Sam Houston State University
Department of Economics and International Business
Working Paper Series

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SHSU Economics & Intl. Business Working Paper No. SHSU_ECO_WP05-06
August 2005

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The "Resource Curse" and Regional U.S. Development

by

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Abstract: The "Resource Curse" is a stylized fact that has been observed consistently in a number of development studies: countries that are relatively well-endowed with natural resources tend to grow more slowly than resource-poor economies. This paper documents evidence that the Resource Curse extends to the individual states of the U.S. Using a variety of specifications, regression of state GSP growth on resource abundance consistently shows a negative and significant relationship. There is strong evidence that resource-based economies are more volatile economies, and volatile economies may be less desirable to investors.

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I. Introduction

The "Resource Curse" is a stylized fact that has been observed consistently in a number of development studies: countries that are relatively well-endowed with natural resources tend to grow more slowly than resource-poor economies. The curse is something of a paradox, given the usual presumption that resource abundance serves as a potential source of income that can be converted to both physical and intellectual capital to support future growth. Rents from the exports of raw materials, for example, could be used to free children from agricultural work and support their education, thereby increasing the nation's potential future productivity.

While some nations have undoubtedly used resource endowments in just this fashion (coal and iron-ore endowments in northern Europe helped set off the industrial revolution in the early 19th century; Latin America progressed markedly after the resource booms there later in the same century), the recent record is one of under-performance by resource-rich countries. Casual observation confirms that the Oil States of the Middle East and many exceptionally resource-abundant countries of Sub-Saharan Africa and Latin America have been unable to maintain sustained rapid economic growth, while resource-poor nations like Japan, Korea, and Taiwan have compiled enviable records of development that have brought them to industrial-country status in two generations or less. More comprehensive empirical tests by Sachs and Warner (2001), Gylfason (2001), and Papyrakis and Gerlagh (2004) confirm the resource curse hypothesis using a variety of specifications and cross-country samples.

Several theoretical rationales have been advanced to explain the poor development performance of resource-abundant countries. One is "crowding out": the exploitation of natural resources crowds out other activities, such as manufacturing, that may have smaller short-run returns, but may be more productive in the long-run. Crowding out occurs directly, through the transfer of labor and other inputs to the resource sector, and indirectly, by driving up prices of non-traded goods, thereby making the manufactured sector less competitive internationally. Sachs and Warner (2001) confirm that non-traded goods prices are higher in resource-abundant economies.

A resource boom may also cause the exchange rate to appreciate (the so-called "Dutch Disease," whereby energy discoveries in the Netherlands caused the phenomenon described), inducing a switch to foreign made products and further eroding domestic manufactures. Because it is usually assumed that manufacturing generates positive externalities through technological spillovers or increasing returns to scale, diminishment of the manufacturing sector leads to lower long-run economic growth.

A refinement of the crowding-out hypothesis is the de-emphasis of education in resource-rich economies. Gylfason (2001) notes that resource-based industries are less high-skill based than manufacturing and service industries, and that skills that are acquired may be less transferable to downstream sectors, which would explain the reduced emphasis on general education in resource-rich countries. Empirical evidence by Gylfason (2001) demonstrates a strong negative relationship between resource abundance and enrollment in at all levels of education in a cross-section of countries. For example, OPEC countries send only 57 percent of children to secondary schools versus 64 percent for the world as a whole, and total educational expenditures as a percent of GDP are also lower than the world average.

Moreover, as pointed out by Gylfason and by Sachs and Warner (2001), the de-emphasis of education in resource-rich economies may be a symptom of the broader problem of poor governance in these economies, a consequence of rent-seeking behaviors and concentrated ownership of productive facilities. The latter serves to concentrate also political power and thereby promotes policies that favor the few (protectionism, inequitable taxation) at the expense of policies that favor the many (free trade, education, transparency), while rent-seeking behavior operates on the assumption that resource rents are easily appropriable, diverting labor and effort away from productive activity and encouraging bribes and public favors.

Longer-term, consistently poor choices may lead to dysfunctional government institutions, such as a breakdown in the rule of law or a lack of independence for the monetary authority. Bulte, Damania, and Deacon [BDD] (2003), building on arguments advanced by Auty (2001), claim that it is not the natural resources, *per se*, that cause sub-par growth, but the indirect effects of resource abundance acting through the channel of institutional quality that lead to poor economic outcomes.

BDD note that there are, in fact, many examples of resource abundant countries that have managed development quite well, including Norway (Oil), Botswana (Diamonds), and Malaysia (Timber, Mining), so that natural resources are not necessarily a drag on performance. However, some resources, especially so-called "point" resources, like oil, appear to be especially susceptible to control by narrow interests and therefore vulnerable to poor institutions and poor quality.

BDD expand their analyses to other measures of development such as poverty, life expectancy, and percent of children undernourished. The idea here is that per capita income may be too narrow a measure of development, and may mask significant inequities across the population, especially if income from resource development is highly concentrated. BDD find that resource abundance does not have a *direct* effect on development indicators (that is, holding income and institutional quality intact), but that abundance does have an *indirect* effect by contributing to the degradation of institutional quality, notably through greater levels of corruption.

The emerging consensus in the development literature appears to conclude that the resource curse is a robust empirical regularity, albeit with several, not necessarily exclusive or exhaustive, theoretical rationale. Current refinements indicate that point resources (like mining, oil and gas extraction) are more detrimental to growth than diffuse resources (like agriculture or aquaculture), perhaps because point resources are more easily controlled by small groups in society, resulting in policies and institutions designed to serve narrow interests.

One danger in any empirical study that purports to demonstrate that variable "X" causes variable "Y" is that there exists some variable "Z" that causes both "X" and "Y", but is itself unmeasured. Thus in the present case, there may be heterogeneous factors, such as government or social institutions, that contribute to both poor development and resource exploitation, especially in the broad cross-section of countries that normally comprise the data set for growth regressions.[1]

Although researchers have been increasingly ingenious in deriving new instruments to

[1] In the U.S., for example, one could point to the institution of slavery in the antebellum South, which perpetuated an agrarian economic base, low education levels (for blacks and poor whites), and very little industrial development relative to the North.

control for unmeasured heterogeneity across countries[2], there is still some uncertainty as to whether the observed relationship is real or spurious. Though this issue can never be settled definitively, one approach to resolving it is to subject the resource curse hypothesis to test using a more homogeneous data set, namely the states of the U.S. The states differ in relative resource abundance, with the states of the West and Southwest being especially resource rich[3]. The U.S. states have the obvious advantage of having very similar government institutions, an overlying constitution and federal law, free movement across borders, and so on.

The objective of this study is to quantify the relationship between resource abundance and various indicators of state economic development. Beyond testing the resource curse itself, it may be of interest to explore the relationship between resource abundance and state development for its own sake. There have been many studies comparing and contrasting paths of state development, dealing with such questions as regional convergence of incomes (Barro and Sala-I-Martin, 1991); precedence of supply or demand factors as drivers of state economic growth (Freeman, 2001; Mathur and Song, 1995); and coincidence of regional economic cycles (Blanchard and Katz, 1992), to give a very partial list. None of these differentiate the role of natural resources in regional development, although many use some indicator of resource markets, such as oil prices, as a control variable.[4] This paper, by contrast, examines directly the

[2]Including legal traditions, diversity of languages, geographic characteristics, and many others; see, for example, Acemoglu, et al. (2001).

[3]Here "natural resources" or simply "resources" are defined to be agriculture and mining, which includes oil and gas extraction.

[4]There are papers, for example Iledare and Olatubi (2004) that examine the effects of fluctuations in resource prices on state economies, but these are primarily concerned with cyclical events.

effect of resource abundance as a differentiating factor in the economic development of individual states.

Figure 1 displays the scatterplot of the growth of Gross State Product (GSP) per capita on the vertical axis and the percent of GSP originating in agriculture and mining, the two sectors usually identified with natural resources. The relationship is statistically significant (t = 5.02), and robust to re-estimation using different time periods (not shown). The relationship is apparently not due to regression to the mean: a similar chart of initial GSP/capita and share of GSP originating in natural resources has *r-square* = 0.06, t = 1.78, but only t = 0.045 if one outlier (Wyoming) is excluded. Therefore there is little evidence that resource-rich states start out ahead and resource-poor states are simply catching up through convergence.

[Figure 1 about here]

We expand on the evidence of Figure 1 by using now standard empirical tests of conditional convergence as introduced by Barro and Sala-I-Martin (1992) and Mankiw, Romer and Weil (1992) as extended for panel data by Islam (1995) to show that states with larger employment shares in the primary sector – agriculture and mining – have lower subsequent growth rates when controlling for initial conditions. These results are robust to a variety of specifications, even when the sample is truncated using instrumental variables to control for virtually all possibility of endogeneity bias.

These results have the potential to add to our understanding of regional development within the U.S., as well as providing perhaps a cautionary note regarding over-emphasizing natural resource development at the expense of other sectors that make more permanent and positive contributions to state welfare.

The paper proceeds as follows. The following section presents data and methodology. Section III presents the results of the empirical tests, Section IV discusses possible connections between resource abundance and other factors thought to contribute to growth prospects, and Section V concludes.

II. Data and Methodology

The essential idea of conditional convergence is that given diminishing returns, economies tend to converge to equal levels of development (an especially attractive assumption for economies as closely integrated as the U.S. States), so that growth rates are negatively related to initial levels of development. The rate of convergence can also be influenced by other factors, however, which is where the term "conditional" convergence enters. A typical specification would be:

$$\nabla y_{i,T} = \gamma y_{i,0} + \delta n_{i,0} + X_{i,0}\beta + \varepsilon_i \qquad \textbf{(1)}$$

where $y_{i,t}$ is the logarithm of Gross State Product (GSP) per capita in state *i* at time *t*, ∇ is an averaging operator taking the change in log GSP divided by the number of years *T*, $n_{i,t}$ is a measure of natural resource abundance, and $X_{i,t}$ is a vector of control variables. Convergence is implied by $\gamma < 0$; the resource curse is implied by $\delta < 0$.

An extension to equation (1) is the pooled cross-section specification:

$$\nabla y_{i,t} = \gamma y_{i,t-1} + \delta n_{i,t-1} + X_{i,t-1} + \mu_i + \tau_t + \nu_{i,t} \quad \textbf{(2)}$$

where the variables are now measured at intervals, in the present case of five years, allowing the inclusion of state fixed effects μ_i to control for unobserved heterogeneity across states that may contribute to growth, such as political differences, local amenities, size and so on; and period fixed effects τ_t to control for unobserved national factors that may change over time, such as macroeconomic shocks. We use five year intervals both for data availability considerations and to mitigate potential problems with serial correlation and endogeneity.

Further, because residuals in pooled estimates with fixed effects and lagged dependent variables are known to be correlated with the fixed effects, we use the instrumental variable method of Arellano and Bond (1991) [AB] in a separate estimate. AB's technique is to difference the variables in order to remove state fixed effects, then use all lagged levels of all regressors to as instrumental variables. Because we are already using non-overlapping periods in measuring the dependent variable and the regressors, the AB technique should obviate any remaining endogeneity bias.

The present sample includes data from 1977 through 2002 or the fifty states of the U.S. The dependent variable, as noted above, is the growth rate of GSP per capita. Other measures of economic welfare could have been chosen, but GSP corresponds to the GDP measures used in cross-national studies. Initial conditions include education levels, as represented by the percent of the state population with at least a bachelor's degree, the logarithm of initial income, labor force and investment growth, and state taxation rates. To mitigate problems of common factors affecting growth and initial conditions in the pooled specifications, at time $T = \tau$ the growth rate is measured over the period $[\tau, \tau + 5]$; initial conditions are measured over $[\tau - 5, \tau]$. In this way, present conditions affect future growth.

[Table 1]

Table 1 provides summary statistics for the variables used in the analysis. Resource abundance is calculated as the share of total employment accounted for by agriculture and mining. Employment is used to give the most extensive possible measure of the contribution of resources to economic development. It is notable that the resource share of employment has fallen by about one-third over the sample. The next three variables account for inputs to the production function: human capital, physical capital, and labor. The growth in physical capital is measured as new capital spending in the state manufacturing sector, clearly an approximation to total capital spending, but no comprehensive measures are available on an annual basis.

Finally, we include state and local spending as a percent of personal income to control for state fiscal burden. There is no unanimity on the relationship between state taxation and growth: one view has taxation as depressing growth by transferring resources form the private to the public sector; the other view has taxation as increasing growth through the provision of public goods, such as education. We cannot resolve this controversy here, but we acknowledge that taxation may be an influence on growth, and we do report on our findings.

III. Empirical Results

Table 2 presents the results of the various regressions of state economic growth on initial conditions including the resource employment share. All regressions in Table 2 include state and time fixed effects, which coefficients are not reported to save space. The first column, Model A, presents the results of equation (2) with initial income as the only regressor. Model A is a pooled variation on the convergence model of Barro and Sala-I-Martin (1992). The coefficient on initial income, $\hat{\gamma}$, can be converted to the estimated <u>half-life to convergence</u> (in years) $\hat{h} = \ln 2 / \hat{\gamma}$.

[Table 2 about here]

Convergence in Model A is quite rapid, with a half-life of only 4.6 years, but the significance of the state fixed effects, as indicated by the *F*-value of 10.73, implies that convergence is not absolute; that is, convergence is to different income levels $\overline{Y}_i = e^{\hat{\mu}_i/\hat{\gamma}}$. The rate of convergence here is faster than that estimated in Barro and Sala-I-Martin (1992), a finding similar to that of Evans and Karros (1996), who also use time series-based methods, and also find that convergence is relative rather than absolute.

Model B introduces the share of employment in the resource sector as a regressor. A one percent increase in a state's resource share of employment results in about a one-half percent lower growth rate, after controlling for initial conditions. At equilibrium, the long term effect of an additional one percent employment share results in an reduction in per capita GSP of $1,034 in 2002 dollars.[5] The estimated rate of convergence slows to a half life of 5.1 years, and state fixed effects are still significant, indicating other sources of long-term income differentials across states.

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[5] $\Delta\overline{Y}_i = e^{\hat{\mu}_i/\hat{\gamma} \times 0.01}$

Model C introduces inputs to the production function as regressors. Of the three, only education produces measurable results, with each additional percent of the state population with a college degree contributing an additional 0.2 percent increase in state growth, or about $1,013 in equilibrium per capita GSP. Capital spending in manufacturing and labor force growth have no impact. The use of lagged values for the initial conditions likely reduces the power of these variables to explain the variation in contemporaneous income, but considerations of endogeneity problems preclude the use of contemporaneous values of the explanatory variables. Coefficients on initial income and resource employment are little changed by the addition of the input variables.

Model D adds taxation as a percent of state personal income to measure the effect of the fiscal burden on state economic growth. Prior evidence on this score is mixed. Tomljanovich (2004) finds negative short-run effects of higher tax rates on economic growth, but no evidence of any effect on long-run growth. Becsi (1996), on the other hand, finds negative short-run effects and a tendency for differentials in tax rates to affect convergence in long-term income levels. The results of Model D indicate that states with higher tax burdens grow faster, *ceteris paribus*. Coefficients of the other regressors excepting labor force growth are measured with greater precision after adding the tax variable, especially the investment variable, which is now significant at the 10 percent level.

We hesitate to make strong claims for the tax result, as our measure of the taxation is crude (total state revenues), and the ideal measure would be closer to marginal rather than average tax rates. Also, it may well be that faster growing states have even faster growing revenues, especially if tax rates are progressive and inequality is increasing. Still, we find no evidence over the sample that tax rates are negative for growth, as many have argued.[6]

Model E addresses the possibility that, despite the use of lagged initial values as explanatory variables, there may yet remain omitted unobservables that affect the dependent variable and the initial conditions and thus cause the regressors to be correlated with the error terms. We use a technique developed by Arellano and Bond (1991), whereby all variables are differenced and the first differenced initial conditions are regressed against lagged levels, the latter serving as instruments that are correlated with the initial conditions, but presumably not with the growth rates. The differencing wipes out the fixed effects. The fitted values of the initial conditions then serve as regressors.[7]

The results of the AB regression in Model E are mostly consistent with the OLS regression in Model D. Precision is less as sample size is reduced and standard errors are increased with the use of instruments, but the "resource curse" is still effective and education remains an important influence on state growth rates. The coefficient of the tax variable is larger, but is no longer measured with significance, nor is investment significant in this formulation. The results of the AB regression is therefore evidence against the possibility that the negative relationship between resource employment and subsequent state economic growth is due to a common contemporaneous, but unobserved factor.

As an additional robustness check, equation (2) is estimated with manufacturing productivity as the dependent variable in Model F. If the resource "curse" is not simply an

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[6]A regression of state growth rates on just initial income, percent college education, and taxation yields nearly identical results for the taxation coefficient.

[7]The instrumental variable regression can be accomplished in either one or two steps; we use the two-step method here. See Arellano and Bond (1991) for details and methodology.

adding up problem, there should be evidence of spillover effects into other industries. Whether this happens because more productive factors are absorbed by the resource sector or because of external inefficiencies like poor governance in the public sector or less emphasis on human capital is beyond the scope of this paper, but its existence can at least be documented.

Model F differs from its predecessors by having initial productivity per worker rather than initial GSP per capita as control, but otherwise is the same specification. The positive sign on initial productivity may be a reflection of the tremendous restructuring experienced in the manufacturing sector over the past 25 years. States with more productive manufacturing sectors may have been better able to confront foreign competition and expand output, while states with laggard industries fell further behind. If labor adjustment to output changes was slow, productivity would be positively correlated with output.

For our purposes, the important result in Model F is the negative and significant coefficient on resource intensity. There is thus some evidence that the growth effects of resource abundance spill over into other sectors, although the exact mechanism is unknown. The other coefficients in Model F are consistent with the prior models, if smaller and only significant in the case of investment, not surprising given the focus on a single sector in this model.

In the following section, we offer some speculations as to the source of the resource curse by examining the correlations of resource intensity with other factors thought to be important for development.

IV. Discussion and Speculations

Regression analysis is able to inform us that there is a negative relationship between resource abundance and growth, but not why such a relationship exists. In the absence of a formal model of state economic development, this section offers some additional, primarily graphical evidence on the linkages between resources and factors presumed to underlie economic growth. The treatment here is similar to the discussion of Gylfason (2001) regarding cross-national resources and economic development.

A. Industry Risk/Return Characteristics

Figure 2 is a "star and dog" chart of 11 industrial groups comprising U.S. GDP. The upper left, or "star" quadrant includes industries with higher growth/lower risk; the lower right, or "dog" quadrant includes lower return/higher risk industries. Portfolio theory maintains that investors prefer return and avoid risk; primary industries have more risk than the other sectors, and although Mining has higher returns than Retail or Transportation, it also is more than twice as volatile. If investment is irreversible, large investment in resource booms will result in less than optimal output during slack times; labor market frictions may compound the problem.

Figure 3 provides some evidence of the effects of resource intensity on volatility of state GSP growth, and of volatility on growth, by plotting growth against volatility for the period 1977-2003. Each one percent increase in the standard deviation of GSP growth is associated with about a 0.2 reduction in growth ($t = 5.31$). The average resource intensity (measured as GSP originating) of the seven labeled states with standard deviations exceeding four percent is 20.0 percent versus a national average of 6.6 percent.

Taken together, these charts suggest that the primary sector is more volatile and achieves lower return than other sectors, and that states with a higher concentration of primary industries fare likewise in comparison with other states.

B. Resource abundance and human capital

Figure 4 is a scatterplot of the percent of the state population with a college degree against resources as a percentage of GSP (as of 2002). The coefficient of the resource variable has $t = 1.80$, significant at the 5 percent level, and implies that each one percent change in resource dependence results in a 0.15 percent change in the percentage of the state population with a college degree. The equation only explains about 6 percent of the variation in college degrees, however, so resource abundance plays only a small part in relative education levels.[8] Still, this finding is consistent with Gylfason (2001), who finds a much stronger cross-country negative relationship between resource abundance and education levels.

Gylfason argues that natural resource-based economies are less high-skill labor intensive and may use lower-quality capital. If true, the public sector may feel less pressure from industry and from workers themselves to upgrade human capital skills, resulting in a less productive and a less flexible labor force.

C. Resource use and efficiency

Figure 5 displays energy use per capita as a function of resource abundance. The fit is very good for such a simple model, with resource intensity explaining 71 percent of the variation in British Thermal Units (BTUs) per capita. Simplicity handicaps us, on the other hand, by

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[8]Without Alaska and Wyoming, two highly resource intensive but very lightly populated states, the r-square increases to 0.15

preventing the identification of the source of the relationship. It may be the case that resource-rich states like Alaska or Texas are located in more extreme climates or have larger land area requiring more energy for transportation; it may be the case that resource-related industries are themselves resource intense in production; or it may be that abundance leads to inefficiency.

D. Resource abundance and the public sector

Figure 6 displays the relationship between the size of the public sector and resource abundance, as of the year 2000. As noted by Gylfason (2001), resource-rich economies may imbue governments with a false sense of security and a temptation to spend freely during the good times. Given the volatility of the resource sector, government programs put into place when prices and tax revenues are high may be difficult to reduce or eliminate when prices and revenues fall. As shown in the diagram, resource dependence explains 17 percent of the variation in state government employment (t = 3.72), so there does appear to be a relationship between the two. Whether this is because of characteristics particular to primary sectors, which are among the more heavily regulated industries and therefore have dedicated regulatory bureaus, or because of the volatility element noted above is beyond the scope of the present study.

E. The effect on wages in other sectors

Sachs and Warner (2001) note that one channel of transmission for the resource curse is the so-called "Dutch Disease," whereby natural resource abundance drives up real wages and renders exports from other sectors non-competitive. Figure 7 shows very little evidence of any relationship between resource abundance and wages in manufacturing, as adjusted for housing prices (there being no U.S. state-level price indexes).[9] Given the cross-state diversity in manufacturing, a common currency, and relatively rapid factor mobility in the U.S., it is perhaps not surprising that local factors such as resource abundance would have little bearing on wage differentials.

V. Conclusion

This paper documents evidence that the “resource curse” –the tendency of resource-rich countries to grow more slowly than resource-poor countries – extends to the individual states of the U.S. Using a variety of specifications, regression of state GSP growth on resource abundance consistently shows a negative and significant relationship. An increase of one percent in the proportion of state employment in the primary sector (agriculture and mining) reduces state GSP growth by about one-half percent, a surprisingly large number. This relationship holds even when confined to a single sector, growth in manufacturing productivity, although the impact is only about one-third as large.

While this paper documents the “what” of the resource curse in the U.S., it is only a tentative foray into the “why.” There is strong evidence that resource-based economies are more volatile economies, and volatile economies may be less desirable to investors. Resource based economies are somewhat less well-educated, although this relationship is certainly not as strong at the state level as the cross-country would indicate. Resource-based economies certainly use more energy, though some of the energy requirements are specific to the needs of primary

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[9]The relationship between resources and unadjusted wages was slightly negative and insignificant.

industries. How much energy use, if any, is due to prodigality from abundance is not known. There is further evidence that resource-rich states have larger state governments, but no indication that wages in other sectors are affected.

Further research will focus on the link between resource abundance and volatility, and the link between volatility and growth. The volatility of state economic growth will have national components and state-specific components. While little can be done at the state level to ameliorate national components of volatility, identification of state level components can be an important element of policy analysis.

Figure 1:

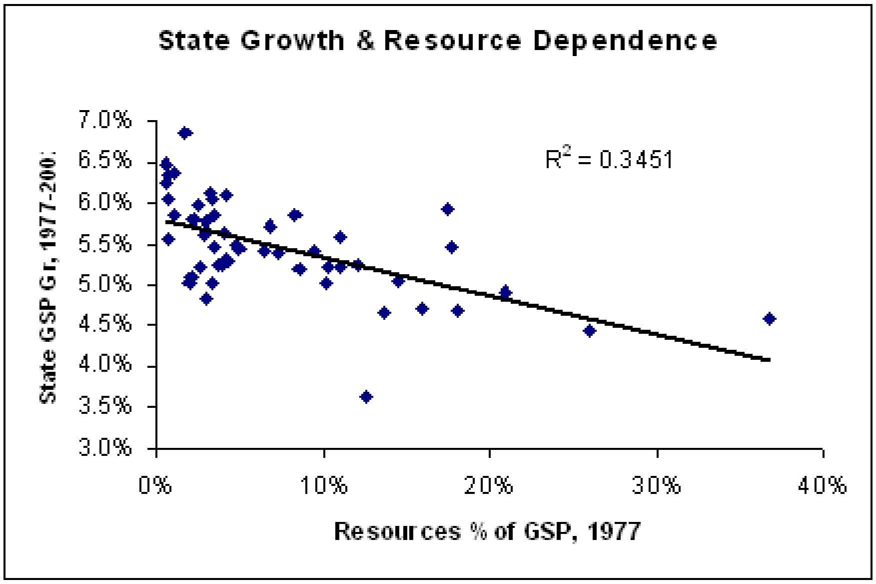


Figure 2:

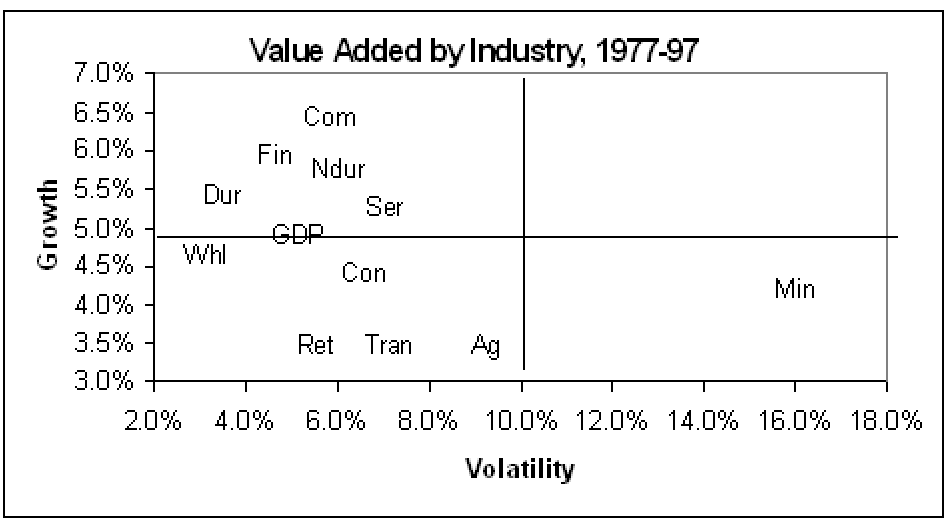
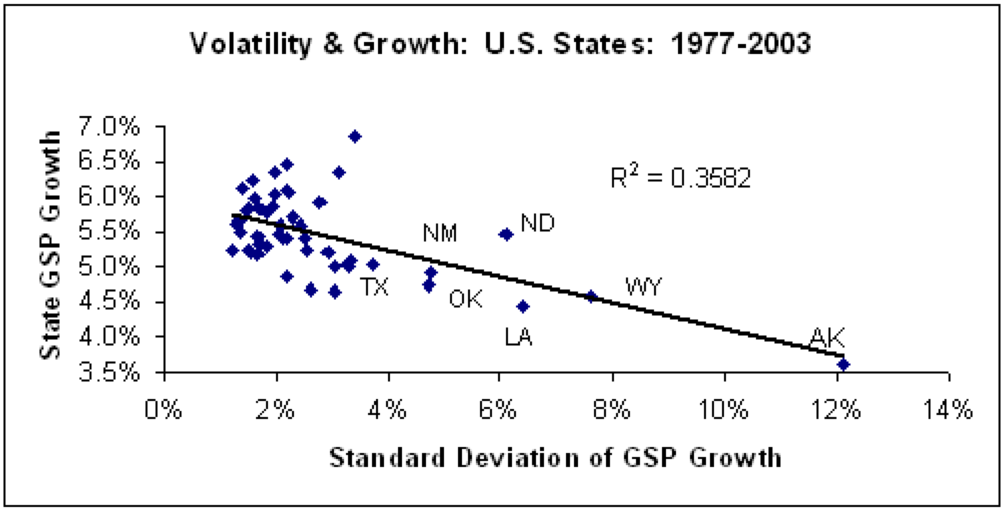


Figure 3:



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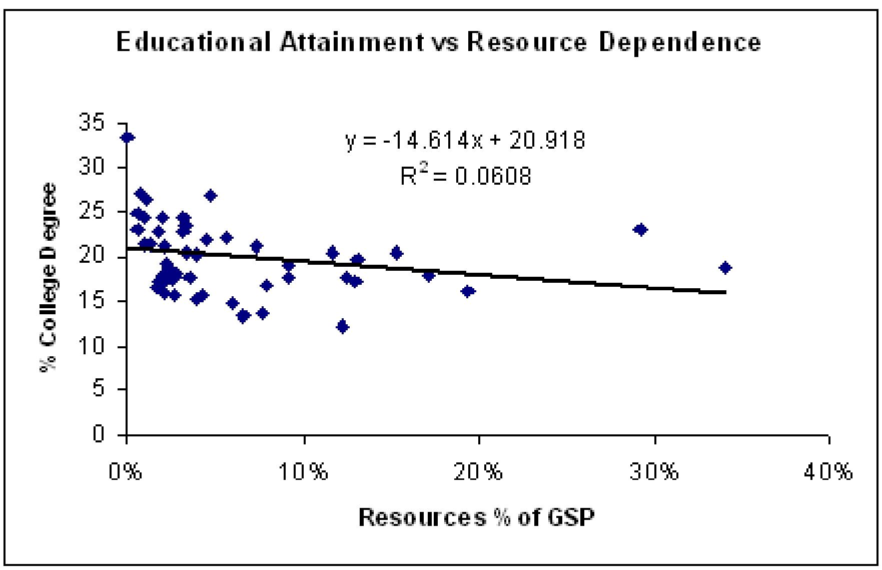


Figure 5:

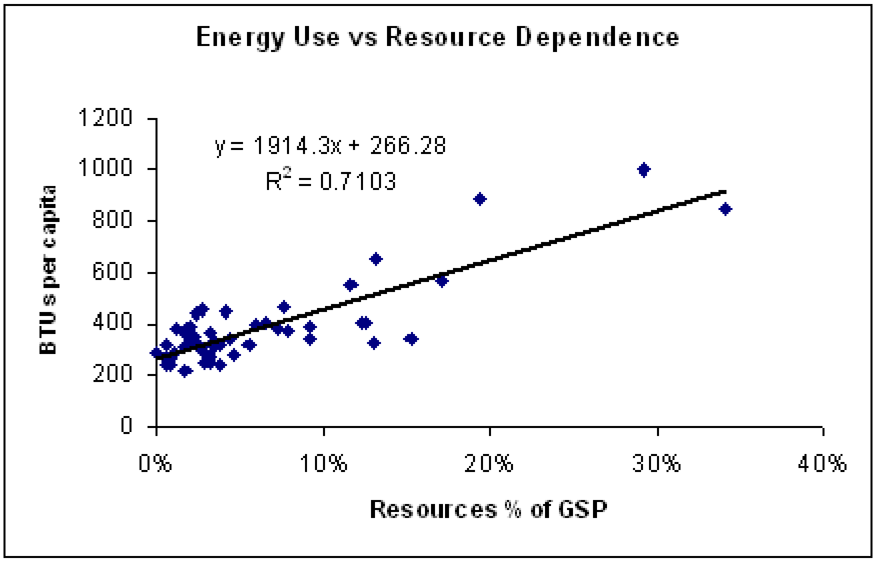


Figure 6:

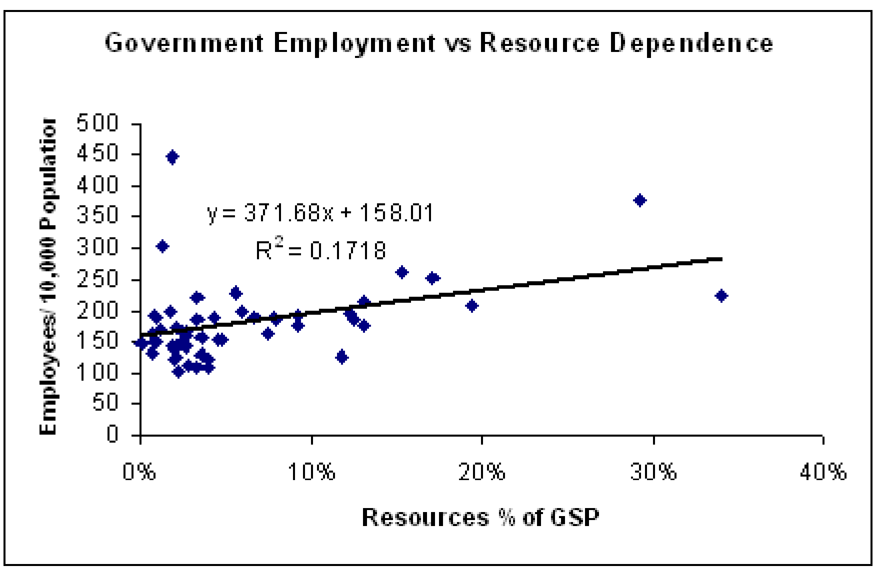
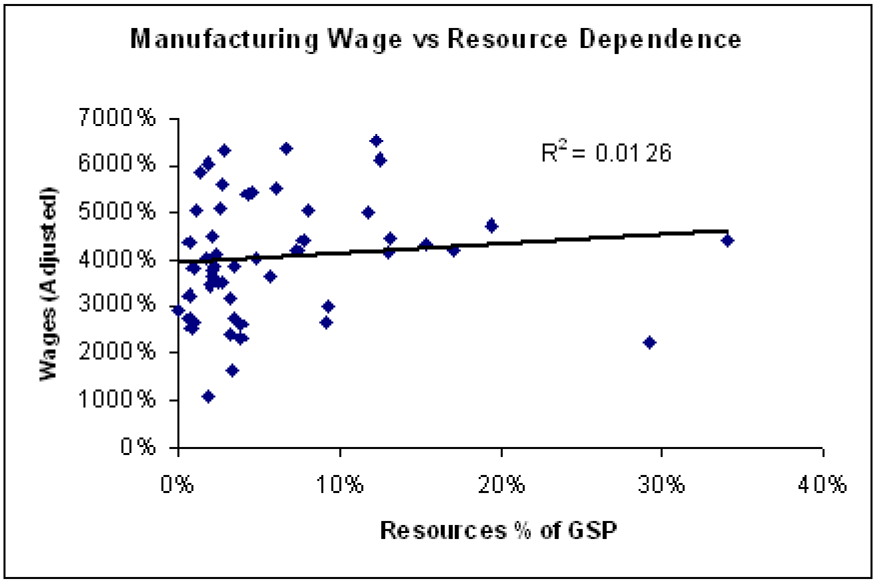


Figure 7:



Manufacturing Wage vs Resource Dependence
Wages (Adjusted)
7000%
6000%
5000%
4000%
3000%
2000%
1000%
0%
0%
10%
20%
30%
40%
Resources % of GSP
R² = 0.0126

Table 1: Descriptive Statistics, 50 States, Various Time Periods (in Percentages, except *Initial Income*, which is in 2002 $)

Variable		Mean	Standard Deviation
Per Capita GSP Growth	1982-1987	2.3	3.2
	2002-1997	1.8	1.1
Initial GSP per Capita	1982	$23,045	$1,030
	2002	$36,143	$1,220
Resource Share of Employment	1982	6.8	4.4
	2002	4.6	2.6
Population with at least a Bachelor's	1982	17.4	3.6
	2002	23.8	4.9
Investment Growth	1977-1982	8.4	7.9
	1992-1997	8.6	7.6
Labor Force Growth	1977-1982	2.3	1.4
	1992-1997	1.5	1.2
Taxation/Personal Income	1982	18.5	9.0
	2002	26.1	7.4

Table 2: Pooled Cross-Section Growth Regressions, 50 States, 1977-2002

Model Variable	(A)	(B)	(C)	(D)	(E) (Arrelano-Bond)	(F) (Manufacturing)
INITIAL INCOME	-0.151*** (8.00)	-0.136*** (8.88)	-0.141*** (8.50)	-0.155*** (12.1)	-0.184*** (8.73)	0.036*** (6.95)
RESOURCES		-0.460*** (4.35)	-0.497*** (4.37)	-0.461*** (4.65)	-0.481** (2.51)	-0.149** (2.17)
EDUCATION			0.222** (2.64)	0.292*** (3.51)	0.508** (2.58)	0.075 (1.02)
INVESTMENT			0.002 (1.04)	0.003* (1.79)	0.002 (0.81)	0.002* (1.63)
LABOR FORCE			-0.014 (0.71)	0.002 (0.015)	0.001 (0.34)	-0.007 (0.51)
TAXATION				0.121** (2.75)	0.153 (1.47)	0.031 (1.43)
Adjusted R^2	0.81	0.84	0.85	0.86	0.22	0.67
F-test: $H_0 : \mu_i = \mu_j$	10.729 $p = 0.000$	8.354 $p = 0.000$	6.696 $p = 0.000$	7.324 $p = 0.000$		2.262 $p = 0.001$
Hausman Test: RE vs. FE	4.99 $p = 0.026$	75.41 $p = 0.000$	55.71 $p = 0.000$	37.32 $p = 0.000$		18.79 $p = 0.002$

,**,:** Significant at the 0.10, 0.05, and 0.01 levels respectively

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