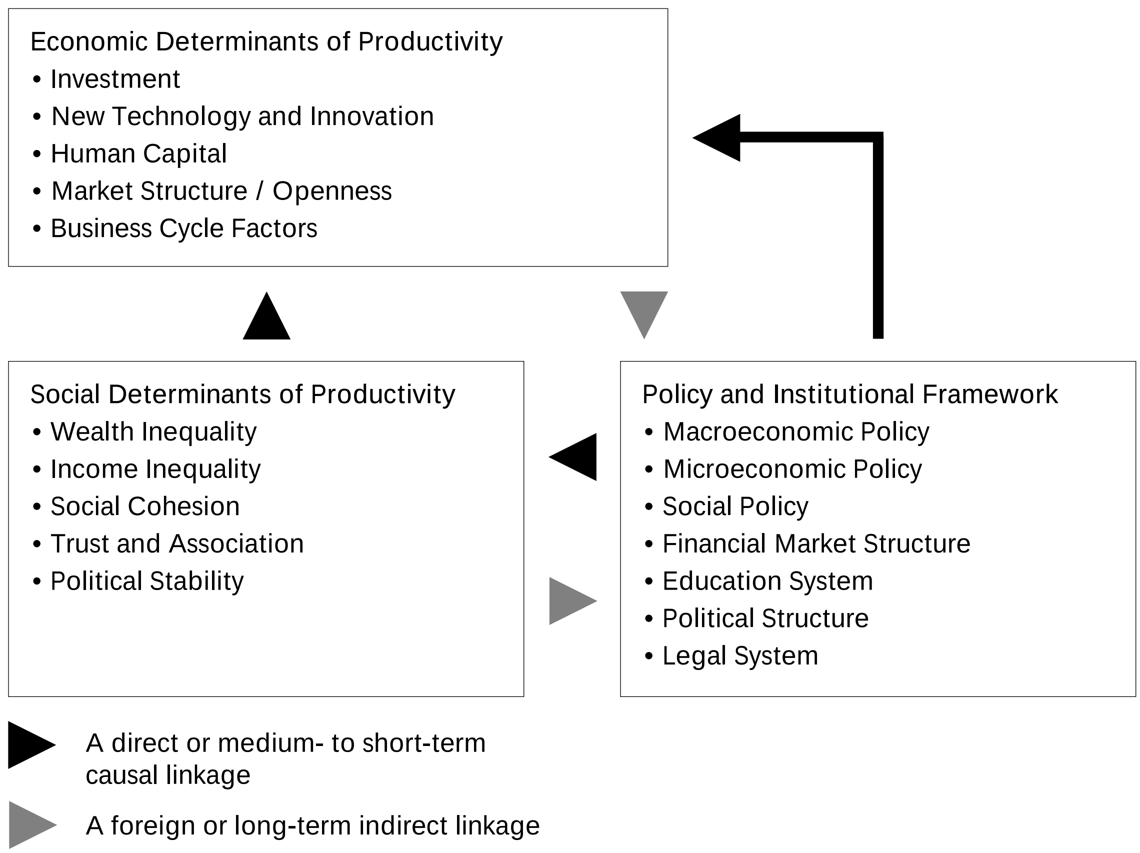
$$Y=AF(K,L)$$

where Y is output, K and L are measures of capital and labour, $F(K,L)$ is a time-invariant functional relationship between capital and labour, and A is a time-varying parameter, referred to as an efficiency parameter or total factor productivity (TFP) parameter. The productivity level is defined as the output per unit of labour input — the average labour productivity — either per worker or per hour worked, defined as Y/L. In this framework, productivity growth is the sum of two effects: the increase in the TFP parameter A, and the increase in capital per worker K/L. This approach is extremely well-known and is used at both the individual micro-unit level and the level of the entire economy.[7] In the latter case, output is measured as real GDP and L is either the working population or the total number of hours worked. At the macro level, A is also referred to as the *stock of knowledge*, in line with the recent emphasis on knowledge as the truly ultimate determinant of technological feasibility. In practice, growth in A is invariably done by attributing to it what other factors cannot explain. In macroeconomics, this is often referred to as the Solow residual. For most industrial countries, growth in labour productivity is accounted for by changes in A, while relatively little growth is accounted for by changes in capital per unit of labour. However, the range of estimates varies considerably.[8]

While this framework is conceptually simple and widely used because productivity growth can be identified by the residual method (i.e., the change in A calculated by subtracting from the growth in Y a weighted average of the growth in K and L), it has long been recognized that this approach presents some serious shortcomings. In particular, there is no institutional context describing how economic incentives are determined, where new technology comes from, or what factors determine investment. The major accounts of the Industrial Revolution or of economic development offered by economic historians place great emphasis on these last factors.[9]

A more general diagram depicting the determinants of productivity growth is given in Figure 1, which distinguishes between three interrelated categories — the economic determinants of productivity, the social determinants of productivity, and the policy and

FIGURE 1
A Conceptual Framework for the Analysis of Productivity



institutional framework in which these factors interact. The arrows indicate the possible directions of causality running between the three sets of interrelated factors. It is conventional to distinguish between the direct effect and the indirect or feedback effect each of these variables has on each other. It is generally agreed that investment, particularly in machinery and equipment, has the most direct measured impact on business sector productivity. This shows up in both country microstudies and cross-country studies. Many social determinants could have an impact on productivity growth through their effect on investment. For example, greater political stability contributes to investment growth by reducing uncertainty; this greater investment in turn raises productivity growth, which leads to high economic growth. More generally, government policies — economic and social — probably have some medium-term effect on productivity growth via their impact on the economic determinants of productivity growth, such as investment. However, both economic and social policy also impact on the social determinants of productivity growth. For example, education policy affects both the average level of human capital in the economy and the longer-run wage distribution between skilled and unskilled workers, which in turn affects future investments in human capital. There are also linkages running between the economic and social determinants to the list of institutional and policy factors. Greater income inequality can influence political decisions on social policy, for example, which would have second-round effects on growth and inequality, and so on. For the purposes of this paper, these highly indirect factors will be mentioned only occasionally, largely because there is not a lot of evidence in the literature. However, they certainly figure prominently in the larger debate on the sources of differences in national economic performance.[10]

One of the major problems affecting research on the deeper causal pathways running from policy to growth is the time frame involved. Tax policy changes are likely to affect investment next year; education policy reforms may not change the stock of human capital in the economy for years to come. This time-horizon problem has forced researchers to use empirical data and methods that are capable of identifying medium-term measurable linkages between particular inputs and economic growth. Much of the cross-country research, for example, tries to identify the long-term effect of policy on growth by using averages of long-term growth rates over long periods, often two or more decades, and samples of countries with vastly different levels of economic development. The difficulty with this approach is that one is forced to assume that the effect of a given variable on growth is the same for all countries, thus ignoring potentially significant differences between countries in the way a given policy or social factor might impinge on growth.

As discussed in a companion paper to this (Harris 1999), the bulk of the micro evidence on productivity is primarily about the so-called economic determinants. This reflects both data availability and the fact that economic theories linking these factors to productivity growth have received a lot more attention from economists than potential social determinants. We now turn to a description of where this evidence stands, and a review of recent trends in social policy.

Economic Determinants of Productivity

The bulk of the productivity literature is concerned with either (a) measuring productivity, or (b) attempting to assess the quantitative importance of a set of limited economic determinants, largely at the microeconomic level but also at the macroeconomic level. The determinants that have received the most attention are investment, human capital, innovation and diffusion of technology, effects of international and domestic competition, various forms of knowledge spillovers, and most recently geographic agglomeration of economic activity. The success of these explanations has varied. Beyond the first four explanations, the measured effects are highly variable and in many cases difficult to detect statistically.

The social policy-inequality-growth debate has been partially motivated by and conducted almost entirely within a macroeconomic framework focused on national comparisons. This is not surprising since differences in social determinants are generally regarded as having systemic economy-wide effects that would tend to impact on all sectors of the economy. The search for empirical regularities has therefore largely focused on differences between economies, averaged over a number of years. Attributing differences in productivity growth across time within a national economy to a single policy is fraught with difficulty. In particular, the fact that so many economic variables tend to trend together makes it impossible to prove the importance of one particular factor relative to any number of others. The most prevalent form of evidence that has been offered in the modern debate, therefore, is either reduced-form or structural growth equations in which the explanatory variable is the average growth of GDP per worker, or per hour, across a number of countries. Researchers in this area are well aware of the possible complex causal relations linking these variables at the aggregate level. Success may thus be judged by the standard scientific criteria of demonstrating that a few variables explain the data fairly well, or that particular variables show up repeatedly as quantitatively significant, despite variations in the data or statistical methods used. So far, it has been difficult to show that the economic determinants do a fairly good job in explaining the growth experience of countries at all levels of economic development.

Using a full sample of countries at all stages of development and only a limited set of economic variables leaves a lot to be explained. In discussing this issue, Hall and Jones (1999) point out that vast differences in income levels cannot be explained by savings behaviour or even measured human capital levels:

> *Output per worker in the five countries with the highest levels of output per worker in 1988 was 31.7 times higher than output per worker in the five lowest countries (based on a geometric average). Relatively little of this difference was due to physical and human capital: differences in capital intensity and human capital per worker contributed factors of 1.8 and 2.2, respectively, to the difference in output per worker. Productivity, however, contributed a factor of 8.3 to this difference: with no difference in productivity, output per worker in the five richest countries would have been only about four times larger than in the five poorest countries. In this sense, differences in physical capital and educational attainment explain only a modest amount of the difference in output per worker across countries.* (92)

International productivity differences (in levels) are enormous and any coherent explanation will have to rely on institutional and social infrastructure factors. The relevance of this to the OECD countries — many have very similar levels of economic development and quite similar institutional structures — is questionable. For these countries, similarities in institutions and developmental stages imply that the sources of growth are more likely to be found in a common set of factors. Most economic theories simply assume the problem away. Contemporary growth theory largely assumes a well-functioning market system with efficient financial markets, and markets that clear (most of the time) for labour and capital. Are these theories — now textbook material for most graduate students — capable of describing the modern economic growth experience of advanced countries? The answer is not a decisive yes or no, but, as we will see below, the support for these models in the case of industrial countries is fairly good. In general, however, the task they face is considerably less daunting than it is for models attempting to explain what Hall and Jones describe, given that the maximum difference in income levels can be expressed as factors of 2 to 3.

Growth theory and empirical work have made some progress in the last decade toward reducing the uncertainty surrounding the determinants of growth in industrial countries. Temple (1999), for example, is cautious but optimistic in his assessment of the literature. I would summarize the evidence on modern empirical growth models as involving three stages — the reduced-form literature, and then the structural models of growth without and with explicit transitional dynamics.

First, in the cross-sectional reduced-form literature, there is a consensus that relatively few variables are statistically robust in a growth equation (see Levine and Renelt 1992; Sala-i-Martin 1997). In a growth equation, average labour-productivity growth is the dependent variable with a set of potential explanatory variables on the right-hand side. The *successful* variables include:

- the initial income level at the beginning of the period
- investment-to-GDP ratios
- schooling levels
- population growth
- indicators of openness in trade and/or foreign direct investment (FDI)

Temple (2000) surveys this literature and notes that, given the lack of an explicit theoretical structure, a large number of variables have been tried and the whole literature suffers heavily from data mining. That said, the growth regression literature has been very influential, although more so with respect to developing country issues than advanced country issues. The early work also revealed a number of variables that, to some, were not good explainers of growth. These included fiscal policy, R&D measures, and various political and legal variables.

Second, an important structural model of growth is the Mankiw-Romer-Weil (1992) augmented Solow model. This is the basic neoclassical growth model of Robert Solow with exogenous savings in physical capital, to which is added a third factor input — human capital. This is all done within a constant returns to scale aggregate production framework. The model is empirically implemented by imposing a steady-state restriction which implies that countries are on a steady-state long-run growth path for the period examined. Under this assumption, growth rates (the dependent variable) can be expressed without reference to the stocks of physical or human capital, but as functions of the savings rate, a schooling variable, and an initial productivity level assumed to be randomly distributed across countries. Attempts to make this model fit OECD cross-sectional data have not met with much success. This can be regarded as either a failure of the theory or a reflection of the fact that the steady-state restriction is too constraining.[11]

Third, the 1990s have brought a variety of structural growth models that incorporate human capital and drop the assumption that observed growth is of the steady-state kind. By incorporating dynamic transition effects to allow theoretical growth rates to vary over time, the models have met with somewhat more success. Barro (1991) was an early pioneer in this area, but numerous methodological, measurement and econometric improvements have been made over the last decade. A good technical survey of this literature is provided by Durlauf and Quah (1999), and it is covered in part in the Barro and Sala-i-Martin (1995) textbook. More significantly, the most recent versions of these models use panel data that exploit both cross-sectional and time series variation and are estimated using a variety of what are referred to as *dynamic panel methods*. Initially, there was some debate about the way in which the human capital variables should enter the model and some of the early results on human capital were quite odd. However, this human capital paradox has recently been largely resolved. Many of these estimates support the view of close to non-diminishing returns to a broad measure of human and non-human capital. Non-diminishing returns imply that increases in broad capital per worker yield incremental output increases that do not diminish as more capital is added. This comes very close to supporting what is known as *endogenous* long-run growth. Endogenous growth, as developed by Romer (1990) and Lucas (1988), occurs when a policy variable, such as the savings rate, can have a permanent effect on the *growth rate* as opposed to the long-term level of income. Non-diminishing returns to capital are a sufficient condition for a growth model to generate endogenous growth. A model exhibits exogenous growth when policy variables have only transitional effects on growth rates, although they can impact on steady-state levels of income. The Mankiw-Romer-Weil model is an example of an exogenous growth model.

Measurement and data issues have turned out to be quite important in this literature. Changes in data on capital stocks, human capital and specific economic policy variables have tended to have a substantial effect on estimated parameter values (see Temple 1999).

Policy enters these models either as an additional explanatory variable or as a structural characteristic of the model. While in principle one can distinguish between endogenous and exogenous growth models, empirically identifying the effect of a policy variable on the steady-state income level *versus* the medium-term growth rate has proven to be very difficult with data sets covering 20 to 30 years. This is simply because convergence in these models is relatively slow, and when the share of profit and returns to human capital becomes large (on the order of 2/3 or greater for most high-income countries), endogenous and exogenous growth models begin to behave qualitatively in a very similar fashion. A lot of the most recent literature works largely within an augmented Solow framework, in which policy impacts on the transitional growth rate, although the effects can last for a couple of decades. Policy is often discussed in terms of its impact on the *rate of convergence*. This refers to the fact that holding policy constant, these theories predict income levels that tend to converge to the steady-state income level. The rate of convergence is defined by reference to how long the process takes. Typical estimates are in the range of 15 to 30 years. When an economy is out of steady-state growth, which is usually assumed to be the case of interest, changes in policy impact on the rate of convergence as well as on the long-run level of income. Other things being equal, a policy that raises long-run income and has a shorter period of convergence is preferable to one that has a longer period of convergence.[12]

A recent paper by Bassanini et al. (2001) provides a good example of the use of this type of econometric model for a cross-country analysis of growth in OECD countries over the 1971-98 period with a specific emphasis on economic determinants. The basic growth model is a dynamic version of the augmented Solow model discussed in chapter 5 of Barro and Sala-i-Martin (1995) with human capital and R&D. Policy variables interact with accumulation variables and also have a potential impact on long-run steady-state levels of productivity. The model does not impose similar dynamics on all countries — rates of convergence are allowed to vary among countries — but it does assume that in the long run all countries are governed by similar parameter values up to a constant level of difference between countries. The model does quite well at tracking the data, and the authors provide an illustrative decomposition of the factors that determine aggregate productivity growth. The set of variables that explain growth includes a group of baseline variables (those derived from the basic theory) and a group of economic policy variables that shift the growth path:

Baseline variables:

- the initial productivity level
- the share of investment in GDP
- population growth
- human capital

Policy variables:

- trade intensity
- R&D expenditures
- inflation variability
- government investment
- government consumption

In the estimation of the model, government investment turned out to be insignificant, while the R&D variable had to be dropped due to limited country coverage, although both were significant on a more limited data set. Table 1 reports the decomposition of the growth rate for each country expressed as a deviation from the OECD average. Looking at the row for Canada, we see that the country's annual growth rate of

TABLE 1
Economic Determinants of Economic Growth in OECD Countries, 1971–98

Country	Annual Average Growth Rate	Growth Differential	Initial Condition GDP/Pop.	Investment Share	Human Capital	Population Growth	Variability of Inflation	Government Consump.	Trade Exposure	Residual Country-specific Effect
Australia	1.68	0.13	-0.37	0.20	0.52	-0.25	0.03	0.01	-0.41	0.40
Austria	1.57	0.02	-0.41	0.07	0.26	0.01	0.05	0.00	0.03	0.01
Belgium	1.66	0.11	-0.53	0.02	-0.15	0.20	0.03	-0.05	0.53	0.06
Canada	1.32	0.23	-0.90	-0.21	0.62	-0.18	0.04	-0.07	0.14	0.32
Denmark	1.69	0.14	-0.57	0.28	0.21	0.12	0.02	-0.14	-0.05	0.27
Finland	1.82	0.27	0.51	0.05	0.02	0.15	0.00	-0.06	-0.26	-0.14
France	1.35	0.20	-0.59	-0.09	-0.10	0.07	0.07	-0.08	0.05	0.48
Greece	1.15	-0.40	2.00	0.19	-0.56	-0.07	-0.16	0.17	-0.51	-1.48
Ireland	3.02	1.47	1.54	-0.18	-0.32	-0.18	0.01	0.09	0.17	0.34
Italy	1.73	0.18	0.22	-0.13	-0.69	0.13	0.02	0.01	0.14	0.48
Netherlands	1.26	-0.29	-0.47	-0.03	0.25	0.01	0.06	-0.13	0.52	-0.50
New Zealand	0.53	-1.02	0.34	-0.17	0.31	-0.29	-0.07	0.10	-0.36	-0.87
Norway	1.72	0.17	-0.12	-0.05	0.35	0.07	0.03	-0.06	-0.04	-0.01
Portugal	2.15	0.60	2.56	0.58	-1.20	0.07	-0.10	0.10	0.11	-1.52
Spain	1.28	-0.27	0.73	0.04	-1.12	0.00	0.03	0.07	-0.14	0.11
Sweden	1.20	-0.35	-0.60	-0.10	0.21	0.11	-0.10	-0.17	0.01	0.30
Switzerland	0.81	-0.74	-1.75	0.08	0.59	-0.04	0.00	0.15	0.02	0.21
United Kingdom	1.63	0.08	0.05	-0.21	0.17	0.15	-0.03	-0.02	0.31	-0.34
United States	1.93	0.38	-1.62	-0.34	0.63	-0.09	0.07	0.09	-0.25	1.89

Source: Bassanini et al. (2001), Table 9.

labour productivity was 0.23 percentage points above the OECD average for the period. The last column reports the country-specific residual effect, which is that part of the growth differential unexplained by the model. For Canada, it turns out that 0.32 percentage points of growth are unexplained. Factors that impact on Canada's growth relative to the OECD average include:

- a high initial income, which tended to reduce Canada's growth relative to other OECD countries, which started the period at much lower productivity levels;
- a share of investment in GDP that was lower than in other countries;
- human capital levels that account for a large positive effect on the Canadian growth differential (0.62 percentage points per year);
- openness to trade, which accounts for a positive 0.14-percentage-point growth differential; and
- population growth, government consumption levels and inflation variability, which account for very little of the growth differential.

The model performs well except for two countries, Greece and the United States. The authors note that Greece is an unusual case, which also raises some data issues. However, the US results are quite interesting. The large positive unexplained residual for the United States reflects the inability of the model to explain the acceleration of labour-productivity growth in the 1990s. To that extent, it is clear that the explanation of growth being offered by this model is less than complete. Nevertheless, the model provides an impressive example of how far modern theory and econometric methods can go in terms of explaining the growth performance of industrial countries. Providing explanations for the country-specific effects remains an important issue. There could be either social determinants or other unaccounted-for economic determinants at work. It is important to emphasize that it would appear that a large portion of economic growth can be accounted for by a relatively small set of determinants.

Social Policy

The basic policy question to be addressed is the extent to which social policy might have consequences for productivity. As most of the empirical work in the area hinges on differences among countries in social policies, this subsection provides a brief review of some indicators of social policy. In Canada, social government expenditure covers a range of public-sector activities. A typical classification scheme based on public finance theory would be as follows:

- Public goods and services — *pure* public goods such as national defence and general public services such as administration, legislation and regulation.
- Merit goods and services — quasi-public goods provided on grounds of market failure, externalities or economic justice principles. For example, government provision of education is common because citizens may ignore the social returns of human capital investment or may have limited access to capital markets. Health care is another example.
- Economic services — private goods or services prone to natural monopoly or strong externalities. Examples include public utilities and financial support for specific activities such as research and development.

- Social transfers — transfers providing support for income and living standards that have declined sharply or to individuals who face exceptional expenses due to old age, disability, sickness, unemployment or family circumstances.

Under this classification, social policy would tend to be defined in terms of spending under the *merit goods and services* and *social transfers* categories. An alternative perspective would be focused not on the classification of spending, but more directly on the goals of social policy. Social policy pursues a number of goals, including:

- increasing self-reliance
- readjusting intergenerational burdens
- improving flexibility and economic growth
- reducing the incidence of low income and child poverty
- improving the efficiency and quality of service delivery
- improving public finances
- improving social cohesion
- ensuring that basic social needs are met

Clearly, economic growth is one goal, but only one of many, and almost certainly not the most important. The recent social policy debate in many OECD countries tended to emphasize the cost side of the ledger. The *incentive cost* argument emphasizes that social protection can generate long-term welfare dependency and the capacity for flexible adjustment to shocks. The funding of social security contributions in the form of payroll taxes or general tax revenues increases the *distortionary welfare cost* of taxation. High social security and health-care contribution liabilities for employers and other non-wage labour costs can lead to lower employment, especially for low-wage unskilled workers. All of these factors might contribute to lower productivity growth.

However, in principle, social programs can facilitate economic adjustment and thus economic growth. For example, unemployment benefits can provide replacement income while people search for a job. Social protection provides collective insurance to cover risks that may occur during a person's life (such as unemployment, sickness, disability, maternity), usually at a much lower cost than if such risks were insured privately, leading to increased investments in human capital and greater mobility. Active measures to encourage and facilitate labour force participation contribute to economic growth by enhancing the flexibility of the labour force. Policies to improve the health and safety of the workforce can increase labour productivity.[13]

Assessing the productivity effects of social policy is inherently difficult. Aside from the direct human capital effects, a lot of the impact is likely to be indirect, working through changes in incentives to invest, save or work or through the induced fiscal effects on similar variables. The search for empirical regularities linking growth to social policy is almost non-existent. OECD comparisons are inevitably going to be the data most discussed in this respect. To make matters worse, these comparative data are almost all related to expenditures — that is, they measure inputs to social programs but not their outputs, which would be preferable in a productivity study. The growth literature has investigated quite extensively two categories of public spending — public investment and government consumption. Generally, the results are mildly favourable toward the productivity or growth effects of public-sector investment, and distinctly negative with respect to public-sector consumption, as is illustrated by the results reported in the last subsection. However, neither of these captures what would be called various forms of social expenditure. Differences between countries in social spending is the only form of evidence available thus far to estimate the growth effects of social policy.

Under the public finance classification of spending, Canada tends to spend relatively little on what might be called public goods or economic services. Of total public spending, a great deal is accounted for by social spending. In 1995, public goods accounted for 2.6 percent of GDP, merit goods (health, education and other social services) 12.3 percent, income transfers 11.5 percent, economic services 2.4 percent and interest on the public debt 9.6 percent. However, comparative numbers are more interesting. Table 2 compares Canada to two other countries perceived to be at opposite ends of the social policy spectrum with respect to spending on education, health and transfers — Sweden and the United States.

TABLE 2

Selected Social Expenditures as a Percentage of GDP, Canada, Sweden and the United States

	1980	1990	1995
Health			
Canada	5.0	5.4	5.8
Sweden	8.4	7.6	5.7
United States	4.0	5.2	6.5
Education			
Canada	5.4	6.7	6.5
Sweden	7.6	6.8	6.6
United States	5.3	5.3	5.0
Transfers			
Canada	8.1	10.8	11.5
Sweden	16.5	19.2	21.2
United States	9.3	8.5	9.4

Source: OECD (2000).

While there were substantial differences among the three countries in 1980, some convergence has occurred between Canada and the United States while Sweden continues to stand out in its spending on social transfers.

Here are some other characteristics of OECD social spending patterns worth noting:

> A well-established empirical regularity in public finance is what is known as Wagner's Law. The demand for certain types of social protection rises more than proportionately with the level of per capita income. While this relationship is not observed in a cross-section of countries, it holds very strongly in almost every national time series on public expenditure. This fact, usually explained by using simple arguments about voter preferences, implies that economic growth is likely to have a positive impact on social spending, confounding the detection of causal channels running in the other direction — from social spending to economic growth.

> Much of what government does is redistributive (Boadway, 1998), but the interesting fact is that the bulk of the redistribution is not from the rich to the poor. During the 1980s and 1990s the reforms to the personal tax system in nearly all OECD countries and the pressure on public budgets meant that the generosity of benefit schemes was reduced. While benefit systems redistribute income, they redistribute primarily not from the rich to the poor but, rather, from the young to the old, from those who work to those who do not, and from childless families to families with children. Social policy, therefore, is

not primarily directed at equity per se, and its growth effects are dependent on the details of specific programs.

> There has been a general and persistent upward trend in total government spending within OECD countries. From 1970 to 2000, the OECD average went from 29.2 percent to 36.5 percent of GDP. Canada went from 33.8 percent in 1970 to 46 percent in 1990, and then down to 37.8 percent in 2000 with the successive Martin budgets. The major factor to which most analysts attribute this growth is the creation and expansion of programs and the provision of services in the social policy area. The income support element of these entitlements is reflected in a persistent rise in income transfer payments until the mid-1990s.

The common social policy experience of so many countries points to the difficulty inherent in attempting to use these variables to explain differences in the growth experiences within OECD countries. However, there are some notable differences, as noted above, and these will prove important in the identification of the effects of social expenditures on productivity.

INEQUALITY, SOCIAL POLICY AND PRODUCTIVITY

In this section we review the theoretical and empirical literature that points to a causal linkage running from inequality and social policy to productivity growth. It is instructive first to assess what has been a key driving force behind the policy dimension of this debate — the recent changes in income inequality. Looking at the total income of the working population, the changes have not been as dramatic as one might imagine from the popular debate on this topic. In Table 3, the levels and changes of two standard inequality indexes, the Gini coefficient and the ratio of income of the 90th decile to the 10th decile are recorded.[14] It is well-known that total income inequality rose in the United States and the United Kingdom from the mid-1970s through the mid-1980s. These trends were never as evident in other countries. However,

TABLE 3
Inequality Levels and Changes, Working-age Population, Mid-1970s to Mid-1990s

	Levels		Absolute Changes Between Periods			
	Gini Coefficient	P90/P10 Decile Ratio	Gini Coefficient	Gini Coefficient	P90/P10 Decile Ratio	P90/P10 Decile Ratio
	mid-90s	mid-90s	mid-70s / mid-80s	mid-80s / mid-90s	mid-70s / mid-80s	mid-80s / mid-90s
Canada	28.7	3.9	0.1	0.1	-0.1	0.0
Sweden	24.7	3.1	-0.6	2.3	0.0	0.2
United Kingdom	30.4	4.1	3.7	2.7	0.7	0.4
United States	33.3	5.3	2.9	0.6	1.0	-0.1

Source: Förster and Pellizzari (2000).

from 1985 to 1995 the trends slowed somewhat. The effects on the distribution of income for the working-age population are shown for four countries: Canada, the United Kingdom, the United States and Sweden. While the level of inequality of income within the working-age population would be considered higher in Canada than in Sweden, there has been virtually no change from the mid-1970s to the mid-1990s. However, with respect to market income, the underlying trend has been similar in most countries. A recent OECD summary of the trends with respect to Canada is provided in Box 1.

What has happened in Canada is typical of a number of OECD countries: from the 1980s to the mid-1990s there was a fairly significant change in the distribution of market income towards the upper end of the distribution despite the relatively mild changes in total inequality, which measures income after taxes and transfers.[15] Specifically for Canada, from 1988 to 1995, changes recorded in the market income share of different deciles are presented in Table 4.

There is little doubt that these data have been a major factor behind the renewed interest in growth and inequality. Specifically, it is being argued that there is a causal chain running in the following sequence:

TABLE 4
Market Income Share Levels and Changes, Canada

	Share in 1995 (percent)	Change over 1988-95 (percentage points)
Three Bottom Deciles	9.6	-0.9
Four Middle Deciles	35.5	-0.5
Top Three Deciles	54.9	1.4

Social policy ⩾ Income inequality ⩾ Economic growth

with the presumption that increased income inequality lowers growth. The debate was given a great deal of impetus by two related developments in the field of economic growth: first, an empirical finding that claimed to show a positive link between lower inequality and higher growth, based on cross-sectional growth regressions; second, some theoretical work in the *new growth theory* tradition that provided a rationale for this link. In this section, we look at both developments. Finally, it should be pointed out that it has long been recognized that causal links could also run the other way — from growth to inequality — although the sign of the effect is largely viewed as ambiguous. In the broad sweep of evidence on the Industrial Revolution and economic development, the received wisdom was summarized by a concept known as the Kuznets (1955) curve, which showed that as income levels rise inequality first increases and then decreases. However, the existence of an inverted U-shaped Kuznets curve says nothing directly about growth and inequality, other than to argue that as income levels get sufficiently large, inequality will fall.

Growth-Inequality Regressions

Evidence on the positive link running from inequality to growth was first provided by Persson and Tabellini (1994), who looked at cross-sectional and time-series data for both developing and OECD countries. They found a significant *order of magnitude* effect of inequality on growth. The equations were a reduced-form growth regression with per capita GDP growth as the dependent variable and controlled for the initial GDP level (per capita)

BOX 1

Inequality Trends in Canada: An OECD Summary

In Canada, the distribution of disposable incomes remained broadly stable over the last two decades, and some summary measures point to a slight decrease in inequality. This holds for both the working-age and the elderly population. During the first period, mid-1970s to mid-1980s, there was some "hollowing out" of the middle incomes, as both the bottom and the top incomes gained income shares at the expense of the middle incomes. This trend did not continue into the second period, from the mid-1980s to the mid-1990s. Real incomes, on average, did not improve in Canada over the last 10 years; they fell for the upper incomes while the real value was maintained for those at the bottom. There was redistribution across age groups in the last ten years: relative incomes of the elderly, in particular older senior citizens, increased more than in all other OECD countries (Austria excepted), namely by 3 percent for those aged 55 to 64, by 8 percent for those aged 65 to 74 and by 10 percent for those aged 75 and over. All other age groups lost ground.

As in most other countries, the share of market income, in particular capital and self-employment income, going to the bottom deciles among those of working-age decreased, and related to that, tax shares fell, too. At the same time, Canada is one of the few countries in which the transfer share of bottom incomes did not increase during the past ten years. Nevertheless, a decomposition of levels and trends in inequality among the working-age population shows that both taxes and transfers contributed to equalize the distribution of disposable incomes over time. As in a majority of countries, a process of "employment polarisation" took place in Canada in the last ten years. However, both fully employed and workless households increased their relative incomes while those of multi-adult households with only one worker fell. The contributions of these three groups to the slight decrease in overall inequality were different: while inequality within and between those groups contributed largely to the decrease, structural changes drove overall inequality up but did not outweigh the other decreasing effects.

Source: Förster and Pellizzari (2000, pp. 36-37).

and schooling. They estimated that a 0.07-increase in the income share held by the top 20 percent of the population lowered the growth rate of per capita income by just under 0.5 percent — a very large effect. They argued that this result also holds for OECD historical data. Using a 70-country post-war data set, Alesina and Rodrik (1994) found that a one-standard-deviation increase in the Gini coefficient of land distribution affects growth rates by 0.8 percentage points per year. A number of studies came to similar conclusions, although it is important to note that the majority of these studies were done with samples dominated by developing countries.[16]

Very few empirical variables that have been asserted to *explain* growth have not gone unchallenged. The same can be said for inequality within samples of both OECD and developing countries. Here are some of the issues that have been raised in the growth-inequality context:

> Empirical growth regressions are very sensitive to the set of explanatory variables used. The significance and magnitude of coefficients often change when the set of explanatory variables changes. For example, most theory suggests that both investment levels and human capital should be important conditioning vari-

ables. Barro (1999) noted this sensitivity and specifically found that when fertility rates are included in the full sample (developed and developing countries), the inequality variable becomes insignificant.

> One of the major problems in this debate relates to the inclusion of both developing and high-income countries in the data sets. These countries differ not only in income per capita but also for a wide range of political and institutional factors. The convergence literature on developing countries has come to the conclusion that there appears to be evidence of non-convergence, suggesting that these differences are very persistent. How this should be dealt with statistically is a major issue. Purely cross-sectional methods have the disadvantage of imposing common parameters on a number of effects that might be expected to differ between countries at different levels of development. One way around this issue is to use dynamic panel methods of estimation that attempt to use both time-series and cross-sectional variation as a way of identifying the determinants of growth while controlling for country-specific effects.[17] One of the first to use this methodology with respect to the inequality issue was Forbes (2000), who found that once country-specific fixed effects were included, changes in inequality either had the opposite effect on growth rates or were insignificant.

> Arjona et al. (2001) adopt a panel approach to look specifically at this issue and at the level-of-development issue in a sample of OECD countries. They use the transitional version of the Mankiw-Romer-Weil model, in which growth depends on population growth, investment, initial income and human capital. They find virtually no evidence that inequality affects growth.

> Another major issue is causality. A standard criticism of much of the cross-sectional growth literature is that one can never be certain that correlation is causation. Usually, there is an attempt to control for this by using data covering long periods of growth as well as conditioning variables measured at the beginning of the period. More sophisticated studies will often try to estimate a structural model in which the causal linkages are more precise. There are a number of different theories linking inequality to growth, and the transmission channel is quite different in each case. It is unfortunate that there have been few attempts to identify the underlying structural link. For example, if increased inequality is assumed to lower human capital investment it would be useful to check whether this structural relationship exists. Perhaps future work will take this into account, but at the moment it is a major weakness of the underlying methodology.[18]

Should any of this be very surprising? Hardly, for two reasons. First, it has long been known that relatively few variables are robust in growth regressions (see Levine and Renelt 1992; Sala-i-Martin 1997). Second, there are the basic data one has to work with. With a few exceptions, there is not much variation in inequality across OECD countries relative to developing countries. The United States and the United Kingdom tend to have higher levels of inequality, but their long-term growth performance was not very different from that of most other industrialized countries until very recently. The recent surge in US growth has, if anything, added to the perception that the causality runs in the other direction. Chart 1 presents a simple plot of growth versus average income inequality.

The chart is plotted for the subset of older OECD countries (it excludes the recent joiners: Mexico, South Korea, Greece, Spain, Portugal and Turkey). Not surprisingly, there is not much to be detected here using ocular statistical methods. The search for a more complicated correlation in these data is largely what the empirical debate has been about.

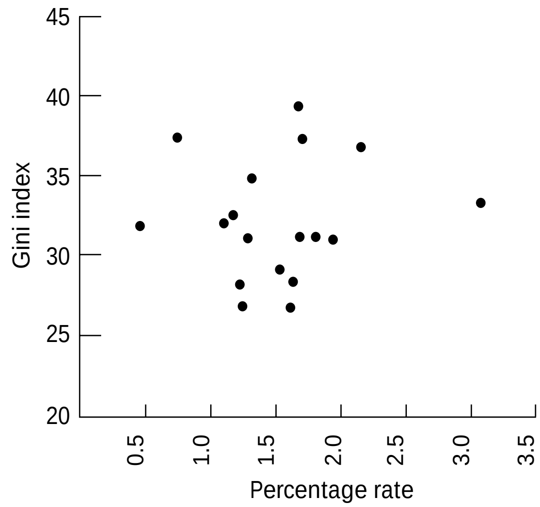
On balance, the empirical case for a link running from growth to inequality for the high-income countries is at best statistically fragile and at worst insignificant. Note that none of this points to the opposite conclusion — that increases in inequality cause higher economic growth.

The Theoretical Linkages

Often in economics, in the absence of decisive evidence for or against a hypothesis, economic theory plays an important role in determining the priors of economists both as social scientists and as policy advisers. Part of the renewed interest in this debate is the new theoretical literature that shows that increases in inequality can hurt growth. Most of this theory is rooted in endogenous growth theory,[19] in which productivity growth is an endogenous characteristic of the economic system. Recent surveys that focus on inequality include Aghion et al. (1999) and Lloyd-Ellis (2000). As it turns out, however, these theoretical developments, while insightful, do not establish a strong case. They provide interesting examples of models where changes in inequality can lead to lower growth under highly specialized assumptions. To obtain these results, one must dramatically simplify the models themselves. Now, this is not a criticism. It merely serves to point out that often, in economics, theory does not suggest a one-sided causal pathway between two variables. In this particular case, there is also an older literature that suggests the opposite effect — higher inequality can raise growth. There is also a political economy literature that emphasizes the endogenous nature of policy and growth consequences.

A brief summary of the theoretical arguments is provided below.

CHART 1
Growth and Inequality Scatter Plot,
Average Annual Productivity Growth,
OECD, 1971–98



Traditional Theory

- Kaldor (1957): With savings-driven accumulation, and assuming the rich have a greater propensity to save than the poor, more inequality leads to greater savings, which can lead to higher transitional growth rates.

- Large investment indivisibilities: Assuming that capital markets are very imperfect, significant individual wealth accumulation may be necessary to make an investment. More inequality could help growth in these circumstances by facilitating the concentration of large pools of investment funds.
- Incentive or Mirrlees-type theories (Mirrlees 1971): With imperfect monitoring of contracts due to transaction costs, moral hazard is to be expected. Borrowers using traditional debt contracts are quite likely to behave opportunistically and not always in the lenders' interest. In such cases, optimal contracts should reward output, and with heterogeneity among borrowers the successful would be rewarded, not the unsuccessful. This implies a need for *ex post* inequality in rewards to maintain incentives. Similar arguments carry through to the taxation of savings in endogenous growth models driven by capital accumulation. Taxing savings results in lowered growth (Rebelo 1991). Both classes of arguments suggest that increased income inequality, as opposed to more equality supported by a highly progressive tax system, leads to higher growth.

Political Economy Models (Persson and Tabellini 1994)

- Inequality affects taxation through the political process: In unequal societies, more voters prefer redistribution assuming the median voter determines policy outcomes. They consequently vote for redistribution, which reduces the incentives to invest and hence lowers the growth rate. Note that this argument assumes that: more inequality ⋗ more redistribution ⋗ less growth.[20]
- Social protection reduces growth through rent-seeking: This argument was made by Lindbeck (1975, 1995), who looked at the link between growth and social protection. He suggested that the universality of Scandinavian welfare states *politicized* the returns to economic activity and thus encouraged people to seek material gain through the political process, by passing redistributive legislation, rather than through entrepreneurial and innovative activity.
- A variant on the first set of theories, but with reverse implications, assumes that interest groups determine policies and that a strong social safety net exists: In the presence of a free-rider problem, interest groups work hard at preventing policies that hurt them but that otherwise may have positive, widely diffused growth effects (e.g., trade liberalization, labour market reforms). With social protection, these losses are partially insured against, thus reducing the opposition of interest groups to growth-promoting policies and increasing the likelihood that they will vote in favour of such measures.

New Growth Theory

- Imperfect markets and diminishing returns to investment: Aghion et al. (1999) refer to this as the opportunity-enhancing effect of redistribution with imperfect capital markets. Given the diminishing returns on individual investments and restrictions on the ability of individuals to pool funds, people with large endowments have low marginal returns on investment, and conversely for the poor. Redistribution from the rich to the poor raises the average return and thus enhances growth.

- Reversal of the traditional incentive argument: This argument stresses the Mirrlees case, but with the added assumptions that the effort of borrowers is related to initial income and that limited liability effects are important. Let us assume that the probability of success of an investment project depends on the effort of the borrower, but that moral hazard exists for the usual reasons. With limited liability, individual borrowers do not bear the risk of failure (the lenders lose), and this affects their effort. If the effort increases the borrowers' own wealth, then redistribution towards poor borrowers will have a positive effect on their effort, thus promoting growth. Aghion et al. argue that redistribution will increase the effort because it reduces borrowing by the poor, who now get a larger share of residual output; with a larger share, they have an incentive to work harder.

As is evident, there are a variety of theories suggesting alternative linkages between inequality and growth. Note that most economic theories hinge on one market failure argument or another, and particularly on imperfect capital markets. In the case of a developed country, this would seem to make sense only in the context of human capital, given well-developed capital markets for other forms of investment in physical capital. If redistribution is to occur, it would have to be financed by distortionary taxes on wages and savings. This would have the traditional negative-incentive effects on growth, which are offset or perhaps overcome by the opportunity-enhancement effect. However, it is far from evident that the appropriate policy to stimulate growth is passive redistribution of income. With inequality of access to investment across individuals, a more suitable policy response would be to either (a) reform financial institutions and markets such that able individuals could invest in education, or (b) provide more direct support for public education.

The political economy theories point to the fact that one must distinguish carefully between three related factors: inequality, which can be measured before the tax and transfer system apply; redistribution, which is income-based; and social insurance, which is situation-specific. Depending upon the assumptions made, more market income inequality before taxes and transfers may lead to greater or less redistribution *ex post*. Lindbeck views social protection as inducing greater political rent-seeking, whose opportunity cost is growth; the other view of social policy is that it provides insurance in a world with insufficient private markets for insuring risk against sickness, unemployment and so forth.

Thus, social safety nets (a) promote individual investments in human capital, and (b) reduce political opposition to growth-promoting adjustments and policies. Which of these effects is more important?

In this instance, economic theory points to interesting hypotheses and provides the empirical economist, or policy-maker, with some insight on what road marks to look for in determining the set of interactions amongst variables. Beyond that, however, the theories themselves are too diverse and too malleable to changes in assumptions or parameter choice to form a basis for reliable policy formulation without empirical validation.

Social Policy and Growth Evidence

It is entirely possible, and theoretically reasonable, that social policy might affect growth without greatly affecting income distribution. For example, many of the theoretical arguments about the consequences of active-labour market policies suggest that these could, in principle, be growth-enhancing. These same policies might also reduce the degree of market-income inequality, but one cannot be certain of this without carefully specifying the dynamic feedback effects from growth to income distribution. It is, however, reasonable to ask whether one can empirically identify the linkage between social policy and growth without reference to an intervening effect on inequality. Unfortunately, very few studies have been published on this issue, and it is one that requires further research. There is a fairly well-developed body of evidence on the effects of government spending on growth, but it generally does not distinguish government spending directed at a social policy objective from spending directed towards other objectives.[21] A large number of studies on the growth consequences of fiscal policy have documented a significant and negative effect of government consumption on growth.[22]

One innovative study that attempts to look specifically at social policy for OECD countries is Arjona et al. (2001, 2002). The authors use a framework similar to that discussed in the second section of the present paper to infer the impact of social expenditures on growth in OECD countries. The growth equation is a Mankiw-Romer-Weil transitional one that controls for investment and human capital intensity across countries, and is estimated using an annual sample of 21 OECD countries over the period 1970-88. The authors find virtually no evidence that post-tax-transfer inequality affects growth rates in OECD countries. There is some evidence that total government spending on social programs reduces growth. The magnitude of the effects is consequential. In the basic model, with aggregate social expenditure as a fraction of GDP, the coefficient is -0.134. This compares with a coefficient on the investment share of 0.345. Both are significant at the 95-percent level.[23] Quantitatively, the implication is that if one were to decrease social spending by 1.0 percent of GDP and increase investment by 1.0 percent of GDP, the impact on aggregate labour-productivity growth would be on the order of 0.5 percent per year. Not a large impact, but over a number of years it would begin to have a significant effect on income levels. Recall that until recently annual labour-productivity growth was in the area of 1.5 percent.

The authors do find, however, that when social spending is disaggregated by function the results are cleaner in terms of both significance and magnitude. Passive social spending is prejudicial to growth, while active social spending promotes growth. Interestingly, they also find that when the definition of active social spending is expanded to include health expenditures, the coefficient estimates on social spending become insignificant. When they include both passive and active social spending as explanatory variables the coefficient on passive social spending is significant and negative, while the coefficient on active social spending is significant and positive. The orders of magnitude are interesting. The coefficient estimates imply that a shift of 1.0 percent of GDP from passive to active spending produces a positive effect on growth of about 0.5 percent. Overall, the results suggest that social expenditures that promote adjustment and labour market participation tend to increase labour-productivity growth, while other forms of social expenditures do not contribute to growth and in fact may reduce it.

Obviously, one should interpret these results with caution, given the limited time-series variation in the data and other potentially omitted variables in the growth equation such as R&D and openness. Nevertheless, this is a good start on an important research and policy issue.

An alternative and in many ways unrelated body of evidence links social capital to economic growth. Social capital as defined by Putnam (1993) and Woolcock (1998) refers to the nature of trust in societies engendered by various forms of community association. One of the best known and most representative definitions can be found in the highly influential work of Putnam (1993):

> *Social capital…refers to features of social organisation, such as trust, norms, and networks, that can improve the efficiency of society by facilitating co-ordinated actions.* (167)

To an economist, as Arrow pointed out long ago, trust is an important substitute for markets and contracts. *A priori*, one would imagine that more trust would imply higher growth. The issue is pertinent to the debate on social policy because there is a strong presumption that social cohesion and social capital are closely related, as argued by Ritzen et al. (2000). A major objective of social policy is the creation of social cohesion. These authors argue that social cohesion creates an environment in which good policy is possible if policy-makers are given room to manoeuvre. The latter is created by reducing societal conflict over distributional objectives, in part through common institutions such as social policy.

However, the empirical evidence on social trust and growth is simply non-existent, so there seems to be little point in continuing in this vein. What evidence exists from cross-country comparisons based on the World Values Survey seems to show that a higher index of *trust* actually leads to lower growth rates (see, e.g., Knack and Keefer 1997). When Knack and Keefer exclude socialist countries and focus on a more recent period (1980-92), they get stronger results. Controlling for initial income per head, human capital and the relative price of investment goods, an increase of 10 percentage points in the level of their *trust* index (slightly less than one standard deviation) is associated with an annual growth rate higher by 0.8 percentage points. Typically, the results are weaker when attention is restricted to a sample of OECD countries. Also using World Values Survey data, Helliwell (1996) found that trust has a negative effect on growth in a sample of 17 OECD countries. Knack (2000) reports that in a sample of 25 OECD countries the impact of trust is imprecisely measured, and the hypothesis that it has no effect cannot be rejected at conventional significance levels. This literature may prove to be influential at a future date, but thus far there is little in it that could be used as a major justification for policy.

CONCLUSION

The linkages between economic growth and productivity are both complex and subject to a variety of potential causal mechanisms. This paper has reviewed the evidence and theory linking the social determinants of productivity growth, which include such factors as the distribution of income and wealth in society; the set of social policies existing in a country, including social insurance and redistributive programs and the education and health systems; and the degree of social cohesion. The complexity in uncovering a link running from social factors to productivity growth is compounded by the fact that these broad institutional arrangements, including the social determinants but also the political and legal systems, may have indirect effects in the long run that are difficult if not impossible to detect in conventional economic data. In spite of these problems, there is a new body of research, both theoretical and empirical, that attempts to identify the relationship among social policies, economic inequalities and productivity growth.

The traditional economic debate on these matters was usually framed in terms of the equity-efficiency tradeoff, in which more economic growth could be achieved only at the expense of increased economic inequality. The newer literature suggests that, in fact, growth and social objectives may be complements rather than substitutes. This certainly provides a more optimistic view of the choices facing governments than has been the case based on the existence of a growth-equity tradeoff.

While these recent empirical and theoretical contributions are interesting and suggest some important new areas for research, it is premature to assume that this literature proves the existence of a robust linkage running from social policy and inequality to productivity growth. One cannot conclude that reduced income inequality leads to increased productivity growth or that more social spending leads to increased productivity growth. The empirical evidence establishing such a linkage, which at this point is largely based on macroeconomic cross-country comparisons, either is simply not in the data or is statistically fragile. Moreover, much of what has been offered as evidence in favour of this hypothesis rests on developing-country data, which are of questionable relevance to an advanced industrialized country like Canada. It is important to emphasize the recent origins of this research. Virtually all of it has been done in the last 10 years, and the total number of studies is still quite limited. It is possible, therefore, that our views based on the weight of evidence will change in the next few years. The one major exception to these observations concerns education. There is a very large body of evidence showing that increasing education has a substantial effect on productivity. The role of human capital in Canada's economic growth has been an enduring theme of both social policy and economic policy. The evidence surveyed in Harris (2002) provides a strong endorsement of this view. The evidence on health expenditures is less convincing, but in general the productivity case for improving human capital is compelling and warrants further research.

In summary, the major conclusion of this paper is as follows:

> The general case linking social policies or inequality to productivity growth remains unproven. Justification for any particular social policy innovation must rest on its cost-effectiveness in reaching its stated social goals. What little evidence we have suggests that social policies promoting labour market participation, rather than passive cash-transfer programs, are most likely to generate productivity benefits, although the magnitude of the effects remains uncertain. A great deal more research is necessary to link social policies to productivity, particularly at the micro level, before a productivity

argument can to be used to promote a particular social policy.

To this can be added the further conclusions of Harris (2002):

- Policies that have been proven to most likely increase productivity are those focused on the proximate economic levers to productivity growth — those that stimulate investment, innovation and competition, and facilitate the international diffusion of knowledge.
- The one social policy for which there is ample evidence of positive productivity effects is education. A substantial portion of Canada's economic growth appears to be attributable to the country's high levels of educational attainment.
- The "new economy" perspective provides a coherent explanation of both recent growth and inequality trends as endogenous reactions to a common cause — the acceleration of technological change. The growing evidence linking both recent and past productivity data, together with evidence on wage inequality trends in industrial countries, provides a more coherent perspective from which to assess policies linking productivity and inequality. A growth-oriented policy must both promote technological adaptation through investment and skills acquisition, and facilitate the required structural change across regions, industries, firms and workers. Social policy can facilitate these adjustments by providing the least well-off with the resources to make the required investments in human capital both for themselves and for their children.

The major rationale underlying social policies in the modern mixed economy has never been higher productivity growth. The general concerns for social justice and the political demands of an increasingly wealthy society for improved education, health and social insurance have long been the major reasons why voters have requested these policies in Canada. This will undoubtedly continue to be true provided economic growth is sustained. Failure to increase or keep pace with living standards in other advanced countries is ultimately the greatest threat to Canada's social programs. In that sense, productivity issues and social policy will always be linked.

NOTES

This article is an abridged version of Harris (2002), published with the permission of Industry Canada.

1 For a recent review of these arguments from a Canadian perspective, see Osberg (1995).

2 Krugman (1994) provides a very readable statement of this argument.

3 Also referred to as endogenous growth theory. Surveys of this field are presented in Aghion and Howitt (1998) and Jones (1999).

4 Harris (2002) contrasts the social determinants of productivity with more conventional economic determinants, such as investment and innovation, by examining two specific social policies — education and health — and the literature on major technological change, wage inequality and the new economy.

5 On aging and social security reform, see OECD (1998). The literature subsequent to the *OECD Jobs Study* is voluminous. A review is provided by Disney (2000).

6 This section draws on material in Harris (1999).

7 For a brief and non-technical review of productivity measurement, see Harris (1999). For an extensive review of the literature and a history of the subject, see Hulten (2000).

8 In the Canadian data, the majority of productivity growth is accounted for by TFP growth or multifactor productivity (MFP) growth. MFP growth data are published regularly by Statistics Canada.

9 A good example is Mokyr (1990).

10 For a recent survey, see Ritzen et al. (2000).

11 For the non-OECD sample, the model was actually somewhat more successful, although this result has been criticized on a number of fronts.

12 These models almost always ignore adjustment costs, which is a serious problem in using them for welfare evaluations. With high adjustment costs, fast convergence is not always a good thing.

13 These are covered in greater detail in the section "The Human Capital Dimension of Growth" in Harris (2002).

14 An increase in the Gini coefficient corresponds to an increase in inequality.

15 Beach and Slotsve (1996) document these trends for Canada.

16 A survey of this literature is provided in Benabou (1996).

17 Contributions to the analysis of growth using panel data sets and fixed-effects estimation include Barro and Lee (1994) and Barro and Sala-i-Martin (1995).

18 An exception is Perotti (1996), who looks at the effect of inequality on female education and fertility for developing countries and finds a significant effect. This suggests that it may be the important causal channel in developing country data.

19 For a comprehensive survey, see Aghion and Howitt (1998).

20 Aghion et al. (1999) claim that this is inconsistent with evidence showing that redistribution has a positive effect on growth and that measures of redistribution are uncorrelated with inequality — they cite Perotti (1994), whose Tables 4 and 8 report regression results. The measure of redistribution is the marginal tax rate.

21 There are a few older studies that claim to focus on the links between social expenditure and growth. Unfortunately, they rely on the cross-sectional approach and most suffer from data deficiencies. Results have generally been mixed, but most come to the conclusion that social expenditure is bad for growth. See, for example, Landau (1985), Gwartney et al. (1998), Hansson and Henrekson (1994), Lindert (1996) and Weede (1986, 1991).

22 This is the literature on fiscal policy and growth. A modern example is Easterly and Rebelo (1993). Temple (1999) covers the evidence in his survey.

23 Results reported in Table 6.4, column 2, of Arjona et al. (2001).

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