

## **Can Public Investment Shift Regional Growth Equilibria? 100 Years of Evidence from the Tennessee Valley Authority**

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A growing class of redistributive policies target public resources towards disadvantaged geographic areas rather than towards disadvantaged individuals (see Glaeser and Gottlieb, 2008 and Moretti, 2011 for reviews). The United States government is estimated to spend approximately 30 billion dollars annually on these programs, while state and local governments spend 12 billion. These policies are even more important in Europe, where EU funds are used to support economic activities in regions with low average income. Little is known about the effectiveness of these policies. When does it make economic sense to help disadvantaged geographic areas rather than disadvantaged households? Who benefits from these policies?

One possible justification for these programs is the notion that economic development exhibits nonlinear threshold effects whereby investments beyond some critical level generate self-sustaining economic activity. When such nonlinearities are present, a “big push” strategy of large scale public investment in particular areas may yield long run returns dramatically outweighing the initial costs of investment (Rosenstein-Rodan, 1943; Murphy, Shleifer, and Vishny, 1989).

Such possibilities have intrigued economists for decades, however empirical evidence on these issues remains thin (Azariadis and Stachurski, 2005). In this project, we will conduct an empirical investigation of the long run effects of a large place based policy which took place in the U.S. at the beginning of the 20<sup>th</sup> century. In particular, we propose an evaluation of the long run growth impact of the Tennessee Valley Authority (TVA) – a large scale regional development authority created in 1933 as part of the New Deal.

The Tennessee Valley region includes most counties in Tennessee, a significant number of counties in Kentucky, Alabama, and Mississippi and a few counties in North Carolina, South Carolina, Georgia, West Virginia, Indiana and Virginia. At the time of the program’s inception the TVA region was among the poorest areas in the country. Electricity was unavailable in most areas, and the population suffered from the scourge of malaria.

According to Franklin Roosevelt, the TVA program was intended to modernize the regional economy by “touching and giving life to all forms of human concerns.” In practice this meant investing in large scale infrastructure programs, particularly large electricity generating dams, whose power was used to electrify the region and boost local productivity. Investments were also made in local schools and roads, and fertilizers meant to help boost agricultural efficiency. Most of the investments were made over the first 25 years of the program during which time over \$20B in federal funds were transferred to the local TVA authority. At the program’s peak in 1950, the annual per capita subsidy to the region was \$125 per resident. By 1970 however, that figure had begun to fall

substantially, as the federal government began to scale back its investment in the region and TVA became a fiscally self-sustaining entity.

The dramatic scope of this program along with the pattern of eventual pattern of federal withdrawal, provide the natural setting to empirically evaluate the long run performance of big push policies. We have obtained access to historical Census data covering all counties in the United States from 1900 through 2000. Our study will be divided into two parts. In the first we simply conduct an evaluation of the impact of the TVA program on TVA counties. To accomplish this we will compare the growth of TVA counties to non-TVA counties with similar characteristics and trends in the three decades prior to 1940. We have already begun this part of the analysis and have discovered that TVA appears to have led to a large shift of economic activity away from agriculture and towards manufacturing. This reallocation led to an increase in per capita income. Most of the gains occurred during the first 30 years of the program when federal funding was heaviest. However, we find no evidence of a reversal in these gains over the 1970-2000 period when funding scaled down. This pattern of a permanent response to a large temporary transfer is qualitatively consistent with simple models of poverty traps.

In the second, more tentative, part of the paper we fit a growth model to our panel of counties and examine whether they exhibit the sort of nonlinear dynamics discussed in the literature on poverty traps and big push policies. Our preliminary findings indicate that although there are substantial nonlinearities in growth of local economic activity, they are not large enough to generate important poverty traps or convergence clubs of the sort discussed heavily in the macroeconomics literature. We are still in the process of determining the extent to which these findings may be driven by measurement problems with the data which may make counties appear more economically mobile than is actually the case.

Finally, we plan to compute long run rates of return to the original TVA investments using both our reduced form program evaluation estimates and our structural growth estimates. By contrasting the two sets of estimates we hope to set the standard for future investigations of these issues.

## References

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