Interregional Growth Divergence and Living Standards Convergence

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In integrated national economies, overall gross domestic product (GDP) and income per capita move in the same direction. Because of this association, observers often assume that the same relation holds at the regional level. We argue in this article that long-term adjustments to interregional growth differentials are realized by product and factor mobility, not by prices, with the exception of the price of land and of nontradable local services, such hairdressing. Quantities, not prices or incomes, adjust. Slow-growing regions, therefore, should have real income per capita as high as that of fast-growing ones, even though they grow at a lower rate. Growth differentials are capitalized into the prices of land and local services, the only prices that vary across the economy. Land-price differentials across the country thus provide an immediate and easy-to-observe measure of interregional growth. We bring out here the significance of this analysis for political institutions and policies.

The Paradox of Slow-Growth High-Income Regions

People choose to live in various environments. Researchers have identified features that people care about in selecting their place of residence, including the physical climate, zoning, the quality of schools, and so forth. We argue that these characteristics

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play a role in some people's selection of a place, but at the margin the distribution of the population in an integrated economy is determined by real standards of living.

Assume there are two cities in a free-trade area such as the national economy, and relative growth rates change in favor of City 1. People move in from City 2. Because land is a resource in fixed supply, its price increases in City 1. This adjustment process continues until real incomes have equalized for the two cities. In the long term, growth differentials are capitalized into the price of land so that the cost of living varies across regions. Why in these circumstances would anyone live in City 2? For one thing, it is cheaper. People like the higher monetary income in City 1, but they also like the lower house prices in City 2. Steven Landsburg (1993) has vividly expounded the mechanism that we here extend to interregional growth, calling it the Indifference Principle.[1]

Quantities (populations in this case) adjust to differential growth, not to prices or incomes per capita, except for the price of land and local services. William Nordhaus systematically establishes that land-price adjustments differ from other prices in an integrated economy in his recent assessment of "Baumol's disease." In his study of sixty-seven U.S. sectors over half a century, he shows that "the differential impact of higher productivity growth on factor rewards is extremely small . . . [and] the fraction of productivity retained as higher factor rewards is very small. For the most part, industrial wage and profit trends are determined by the aggregate economy and not by the productivity experience of individual sectors" (2008, 21–22). This finding shows at the same time that most of the economic gains from higher productivity growth are passed on to consumers in the form of lower prices.

Because the supply of land is fixed, land prices are bid up in the more prosperous regions and bid down elsewhere. Over time, lagging regions' advantages in lower land prices compensate for their lower nominal income. Once the process has been completed, prices and incomes in each industry equalize across regions. Because people move from lagging regions to more prosperous ones, living standards tend to converge across all regions of an economically integrated economy, no matter what the growth rate is in specific regions. In deciding where to settle, people are ultimately indifferent between the two places. In the long term, thanks to population mobility, people of all regions gain equally from the accelerated growth in one region. Once the process has worked itself out, statistics on published real income per capita cannot reveal regional growth rates when only a national price deflator is used. Land prices are more appropriate for this purpose.

In economic theory, all cities must be equally attractive. If they were not, few people would live in any but the best. The emergence and growth of suburbs is explained by this process. All locations ultimately become equally attractive.

1. In his formulation, Landsburg popularizes a general principle that E. J. Chambers and D. F. Gordon first set out in 1966.

This analysis does not seek to explain the rate of growth in various regions of an integrated national economy. Growth is a complex process associated with multiple factors. Our purpose is only to explain how adjustments to differential regional growth rates are realized.

Landowners' Position

Do some benefit or lose more than others from this process? In the long term, thanks to population mobility, people of all regions gain almost equally from the accelerated growth in one region. One obvious candidate for short-term differential benefits are urban landowners in City 1, whose assets have permanently increased in value or who can charge higher rents for the houses they possess. Increased income being capitalized into the price of land, economic gains in City 1 accrue to the owners of the resource in fixed supply, and losses to landowners in City 2. But a fixed resource generates specific gains to its owners only in the transition period. Newcomers to City 1 have to pay a higher price for houses in prosperous regions, which they will do only if their new income compensates for the lower price of houses in lagging regions.

Empirical Validation for the United States, Canada, the United Kingdom, and France

United States

The implication of the analysis is that in the long term interregional adjustments translate into population and growth changes, not into differential prices and living standards. Between 1920 and 2000, variations in income per capita across the United States declined significantly despite wide movements in populations (see table 1).

Table 1
Regional Share of the U.S. Population, 1920–2000 (%)

REGION	1920	1950	1960	1970	1980	1990	2000
Northeast	28.0	26.0	24.9	23.1	21.7	20.4	19.0
New England	7.0	6.2	5.9	5.8	5.5	5.3	4.9
Mid Atlantic	21.0	19.9	19.1	18.3	16.2	15.1	14.1
Midwest	32.1	29.4	28.8	27.8	26.0	24.0	22.9
South	31.2	31.2	30.7	30.9	33.3	34.4	35.6
West	8.7	13.3	15.6	17.1	19.1	21.2	22.5

Sources: U.S. Bureau of Census 1980, Section 1:10; 1995, Section 1:31; 2003, Section 1:21, 27.

Table 2
Regional per Capita Income, 1880–1980 (Population Weighted, United States = 100)

REGION	1880	1900	1920	1940	1960	1980
Price-Adjusted Personal Income per Capita Relative to the U.S. Average						
West	166	138	124	115	109	108
Midwest	103	109	101	101	101	99
South	55	54	63	64	82	93
Northeast	141	137	133	130	108	98
Price-Adjusted Income per Worker Relative to the U.S. Average						
West	131	126	117	112	107	105
Midwest	110	114	102	101	101	98
South	56	56	67	67	87	96
Northeast	133	128	125	122	103	99

Source: Mitchener and McLean 1999, 1019.

The share of population in the West almost tripled, whereas significant declines occurred in the Northeast and the Midwest. Mobility was considerable.

Yet the distribution of income per capita narrowed over the century. Using urban price indices, Kris Mitchener and Ian McLean (1999) have made estimates of average regional real incomes between 1880 and 1980. At the end of the period, the dispersion of real income per worker between the four big regions had declined and remained extremely low. With a national average equal to 100, interregional variations of income per worker in 1980 ranged only from 96 to 105 (see table 2). We conclude that over time regional adjustments to varying growth rates took the form not of price and income dispersion, but of quantity adjustments.

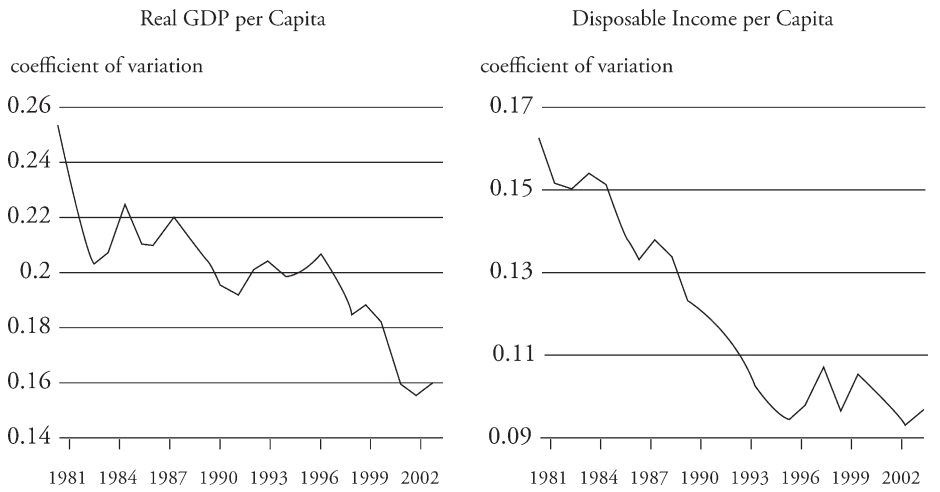
Canada

In terms of coefficients of variation (the ratio of the standard deviation to the mean) of GDP and of disposable income per capita, the federal budget indicates that "while economic disparities between the provinces remain substantial, they have clearly declined over the last 25 years" (Department of Finance, Canada, 2006, 116) (see figure 1).

This reduced dispersion occurred as substantial movements of the Canadian population took place, producing declining shares in the Atlantic provinces and Quebec as well as rising shares in Ontario and the western provinces (see table 3). Thus, the Indifference Principle has resulted in convergence of real incomes across the provinces.

A specific comparison of Quebec and Ontario offers the following picture. For 2007, table 4 shows conditions in Quebec relative to Ontario on the basis of three

Figure 1
Economic Disparities Between Provinces, 1981–2005



Source: Department of Finance, Canada 2006, 116.

measures: GDP per capita, personal disposable income, and average weekly earnings. By those measures, Quebec lags behind Ontario by 10 to 16 percent.

These data, however, do not incorporate differences in the cost of living between the two provinces. Comparative retail price indices for eleven Canadian cities published by Statistics Canada for October 2007 reveal that the cost of living in Montreal was 11.2 percent lower than the corresponding figure for Toronto (Statistics Canada 2008, 51–52). According to another source, an identical basket of goods and services in 2007

Table 3
Regional Share of the Canadian Population, 1951–2011 (%)

Year	Atlantic Provinces	Québec	Ontario	Western Provinces	Canada*
1951	11.6	28.9	32.8	26.5	100.0
1961	10.4	28.8	34.2	26.4	100.0
1971	9.5	27.9	35.7	26.6	100.0
1981	9.1	26.4	35.5	28.7	100.0
1991	8.5	25.2	37.2	28.8	100.0
2001	7.5	23.8	38.4	29.9	100.0
2011	6.8	23.1	38.8	31.0	100.0

* Including Yukon, North-West Territories, and Nunavut.
Source: Quebec Institute of Statistics 2005, 147; 2011, 21.

Table 4
Comparison of Québec and Ontario, 2007

	Québec	Ontario	Québec/Ontario
GDP per capita at market prices ($)	38,495	45,646	84.3
Disposable income per capita ($)	24,690	27,834	88.7
Average weekly earnings ($)	739.33	818.98	90.3

Source: Quebec Institute of Statistics 2012, 22, 26, and 29.

cost 16 percent less in the metropolitan region of Montreal than in the corresponding region of Toronto (Human Resources and Skills Development Canada 2009, 79).[2] Housing costs accounted for 95 percent of the spread between the two cities. However, the basket of goods and services as defined by this source applies to lower-income families, for which expenditure devoted to housing is higher than for the average household. We conclude that, as in the United States, interregional adjustments in Canada took place through quantity variations, not through price changes.

England and France

We have calculated that interregional income differentials in England are on the whole tightly distributed once adjusted for cost of living differences. In general, rural areas have lower average income than London, according to published official statistics, yet equalization is nonetheless realized across both types of territory when similar occupations are considered. INSEE analysts in France have shown that "overall differences in price levels between Paris (higher by 13 percent) and the rest of the country is of the same order of magnitude as differentials in earnings levels" (Fesseau, Passeron and Vérone 2008, 1, our translation).

Overall, our data confirm that in the United States, Canada, the United Kingdom, and France economic integration through trade, labor-market adjustments, and immigration leads to equalization of real incomes. What does not equalize across the economy is the price of the fixed resources—land and local services.

Adjustment in Nonintegrated Economies

This process of income equalization differentiates integrated economies from economically isolated countries across the world. In the latter case, labor, like land, becomes a resource in fixed supply because of low population mobility between countries. Differential growth rates across countries are capitalized into both the price of land and wages. Because mobility across countries is low, people in more

2. The reader should note that we here refer to cities rather than to provinces because cost-of-living indexes for provinces do not exist.

prosperous economies gain in terms of relative income per capita, whereas immobile people in lagging countries experience relative income declines. That outcome is precisely what is observed across the world as nonintegrated countries have over time fallen behind industrialized economies. Because the global economy is less integrated than the economy of individual countries, data on GDP per capita in various countries is probably a more valid measure of both relative income per capita and relative overall growth. A number of policy and institutional corollaries can be derived from our analysis, particularly in relation to zoning, regional development programs, and federalism.

Policy and Institutional Implications

Land-Use Planning

Because landowners in rapidly growing cities capture higher prices for their assets, they are sensitive to changes in the economic environment, which gives them a strong incentive to lobby for favorable conditions. Land-use planning reduces the supply of land to be occupied in the area concerned. It is not surprising that homeowners favor more rigid zoning regulations in order to create greater scarcity of building space and thereby cause their property values to rise. Zoning or land-use planning in a particular area, such as New York City, can maintain artificially high prices permanently. Nevertheless, fewer people will move to zoned areas, causing equalization of income to occur. Landsburg attributes farmers' political power to this source. The quantity of farmland, though not strictly fixed, cannot increase significantly. Therefore, farmers are well placed to take advantage of subsidies or protection. Appreciation of their asset means, however, that the cost of occupying their property has increased permanently. New businesses in the same line of activity can hardly appear in response. In the long term, as the price of farm land remains permanently high, the higher cost of production for new owners entirely offsets the initial rise in the farmers' wealth. The Indifference Principle does not apply less forcefully to farmers.

Equalization and Regional Development Programs

Because real per capita income adjusted by appropriate price deflators does not differ significantly between regions in Canada and in the United States, central programs such as equalization payments to provinces or states, regional economic development policies, and subsidies to regional corporations have no firm analytical basis. They inefficiently maintain excess populations in favored regions at the expense of faster-growing regions. A powerful system of equalization in favor of lagging provinces provides a case in point in Canada. The Canadian welfare state not only seeks to erase economic differences between individuals but also guarantees "equivalent" public services in all Canadian provinces.

Yet, owing to the Indifference Principle, there is no significant difference in real income per capita between slow-growth regions and the rest of Canada. The level of equalization payments received by each province should be similar, most likely zero for each. One widely accepted critique of the equalization program holds that it has magnified regional income disparities by preventing workers from moving to their most productive location outside slow-growth regions. It is true that equalization payments affect productivity negatively. Such a program reduces the mobility of resources—of human capital, in particular. Fewer people have moved from Quebec and the Atlantic provinces to the more prosperous regions of Canada. But the observed convergence of real incomes invalidates the conclusion that interregional income disparities are increased.

In fact, equalization brings about an equal decline in income per capita in all regions. It makes explicit the transfer of the burden from lagging provinces to other regions of Canada. Absent equalization, higher growth, higher land rents, and higher wages would have ensued in Alberta, Ontario, and British Columbia owing to lower taxation and higher immigration. These provinces' growth is negatively affected. High-growth provinces are the first victims of fiscal equalization. Yet lagging provinces have gained nothing. They have lost in less-depressed land prices and lower nominal wages what they have gained in subsidies. They share in the reduced income per capita across the country. Equalization is thus self-defeating, a pure waste.

Equalization is but one policy enacted by central governments with concentrated regional incidence in one or more provinces and states. Other programs, such as regional development policies and subsidies to corporations, also affect specific regions differently. Our assessment of equalization applies to all such federal programs. As excess populations are induced in favored regions, the burden of such programs is capitalized into higher land prices in those lagging territories as fewer residents move to more prosperous ones. As always, living standards are equalized across the whole integrated national economy.

Federalism

The logic analyzed in this article does not invalidate the traditional theory of federalism. Competition between provinces and states acts as an adjustment process. In an integrated economy, decentralized governments' mistakes are revealed rapidly. People (as well as capital and goods and services) victimized by a lagging economy can respond to the local government's inefficiencies by moving out. Local and provincial governments' ability to abuse their tax and regulatory powers is thereby curtailed. They are more constrained.

Yet competitive federalism acts more through population mobility than through income changes. As local victims of inefficient provincial and state policies are driven away, the burden of such policies is capitalized into lower land prices in slow-growth territories. To the extent that their relative real income per capita is less affected by the

failures of their provincial or state government, less mobile local people do not bear the full cost of such policies. Lagging regions gain not so much from federalism as from being part of a common national market. In similar fashion, local median voters are not induced to resist as vigorously the policies that hurt them. This effect may explain why the empirical record is mixed on federalism's contribution to containing the growth of government (Grossman and West 1994; Borcherding and Lee 2006).

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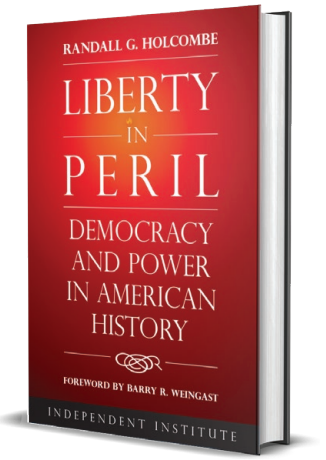

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