ECONOMIC GROWTH AND CONVERGENCE ACROSS CANADA

by

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Abstract

This study employs empirical methods to investigate economic growth and convergence across the provinces of Canada over the period 1971-2000. A panel data approach is implemented, which has the ability to allow for differences in the aggregate production function across provinces. This produces results that are significantly different from single cross-sectional regressions: higher estimated rates of conditional convergence and lower estimated values of the elasticity of output with respect to capital. These results point to more policy activism which places emphasis on the improvement of province-specific aspect of the aggregate production function.

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1. Introduction

An important economic issue is whether or not poor economies tend to grow faster than rich ones. For this question the Solow model suggests that the higher the rate of saving, the richer the economy; the higher the rate of population growth, the poorer the economy. Based on the assumption of diminishing marginal returns to capital, the Solow model shows that poor economies have high rates of return and therefore catch up with richer economies by initially growing faster and then their growth rates slow down to the common rate of technological process. That is just "convergence" in terms of income level and the growth rate.

In the last two decades economic researchers have devoted a lot of attention to economic growth and convergence. While there are many econometric studies on the national growth process, studies focusing on the convergence of regions is more limited. In contrast to national data, regional data are not subject to different methods of collection, do not encounter the problem of conversion to a single currency, and therefore are immediately comparable. So in this paper, I examines whether the Solow growth model is consistent with the interregional variation in per capita income across the provinces of Canada.

When estimating convergence, most existing studies implement cross sectional regression with identical production functions for all the economies. Although it is recognized that

production functions may vary across countries or even across regions of a country, it is econometrically difficult to allow for such differences since they are not readily observable. The present paper implements a panel data analysis to deal with this kind of issue.

By reformulating the regression equation usually used in studies of convergence into a dynamic panel data model with individual regional effects and using a panel data estimation approach, I get two noticeable results which are very different from the corresponding results obtained from single cross-section methodology. First, the estimated convergence rate is higher. Second, the estimated values of the elasticity of output with respect to capital are much lower and more in conformity with its commonly expected empirical values.

2. Empirical Research on "Convergence"

Since the 1980s the issue of convergence has been a major focus of growth empirics. The basic paradigm for this kind of discussion is provided by the Solow (1956) model. In his classic 1956 article, Solow proposed that we begin the study of economic growth by assuming a standard neoclassical production function with diminishing returns to capital. Taking the rates of saving and population growth as exogenous, he showed that the crucial assumption of diminishing returns to capital would lead the growth process within an economy to eventually reach a steady state level of income per capita. That is the notion of convergence which can be understood as if economies are similar in preferences and technology, then the steady state income levels for them will be the same, and with them they will all tend to reach that level of per capita income. In international extensions of the Solow model, the convergence effect is reinforced by the movement of labor from poor economies to rich ones and of capital and technology from rich economies to poor. As a result, the convergence can also be understood as all economies will eventually reach the same steady state growth rate since the technology is a public good to be equally shared.

A key problem in this regard is how to test convergence. Since the notion of convergence is related to the steady state of an economy, a test for convergence requires the assumption that the economies included in the sample are in their steady states. However, it is problematic to judge whether or not economies are in their steady states. Provided by

the assumption of diminishing returns to capital, poor economies have high rates of return and thus tend to grow faster than rich economies. Therefore, analyzing the correlation between the initial levels of income and subsequent growth rates has become a popular method for studying convergence and a finding of inverse correlation between them has become a criterion for judging whether or not convergence holds.

In the beginning, much of empirical research on convergence was conducted on the basis of developed industrialized countries because of the limit of data availability. Baumo (1986), for example, reported finding convergence among a group of countries included in Maddison's (1982) sample. Those countries tended to converge both to similar levels of per capita income and to similar rates of growth. With more wide-ranging data sets became available, economists were able to do research on a wider cross section of countries and a new issue began to draw more and more attention: the failure of countries to converge in per capita income. Romer (1989a), for example, found that over a large sample of countries, the correlation between initial income levels and subsequent growth rates is either zero or even positive. The endogenous growth theory rose just as a response to this kind of empirical findings.

A different explanation to those same facts is the proposition of the concept of "conditional convergence". Barro, in his first empirical work (1989) on growth, showed that once differences in the initial levels of human capital (along with some other pertinent variables) are controlled for, the correlation between the initial levels of income and subsequent growth rates turns out to be negative even in the wider sample of countries. Mankiw, Romer and Weil (1990) examined empirically the set of countries for

which non-convergence had been widely documented in past work and found that if differences in saving and population growth rates are accounted for, there is convergence at roughly the rate that the Solow model predicts. All of this kind of papers stresses on the fact that the neoclassical growth model does not imply that all economies will reach the same level of per capita income. Rather, the neoclassic growth model predicts that economies generally reach different steady states because saving and population growth rates vary across economies. Therefore, those tests followed a similar methology: cross sectional data analysis that is running cross-section regression with the subsequent growth rates as dependent variable and the initial level of income as the prime explanatory v ariable w hile o ther v ariables o n t he r ight-hand s ide o f t he r egression a re designed to control for the differences in preferences and technology.

While there are a huge set of various econometric researches on the national growth process, the set of researches focusing on the growth of regions is more limited. Barro and Sala-i-Martin (1991, 1992 and 1995) advocated the use of available regional accounting data and by implementing cross-sectional analysis they found a robust evidence of regional convergence; in particular, the convergence across U.S.A and across regions of Europe appears to occur slowly but steadily at a rate of 2% per year. By studying the convergence across Italian regions, however, Cellini and Scorcu (1995) strongly suggested that the evidence of overall convergence provided by several cross-section works might be a statistical artifact, explained by the lack of an adequate dynamic specification for the short-run or transitional movements in data.

The methodology of cross sectional data analysis has a big problem that is only such differences in preference and technology as can be well observed and measured can be accounted for. However, differences in preference and technology across economies have various facets and dimensions which are not readily observable and measurable. Only a panel data methodology can possibly take account for such unobservable and immeasurable factors.

3. Model specification, Data and Sample

3.1 Model Specification

I begin this part by first reviewing the textbook Solow model.

Solow's model is based on a Cobb-Douglas production function by assuming the rates of saving, population growth rates and technology progress as exogeneous. The two inputs, capital and labor are paid their marginal products:

(1) $$Y(t) = K(t)^{\alpha}(A(t)L(t))^{1-\alpha} \qquad 0 < \alpha < 1$$

where the notation is standard: Y is output, K is capital, L is laborl and A is the level of technology. L and A are assumed to grow exogenously at rates n and g so that

$$L(t) = L(0)e^{nt}$$
$$A(t) = A(0)e^{gt}$$

A(t)L(t), which is the number of effective units of labor, grows at rate $n+g$.

Defining s as the constant fraction of output that is invested, also defining k and y as the stock of capital and the level of output per effective unit of labor $k = K/AL$ and $y = Y/AL$ respectively, the evolution of k is given by

(2) $$\dot{k}(t) = sy(t) - (n + g + \delta)k(t)$$

$$= sk(t)^{\alpha} - (n + g + \delta)k(t)$$

where δ is the rate of depreciation. Equation (2) implies that k converges to its steady state value:

$$k^{*} = \left[\frac{s}{n + g + \delta}\right]^{1/(1-\alpha)}$$

Upon substitution, the production function can be transformed to

$$(3) \qquad \ln\left[\frac{Y(t)}{L(t)}\right] = \ln A(0) + gt + \frac{\alpha}{1-\alpha}\ln(s) - \frac{\alpha}{1-\alpha}\ln(n+g+\delta)$$

It is evident that the model predicts the impact of saving and population growth on real per capita income.

In empirical studies, the question is whether the data support the Solow model's predictions concerning the determinants of real income per capita or not. g and δ are assumed to be constant across economies since g reflects the exogenous rate of technology progress which is not country-specific and there is not any strong reason to expect depreciation rate δ to vary greatly across economies. This is not the same for the term $[\ln A(0)]$. Mankiw, Romer and Weil convincingly pointed out "The A(0) term reflects not just technology but resource endowments, climate, institutions, and so on; it may therefore differ across countries."(1990 p.6) So we can assume

$$\ln(A) = a + \varepsilon$$

where a is a constant and ε is a country-specific shift term. Upon substitution and rebuilding equation (3), we can get

$$(4) \qquad \ln(\frac{Y}{L}) = a + \frac{\alpha}{1-\alpha}\ln(s) - \frac{\alpha}{1-\alpha}\ln(n+g+\delta) + \varepsilon$$

This equation suggests that much of the cross-economy differences in income per capita can be traced to differing determinants of the steady state: accumulation of capital and population growth. Also, the Solow model can give prediction about the convergence rate to steady state by approximating around the steady state

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(5)
$$\frac{d \ln(y(t))}{dt} = \lambda \left[\ln(y^*) - \ln(y(t)) \right]$$

where y^* is the steady-state level of income per effective labor given by equation (3), $y(t)$ is the actual income per effective labor at time t.

The convergence rate λ can be computed by

$$\lambda = (n + g + \delta)(1 - \alpha)$$

Equation (5) implies that

(6)
$$\ln(y(t)) = (1 - e^{-\lambda t}) \ln(y^*) + e^{-\lambda t} \ln(y(0))$$

where $y(0)$ is income per effective labor at some initial date.

Sutracting $\ln(y(0))$ from both sides of equation (6):

(7)
$$\ln(y(t)) - \ln(y(0)) = (1 - e^{-\lambda t}) \ln(y^*) - (1 - e^{-\lambda t}) \ln(y(0))$$

Substituting for y^* gives

(8)
$$\ln(y(t)) - \ln(y(0)) = (1 - e^{-\lambda t}) \frac{\alpha}{1 - \alpha} \ln(s)$$
$$- (1 - e^{-\lambda t}) \frac{\alpha}{1 - \alpha} \ln(n + g + \delta) - (1 - e^{-\lambda t}) \ln(y(0))$$

Thus, the growth of income becomes a function of the initial income level and the determinants of the ultimate steady state. This equation is the most popular model adopted in cross-section analysis for studying the process of convergence across different economies. Under the assumption that the saving rates s and population growth rate n are independent of country-specific factors ε, researchers can estimate equation (4) with Ordinary Least Squares.

Among all the reasons that support the independence assumption, the most important is to believe in any model where saving and population growth are endogenous but preferences are isoelastic, permanent differences in the level of technology do not affect saving rates and population growth rates, that is, s and n are independent of ε. However, this independence assumption is not convincing enough. Just as noted by Mankiw, Romer and Weil, A(0) reflects not only technology, but also include resource endowment, climate and so on. Therefore it is hard to image that the differences in all that included in the broader definition of A(0) will not affect people's saving and fertility behavior. Since OLS estimates are valid only under the independence assumption, the uncertainty of this assumption makes the results of cross-sectional regression suspicious. As a result, panel data approach is advocated and implemented to deal with the vital shortage in cross-sectional regression by controlling for this technology shift term ε. The model is derived as follows.

By substituting $\ln(y(t))$ with $\ln y(t_2)$ and $\ln(y(0))$ with $\ln y(t_1)$, equation (8) can be expressed as

$$(9) \qquad \ln y(t_2) - \ln y(t_1) = (1 - e^{-\lambda \tau}) \frac{\alpha}{1-\alpha} \ln(s)$$

$$- (1 - e^{-\lambda \tau}) \frac{\alpha}{1-\alpha} \ln(n + g + \delta) - (1 - e^{-\lambda \tau}) \ln y(t_1)$$

where $y(t_1)$ is income per effective labor at some initial point of time, $\tau = t_2 - t_1$ and saving rate s and population growth rate n are assumed to be constant for the entire intervening time period between t_1 and t_2.

Equation (9) is formulated in terms of income per effective labor. Recall that income per effective labor is given by

$$y(t) = \frac{Y(t)}{A(t)L(t)} = \frac{Y(t)}{L(t)A(0)e^{gt}}$$

Hence

$$\ln y(t) = \ln\left[\frac{Y(t)}{L(t)}\right] - \ln A(0) - gt$$

$$= \ln \hat{y}(t) - \ln A(0) - gt$$

where $\hat{y}(t)$ is income per capita, $\left[Y(t)/L(t)\right]$

Reformulating equation (9) in terms of income per capita, we get

$$(10) \quad \ln \hat{y}(t_2) - \ln \hat{y}(t_1) = (1 - e^{-\lambda\tau})\frac{\alpha}{1-\alpha}\ln(s) - (1 - e^{-\lambda\tau})\frac{\alpha}{1-\alpha}\ln(n + g + \delta)$$

$$- (1 - e^{-\lambda\tau})\ln \hat{y}(t_1) + (1 - e^{-\lambda\tau})\ln A(0) + g(t_2 - e^{-\lambda\tau}t_1)$$

Subtracting the term of $-\ln \hat{y}(t_1)$ from both sides

$$(11) \quad \ln \hat{y}(t_2) = (1 - e^{-\lambda\tau})\frac{\alpha}{1-\alpha}\ln(s) - (1 - e^{-\lambda\tau})\frac{\alpha}{1-\alpha}\ln(n + g + \delta)$$

$$+ e^{-\lambda\tau}\ln \hat{y}(t_1) + (1 - e^{-\lambda\tau})\ln A(0) + g(t_2 - e^{-\lambda\tau}t_1)$$

It can now be seen that equation (11) is a representative panel data model. Equation (11) can also be rewritten as the following conventional form in panel data literature

$$(12) \qquad y_{it} = \gamma y_{i,t-1} + \sum_{j=1}^{2}\beta_j x_{ij}^j + \eta_t + \mu_i + v_{it}$$

where

$$y_{it} = \ln \hat{y}(t_2)$$

$$y_{i,t-1} = \ln \hat{y}(t_1)$$

$$\gamma = e^{-\lambda\tau}$$

$$\beta_1 = (1 - e^{-\lambda\tau})\frac{\alpha}{1-\alpha}$$

$$\beta_2 = -(1 - e^{-\lambda\tau})\frac{\alpha}{1-\alpha}$$

$$x_{it}^1 = \ln(s)$$

$$x_{it}^2 = \ln(n + g + \delta)$$

$$\mu_i = (1 - e^{-\lambda\tau})\ln A(0)$$

$$\eta_t = g(t_2 - e^{-\lambda\tau} t_1)$$

and v_{it} is the transitory error term that varies across regions and time periods and has zero mean. Note that $(1 - e^{-\lambda\tau})\ln A(0)$ is a time-invariant individual region or country effect term. Panel data analysis of this equation provides the kind of environment necessary to control for the individual region and country effect.

3.2 Data Description and Sample

All the data in the paper come from CANSIM II data base constructed by Statistics Canada. The data are annual and cover the period 1971-2000. There are 12 provinces and one territory in Canada. I only choose 10 of them while the three I ignored are Yukon, Northwest Territories and Nunavut. These provinces or territory are so small that the determination of their real income may be dominated by idiosyncratic factors. The other reason for omitting them is to avoid structure inconsistency since it was until 1991 that Northwest Territories and Nunavut became two independent regions.

Based on equation (11), the variables I employ are as following

• y real per capita GDP

• n the average rate of growth of population

• s share of investment in real GDP

• $g + \delta$ assumed to equal 0.05 and same for all the provinces and all years

For panel data analysis, it is necessary to divide the whole time period into several short-time spans. The question is what is the appropriate length for such time span. Since the underlying data set is annual, it is technically feasible to employ a time span of only one year. However, consider short-term disturbances may loom large in such short time spans, I choose five-year time intervals as a usually adoption in economic growth research. Hence, I have 6 data points for each province across Canada during the period 1971-2000: 2000, 1995, 1990, 1985, 1980, 1975. When t=2000, for example, t-1=1995 and saving and population growth variables are taken average over period 1995-2000.

4. Empirical Results

4.1 Single Cross-section Estimation

In order to demonstrate the advantage of panel data approach, I first run single cross-sectional regression with and without the constraint that the coefficients of $\ln(s)$ and $\ln(n + g + \delta)$ are equal in magnitude and opposite in direction. Here y_{it} is real per capita GDP for 2000 and $y_{i,t-1}$ is real per capita GDP for 1971. s and n are average investment and population growth rates respectively for the period 1971-2000. The results are reported in Table I and II in Appendix.

Surprisingly, contrary to the prediction of Solow model, the coefficient for population growth rate is positive although it is not significant. This wrong sign problem may come from the bias result from the limitation of single cross-section which I discussed in section 3. Another possible reason is that I did not include human capital variable in my regression.[*] In constrast, the regression with constraint gives some better and reasonable results. The coefficients have the predicted signs and are significant. The restriction that the coefficients of $\ln(s)$ and $\ln(n + g + \delta)$ are equal in magnitude and opposite in direction is not rejected. In addition, the derived convergence rate is 0.0105 and the elasticity of output with respect to capital α is 0.54. Note that the value of α implied by the Solow model should equal capital's share in income which is 1/3, the value of α I get from regression is much higher. Once again, human capital variable is implied.

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[*] About human capital I will discuss in section 4.3.

4.2 Panel Data Estimation

I use the Least Squares with Dummy Variables (LSDV) estimator which is base on the fixed-effects assumption. Although the presence of a lagged dependent variable on the right-hand side of equation (12) makes LSDV an inconsistent estimator, when asymptotics are considered in the direction of $N \to \infty$, we can consider the asymptotics properties of panel data estimators in the direction of T instead. Amemiya (1967) has shown that when considered in the direction of $T \to \infty$, LSDV proves to be consistent and asymptotically equivalent to the Maximum Likelihood Estimator (MLE). Islam (1995) did a Monte Carlo study and found that the LSDV estimator, although consistent in the direction of T only, actually performed very well.

Very different results are achieved when I use panel data approach to run the regression. The estimation results with and without restriction are respectively reported in Table III and IV.

Compare Table I with Table III and Table II with Table IV, it is clear that panel data estimation allowing for correlated individual regional effects leads to considerable changes in the results. All the coefficients have correct signs as expected and are significant. The convergence rate λ is 0.0519 in unrestricted model and 0.04716 in restricted model. Both are much higher than those got in single cross-section estimation.

Also worth to notice is the change in the implied value of the elasticity parameter, α. The estimated value of α is 0.35 which is much lower than the value I get with single cross-section estimation but more closer to its generally accepted values.

4.3 Discussion about Human Capital

Actually, the importance of human capital has been already proved by many empirical studies. Barro(1990), for example, defined a broad capital including both physical and human capital. Mankiw, Romer and Weil augmented the Solow model by including accumulation of human as well as physical capital and found including human capital lowered the estimated effects of saving and population growth to roughly the values predicted by the augmented Solow model which is

$$(13) \quad \ln(y(t)) - \ln(y(0)) = (1 - e^{-\lambda \tau}) \frac{\alpha}{1 - \alpha - \beta} \ln(s_k) + (1 - e^{-\lambda \tau}) \frac{\beta}{1 - \alpha - \beta} \ln(s_h)$$

$$- (1 - e^{-\lambda \tau}) \frac{\alpha + \beta}{1 - \alpha - \beta} \ln(n + g + \delta) - (1 - e^{-\lambda \tau}) \ln(y(0))$$

I can still reformulate equation (13) and get

$$(14) \quad \ln \hat{y}(t_2) = (1 - e^{-\lambda \tau}) \frac{\alpha}{1 - \alpha - \beta} \ln(s_k) + (1 - e^{-\lambda \tau}) \frac{\beta}{1 - \alpha - \beta} \ln(s_h) + e^{-\lambda \tau} \ln \hat{y}(t_1)$$

$$- (1 - e^{-\lambda \tau}) \frac{\alpha + \beta}{1 - \alpha - \beta} \ln(n + g + \delta) + (1 - e^{-\lambda \tau}) \ln A(0) + g(t_2 - e^{-\lambda \tau} t_1)$$

Measurement of human capital has been a big difficulty in empirics. Barro and Lee(1993) constructed a variable named HUMAN which measures the average schooling years in the total population over age 25. Since HUMAN includes schooling at all levels, it gives a direct measure of the stock of human capital. However, CANSIM II only posts 1996

HUMAN data. And finding another proxy for human capital accumulation is econometrically difficult. In addition, some researchers found that incorporation of the time dimension of the human capital variable into the panel analysis annihilates the effect that the cross-sectional variation in human capital had on the regression results. Therefore, I only include human capital into my single cross-section regression.

Consider the average years of schooling does not vary greatly across time in a particular region, I take the '1996 average years of schooling over age 25 by province in Canada' as the average value of human capital accumulation cover the period 1971-2000. The regression result is reported in Table V. As been observed, the coefficients for all the variables are just as predicted by the Solow model although the coefficient of $\ln(n + g + \delta)$ is not significant. The implied convergence rate is 0.0201 which is higher than the one achieved in restricted single cross-section model but still much lower compare to those got in panel data analysis.

5. Conclusion

In present paper, I examined the economic growth and convergence across the provinces of Canada. By reformulating the regression equation usually used in studies of convergence into a dynamic panel data model with individual regional effects and using a panel data approach to estimate, I get two noticeable results compared with the results of single cross-sectional regression: one is higher convergence rate and the other is a lower value of the elasticity of output with respect to capital. These results can be explained as following: by using a single aggregate production function, the single cross-section analysis inevitably leads to omitted variable bias. A panel data approach can correct this kind of bias.

Contrary to what may appear at first sight, the higher rate of conditional convergence calls for more policy activism. Traditionally, policies are designed aiming at adjusting saving and population growth rates, since only these are thought to be the determinant of the steady state level of income. According to my study, the A(0) term has an important role in determining the steady state level of income. That is, even with similar rates of saving and population growth, a region can directly improve its long-run economic status by improving the components of A(0). More over, improvements in A(0) can have positive effects on s and n, which will lead to a further (indirect) increase in a steady state level of income. In Canada, the differences in income across provinces are often big.

Hence, a richer scope for policy activism in raising the long-run income levels and in quickening the convergence pace is necessary in Canada.

Appendix A

TABLE I

SINGLE CROSS-SECTION RESULT, 1971-2000:
DEPENDENT VARIABLE IS ln(y2000)

Unrestricted form

Variable	Coefficient	Std.Error	Prob.
$ln(y71)$	0.5830	0.1540	0.0091
$ln(s)$	0.4005	0.2150	0.1118
$ln(n+g+\delta)$	0.2288	0.5249	0.6782
C	5.6548	2.5676	0.0699
R-squared	0.82		
Adjusted R-squared	0.73		

TABLE II

SINGLE CROSS-SECTION RESULT, 1971-2000:
DEPENDENT VARIABLE IS ln(y2000)

Restricted form

Variable	Coefficient	Std.Error	Prob.
$ln(y71)$	0.7290	0.1636	0.0029
$ln(s)\text{-}ln(n+g+\delta)$	0.3201	0.2287	0.2043
c	2.6227	1.8631	0.2020
R-squared	0.76		
Adjusted R-quared	0.69		
Implied λ	0.0105		
Implied α	0.54		

TABLE III

LSDV ESTIMATION WITH FIXED EFFECTS: DEPENDENT VARIABLE IS y_{it}

Unrestricted form

Variable	Coefficient	Std. Error	Prob.
$\ln(y_{i,t-1})$	0.7716	0.0197	0.0000
$\ln(n+g+\delta)$	-0.1993	0.0863	0.0266
$\ln(s)$	0.0874	0.0210	0.0002
Fixed Effects			
NEW	2.1304		
PEI	1.8391		
NS	1.8244		
NB	1.8056		
QU	1.8613		
ON	1.9245		
MAN	1.8565		
SAS	1.8508		
AL	1.9606		
BC	1.8946		
R-squared	0.91		
Adjusted R-squared	0.88		
Implied λ	0.0519		

TABLE IV
LSDV ESTIMATION WITH FIXED EFFECTS: DEPENDENT VARIABLE IS y_{it}

Restricted form

Variable	Coefficient	Std. Error	Prob.
$\ln(y_{i,t-1})$	0.7899	0.0168	0.0000
$\ln(s) - \ln(n+g+\delta)$	0.1107	0.0224	0.0000
Fixed Effects			
NEW	2.3391		
PEI	1.9472		
NS	1.9293		
NB	1.9065		
QU	1.9630		
ON	2.0122		
MAN	1.9607		
SAS	1.9488		
AL	2.0304		
BC	1.9736		
R-squared	0.92		
Adjusted R-squared	0.89		
Implied λ	0.0472		
Implied α	0.35		

TABLE V

SINGLE CROSS-SECTION RESULT, 1971-2000: INCLUDING HUMAN DEPENDENT VARIABLE IS ln(y2000)

Unrestricted form			
Variable	**Coefficient**	**Std.Error**	**Prob.**
$ln(y71)$	0.5472	0.1706	0.0238
$ln(s)$	0.4969	0.2521	0.1058
$ln(n+g+\delta)$	-0.1979	0.9364	0.8410
ln (HUMAN)	1.5049	2.0536	0.4966
C	1.1293	7.3477	0.8839
R-squared	0.83		
Adjusted R-squared	0.69		
Implied λ	0.0201		

Appendix B

Per Capita GDP in 1971 and 2000 for Different Provinces in Canada

Province	Code	1971 Per Capita GDP($CAN)	2000 Per Capita GDP($CAN)
Newfoundland	NEW	9965.179	23085.02
Prince Edward Island	PEI	9226.451	21629.83
Nova Scotia	NS	12094.71	23357.08
New Brunswick	NB	11483.53	23687.30
Quebec	QU	16028.97	26982.99
Ontario	ON	20978.50	33302.36
Manitoba	MAN	15939.43	26236.36
Saskatchewan	SAS	14925.99	29439.57
Alberta	AL	19009.97	42254.56
British Columbia	BC	18795.56	28608.27

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