NO STATE LEFT BEHIND: CAN STATE POLICY ENHANCE BUSINESS CLIMATE AND STUDENT PERFORMANCE?

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Abstract

This paper will investigate whether the NAEP test explains cross state differences in incomes and growth rates across U.S. states. The entire accountability project in education is likely due to two main objectives: to increase the productivity of our education investments and achieve higher standards of living and second, to ensure that equity considerations are taken into account in terms of education opportunity and the ability to meaningfully take part in the modern economy. The paper will also seek to determine if state policy can be effective in promoting human capital accumulation and economic growth. Why do some states have higher NAEP test scores than others? Based on our study of this question, we will ask if state policy can be effective in promoting human capital accumulation. This is an important question for several reasons. Since human capital is such an important component of economic growth, it is reasonable to assume that states will compete to produce and retain human capital. In fact, many states explicitly compete in this area by advertising their highly skilled workforce capacity to modern corporations in search of new plants and headquarters. Do states that compete in this way have higher test scores? Several new indicators related to state business climate will help us to understand this story.

Introduction

This paper has two objectives. First, we want to explain the factors which have caused some states to grow more quickly than others. As our baseline for research, we will use a widely circulated paper by Bauer et. al. (2006) from the Cleveland Federal Reserve Bank. They have a great story; however, we want to add to this story and in our story, we want to focus on human capital, and more specifically, we want to see if cross-state NAEP test scores serve as a good measure of human capital. Most of the cross-state literature uses high school and college graduation rates as their measure of human capital. The NAEP scores, however, seem intuitively much better as measures of human capital as they actually measure student performance across various subjects. We do in fact find that our NAEP human capital variable better explains cross-state growth performance than the typical high school variables in the literature.

The second objective of this paper is to focus on the determinants of NAEP test scores. Why do some states have higher NAEP scores than others? In particular, we are interested in the hypothesis that good governance and good state policy might be correlated with good NAEP scores. States that care about their long-run growth prospects, should also very much care about developing their human capital stocks. Again, we follow the leaders in this field and then add to their story. Grissmer et. al. (2000) have offered a detailed analysis of the primary variables which determine NAEP test scores across states. We summarize their findings and then proceed with our own regression analysis in order to analyze several policy variables of interest.

MODELS

I. Cross State Growth

We have chosen to use the cross state growth model used by Bauer et. al. as their paper is based on determining the factors that affect cross state growth in the long-run. Since we have chosen to use the model used by Bauer et. al., we will allow them to introduce it.

At any given time t, the income ($Y_{t,s}$) of state s is assumed to follow a Cobb-Douglas function of its capital ($K_{t,s}$) and labor ($L_{t,s}$).

$$Y_{t,s} = K_{t,s}^{\alpha}(L_{t,s}X_{t,s}^{\gamma}A_t)^{1-\alpha} \quad (1)$$

The equation also contains the familiar labor-augmenting rate of productivity growth in the national economy (A_t), which accounts for all increases in labor-augmenting productivity including the average of any state-specific labor-augmenting factors at time t. State-specific labor augmenting factors $X_{t,s}$, allow for relative differences in the state-varying factors. Without the addition of these state-specific factors, this equation is completely standard in the international income convergence literature.[1] Although [many] others have accounted for human capital differences in a similar manner, we can do so with greater precision because we have a longer time period and we can control for more factors. The data available for U.S. states are richer than what is available internationally, allowing us to examine a wider set of factors.[2]

Specifically, we examine a set of factors that might offer a production benefit, such as human capital or public infrastructure, and that are either a characteristic of the resident workforce or that are more available to that workforce than to other workforces. By construction, the aggregate productivity level (At) will capture the average effect over all 48 states of all such production amenities, while the state factors are measured relative to the overall average and thus have a mean of one. This construction makes the estimation of the X variable a between-state estimator of the full effects in cases where the X variable is likely to have general as well as relative effects."[3]

II. Cross State NAEP score determinants

Grissmer et. al. (2000) performed a study on the NAEP from 1990-1996 focusing on cross-state analysis. The model we used to analyze the cross-state NAEP scores and the factors that influence them is roughly the same model as used by Grissmer et. al. (2000), since we are following their work.

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[1] For ease of exposition in the development of our model, we treat X as a single factor. It is straightforward, but more tedious, to reformulate our exposition by modeling X as a log-linear function of multiple factors, Z.

[2] More factors could be considered with a shorter period, but we believe that the longer period is more desirable because it provides more reliable estimates of the effects. Higgins, Levy, and Young (2006) follow this former approach using many factors in a shorter panel of U.S. county-level data.

[3] Bauer et. al. (2006)

We made a few changes to the Grissmer et. al. (2000) model. One change being that we observed 48 states whereas they observed only 44 states. Another difference is that Grissmer et. al. (2000) used a panel data set where as we focused on one particular year (2005). We did, however, follow Grissmer et. al. (2000) and others in including the main variables that have been found to influence test scores on the NAEP. Basically we ran an ordinary least squares (OLS) regression as Grissmer et. al. (2000) and others have done on all of our state policy variables that could possibly have an effect on the NAEP score of a state.[4]

We extended the Grissmer model by including several business policy variables as defined by Forbes.com. The variables were economic climate, quality of life, business costs, growth prospects, labor, and regulatory environment.

III. Results – Determinants of Cross State Growth

In our study, we examined three periods in U.S. history: 1934-2005 (as per the Bauer et. al. paper), 1980-2005, and 1995-2005. After controlling for the respective income levels in each period and for the other variables used by Bauer et. al. (2006), the NAEP scores proved to be a better measure of human capital in the third time period rather than the first two. This result is expected as the NAEP was not introduced until 1969, thirty-five years after the start of the first period studied. Since the NAEP began administering the test on the state and national level in 1990, the NAEP tends to be a more accurate measure of human capital in the last period.

The percent of the population with at least a bachelor's degree (college variable) is one of the human capital variables used by Bauer et. al. and this variable tended to explain most of the convergence in incomes for the 1934-2005 period.

We also checked to see if physical capital had any effect on the convergence of income over the three specified periods, as this variable was surprisingly absent from the Bauer framework. However, we found that neither of our two measures of capital were statistically significant.

After running regressions on the three growth rate periods, we concluded that the college variable (in Bauer) was the most important determinant of real growth rates in the first two periods as it consistently demonstrated more explanatory power in the regressions than the NAEP variable. The NAEP was still significant in the first two periods, just not nearly as much as the college variable. The NAEP was the most important determinant of real growth rates in the third period as it consistently had more explanatory power in the regressions than the college variable.

The first two periods demonstrate that the percent population with a bachelor's degree was the most important determinant of real growth rates. Although the college variable was the most important determinant, the NAEP was still significant when regressed in the first two periods. The third period shows that in more recent years, the NAEP has become a more important determinant of real growth rates than the percent population with a bachelor's degree. The NAEP is the most significant variable even with the college variable and the high school variable added. These results can be seen below in tables 1-3.

We also checked to see if the college variable was complementary with the NAEP (k-12 variable) by running interaction terms in our regressions, however they were not statistically significant in any time period.

[4] For details on the specific model we followed, see Grissmer et. al. (2000)

The results of our regressions can be seen below in Tables 1-5. For ease in understanding the regression results, variable names can be found at the end of the paper in Table 6. Coefficients that are statistically significant at the 5% level are in bold.

Table 1. Real Growth Rate 1934-2005

Table 1. Real Growth Rate 1934-2005	Regression 1 (Fed Baseline)	Regression 2	Regression 3	Regression 4	Regression 5
Constant	3.10 **(8.17)**	1.696 **(2.06)**	1.367 (1.54)	2.149 **(2.62)**	1.720 **(2.03)**
PI34Fed	-0.0002 **(-12.75)**	-0.0002 **(-13.12)**	-0.0002 **(-11.75)**	-0.0002 **(-12.64)**	-0.0002 **(-11.72)**
Pat99Fed	-0.122 (-1.00)	-0.166 (-1.38)	-0.085 (-0.66)	-0.152 (-1.22)	-0.083 (-0.65)
HS99Fed	-0.004 (-0.92)	-0.012 **(-1.97)**	-0.008 (-1.24)		
Coll99Fed	0.015 **(3.04)**	0.014 **(2.94)**		0.012 **(2.48)**	
Tax99Fed	-1.845 (-1.29)	-1.440 (-1.03)	-1.944 (-1.28)	-1.585 (-1.10)	-1.994 (-1.31)
Fail99Fed	-3.450 (-0.55)	0.565 (0.09)	4.370 (0.64)	-2.871 (-0.45)	1.555 (0.24)
NAEP8th05		0.007 **(1.90)**	0.009 **(2.01)**	0.002 (0.78)	0.005 (1.59)
Adjusted R^2	0.8403	0.8499	0.8219	0.8394	0.8196

Table 2. Real Growth Rate 1980-2005

Table 2. Real Growth Rate 1980-2005	Regression 1	Regression 2	Regression 3	Regression 4	Regression 5
Constant	1.493 **(6.62)**	0.659 (1.37)	0.390 (0.71)	0.878 **(1.88)**	.0531 (1.03)
PCPI80	-0.00003 **(-2.56)**	-0.00003 **(-2.64)**	-0.00002 (-1.38)	-0.00003 **(-2.76)**	-0.00002 (-1.54)
Pat99Fed	0.039 (0.60)	0.014 (0.22)	0.086 (1.21)	0.024 (0.37)	0.089 (1.26)
HS99Fed	-0.001 (-0.39)	-0.005 (-1.58)	-0.003 (-0.80)		
Coll99Fed	0.011 **(3.82)**	0.010 **(3.76)**		0.0097 **(3.47)**	
Tax99Fed	-1.195 (-1.41)	-0.956 (-1.15)	-1.159 (-1.22)	-1.052 (-1.25)	-1.207 (-1.27)
Fail99Fed	-9.763 **(-2.59)**	-7.382 **(-1.92)**	-5.703 (-1.30)	-8.841 **(-2.33)**	-6.637 (-1.58)
NAEP8th05		0.004 **(1.95)**	0.005 **(1.99)**	0.002 (1.18)	0.004 **(1.99)**
Adjusted R^2	0.3134	0.3572	0.1515	0.3335	0.1588

Table 3. Real Growth Rate 1995-2005

Table 3. Real Growth Rate 1995-2005	Regression 1	Regression 2	Regression 3	Regression 4	Regression 5
Constant	0.109 (0.66)	-0.589 **(-1.83)**	-0.700 **(-2.14)**	-0.587 **(-1.91)**	-0.748 **(-2.43)**
PCPI95	-4.68e-06 (-1.55)	-5.09e-06 **(-1.78)**	-2.34e-06 (-0.91)	-5.08e-06 **(-1.82)**	-2.33e-06 (-0.92)
Pat99Fed	-0.031 (-0.67)	-0.050 (-1.13)	-0.035 (-0.78)	-0.050 (-1.15)	-0.035 (-0.79)
HS99Fed	0.0037 **(2.01)**	-0.0001 (-0.02)	0.002 (0.46)		
Coll99Fed	0.0042 **(1.95)**	0.0040 **(1.94)**		0.0004 **(2.03)**	
Tax99Fed	-0.417 (-0.70)	-0.235 (-0.42)	-0.219 (-0.38)	-0.236 (-0.42)	-0.212 (-0.37)
Fail99Fed	0.574 (0.23)	2.551 (1.02)	3.652 (1.45)	2.535 (1.06)	4.039 **(1.71)**
NAEP8th05		0.004 **(2.47)**	0.0039 **(2.49)**	0.0037 **(3.30)**	0.0044 **(3.95)**
Adjusted R^2	0.1700	0.2619	0.2120	0.2799	0.2267

Table 4. Per Capita Personal Income 2005

Table 4. Per Capita Personal Income 2005	Regression 1	Regression 2	Regression 3	Regression 4	Regression 5
Constant	20844.09 **(1.86)**	-9309.18 (-0.37)	-23027.82 (-0.78)	-3850.8 (-0.16)	-24661.44 (-0.89)
Pat99Fed	5965.24 **(1.86)**	5058.82 (1.56)	10902.16 **(3.06)**	5260.86 (1.63)	10909.89 **(3.10)**
HS99Fed	19.756 (0.14)	-140.53 (-0.78)	36.366 (0.17)		
Coll99Fed	628.02 **(4.51)**	610.75 **(4.41)**		586.67 **(4.37)**	
Tax99Fed	-86002 **(-2.04)**	-77330.52 **(-1.83)**	-103130.9 **(-2.05)**	-79108.68 **(-1.88)**	-102923.7 **(-2.07)**
Fail99Fed	-137777.6 (-0.74)	-51583.63 (-0.27)	121447.8 (0.53)	-92887.18 (-0.50)	134552.6 (0.63)
NAEP8th05		160.21 (1.35)	208.35 (1.47)	99.373 (1.12)	225.43 **(2.25)**
Adjusted R^2	0.5251	0.5343	0.3297	0.5386	0.3448

IV. Results – Determinants of NAEP

NAEP is important because it explains both income growth rates and levels, so a better understanding of what causes higher NAEP scores may also help state policy makers. After controlling for all of the standard variables which can arguably determine student performance, only a subset were robust across our regressions. The four main variables that influence the combined math and reading NAEP test scores from 2005 are: per capita personal income, annual unemployment rates, high school graduation rates, and the economic climate (as measured by Forbes) of a state. The latter two can potentially be affected by state policy. The reason we conclude that these four policy variables are the most important is that they were all statistically significant when regressed with almost any other variable(s). All four had the expected sign when regressed without any other variables and were mostly significant. When just the four variables were run on the combined math and reading NAEP test from 2005, they were all significant at the 3.1% level or lower.

Despite what some researchers have found, we were unable to find any relationship between state and local funding per pupil and the combined 2005 NAEP test scores. State and local funding per pupil had a t-statistic of 0.63 and would have had very little effect as the coefficient was 0.0003. We also checked state funding per pupil and it also had no significant relationship to the combined 2005 NAEP test scores. The state funding per pupil variable had an even worse t-statistic of 0.08 and would have had even less of an effect as the coefficient was 0.00004. We were also unable to find any significant relationship between the average class size (student-to-teacher ratio) and the combined 2005 NAEP test scores. Even though we had the right sign (negative), the t-statistic was a mere -0.70 with a coefficient of -0.187.
Although not presented in Table 5 below, we also checked the real growth rates from 1980-2005 and from 1995-2005 and their effect on combined 2005 NAEP test scores and were unable to find a statistically significant relationship. In addition to real growth rates, we examined expenditure variables such as total federal expenditures per capita, state expenditures per capita, local expenditures per capita and combinations of the three and found no statistically significant relationship with the combined 2005 NAEP test scores.

Another potentially interesting avenue for research in this area is determining whether state business climate might have an effect on NAEP. If business is interested in improving work force quality, could it be the case that they might indirectly be able to positively influence student performance by using their influence in the policy arena? The potential variables we tested were: economic climate, quality of life, business costs, growth prospects, labor, and regulatory environment.

The only Forbes variable to show up statistically significant consistently was economic climate. The t-statistics for economic climate ranged from 1.22 to 2.26. The only other two Forbes variables to show up significant in any of the regressions were labor and quality of life. Labor appears to be mildly correlated with per capita personal income because per capita personal income loses its significant when the labor variable is added. The correlation coefficient of the two variables is -0.5405 suggesting a mild correlation. Although not shown below, the average of all six Forbes variables almost had a statistically significant relationship with NAEP test scores (t-statistic of -1.47). The only problem is that it had a negative sign rather than the expected positive sign. All of the results can be found at the end of this section in Table 5.

Our results conclude that over time, the NAEP test has become a more important determinant of real growth rates than the percent population with a bachelor's degree. Despite what previous research has shown, we were unable to find a statistical relationship between average class size and NAEP and between state and local funding per pupil and NAEP. We were able to show, however, that the four main determinants of a state's score on the NAEP test are per capita personal income, annual unemployment rates, high school graduation rates, and economic climate. This last result answers one of our original questions of how state policy affects a state's NAEP score. Although two of the four explanatory variables cannot be controlled by state policy, two of them can: high school graduation rates and economic climate. Albeit states don't have a huge amount of control over high school graduation rates, they do have some control over the teachers, schools, supplies, etc. which would ultimately affect graduation rates. The economic climate of a state is very much controlled by state policy as it includes the presence of big companies, income, and gross state product growth among other things.

Table 5. 8th Grade NAEP

Table 5. 8th Grade NAEP	Regression 1	Regression 2	Regression 3	Regression 4	Regression 5	Regression 6	Regression 7	Regression 8	Regression 9	Regression 10	Regression 11
PCPI05	0.0003 **(2.19)**	0.0004 **(2.37)**	0.0003 **(1.92)**	0.0002 (0.97)	0.0003 **(2.10)**	0.0004 **(2.50)**	0.0002 (1.04)	0.0003 **(2.17)**	0.0003 **(2.23)**	0.0002 **(1.51)**	0.0003 **(2.18)**
AnnUn	-1.897 **(-1.92)**	-1.719 **(-1.71)**	-1.939 **(-1.92)**	-1.941 **(-1.94)**	-1.891 **(-1.88)**	-1.479 **(-1.42)**	-1.673 **(-1.71)**	-1.874 **(-1.88)**	-1.881 **(-1.89)**	-1.322 (-1.28)	-1.731 **(-1.69)**
StLFundPP				0.0003 (0.63)							
StFundPP					0.00004 (0.08)						
BusCost						-0.064 (-1.21)					
EconClim	0.124 **(2.06)**	0.119 **(1.97)**	0.126 **(2.06)**	0.117 **(1.90)**	0.123 **(2.01)**	0.118 **(1.96)**	0.134 **(2.26)**	0.116 **(1.86)**	0.113 **(1.77)**	0.080 (1.22)	0.114 **(1.85)**
GrowPros									0.028 (0.56)		
QualLife										-0.123 **(-1.59)**	
Labor							-0.086 **(-1.67)**				
RegEnvi								-0.025 (-0.57)			
GarofaloK			2.55 (0.31)								
K1996		-0.0007 (-0.98)									
HSGradRate04	0.490 **(5.00)**	0.493 **(5.03)**	0.496 **(4.91)**	0.473 **(4.63)**	0.490 **(4.94)**	0.499 **(5.11)**	0.505 **(5.24)**	0.497 **(4.99)**	0.469 **(4.44)**	0.355 **(2.77)**	0.478 **(4.78)**
STRatioDoE											-0.187 (-0.70)
Adjusted R^2	0.6030	0.6025	0.5940	0.5970	0.5931	0.6074	0.6195	0.5963	0.5962	0.6171	0.5979

Conclusion

"Our results are easily summarized: A state's stock of knowledge is the main factor explaining its relative level of per capita personal income. If state policymakers want to improve their state's economic performance, then they should concentrate on effective ways of boosting their stock of knowledge."[5]

Just as Bauer et. al. found that "a state's stock of knowledge is the main factor explaining its relative level of per capita personal income," we found that a better measure of a state's stock of knowledge, at least in the past 15 years or so, is the NAEP test rather than high school or college graduation rates.

Our analysis of Cross-State NAEP test scores in relation to variables that can be controlled by state policy has led us to conclude that some variables that influence NAEP test scores can be controlled by state policy. Although the most important variables in determining a state's score on the NAEP are demographic variables that states cannot control, states do have control over some of the variables that influence NAEP test scores.

Between both of our studies, we conclude that states do have some control (although relatively small) over what their score will be on the NAEP test. Because the NAEP test is a better measure of human capital than high school and college graduation rates within the past 15 years or so, states should be able to raise their per capita personal incomes by investing in education, specifically those areas that are tested by the NAEP. Since there is probably two-way causation between per capita personal incomes and educational attainment, states that invest in education will see gains in per capita personal incomes, which will in turn lead to gains in education.

[5] Bauer et. al. (2006)

Table 6. Variable Names, Definitions, and Sources

Definition	STATA Symbol	Source
Population (Estimated, 2005)	Pop05JLARC	U.S. Census Bureau annual population estimates.
Percent Change in Population (Estimated, 2000-2005)	PerPopChg	U.S. Census Bureau annual population estimates.
Percent Change in Foreign-Born Population (Estimated, 2000-2005)	Foreign	U.S. Census Bureau annual population estimates and American Community Survey.
Per Capita Personal Income (2005)	PCPI05	U.S. Bureau of Economic Analysis regional economic information system (Sept. 2006).
Annual Unemployment Rate (2005)	AnnUn	U.S. Department of Labor Bureau of Labor Statistics.
Per Capita State and Local Revenue (FY 2004)	PCSLRev	U.S. Census Bureau data on state and local government finances (2003-2004) and population.
State and Local Revenue as a Percent of Personal Income (FY 2004)	SLRPerPI	U.S. Census Bureau data on state and local government finances (2003-2004); Bureau of Economic Analysis.
Per Capita State Revenue (FY 2004)	PCStRev	U.S. Census Bureau data on state and local government finances (2003-2004) and population.
Per Capita Local Revenue (FY 2004)	PCLocRev	U.S. Census Bureau data on state and local government finances (2003-2004) and population.
Per Capita State and Local Taxes (FY 2004)	PCSLTax	U.S. Census Bureau data on state and local government finances (2003-2004) and population.
State and Local Taxes as a Percent of Personal Income (FY 2004)	SLTPerPI	U.S. Census Bureau data on state and local government finances (2003-2004); Bureau of Economic Analysis.
Per Capita Local Taxes (FY 2004)	PCLocTax	U.S. Census Bureau data on state and local government finances (2003-2004) and population.
Per Capita State Taxes (FY 2005)	PCStTax	U.S. Census Bureau data on state tax collections (2005).
Per Capita Federal Grants (FFY 2004)	PCFedGr	U.S. Census Bureau Consolidated Federal Funds Report (2005) and population data.
Federal Expenditures Per Capita (FFY 2004)	FedExpPC	JLARC staff analysis of U.S. Census Bureau Consolidated Federal Funds Report data (issued December 2005) and Population data.
Per Capita State Expenditures (FY 2004)	PCStExp	U.S. Census Bureau data on state and local government finances (2004) and population.
Per Capita General Fund Expenditures (FY 2005)	PCGFExp	National Association of State Budget Officers' 2005 State Expenditure Report; U.S. Census Bureau population data.
State General Fund Expenditures as a Percent of Personal Income (FY 2005)	SGFEPtPI	National Association of State Budget Officers' 2005 State Expenditure Report; U.S. Bureau of Economic Analysis.
Per Capita State and Local Debt Outstanding (FY 2004)	Debt	U.S. Census Bureau data on state and local government finances (2004) and population.

Bond Ratings (October 2006)	SandP	Virginia Department of the Treasury data (October 2006).
	Moody	
	Fitch	
Per Capita Total Medicaid Expenditures (FY 2004)	Medicaid	U.S. Department of Health & Human Services Centers for Medicare and Medicaid Services Quarterly expense report 2004-1997.
Percent of Population Under Age 65 With Health Insurance (2005)	HealthIn	U.S. Census Bureau data on health insurance (2006 Annual Social and Economic Supplement) and population.
State and Local Funding Per Pupil, K-12 (2003-2004)	StLFundPP	U.S. Census Bureau data on local government finances for public education (2004).
State Funding Per Pupil (2003-2004)	StFundPP	U.S. Census Bureau data on local government finances for public education (2004).
Average Salary of Public Schoolteachers (2003-2004)	SalPTch	National Education Association Rankings of the States 2005 and Estimates of the States (November 2006).
Average Annual In-State Tuition and Fees at Public 4-Year Institutions (2005-2006)	AInStT	College Board data in Trends in College Pricing (2006).
State Government Full-Time Equivalent Employment Per 100 Persons (2005)	SGFTEmp	U.S. Census Bureau data on state government employment and payroll (March 2005).
Business Costs - Index based on cost of labor, energy and taxes.	BusCost	Moody's Economy.com; Pollina Corporate Real Estate; Pacific Research Institute; CFED; Moody's.
Labor -Measures educational attainment, net migration and projected population growth.	Labor	
Regulatory Environment - Measures regulatory and tort climate, incentives, transportation and bond ratings.	RegEnvi	
Economic Climate - Reflects job, income, and gross state product growth as well as unemployment and presence of big companies.	EconClim	
Growth Prospects - Reflects projected job, income and gross state product growth as well as business openings/closings and venture capital investments.	GrowPros	
Quality Of Life - Index of schools, health, crime, cost of living, and poverty rates.	QualLife	
NAEP 4th Grade Math 2005	MTH4th05	National Center for Education Statistics
NAEP 4th Grade Reading 2005	RDG4th05	
NAEP 4th Grade Science 2005	SCI4th05	
NAEP 8th Grade Math 2005	MTH8th05	
NAEP 8th Grade Reading 2005	RDG8th05	
NAEP 8th Grade Science 2005	SCI8th05	
Student-to-Teacher Ratio	STRatioDoE	U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 2004–05, Version 1d.

High School Graduation Rate	HSGradRate04	U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1999–2000, Version 1c; 2000–01, Version 1b; 2001–02, Version 1b; and 2004–05, Version 1d. GED data were acquired from the General Educational Development Testing Service.
NAEP 4th Grade Math 2005 School Lunch Program	SL4Mth05	National Center for Education Statistics
NAEP 4th Grade Reading 2005 School Lunch Program	SL4Rdg05	
Physical Capital 1996	GarofaloK	"Regional Convergence: Evidence from a New State-by-State Capital Stock Series"
Physical Capital Growth Rate 1947-1996	KGR4796	
Physical Capital 1996	K1996	"Whether State Fiscal Policy Affects State Economic Growth"
Best State to Conduct Business (Average of 6 Forbes' variables)	Forbes	Moody's Economy.com; Pollina Corporate Real Estate; Pacific Research Institute; CFED; Moody's.
Per Capita Personal Income 1980	PCPI80	http://www.infoplease.com
Per Capita Personal Income Growth Rate 1980-2005	PIGR8005	calculated
Personal Income (real per capita)	PI05Fed	Note: Same as JLARC variable
Patents (per capita)	Pat99Fed	"State growth empirics: the long-run determinants of state income growth"
High School+ (percent)	HS99Fed	
College+ (percent)	Coll99Fed	
Tax Rate (proportion)	Tax99Fed	
Business Failure Rate (proportion)	Fail99Fed	
Real Growth Rate	RGR3405	

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