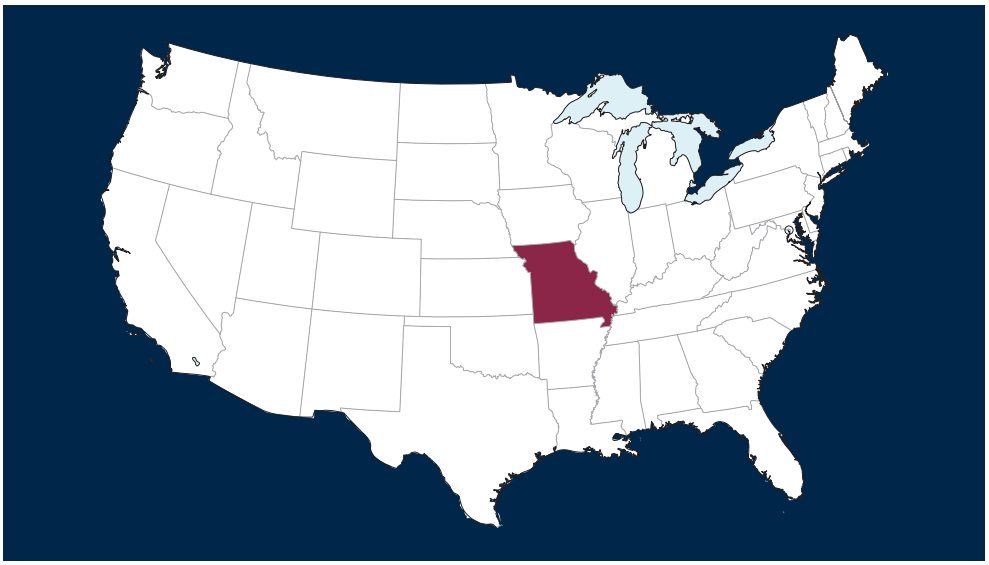
SHOW-ME INSTITUTE

WHERE LIBERTY COMES FIRST

ESSAY

JULY 2017



WAS MISSOURI ALWAYS LIKE THIS?

A COMPARISON OF MISSOURI'S GROWTH WITH THAT OF THE UNITED STATES

By Joseph H. Haslag and Michael Austin

INTRODUCTION

Since 1997, Missouri's economic growth rate has been one of the lowest in the United States.[1] However, Missouri has not always been a slow-growing state. In the ten years prior to 1997, Missouri's economic growth rate was very similar to that of the nation as a whole.

The purpose of this essay is twofold. First, we document the change in Missouri's economic growth rate and establish that Missouri's growth rate is indeed significantly different from the national growth rate. Second, we ask why Missouri's economic growth rate slowed relative to the national average. Our proposed explanations are tentative, because several variables must be taken into account when explaining the break that began in 1997 between the economic growth rate of Missouri and that of the United States as a whole. Because several factors changed in and around 1997 that could account for the slowdown in Missouri's economic growth, our analysis can only identify possible explanations for the divergence. We cannot conclusively determine how much each factor contributed to the Missouri slowdown. In short, there is no smoking gun.

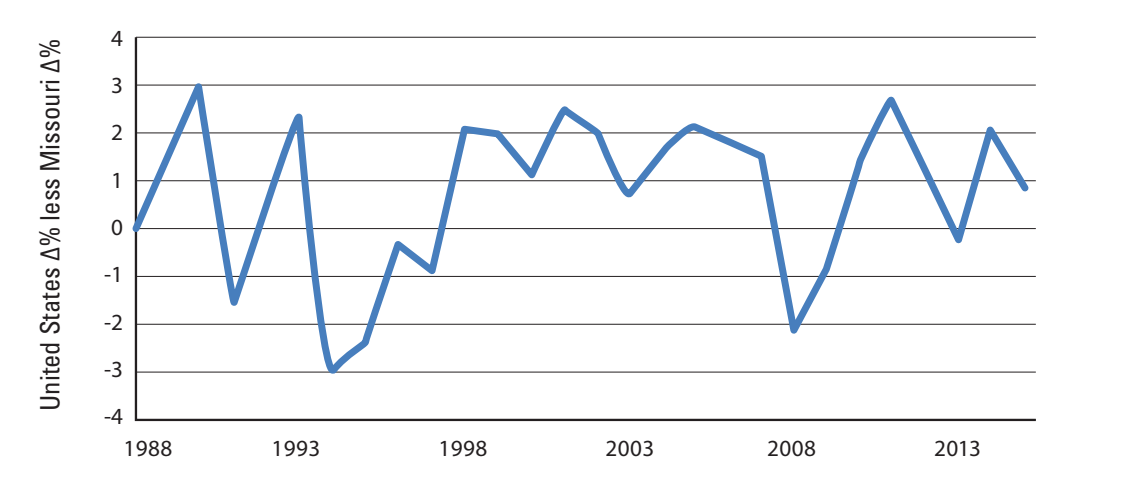
In this essay we limit the set of potential explanations to measures of government activity. Specifically, we focus on taxation and spending

measures undertaken by state government. We have measures of changes in spending, changes in the composition of spending, changes in tax rates, and changes in tax credits redeemed. However, at least one potentially important measurement is missing from this analysis: regulatory changes. Unfortunately, we have no comprehensive measure of the regulatory environment at the state level, so we are forced to omit this from our analysis. Consequently, our conclusions must be considered tentative.

Figure 1

United States Less Missouri Real GDP Growth, 1998 to 2015

Beginning in 1997, Missouri's rate of real GDP growth has consistently lagged behind that of the United States as a whole.



Source: Data from U.S. Bureau of Economic Analysis.

Why even think about measures of government activity? We start with the evidence that economic growth, while driven by technological advancement, also depends crucially on institutions.[2] Over long periods of time, economic growth is the application of new ideas to economic activity. The new ideas, or technologies, lower the cost of producing a given quantity of goods and services. Put another way, the same level of real gross domestic product (real GDP) can be produced with fewer inputs (i.e., labor and/or capital). Alternatively, with the same level of inputs, more real GDP can be produced as new technologies are implemented. If you assume that access to new technology is roughly the same in all states, then economic growth should be evenly distributed absent differences in the laws and institutions that govern economic activity in each state. So, when we observe differences in economic growth rates across states, the first thing to look at is whether there are also differences in laws or institutions: Did a state's government change things in a meaningful way that could account for economic growth being faster or slower in that state compared with the nation?

The essay consists of four sections. We begin with a review of the history of economic growth in Missouri and the United States from 1987 through 2015. With this history, we can establish that Missouri really is different from the nation as a whole. Next, we consider the history of changes in the level and the composition of state government spending, which helps us identify whether changes in spending behavior might account for Missouri's economic growth slowdown. Next, we consider changes in tax policy in order to identify whether changes in economic growth might be a result of changes in state tax policy. We offer a brief summary of our findings in the concluding section.

ECONOMIC HISTORY: MISSOURI AND THE U.S.

Data on Missouri's real GDP spans the period from 1987 through 2015.[3] We start with the key measurement: the

difference between the U.S. real GDP growth rate and the Missouri real GDP growth rate. Figure 1 plots the difference for the period 1988 through 2015. When the United States is experiencing faster real GDP growth than Missouri, Figure 1 records this as a positive value. Conversely, when Missouri is reporting faster real GDP growth than the United States, Figure 1 records this as a negative number. Figure 1 shows that before 1998, there were swings in the difference between U.S. and Missouri real GDP growth, but no discernible average difference. However, from 1997 onward, the U.S. real GDP growth rate has consistently been higher than the growth rate of Missouri real GDP growth, the only exceptions being 2008 and 2009.

Table 1: **Test Statistics for Null Hypothesis that the Difference Between U.S. Real GDP and Missouri Real GDP Equals 0**

Null Hypothesis	Mean difference (pct. pts.)	Std. dev. of difference
Difference between U.S. and MO real GDP growth rates is equal to zero 1988–1997	–0.07	0.636
Difference between U.S. and MO real GDP growth rates is equal to zero 1998–2015	1.28*	0.3

*Significant at the 5% level.

Let's go into the numbers in a bit more detail: Between 1988 and 1997, real GDP for the United States increased at a 3.11 Percent average annual rate while Missouri real GDP increased at 3.18 percent average annual rate. Our data indicate that Missouri's real GDP increased at an average annual rate that was seven basis points greater than the average annual growth rate of the United States' real GDP between 1988 and 1997. It is easy to verify that the difference was not statistically significant. Table 1 shows the test statistic computed under the null hypothesis that the difference between the United States' and Missouri's real growth rates is zero. The data indicate that there is no significant difference between U.S. real GDP growth and Missouri real GDP growth between 1988 and 1997.

After 1997, however, the U.S. average annual real GDP growth began to eclipse Missouri's. For the period 1998 to 2015, Missouri's real GDP increased at an annual average rate of 1.05 percent. During the same period, the average annual growth rate for the United States was 2.34 percent. So, the United States reported an average annual real GDP growth rate 1.28 percentage points higher than Missouri's between 1998 and 2015. Data in Table 1 detail this divergence.

There is another way to check if the growth rates during the two time periods are different. Is the mean difference in the growth rate during the 1988–97 period equal to the mean difference in the growth rate during the 1998–2015 period?[4] The null hypothesis is that the two sample means are equal to one another. We can reject this hypothesis. Thus, our results indicate that with regard to the difference in the growth rate between the United States' real GDP and Missouri's real GDP, a break occurred in 1997.

What are the consequences of the change in economic growth rates in Missouri relative to the nation? Figure 2 shows the change using the ratio of Missouri real GDP relative to its 1988 value and the ratio of United States real GDP relative to its 1988 value. In both Missouri and the United States, the 1988 ratio will be equal to one. Then for the United States, we plot the path of real GDP indexed to 1988, setting the growth rate equal to 3.11 percent. In 1998, we change the growth rate from 3.11 percent to 2.34 percent. Similarly, for Missouri, we plot the indexed value of real GDP indexed to its 1988 value, setting the growth rate equal to 3.18. In 1998, we change the real GDP growth rate from 3.18 percent to 1.05 percent. [5]

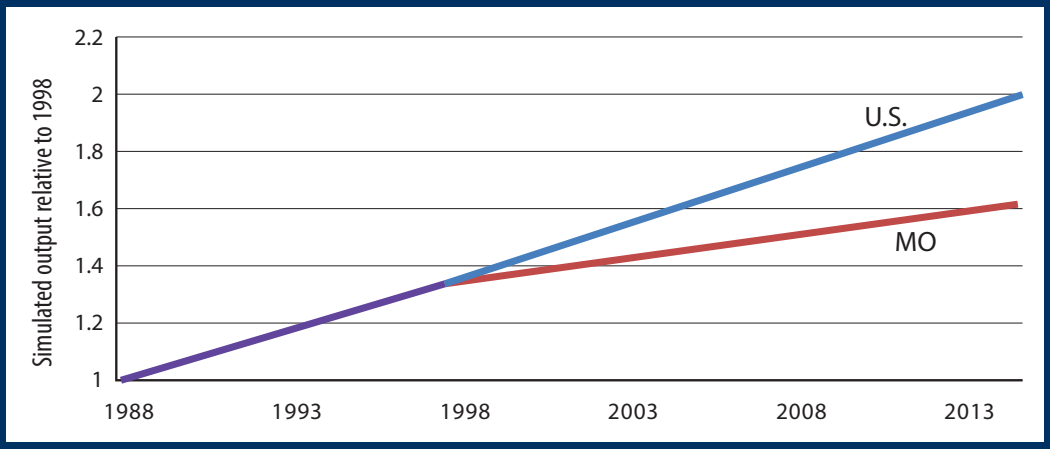
To put the value of this growth slowdown into perspective, note that the value of real GDP in Missouri in 1997 was

$217.873 billion. If Missouri had grown as fast as the national annual average, the 2015 value of Missouri's real GDP would have been $330.385 billion. The 2015 actual level of real GDP in Missouri was $261.533 billion. Therefore, if Missouri real GDP had increased at the same rate as United States GDP—if Missouri had increased at the average U.S. growth rate—then Missouri's real GDP in 2015 would have been $68.852 billion greater. The $68 billion amount corresponds to slightly more than three months of production of goods and services. That is a tremendous difference.

Figure 2

Relative Growth, United States and Missouri, 1988 to 2015

If Missouri's GDP growth had kept pace with that of the United States as a whole between 1998 and 2015, then Missouri GDP in 2015 would have been nearly $69 billion higher.



Source: Author's calculations.

Now that we've identified where the break occurred, we get to the rub: Why did the break occur? Our approach is to take what happened in the United States as given and look for changes in Missouri's state government that could account for the structural break in the growth rate of real GDP in Missouri relative to the United States.[6] Based on the evidence, the structural break in the growth-rate differential occurred in 1997. Accordingly, our search will focus on changes implemented by Missouri state government that took place in and around 1997.

A QUICK PRIMER ON THE ECONOMICS OF GROWTH

First, it is important to make sure that we are talking about the rate of change in real GDP over periods that are fairly lengthy, like a decade or more. Over shorter intervals, like business cycles, there are more and more factors contributing to changes in economic activity, which makes them more volatile and prone to being influenced heavily by idiosyncratic events. Over long intervals, economic growth across countries is often attributed to countries catching up to one another and to technological progress.[7] The catching-up part refers to countries that are poor and begin to catch up to richer countries. Recently, MIT economist Daren Acemoglu and colleagues have shown that catching up depends critically on institutions in the poorer countries.[8] Political institutions and the rule of law both play important roles in explaining why, in recent decades, the Philippines has not caught up much to more developed countries in terms of living standards while South Korea has, to take one example.

Because Missouri shares so many political and legal institutions with the other states, we will focus our discussion on the role of technological progress. By *technological progress* we mean an idea or process that, when implemented, increases productivity (that is, reduces the cost of producing a good or delivering a service). Another way to represent technological progress is as an increase the marginal product, or return, to machines and workers used by firms producing a good or delivering a

service. If the cost of producing a good is lower because fewer people or machines are needed, then it is also true that a given number of people and machines will produce a greater quantity of the good.

The economics of growth are easy to summarize. Suppose there is an opportunity to implement some kind of technological progress that will result in faster economic growth. Further suppose that all states are identical. In this case, the first question is where to locate the new idea or process. With the return to the company being the same in each state, then any state location offers the same return to shareholders. If one state, however, creates a regulation, law, or a tax that lowers the return, then the realized *after-policy* return is lower in that state and the new idea or process will be located in a state without such policies.[9]

We will use this framework to explain how changes in Missouri state revenues and expenditures affect economic growth. There is a return offered to the use of new technology within every state. If Missouri, for example, changes policy in a way that permanently lowers the *after-policy* return, then Missouri growth will decline and it will record slower economic growth compared to states that did not implement such policies.

To help illustrate this framework in operation, there are specific examples that are worth presenting. For one thing, not all types of government spending are the same.[10] Consider, for example, a permanent increase in the growth rate of government purchases of consumption goods and services. The kinds of goods and services that the government purchases—specifically, public goods—are goods that are consumed collectively. One person's consumption of a public good does not prevent another person from simultaneously consuming the same good—even if only one of the people is actually paying for the good. People pay for the good through taxes and enjoy the benefits of the good as if they had purchased it directly. For a government consumption good, there is no new idea or production process that is improved.[11] Robert J. Barro of Harvard University analyzed economic growth in a cross-section of countries and found that economic growth is inversely related to government consumption in GDP (Barro, 1991).

To show how challenging it can be to assess how state economic policy affects real GDP growth, suppose that the government uses higher tax rates to pay for infrastructure. Infrastructure is the type of public good that raises the after-policy return for private firms. One type of infrastructure—roads—makes it less costly for firms to transport goods and services from production locations to sales locations. In contrast, higher tax rates will lower the after-policy return. On balance, one cannot say what net impact these two policy actions will have on economic growth at the state level. The point is that the effects of taxes and spending on economic growth depend on what tax rates are used to pay for what kind of spending.[12]

SPENDING BY MISSOURI STATE GOVERNMENT

We begin by looking at the broad measures of spending by Missouri using Census Bureau data on total expenditures by state government. Figure 3 plots the ratio of total expenditures to nominal GDP for the period from 1992 through 2013.[13] The evidence suggests that before 1997, the fraction of Missouri's nominal GDP spent by Missouri State Government was between eight percent and nine percent. After 1997, there was a small increase in the fraction of nominal GDP spent by Missouri. Missouri has typically spent between nine percent and ten percent since 2000.

Figure 3 does not tell us that there was a significant change in the size of government in Missouri. Total expenditures are about one percentage point higher after 1997 compared with before. If the argument is that state real GDP growth is lower because Missouri State Government is spending too little, the evidence in Figure 3 seems to contradict that proposition. There is little evidence government in Missouri has expanded much over this period.

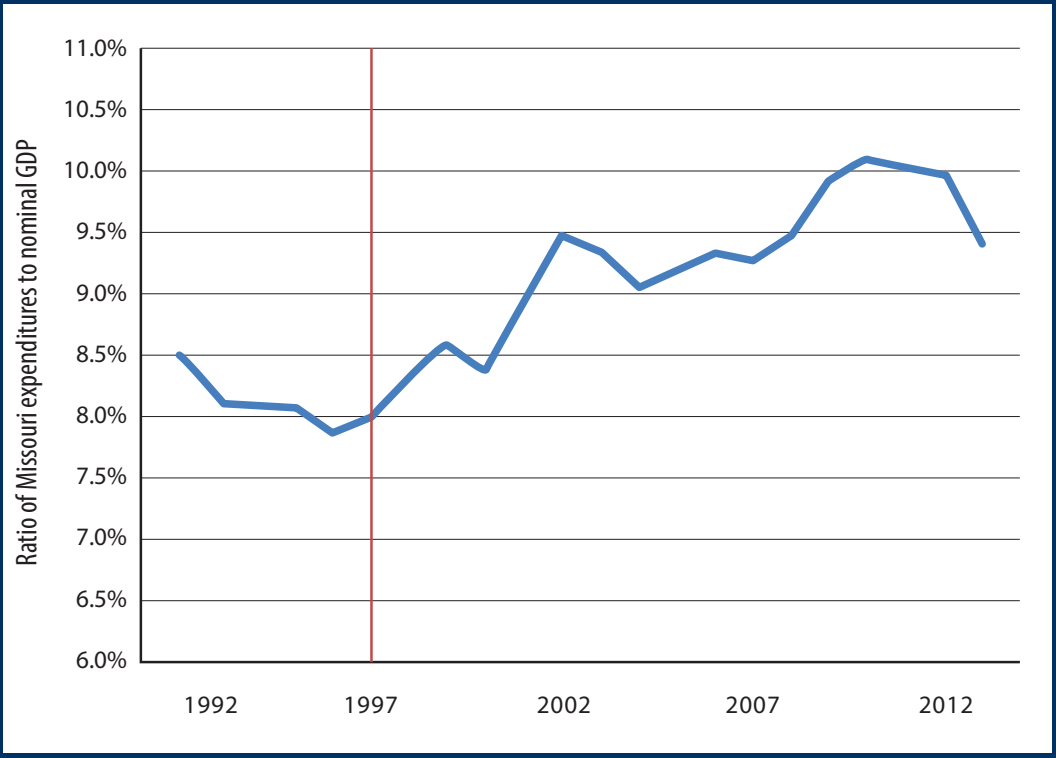
Figure 4 reports the revenues collected by calendar year and deposited into the Missouri General Revenue accounts, hereafter referred to as Total State Revenues. For Figure 4, we divided Total State Revenues by the state's nominal GDP. Overall, Figure 4 shows that total state revenues ranged between 3.5 percent of nominal GDP and 5 percent of nominal GDP. It is true that we observe Total State Revenues trending upward relative to GDP

between 1975 and 1996, peaking at 4.9 percent in 1996. Since then, however, the ratio has moderated, indicating that state government is not growing as a fraction of the state economy. The evidence therefore does not support the notion that the reason Missouri's economic growth has been slow is that state government has gotten too big. Nor is there evidence to support the idea that state government has shrunk too much. Overall, the size of government in Missouri does not appear to be a large factor in the change in trend in state economic growth relative to the nation. It is worth noting that the Census Bureau measure includes transfers from the federal government that are spent by Missouri state agencies.

Figure 3

The Ratio of State of Missouri Expenditures

As a percentage of nominal GDP, state expenditures increased somewhat, but not dramatically, between 1997 and 2013.



Source: U.S. Census Bureau and author's calculations.

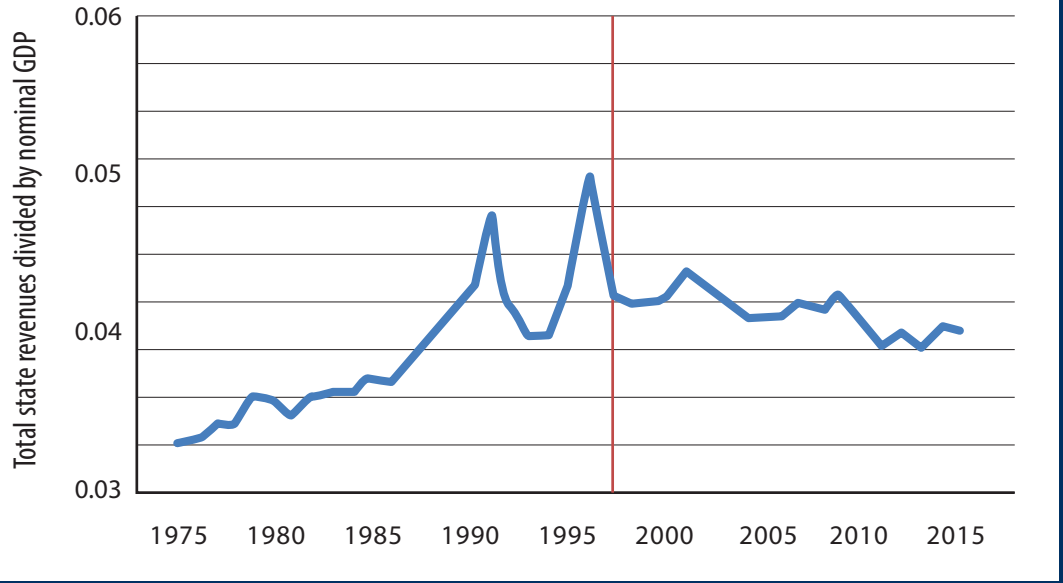
Our next step is to examine Missouri expenditures by category. Our question centers on the idea that changes in the composition of state spending have changed in some way that could account for the slowdown in state economic growth relative to the nation. We break expenditures into four categories: Education, Transportation and Public Safety, Public Welfare and Health, and Natural Resources and Environment, which together account for 88.9 percent of expenditures each year.[14] Next, we divide spending in each category by total expenditures. Then we use the 1998 value of the ratio of each spending category to total expenditures as the reference point. In other words, we focus on the amount of spending on each of these four major categories relative to 1998 total spending.

Figure 5 plots the spending measure on each of the four categories over time. We see that spending on Public Welfare and Health has increased relative to the other three categories since 1998. Indeed, Figure 5 indicates that the share of spending on Public Welfare and Health has increased 30 percent compared with the share recorded in 1998. Meanwhile, spending on Education, Transportation and Public Safety, and Natural Resources and Environment have all declined. The share spent on Education is roughly 0.8 times the share recorded in 1998, while both Transportation and Public Safety and Natural Resources and Environment stand at roughly 0.6 times the share they recorded in 1998.

Figure 4

Total State Revenues Divided By GDP

The size of Missouri state government does not appear to be driving the change in state economic growth relative to that of the nation.



Source: Revenue data from the University of Missouri Economic Policy Analysis Research Center; nominal GDP data from U.S. Bureau of Economic Analysis.

The evidence in Figure 5 indicates that Missouri has changed its spending composition over time. There are two changes in categories that relate to capital accumulation. Education and Transportation and Public Safety are what Missouri contributes to human capital accumulation (the former) and to infrastructure investment (the latter). Decreases in both spending categories could account for the slowdown in Missouri's real GDP growth. In addition, the increase in spending on Public Welfare and Health could also account for a reduction in state real GDP growth.[15] This category of spending is most closely linked with transfer payments by the government from one class of taxpayers to another. If tax rates increase in order to pay for the expanded transfer payments, the reduction in after-tax returns results in less saving and slower economic growth.

Overall, we see that spending by the State of Missouri has increased relative to the rate observed before the growth-rate slowdown occurred. This evidence is consistent with the evidence presented by Barro: an increase in state government expenditures is negatively related to the growth rate of real GDP. As we delve further into the spending, we see that the composition of state spending has changed, shifting away from human and government capital accumulation and toward health services and transfers. Arguably, these changes could reinforce one another in the sense that transfers could be negatively related to economic growth and human and government capital investment are positively related to economic growth. In other words, Missouri picked exactly the wrong composition of spending since the 1990s, and this change in priorities has contributed to reducing real GDP growth.

STATE OF MISSOURI REVENUES

Another important question is whether there were changes in tax rates implemented by Missouri that could account for the slowdown in economic growth relative to the nation. The individual income tax rate could change in the next few years if revenue increases are big enough to trigger the rate reductions. However, the rate structure has not changed.

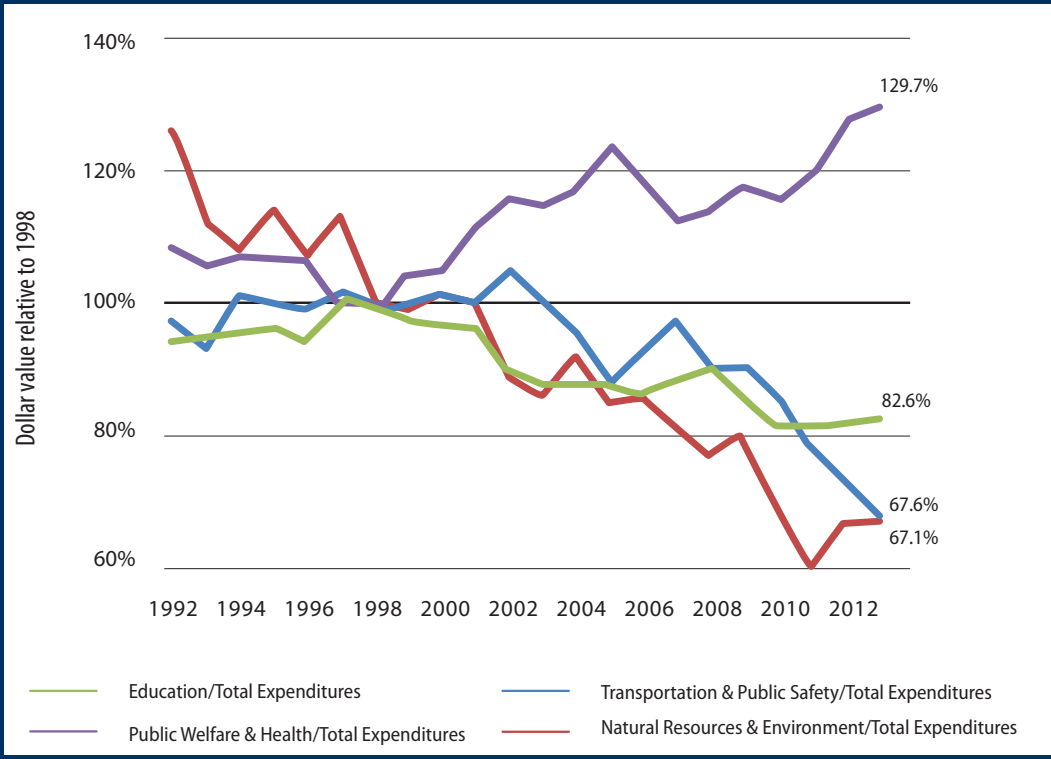
What did change was the corporate income tax rate. In 1993, the corporate income tax rate increased from 5 percent to 6.25 percent. In addition, Missouri reduced the fraction of federal corporate income tax that could

be deducted from the state corporate income tax base; it went from 100 percent to 50 percent. With an increase in the state corporate income tax, the after-tax return to investment declined. People substituted more current consumption, which is relatively cheaper when the after-tax return declines, and reduced future consumption. With the increase in current consumption, less investment would be located in Missouri and economic growth would slow. Since 1993 is just a few years before we see our break, this could be a significant factor explaining the divergence in growth rates.

Figure 5

Missouri Expenditures by Type (Indexed to 1998 Values)

Since 1998, public welfare and health expenditures have grown relative to expenditures in other categories.



Source: U.S. Census Bureau and author's calculations.

The role of tax credits is another potential explanation for why Missouri continues to grow at a slower rate than the nation. Table 2 shows the annual amount of tax credits redeemed, or given back to taxpayers, by type of credit for each fiscal year from 2005 through 2016.[16] Unfortunately, the data on tax credits only goes back to 1997, meaning we can't draw any conclusions about tax credits and the pre-slowdown period. So what can Table 2 help us understand? First, many of the tax credit programs are aimed at economic development incentive programs. These programs, financed by tax credits, inefficiently allocate taxpayer money into speculative private-sector development projects with poor economic results. In 2010, a Missouri tax credit commission reviewed the state's tax credit effectiveness and found that out of 54 tax-credit programs, 28 did not create a "justifiable benefit in relation to their cost to taxpayers.[17] These tax credits play a role in decreasing tax revenues without leading to growth in GDP. Table 2 shows an upward trend in the quantity of tax credits redeemed over the past decade. The next step is to make the case that increasing the quantity of tax credits could be associated with slower economic growth.

In a given year, the resources that can be spent by people living within a state are allocated between consumption, saving, and paying taxes. This helps us understand where the monies for tax credits are coming from. For one thing, taxes that otherwise would have been collected by the state government are given to specific people. Tax credits

are not monies that come from thin air, but are redirected from state government to the set of tax credit recipients. Once we accept that tax credits represent an alternative use of monies, it follows that there must be an opportunity cost of redeeming tax credits; that is, those monies could have been used by state government, or kept in people's pockets by reducing everyone's tax payments. This is why so many people refer to tax credits as a policy that picks winners and losers. Simply put, it is government policy that directs the monies to a subset of select citizens that subsidize specific activities. In terms of the effects on economic growth, tax credits are a form of capital spending.

Figure 6 plots the ratio of total credits redeemed by Missouri state government to the state's real GDP for the years 2005 through 2015. There is an upward trend in the ratio for most of the decade. However, the last several years indicate a downward trend in the dollar amount of tax credits redeemed relative to Missouri GDP. Between 2005 and 2015, tax credits redeemed by Missouri state government were between 1.7 and 2.5 percent of the total value of final goods and services produced within Missouri.

The effect of tax credits on economic growth depends on the return on monies redeemed as tax credits relative to the return from other uses. For example, if the government chooses as well as the people in a competitive marketplace of ideas, then the return to subsidized activities will be equal to the average returns on the set of all other capital purchases and economic growth, in which case there will be no impact on overall state economic growth. In such a scenario, the tax credit programs are neutral with respect to state economic growth. However, suppose the return were lower on monies spent on tax-credited projects compared with the average return on other investment projects. In that case, economic growth would decline. Since we do not have data on the returns to tax credit programs, there is a question regarding tax credits. Are they providing the same return as the average market outcome? Unfortunately, we don't have data to answer that question.

Table 2: **Tax Credits Redeemed by Missouri State Government, Fiscal Years 2005 to 2016**

Fiscal Year	Total	MO real GDP (mil of $)
2005	406,071,958	247,860
2006	412,174,317	250,021
2007	479,342,622	250,581
2008	504,525,332	255,426
2009	584,721,601	250,436
2010	522,875,929	253,059
2011	545,165,050	250,034
2012	629,454,223	252,620
2013	512,911,236	257,410
2014	549,760,534	257,987
2015	513,311,854	262,479
2016	575,371,360	n/a

Source: Missouri Office of Administration (personal correspondence.

CONCLUSION

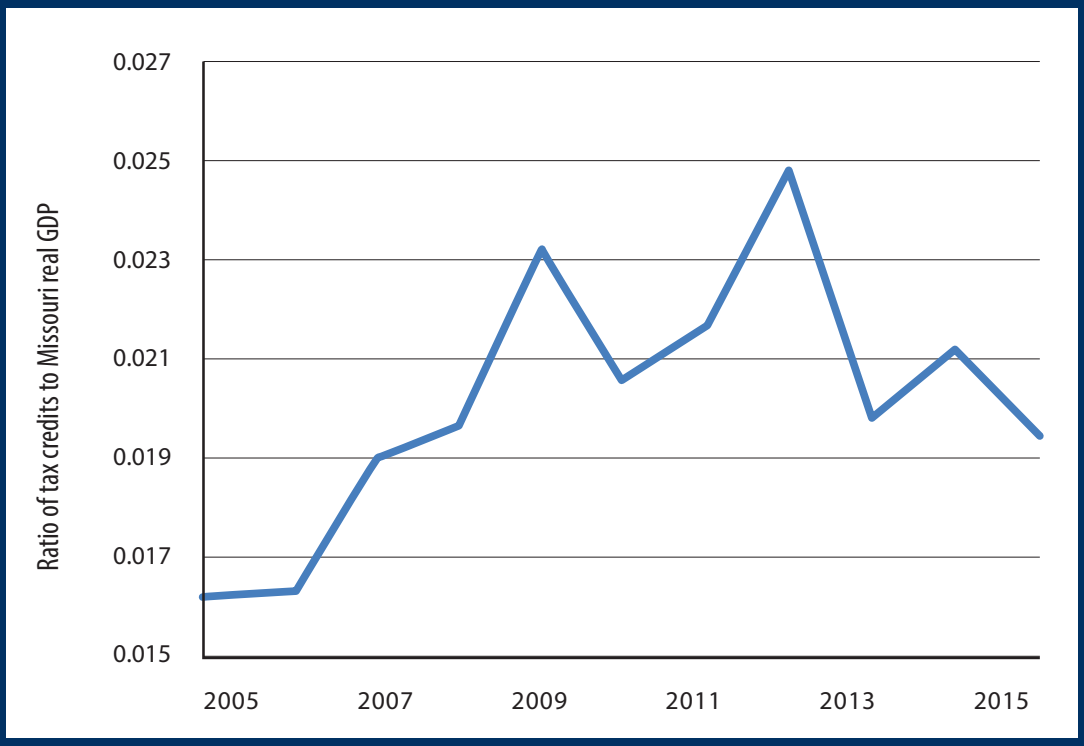
In this paper, we make two contributions. One is undisputed: Missouri used to look like the rest of the country. In terms of economic growth, Missouri's real GDP increased at a rate nearly identical to the rate at which the United States' real GDP increased. The

trend, however, has shifted. We present evidence that a significant divergence occurred between Missouri's real GDP growth rate and the nation's real GDP growth rate beginning in 1997. In Missouri, the average annual rate of real GDP growth has been roughly half the rate of the United States over the past two decades. The key question is, why did Missouri's economic growth slow relative to the nation's?

Figure 6

Ratio of Total Tax Credits to Missouri Real GDP, 2005 to 2015

Tax credits have grown to approximately 2 percent of Missouri's economy.



Source: Office of Administration, State of Missouri, and Bureau of Economic Analysis.

The second contribution is subject to caveats. We examine changes in government activity, identifying a set of policy changes that could account for the change in Missouri's real GDP growth relative to the nation's real GDP growth rate. If the Missouri economy is growing at a slower rate than other states, 47 at the last count, it is likely that something institutional or something in the policy environment has changed; the economics of growth suggest that both institutions and policy variables affect growth rates. As we argued in the paper, an economy's growth rate is positively related to the *after-policy return* on regulations, laws, and taxes. The main institutions in Missouri are similar to the institutions that matter at the national level, so we examine state policy variables, looking for a change that has occurred in the state policy realm that could possibly account for the slowdown. We looked at changes in State-of-Missouri spending, the composition of spending, revenues, and the composition of revenues. Because we are looking at only one change in the trend growth rate of Missouri's real GDP, anything that changes its trend rate will be perfectly correlated with our lone observation. With that in mind, our results are a variation on Occam's razor; that is, the simplest candidate explanation is the best candidate explanation.

Our findings are easily summarized. There is only a small change in the fraction of Missouri income spent by Missouri government. What has changed is the composition of spending. Indeed, the shift has been away from infrastructure and education and toward transfer payments. Research indicates that such a shift in spending

could account for a reduction in a country's economic growth rate. Hence, the shift is a reasonable candidate that could explain why Missouri suffered a growth slowdown relative to the nation. In addition, Missouri raised the corporate income tax rate and the amount of corporate income subject to the higher rate in 1993. Thus, the after-tax return offered by Missouri corporations has declined and could account for why Missouri's growth rate is less than the nation's. Lastly, we examined the role tax credits might play, despite only having data going back to 2005. During that period, tax credits offered by Missouri State Government have increased from about $400 million to nearly $600 million a year. If the return on the government-selected recipients is lower than the average return on investment in Missouri, then an expanded tax credit program is consistent with slower economic growth in Missouri relative to the rest of the country.

We view this essay as the first step in a more ambitious research project. Now that we have documented that Missouri's economic growth did slow relative to the nation's economic growth, we need to see if the changes in Missouri's government policies are different from policy changes in other states. We have identified a set of potential "leading" relationships. However, such evidence would be stronger if we knew that Missouri's policy changes differed from policy changes in other states around the country.

Joseph Haslag is Chief Economist for the Show-Me Institute, and Michael Austin is a former policy researcher for the Show-Me Institute.

ENDNOTES

[1] See Haslag and Podgursky (2012) and Haslag (2014).
[2] See Acemoglu (2009).
[3] One data-measurement issue needs to be addressed. The Bureau of Economic Analysis (BEA) reports the real Gross Domestic Product (real GDP) for Missouri all the way back to 1988. With so many new types of businesses spawned by new technologies, the BEA changed the method used to calculate real GDP in 1997. From 1997 forward, the BEA used new North American Industrial Classification System, or NAICS, as the industrial classification system applied to compute real GDP. Between 1988 and 1997, the BEA used the old Standard Industrial Classification, or SIC. In 1997, both methods were used to compute real GDP. This means that the *growth rate* can be computed consistently even though there is a break in the level of the real GDP series. To give the reader an idea of the impact, nominal GDP was measured by both the SIC method and the NAICS method in 1997. In 1997 dollars, Missouri's GDP was $158.308 billion under the SIC and was $163.749 billion when computed using the NAICs. Hence, there is roughly a $5.4 billion increase in Missouri real GDP when computed using data collected using industries classified by NAICS compared with data collected using the SIC.
[4] Thus far we have asked if each sample mean growth-rate differential is different from zero. Now we conduct a test to determine if the sample means growth-rate differentials are different from each other.
[5] In case you think that a one-percentage point difference in the growth rate is not that big of a deal, let's remember how compounding works. It takes about 35 years, using the national average annual growth rate, for real GDP to double in the nation. In contrast, Missouri's real GDP will take nearly 70 years to double at the average annual rate from 1997 to 2015. In other words, Missouri's real GDP will take an extra 35 years to achieve what the average state will achieve in the U.S. in terms of the value of goods and services produced.
[6] To be complete, we also ask whether the average annual growth rate in the United States during the 1988–1997 period is different from the average annual growth rate in the United States during the 1998–2015 sample. The null hypothesis that the two sample means are equal was tested, and the likelihood that the null hypothesis is true is 10.5 percent. Thus, we cannot reject the hypothesis that for the United States the average annual growth rate changed after 1997.
[7] See almost any economic textbook on economic growth. The results go back to Solow (1956) and Swan (1956).
[8] See, for example, Acemoglu and Johnson (2005). In addition, Acemoglu (2005) and the references contained therein provide an excellent presentation of political and legal institutions and their effects on economic growth.
[9] If one were to maintain the assumption that all states offer the same return to any idea or production process, then it is possible for locations to agglomerate in one state by sheer chance For example, if companies just threw darts, when blindfolded, at a map, it is possible that all the technological progress, and growth, would end up in North Carolina. If we assume diminishing returns, then the existence of a company in North Carolina, for example, would mean that the return would be higher if the new technology were located in Missouri than adding another new technology in North Carolina. Note that in this story, we assume there are no spillovers associated with locating the two new technologies in North Carolina that would offset the diminishing returns.
[10] For the sake of brevity, we assume that in these illustrations, there is no Laffer curve tradeoff for the government. In other words, an increase in the tax rate results in higher revenues.
[11] Medicaid is often cited as an example of a government consumption good. Such items are not public goods in the same sense that parks, schools, and roads are. It is part of government spending, but the Medicaid recipient cannot share their treatment or doctor visit with another person.
[12] In their paper, "A New Framework for Testing the Effect of Government", Par Hansson and Magnus Henrekson of the Trade Union Institute for Economic Research performed a disaggregated study on the effect of state government spending on growth and productivity. Their research mirrors the intentions of this paper with their major conclusion that certain types of government expenditures have consistently different effects on economic growth (Hansson & Henrekson, 1993). They reported that government transfers and consumption hold consistently negative effects on growth, while expenditures on education has a positive effect, and government investment has zero effect. L. Jay Helms of the University of California–Davis dug even deeper into the effect fiscal policy has on economic growth. By discovering that different government expenditures affect economic growth differently, Helms tested the claim that expenditures and the specific revenues that finance them provide a more comprehensive understanding of the directed effects on state economic growth (Helms, 1985).
[13] We start with 1992 data because we are using the data to identify a structural break in the series that occurs on or before 1997. Including data from 1988 through 1991 would not alter any inferences we make about changes in spending types before or after 1997.
[14] Public Welfare & Health includes state expenditures on Supplemental Security Income (SSI), Temporary Assistance for Needy Families (TANF) and the Medical Assistance Program (Medicaid). It also includes provisions of services for the conservation and improvement of public health, including hospital care (Census Bureau Governments Division, 2006) . Data from the Social Security Administration note that growth in SSI payments is largely due to growth in the numbers of disabled persons and children (Social Security Administration, 2016). They reveal total cost of cash benefits for the Social Security disability program has grown 93 percent in 2003 dollars (Social Security Office of Policy, 2016).
[15] I am not claiming that a healthier population would not result in faster economic growth. First, expenditures on health are not necessarily related to a healthier population. See Morena-Serra and Smith (2011), who state that "…the expected relationship between health outcomes and system coverage—measured either by pre-paid spending (total, public or private) or health service utilization—is ambiguous *a priori." p.1* .
[16] A more complete table is available from the author that breaks down the diffenrent types of tax credits reported.
[17] See Missouri Tax Credit Review Commission (2010).

WORKS CITED

Acemoglu, Daron. 2009. *Modern Economic Growth,* Princeton, NJ: Princeton University Press.

Acemoglu, Daron. 2005. Politics and Economics in Weak and Strong States. *Journal of Monetary Economics, 52,* 1199–1226.

Acemoglu, Daron and Simon Johnson. 2005. Unbundling Institutions. *Journal of Political Economy, 113,* 949–995.

Barro, R. J. (1991, May). Economic Growth in a Cross Section of Countries. *Quarterly Journal of Economics, 106*(2), 407–443. Retrieved on April 27, 2017 from http://www.econ.nyu.edu/user/debraj/Courses/Readings/BarroGrowth.pdf.

Census Bureau Governments Division. (2006, October 1). Government Finance and Employment - Classification Manual. U.S. Bureau of the Census. Retrieved on April 27, 2017 from http://www2.census.gov/govs/pubs/classification/2006_classification_manual.pdf.

Hansson, P., & Henrekson, M. (1993, December). A New Framework for Testing the Effect of Government Spending on Growth and Productivity. *Public Choice, 81*(3/4), 381–401. Retrieved on April 27, 2017 from http://www.jstor.org/stable/30026935?seq=1#page_scan_tab_contents.

Haslag, J. H. (2014). The 49th State: Revisting Missouri's GDP Sector by Sector. St. Louis, MO: Show-Me Institute. Retrieved on April 27, 2017 from http://showmeinstitute.org/sites/default/files/2014%2010%20-%20Economic%20Growth%20-%20Haslag_0.pdf.

Haslag, J. H. & Podgursky, M. (2012). Slip Sliding Away: The Weak Relative Growth of the Missouri Economy. St. Louis, MO: Show-Me Institute. Retrieved on April 28, 2017 from http://showmeinstitute.org/sites/default/files/Missouri%20Economy%20-%20Haslag%20and%20Podgursky_WEB_0.pdf.

Helms, L. J. (1985, November). The Effect of State and Local Taxes on Economic Growth: A Time Series - Cross Section Approach. *Review of Economics and Statistics, 67*(4), 574–582.

Missouri Tax Credit Review Commission. (2010). Report of the Missouri Tax Credit Review Commission. Jefferson City, MO: State of Missouri. Retrieved from http://tcrc.mo.gov/pdf/TCRCFinalReport113010.pdf.

Moreno-Serra, R., & Smith, P. (2011). The Effects of Health Coverage on Population Outcomes: A Country-Level Panel Data Analysis. Results for Development Institute. Retrieved on July 11, 2017 from http://www.resultsfordevelopment.org/sites/resultsfordevelopment.org/files/resources/Transitions%2520in%2520Health%2520Financing%2520-%2520Effects%2520of%2520Health%2520Coverage%2520on%2520Population%2520Outcomes%5B1%5D.pdf.

Social Security Administration. (2016). Annual Report of the Supplemental Security Income Program. Social Security Administration. Retrieved on April 28, 2017 from https://www.ssa.gov/oact/ssir/SSI16/ssi2016.pdf.

Social Security Office of Policy. (2016). Trends in the Social Security and Supplemental Security Income Disability Programs. Retrieved on April 28, 2017 from https://www.ssa.gov/policy/docs/chartbooks/disability_trends/sect01.html.

Solow, Robert. 1956, A Contribution to the Theory of Economic Growth. *Quarterly Journal of Economics, 70,* 65–94.

Swan, Trevor W., 1956, Economic Growth and Capital Accumulation, *Economic Record, 32,* 334–61.

United States Bureau of Economic Analysis. Regional Data. Retrieved on June 26, 2017, from https://bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=2#reqid=70&step=1&isuri=1 (state GDP data); and https://bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=2#reqid=70&step=1&isuri=1 (nominal GDP data)

University of Missouri Economic Policy Analysis and Research Center. Missouri General Fund Revenues. Retrieved on June 26, 2017 from http://eparc.missouri.edu/publications/hist_tax/sec02/orp11_2016a.pdf

NOTES

NOTES

5297 Washington Place I Saint Louis, MO 63108 I 314-454-0647

3645 Troost Avenue I Kansas City, MO 64109 I 816-561-1777

Visit Us: showmeinstitute.org

Find Us on Facebook: facebook.com/showmeinstitute

Follow Us on Twitter: twitter.com/showme

Watch Us on YouTube: youtube.com/showmeinstitute