Metro-nonmetro Economic Growth and Convergence in the Plains States - Rethinking the Rural-Urban Relationship in a Global Economy

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Abstract

This paper tests for conditional b-convergence, and for s-, or unconditional convergence of the metro- and non-metro portions of per capita incomes of the Plains states as classified by the Bureau of Economic Analysis, and calculates metro- non-metro income inequality. We find evidence of b-convergence only for the state of Missouri, and divergence for Iowa, Kansas, Minnesota, Nebraska, North Dakota and South Dakota, indicating slower economic growth, and lack of economic parity for Plains states' non-metro counties, and heterogeneity rather than homogeneity in terms of factor endowments. Metro non-metro income inequality as measured by the Gini coefficient, increased for all states except Missouri. In terms of policy implications, we suggest a shift of Federal policy from subsidy based support of traditional agricultural commodity production to a multi-sectoral economic development approach, using the existing Northern Great Plains Regional Authority as an institutional structure to coordinate development efforts across the Region.

Introduction

The empirical growth literature contains useful assumptions for assessing the path towards steady state growth for rural counties within state and regional boundaries. Geographical regions with freely moving factor inputs (capital, labor, goods, trade, technology) within political boundaries are theorized to eventually converge to same levels, with lagging regions eventually "catching up" with high-growth regions. Following Solow-type (1957[1]) standard, neoclassical growth theory, high growth regions will experience declining returns to capital, and capital will migrate to labor rich, less developed regions, for an optimum matching of capital investments, labor availability and characteristics. Despite the highly technical character of the literature, three aspects of traditional (Solow 1957[2]) and recent empirical work on economic growth and

convergence (Mankiw 1995[3]; Baumol 1998[4]; Barro and Sala-I Martin 1995[5]; Barro 1998[6]; Lucas 1997[7]) are of interest to policy makers and community stakeholders in the rural counties of the Plains region. The assumption of eventual *convergence* of incomes across regions, indicating progress towards economic parity with urban areas, *homogeneity*, the assumptions that technology and characteristics of human capital are fairly homogenous across the region, and *mobility*, the assumption that lagging regions will grow faster than wealthy regions, thus indicating diminishing distributional inequities according to the faster speed of growth in lagging regions. Internationally (Pritchett 1997[8]) and nationally (Barro and Sala-I Martin 1995[9]; Young, Higgins and Levi 2007[10]), divergence, especially across U.S. counties and regions has been the norm rather than convergence, indicating increasing income inequality and declining productivity in lagging regions. These findings will resonate with the regional non-metro populations and policy makers in the Plains states that are deeply familiar with the problems encountered in rural areas such as negative population growth, rural per capita incomes in most rural counties that are below the U.S. average, and lag metro incomes by eighteen to forty percent across the plains states (ers.usda.gov)[11] (see Table 1). The clearly increasing concentration of economic activity in metro geographical areas presents rural Plains states counties with the pragmatic problems of inadequate local labor markets, the maintenance of acceptable levels of public services with a steadily declining tax base in fiscally stressed counties and states. This paper tests for conditional, β-convergence, and for σ-, or unconditional convergence of the metro- and non-metro portions of the of per capita incomes of the Plains states as classified by the *Bureau of Economic Analysis* (bea.gov)[12]. We situate our findings within the context of regional and federal development theory and policy to identify potential solutions.

Federal and Regional Development Policy

Regional economic growth does not occur in a policy vacuum. As long-time observers of the changing fortunes of regional development have noted, congruence between regional and federal economic policy is vital (Hansen, Higgins, and Savoie 1990[13]). We are currently experiencing a severe economic crisis in financial markets in the U.S. We are concerned about the potential impact of credit restraints, lack of demand, and unemployment on the economic health of remote, low population density rural counties that are especially vulnerable to macroeconomic shocks. On the other hand, the crisis might herald a much needed "paradigm shift" in the non-interventionist Federal approach to regional development as practiced for the last three decades. Regional development has faced theoretical as well as fiscal obstacles. Regional federal intervention has currently little theoretical as well as federal fiscal support (Bartik 1991[14]). Internationally as well as regionally, economic development theory has gone through distinct "phases" in which factors are thought to contribute to self-sustaining economic growth. In the optimistic post WW II "golden age" of development (Meier 2005[15]), following classical economic theory (Smith [1776] 1976[16]; Ricardo [1817]1997[17]) capital formation was considered the main constraint to economic development (Adelman 2002[18], Easterly 2002[19]). Internationally, foreign aid, and in the U.S. regional investment in designated growth centers and enterprise zones, provision of "hard" infrastructure through federal programs such as the *Economic Development Agency*, and the *Appalachian Regional Commission*, revenue sharing, were theorized to be sufficient in integrating lagging U.S. regions. Initial federal investments were believed to be up to the task of dissolving persistent metro-nonmetro developmental

differentials, stimulating private investments, and thus permanently absorb regional labor surpluses. The two post WWII decades were periods of unprecedented national prosperity, in which the federal government took an active role in regional development, pursued a full-employment policy, and initiated various re-distributive efforts under the auspices of the "War on Poverty." Following the Vietnam War, the "oil shocks" and "great stagflation" of the 1970's seemed to indicate to theorists that previous state interventionist strategies were to blame for lack of development, discouraging private investments (Buchanan 1985[20]). Federal state activism in lagging regions and a full employment policy were thought to be ineffectual at best, or grossly efficiency distorting at worst (Friedman 1976[21], Gylfason 1999[22]). The policy reversal inspired by the "neoclassical revolution" (Tobin 1998[23], Galbraith 2000[24]) was characterized by a return to orthodoxy in terms of a reaffirmation of decentralized decision-making, and reliance on the competitive force of the market price mechanism in bringing about an optimal allocation of resources (Carter 1997[25]). Any form of state intervention was theorized to simply prolong the inevitable industrial and geographical restructuring in declining rural areas. From U.S. and Canadian regional development efforts of long duration in extremely rural areas, it was learned that an initial investment in regional infrastructure in designated "growth centers" was insufficient in stimulating lasting prosperity, constituting a "bitter lesson" for theorists, development practitioners and affected communities alike (Higgins and Savoie 1988:45[26]; Widner 1990[27]; Whisnant 1994[28]; Browne 2001[29]).

For remote, rural counties experiencing population decline in the U.S. in general, and for the sparsely populated Plains states' rural counties in particular, the loss of funding from terminated Federal programs such as the *Title V Commissions*, and reduced funding of the *Economic Development Agency* had considerable impact (Browne 2001[30]; Isserman 2004[31]). Altogether, legislation of the "new Federalism," the *Omnibus Budget Reconciliation Act* of 1981, terminated sixty development programs, and returned the remaining programs to state governments in nine greatly reduced block grants (Flora and Flora, 2006[32]). In 1987, the Federal practice of revenue sharing, on which many rural counties counted for a significant portion of their budget, was eliminated. As the U.S. agricultural sector continued to decline in importance as a significant source of employment as well as a substantial contributor to foreign trade, the population loss was experienced acutely in the farm-dependent counties of the Plains states ill equipped to move labor surpluses to other sectors (Johnson and Rathge 2006[33]) (for the percentage of farm-dependent counties in the Plains states, see Table 2). While "footloose labor" (Gylfason 1999:19[34]) and outmigration was desirable from a neoclassical efficiency standpoint, these developments left farm-dependent counties with the burden of maintaining an inadequate infrastructure and service delivery to an aging population with a continuously declining tax base. Large- scale outmigration also remains undesirable politically for sparsely populated states with a low number of electoral votes. Despite the decline of Federal activism in terms of development in rural regions, a continued Federal- and state function is therefore required for maintaining populations in agriculturally dependent counties. The cost of underdevelopment continues to be born jointly by states and the Federal government through transfer payments such as farm subsidies, housing and energy assistance. Expenditures for farm subsidies vastly exceed the available funding for regional development agencies such as the *Northern Great Plains Regional Authority*, currently funded at thirty million through the year 2012 (Atkinson 2004[35]; Isserman 2004[36]; National Association of Development Organizations[37]). Expenditures for rural income maintenance such as *Medicaid*, *Food Stamps*, *Temporary Aid for Needy Families* are also

considerably above the state and national average in farm-dependent rural counties (transfer payments not shown in tables, compare the item "per capita income maintenance" from the *Bureau of Economic Analysis Regional Information System* for Plains states' counties).

The growth center model in lagging regions after the era of federal intervention mainly concentrated on providing incentives in order to attract business. The incentive strategy without Federal aid has been in effect now three decades, with mostly less than favorable results. The Plains states have a favorable tax climate (Business Conditions Index[38]), and all states have designated enterprise zones. Iowa, for example, has over 1600 designated enterprise zones; in Minnesota JOBZ tax free zones (job opportunity building zones) are designated in distressed regions. In general, tax incentives in designated growth centers have brought about relatively slight improvement in regional labor markets in remote rural regions. Studies have shown that location decisions in general are mainly influenced by access to markets, transportation cost rather than by incentives, leaving remote rural counties uncompetitive (Lynch 2004[39]). The discrepancy between the cost of tax incentives and job creation and growth, and the resulting shortfall of revenue, the lack of transparency and accountability of the process, has left many policy makers disillusioned with the process. "Clawback" laws that impose a penalty on companies that have received incentives if they move out of state, or fail to meet objectives have been passed in Minnesota (Progressive Policy Institute 2002[40]). While the criticism levied at the efficacy of state interventionist' regionalism of the post World War II era was justified (Easterly 1999[41]), the policies of the last three decades of relying mainly on market forces to reduce regional disparities have been equally disappointing in resolving the persistent rural/ metro disparities.

The Theoretical Rationale for Economic Growth and Convergence

Economic growth theory addresses the distributional concerns of rural regions: income equity, the potential of productive parity with prosperous urban regions, issues vital to quality of live. The empirical literature employs per capita personal income as a proxy measure of output and growth. Conditional or β-convergence assumes that in lagging regions income will grow more quickly due to diminishing returns of additional factor inputs in regions with higher earnings. When growth rates are regressed on initial income, the relationship between the level of initial incomes and growth rates over time is negative, if growth in lagging regions is faster. The literature (Baumol 1986[42]; Barro and Sala-i-Martin 1995[43]) found generally a two-percent faster growth rate considered "ubiquitous" for lagging regions. Another way to test for declining income inequality over time is σ-, or unconditional convergence, which uses the variance of the dispersion of incomes around the mean, implying that incomes will converge to the same levels over time, and economic growth towards the same steady state. With severe initial disparities between wealthy and poor regions, it follows that β-convergence, faster growth of poorer regions is a necessary, although not always sufficient condition of declining σ-convergence, the eventual parity of per capita incomes across regions. From a glance at traditional indicators (ers.usda.gov)[44] from our national income accounts for the Plains States, we can note that currently per capita personal income parity is not the case for Plains states rural and metro regions (see Table 1).

Table 1 Metro-Nonmetro Population, Incomes

State	*Income non-metro portion 2006*	*Income metro portion 2006*	*Non-metro income lag*	*Population non-metro 2007*	*Population metro 2007*
Iowa	30,011	35,457	15%	1,316,213	1,671,833
Kansas	28,656	38,349	25%	1,008,407	1,767,590
Minnesota	29,058	41,999	30%	1,407,835	3,789,786
Missouri	24,978	35,636	30%	1,383,367	3,533,399
Nebraska	28,493	38,821	27%	745,905	1,028,666
North Dakota	30,865	34,852	12%	331,908	307,807
South Dakota	29,174	35,528	18%	434,812	361,402

The differential between rural and urban per capita incomes is substantial, and higher for the states that show concentration of populations in urban areas. It is therefore of interest to test for trends towards faster growth in rural incomes, if β-convergence is present, we can expect eventual σ-, or unconditional convergence, meaning declining differential among rural and urban incomes over time, diminishing the current disparities.

Methodology

This analysis evaluates per capita income metro/ nonmetro growth in the Plains States. This analysis follows the *Bureau of Economic Analysis* definition of the plains states which includes Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota (bea.gov)[45]. This paper uses the terms rural/urban, metro/nonmetro interchangeably throughout the body of the paper, but follows the *U.S. Census*, *Office of Management and Budget* definition of metro areas above 50,000, and nonmetro as population of less than 50,000 and/or no urban core for the disaggregation within the Plains states.

The measure for income growth, per capita personal income is available in a time series from 1969-2006 from the *Bureau of Economic Analysis REIS* (regional economic information system) (bea.gov)[46]. The income measures have been converted to constant Dollars using *CPI* deflators from the *Bureau of Labor Statistics* (www.bls.gov)[47] for a constant time series for the purpose of calculating growth rates. Per capita personal income as defined by the *Bureau of Economic Analysis* contains all sources of income except contributions to social security (bea.gov)[48]. Economic activity is increasingly concentrated in urban areas; they are the primary engines of economic growth for U.S. states and regions. In general, up to eighty-five percent of incomes in developed nations are generated in urban regions (OECD Rural Policy Reviews[49]). Therefore, the developmental differentials of concern in U.S. states in general, and in the Plains states in particular, are between metro and non metro counties. In order to test for convergence, metro and nonmetro per capita personal incomes are disaggregated from the *Bureau of Economic Analysis* time series.

Levels of economic growth and development are commonly assessed through testing for income convergence (Solow 1957[50]; Mankiw 1995[51]; Baumol 1998[52]; Barro and Sala-I Martin 1995[53]; Lucas 1997[54]; Barro 1998[55]). When testing for income convergence, per capita personal income

or earnings per worker are used as a proxy for assessing increased output, well-functioning labor markets, and free, optimal movements of resources in geographical regions (Lall and Yilmaz 2000[56]; Crain 2005[57]). Two types of tests for convergence are as follows: σ- *convergence* can be assessed through the coefficient of variation. The coefficient of variation refers to the ratio of the standard deviation to the sample means expressed as a percentage. If convergence occurs, we expect declining disparities in regional incomes over time.

$$CV= \sqrt{\frac{\sum (X-\bar{X})^2}{n-1}} \bigg/ \frac{\sum X\ (100)}{n}$$

β- *convergence* occurs when low-income and poorer regions grow at a faster rate. Following the work of Abramowitz (1986[58]), Baumol (1998[59]), and Barro and Sala-I-Martin (1995[60]), β-convergence is calculated through regressing growth rates on the initial incomes in a time series. If convergence has occurred and lagging regions have grown faster, the relationship between α and β will be negative.

Income growth rates $= \alpha + \beta [\ln (Y/N)_{I\ 1969}] + \mu_t$

Where:

ln is the natural logarhythm of the initial per capita income, β the rate of convergence across all regions to be estimated, plus the error term μ.

The growth rates required for β-*convergence* are calculated as follows. In order to calculate growth rates, two methods are most commonly used, the *least squares-* and *continuously compounded* method (www.wordbank.org). Both methods require a constant price series of per capita income without missing values, available from the *Bureau of Economic Research* ([bea.gov](bea.gov))[61]. The *least-squares method* of calculating growth rates regresses the natural logarhythm of annual incomes on a linear time trend:

ln (real income per capita) $= \alpha + \beta_{ypc}$ **(time trend 1969-2002)** $+ \mu_t$

where:

ln refers to the natural logarhythm of per capita incomes from 1969-2002, the subscript refers to the value of income in each year, and μ_t refers to the error time. The average annual growth rate is obtained by [exp (β)-1]100 for expression as a percentage.

The *continuously compounded* method for calculating growth rates uses the last and first observations of the time period:

ln real per capita income $= [\ln (X_{1969}/X_{2006})]/n$

where:

ln is the natural logarhythm of per capita real income from 1969-2006, divided by the number of observations (years).

Findings

The Plains States as defined by the *Bureau of Economic Analysis* are a relatively homogenous, predominantly agricultural region, with a large percentages of counties designated as rural (See Table 2). There are important differences across the states in terms of commodity production, level of urbanization, distribution of rural and metro population. Missouri (St. Louis) and Minnesota (Minneapolis) are the two states with large metropolitan areas, Iowa, Kansas, Missouri and Nebraska have thriving combined metropolitan areas. For these states, the larger portion of the population is concentrated in metro areas, whereas North and South Dakota have few metropolitan areas, and the largest portion of the population remains in rural areas (see Table 1 above). The percentage of rural counties is high, ranging from seventy percent in Iowa to ninety-two percent in North Dakota. The percentage of farm-dependent counties, where agricultural production is the predominant activity is high for all states except Missouri (see Table 2). Manufacturing similarly is above the national average of seventeen percent in Iowa, Kansas, and Missouri.

Table 2 Rural Designation, Percentage Agricultural, Manufacturing Counties, Value Added

State	*% Rural counties*	*Farm-dependent counties %*	*Manufacturing-dependent counties %*	*Value added to U.S. economy 2007 by agricultural commodities*
Iowa	70%	13%	32%	6.7%
Kansas	85%	32%	15%	4.1
Minnesota	76%	11%	27%	4.4
Missouri	70%	5%	21%	2.4
Nebraska	90%	68%	3%	5.1
North Dakota	92%	59%	0%	1.9
South Dakota	89%	68%	3%	2.0

The familiar parable of comparative advantage (Ricardo [1817] 1997[62]) in trade policy posits that regions should concentrate on the commodities that correspond to their factor endowments, and can be most efficiently produced. Regions concentrate their economic efforts on what they do best, according to resource endowments, and population characteristics. The Plains States concentrate on highly specialized commodity production. While Iowa is the number one producer state for export in the U.S. for feed grains, soybeans and livestock, Nebraska the number two producer for livestock and hides, Kansas the number two, and North Dakota the number one producer of wheat (ers.usda.gov)[63], the value added would not be expected to generate large gains in export led growth sufficient to raise productivity levels, and thus ultimately income levels in rural regions. This phenomenon is a feature of the global economy,

where economic growth has increasingly become "uncoupled" (Drucker 1986[64]) from employment and basic, export-led growth commodity production, with financial markets the driving engine of growth rather than trade, and consumption (service related job growth in urban areas) rather than investment a key feature, which favors income growth in urban areas capable of providing financial and other services. As the *U.S. Department of Agriculture* shows, the agricultural- and manufacturing dependent counties are the counties experiencing the highest population loss (not shown on table, see Profiles of America, ers.usda.gov)[65]. Farm employment in rural Plains states remains much higher than the national average, and there are large differentials in educational attainment between rural and urban counties (see Table 3). As recent convergence literature has shown (Beenstock and Felsenstein 2006[66]), heterogeneity among the workforce will prevent movement of labor across regions, and thus upward mobility of incomes in lagging regions. Human capital tends to "cluster" in urban areas, and businesses will locate near an educated, well-trained workforce.

Table 3 Poverty, Unemployment, Educational Attainment

State	Non-metro Poverty Rate 2007	Metro Poverty Rate 2007	Non-metro Unemployment 2007	Metro Unemployment 2007	Farm Employment % 2006	Nonmetro Educational Attainment College 2000	Metro Educational Attainment College 2000
Iowa	10.8	10.8	4.0	3.6	5%	15.6	26.4
Kansas	13.6	10.6	3.6	4.3	4%	18.7	30.3
Minnesota	10.5	8.7	5.3	4.3	3%	16.9	31.6
Missouri	17.1	12.1	5.4	4.9	3%	13.0	24.8
Nebraska	11.7	10.4	2.9	3.1	5%	16.8	29.7
North Dakota	12.7	10.4	3.6	2.7	8%	17.2	28.5
South Dakota	16.3	10.3	3.2	2.7	6%	19.4	24.5

Calculating continuously compounded growth rates for the Plains states for metro-nonmetro income shares of per capita personal income, we find slower growth for all states except Missouri. This result illustrates the currently low growth potential of the counties dependent on specialized agricultural commodity production; Missouri has the lowest percentage of farm dependent counties among the Plains states (for percentage of farm-dependent counties, see Table 2).   Similarly, to denote change in income inequality, we find an increase in Gini coefficients from 1969-2006 for all plains states except Missouri. The Gini coefficient is bounded between one and zero, with zero denoting perfect income equality; a Gini of above four is considered high. The Plains states with the larger metro areas show the highest Gini values, a considerable differential indicating considerable rural/metro income disparities (see Table 4). Growth rates (calculated by continuously compounded and relative change) similarly show slower growth in non-metro income for all Plains states except Missouri.

Table 4 Metro-Nonmetro Income Growth, Gini Coefficients

State	PCPI 2006	PCPI Growth Metro portion 1969-2006	PCPI Growth Non-Metro Portion 1969-2006	PCPI Growth Relative Change Metro Portion	PCPI Growth Relative Change Nonmetro Portion	Gini 1969	Gini 2006	Evidence for β-convergence	Evidence for σ-convergence
Iowa	33,038	1.415	1.138	8.4	7.5	1.54	4.16	No	No
Kansas	34,799	1.615	1.228	9.1	7.7	3.60	7.23	No	No
Minnesota	38,859	1.640	1.510	9.2	8.7	7.95	9.15	No	No
Missouri	32,789	1.334	1.427	8.1	8.4	9.64	8.79	Yes	No
Nebraska	34,440	1.606	1.174	9.1	7.6	3.62	7.67	No	No
North Dakota	32,763	1.739	1.670	9.6	9.4	2.38	3.03	No	No
South Dakota	32,030	1.754	1.628	9.7	9.2	3.72	4.91	No	No

Regressing growth on initial incomes, we find conditional convergence for only Missouri among the plains states, indicating that the Missouri non-metro income grew faster than the metro portion. Since *β-convergence*, the necessary condition for *σ- convergence* is not present for all Plains States except Missouri, it is not surprising that there is no evidence of *σ- convergence* for the Plains states (for graphs of individual state patterns of convergence see the Appendix). Minnesota and Missouri, the states with the largest metropolitan areas and thus the largest dispersion of incomes around the mean show the highest initial values for the coefficient of variation. We can note for all Plains states a period of convergence until 1974, after which incomes essentially diverge, with the 2006 coefficient of variation values much higher than in 1969. This is a pattern noted by previous studies (Bernat 2001[67], Barro 1991[68], Pritchett 1997[69]). What caused the reversal? We have not tested the time series for factors contributing or inhibiting convergence within the confines if this analyses. Possible explanations from previous analyses are the 1974 and 1976 oil shocks, which affected the producer prices for agricultural regions adversely (Bernat 2001[70]). The sectoral restructuring, decline of manufacturing in rural areas are possible explanations (Bernat and Recipe 2000[71]). The fluctuations for North Dakota, the number one wheat producer, can possibly be attributed to commodity price volatility. The Plains states rural counties did not experience "trickle-down" effects in periods of national- and state economic expansion, a return to convergence in the prosperous 1990's as other analyses for U.S regions have shown (Bernat 2001[72]). As other authors have noted, rural counties are more vulnerable to macroeconomic shocks and volatility (Wood and Bishak 2000[73], Sherwood-Call 1996[74]). Another possible explanation advanced was the decline in federal funds in the 1980's for rural development through *OBRA* (Omnibus Budget Reconciliation Act) legislation, which dramatically reduced federal funds by sixty-six percent, and loan guarantees by as much as forty-one percent (Flora and Flora 2006[75]). The generally long period of convergence until 1974 may thus indicate that Federal funds and policy initiatives, while insufficient in stimulating self-sustaining growth in lagging regions, may have had some positive impact on regional convergence (Isserman and Rephann 1995[76]). In conclusion, we find no evidence of the expected "leapfrogging," in classical growth theory (O'Neill and Kearns 2004[77]), the faster growth required by rural regions to diminish regional disparities.

Rethinking the Rural Urban Relationship

Lack of convergence indicates a persistent lack of economic parity between rural and metro counties, and heterogeneity rather than homogeneity in terms of factor endowments. Lack of economic growth, regions that fail to realize their productive potential are undesirable both from an efficiency as well as equity standpoint. Neither the overall U.S. economy at large, nor rural Plains states counties benefit from the current condition. What is to be done? Growth theory can be said to begin with Arthur Lewis (1954[78], 1955[79]) seminal paper on the dual sector model, which noted the productive potential of rural regions, an "unlimited" resource that only needed to be mobilized creatively for accelerated growth. Arthur Lewis did comment in later years on the tendency of development policy and theory to treat rural regions, the agricultural sector with benign neglect, as simply a "reservoir" for resources and labor transfers. Similarly, rural policy in the U.S. has historically mainly focused on agricultural policy rather than articulating a comprehensive rural development strategy meaningfully imbedded in a national industrial and development policy (Isserman 2004[80]; Drabenstott 2004[81]; Atkinson 2004[82]). In Solow's (1957[83]) model, growth is exogenous to the capital/labor ratio, which seemed to indicate to a large portion of the later empirical work that economic growth is "immune to economic policy, good or bad" (Gylfason 1999:27[84]), suggesting state intervestment in lagging regions to be detrimental to growth. The reduction of federal development funding for now more than two decades was informed by the goal of enhancing overall efficiency of the U.S. economy. Paradoxically, the role of government in the Plains states remains distributive, through agricultural subsidies and support of rural incomes by the various income maintenance programs. Internationally, research indicates that policies should shift from the traditional, government subsidy based support of commodity production and business incentives provisions towards a multi-sectoral, diversified development approach integrating all levels of government (OECD Rural Policy Briefs[85]). Similarly, in the current challenging economic climate, a comprehensive, integrated regional/ Federal response will be required to revitalize the Plains states' rural regions. A difficult proposition politically, it will nevertheless be necessary to shift the current Federal expenditures supporting traditional agricultural commodity production to at least parity in funding for economic development in order to foster agricultural diversification and innovative, multi-sectoral job creation in the promising areas of product agriculture, renewable energy, bio fuels, advanced manufacturing and professional services (Drabenstott 2004[86]). As a direction for future research, growth models can incorporate a variety of variables to sort out which activities contribute significantly to economic output and income growth. An industrial strategy of diversification rather than continued focus on traditional commodity production will not only enhance the competitiveness of individual counties, but the overall U.S. economy.
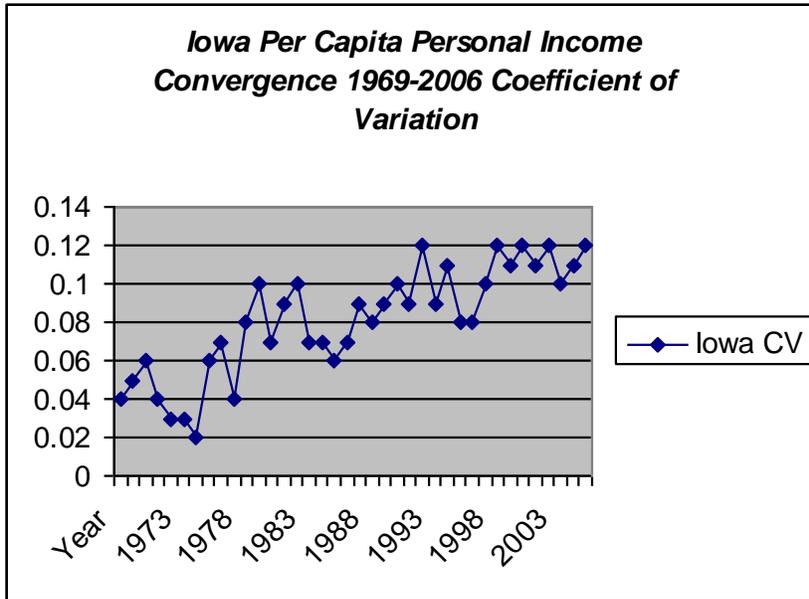
A promising "delivery system" (Drabenstott 2004[87]) for regional economic development currently in place is the *Northern Great Plains Regional Authority* (established through the 2002 Farm bill), which has been authorized to add counties in Missouri in addition to North and South Dakota, Minnesota, Nebraska, and Iowa (National Association of Counties[88]). Conceived similar to the structure of the *Appalachian Regional Commission*, the *NGPRA*, with adequate funding, support and leadership, has the potential to coordinate development among various levels of government and local communities in the Plains states. An integrated, regional approach to funding would eliminate the frustrating annual competition for grants, currently only available to U.S. low population density counties from the *US Department of Agriculture*, the

Economic Development Agency, and the small cities block grant from the Department of *Housing and Urban Development*.
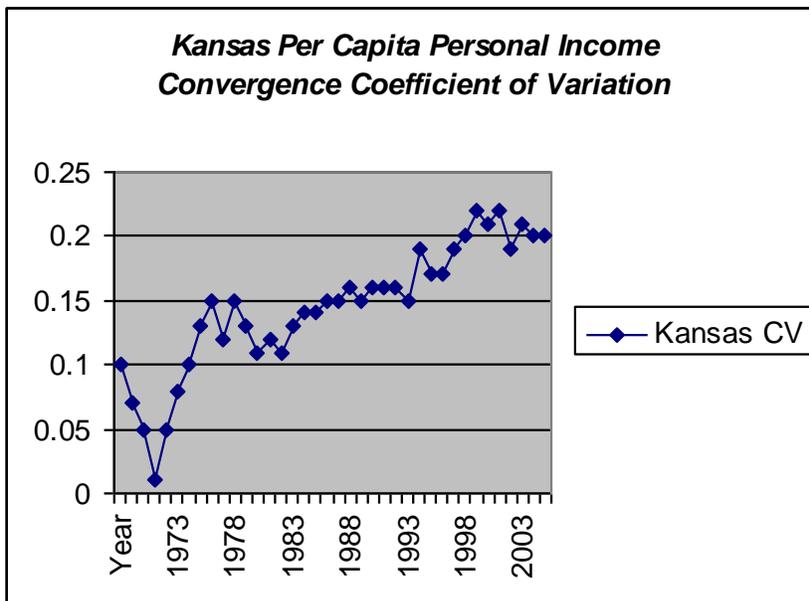
Put simply, the only way Plains states and counties can counter revenue shortfalls and build sustainable communities is through local income and population growth. This will require a retooling of the current business incentive structure and human capital development of the local labor force. On the Federal level, legislation taxing business incentives, and mandatory incentive cost disclosure laws have been suggested to resolve the costly "bidding wars" among states (Progressive Policy Institute 2002:42[89]). As studies of current regional incentive policies have shown, the emphasis on the local level should focus specifically on income growth rather than generic employment growth (Atkinson 2004[90]; Lynch 2004[91]). States thus should tie incentives to firms with wages above average, and require companies that move or fail to meet expected job creation targets to repay incentives. From endogenous growth theory (Romer 1986[92]; Aghion and Howitt 1998[93]), we know the important role of human capital in economic growth. Attraction of high income generating businesses requires significant human capital investments in the rural labor force to eliminate the current disparities in educational attainment. Similarly, it has been suggested to provide tax incentives to individuals, not just business, to locate in rural counties, which will require significant investment to improve local amenities. Again, a regional effort coordinating federal and business human capital investments in the local labor force local is required. We hope that the current financial crisis will stimulate a fruitful rethinking of the structure of our national economy, and a renewed mobilization of the productive potential so richly available in our rural regions. We trust that the current economic crisis will not lead to less of a federal role in our rural regions, but rather to a new and more effective partnership between the federal government, business, and rural stakeholders, towards a coherent national agricultural and industrial strategy congruent with regional development objectives.
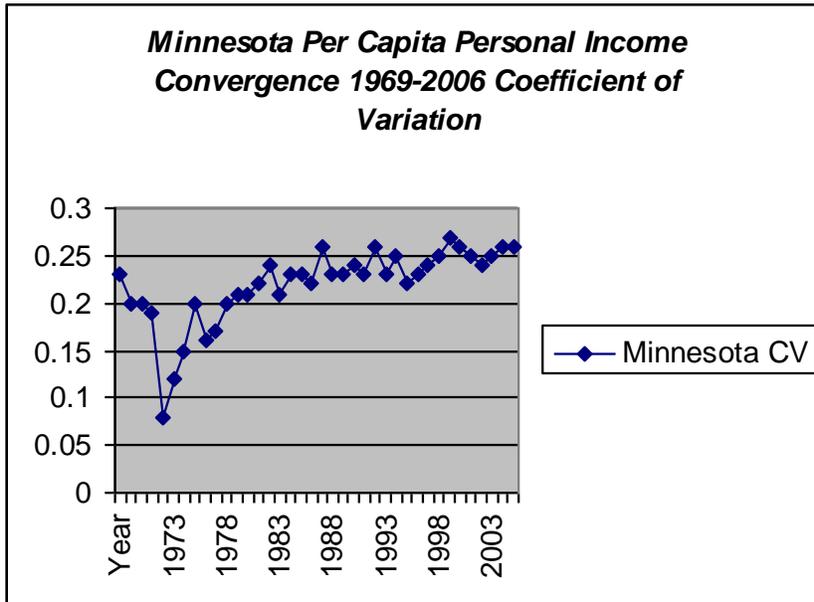
Appendix: [**back to top**]
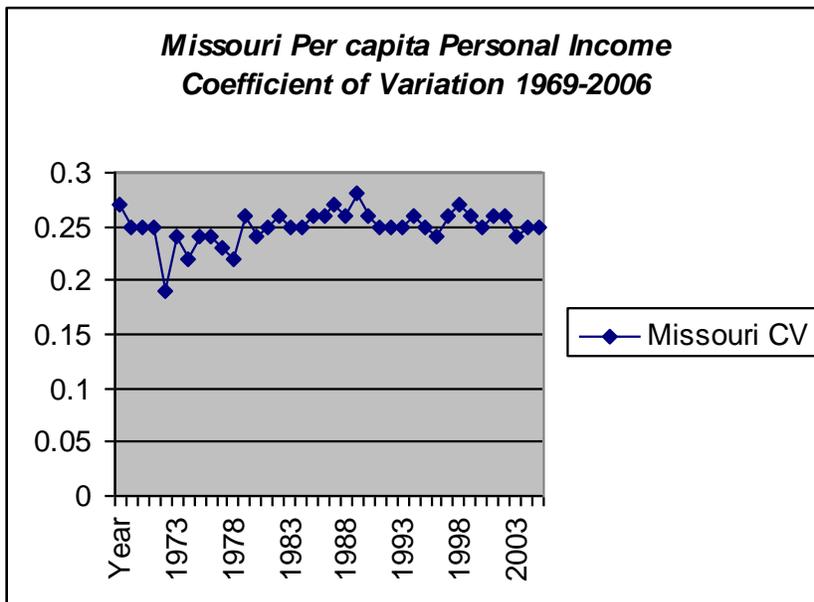
Graph 1 Iowa σ - Convergence

Iowa Per Capita Personal Income Convergence 1969-2006 Coefficient of Variation

Graph 2 Kansas σ - Convergence

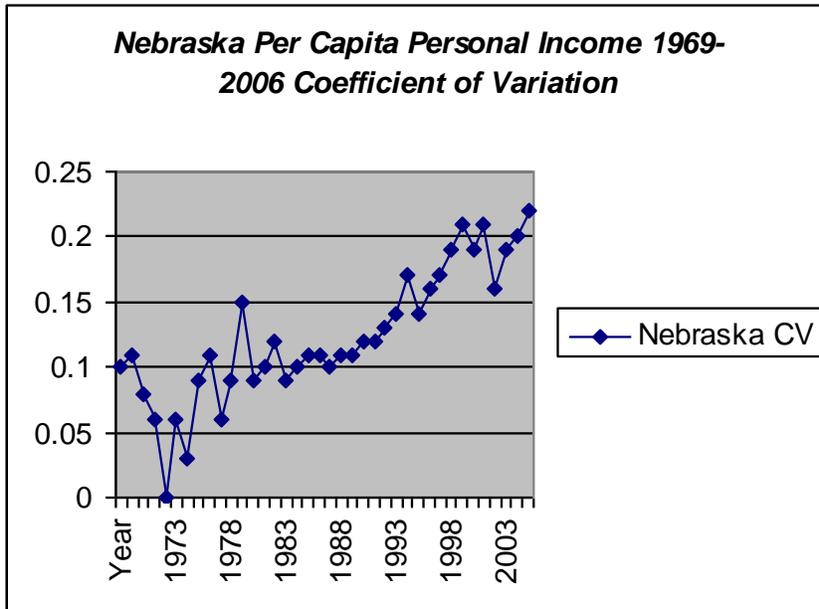**Kansas Per Capita Personal Income Convergence Coefficient of Variation**

Graph 3 Minnesota σ - Convergence

Graph 4 Missouri σ - Convergence

Graph 5 Nebraska σ - Convergence

Nebraska Per Capita Personal Income 1969-2006 Coefficient of Variation

Graph 6 North Dakota σ - Convergence

North Dakota Per Capita Personal Income Convergence 1969-2006 Coefficient of Variation
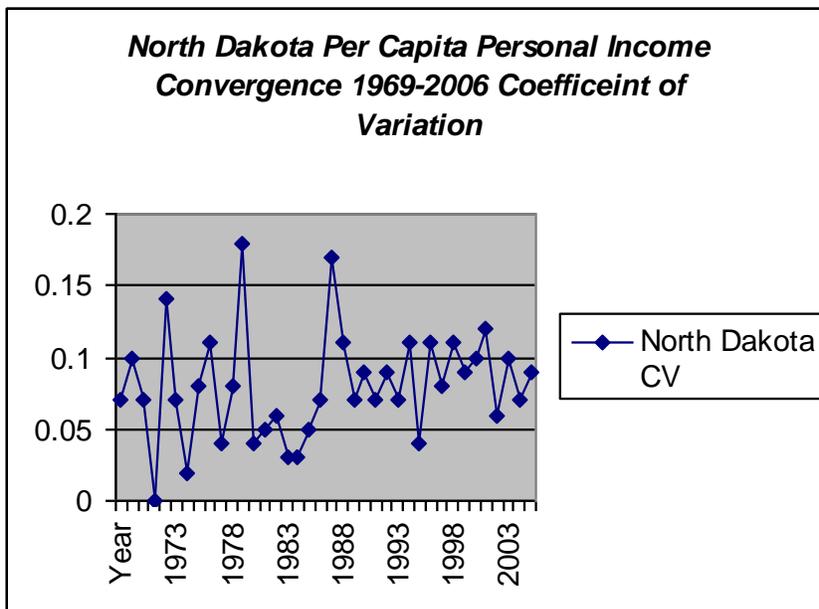
Graph 7   South Dakota σ - Convergence
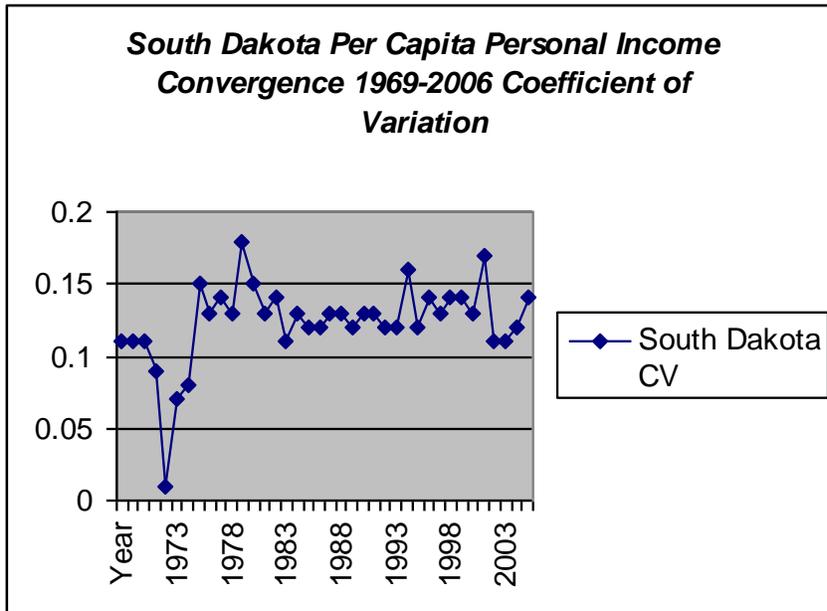
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I was originally born in Berlin, Germany. I have undergraduate degrees in different disciplines such as music and classic languages, but I have been fascinated with economic growth early on. At twelve years of age, I read a classic work about industrialization under Bismarck, and I was hooked! As Robert Lucas once said, once you start thinking about growth, you can't think about anything else. I earned my Ph.D. from the University of Kentucky in 2003. Working at the Appalachian Center at the University of Kentucky was an invaluable experience; it taught me to appreciate the diversity of our rural regions, and the necessity of a region-specific approach for rural development. I am currently an assistant professor at Western Illinois University.

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