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POPULATION ADJUSTMENT TO TRANSPORTATION INVESTMENT AND TRANSPORTATION PLANNING

PROBLEM STATEMENT

Planning for the future in a highly populated, dense, and rapidly growing state like Florida is a truly Herculean task. One requirement for such planning is accurate projections of future population. Another is a framework for relating the roles of population growth and transportation investments to each other and to the state's objectives. How to achieve Florida's Transportation Mission—which is essentially to maximize the net benefit of Florida's transportation investments to the state's residents—depends upon whether the regions of Florida are fully open economies or partially closed economies. In a fully open economy, households and firms migrate rapidly across regions in response to policy decisions or other changes in basic conditions that make one region more or less desirable than others. A large body of academic economic evidence suggests that regional economies in the United States are fully open, but significant parts of Florida's 2020 Transportation Plan (FTP) appear to treat population as closed with respect to transportation infrastructure, in the sense that the amount of future population growth is determined entirely by factors outside the influence of transportation policymakers. This project investigates whether the perspective adopted by Florida to guide long-range transportation investment decisions, as represented in Florida's 2020 Transportation Plan, provides an adequate framework for thinking about the relationship between population growth and road investment, and about how that framework might be improved.

OBJECTIVES

This project seeks to answer three questions. First, does Florida's population respond to transportation investments quickly relative to the life of transportation investments? Second, how should transportation planning account for such a response in trying to maximize net benefits to Floridians—that is, what is the difference between planning for Florida in an open, versus a closed or partially closed, framework? Third, is the difference between investment decisions under the two frameworks large enough to worry about? In addition, the researchers also address the role of the uncertainty associated with projections of future population in transportation planning.

FINDINGS AND CONCLUSIONS

First, researchers found that the elasticity of state level population with respect to state road capital stock lies between .23 and .59, with .4 being the best estimate. This means that, all else being equal, a 10% increase in Florida's stock of quality adjusted highway infrastructure will increase Florida's population by 4%. This finding is highly significant statistically and is quite robust to alternative empirical specifications.

Second, researchers found that the manner in which transportation investment options are evaluated is quite different conceptually if the decision maker adopts an open economy perspective instead of a closed, or partially closed, economy perspective. In an open economy, the lion's share of the net benefits of state transportation investments to state residents (as opposed to spillover benefits to the rest of the nation) is reflected in increases in property values. Residents who own businesses with monopoly power in local markets may also benefit. Other sources of potential benefits to the state's residents are competed away by migration of workers and firms.

Third, researchers found that the loss of net benefits to Florida's residents, resulting from making transportation decisions as if the economy were partially closed, could be quite large. Further, as indicated above, the benefits of transportation investments must be evaluated in terms of their impacts on rent gradients—the levels and patterns of land rents in urban areas. Most other potential sources of net benefits to Florida's residents will be competed away by migration of firms and households. Thus, the difference between the two frameworks is significant enough that Florida's planning efforts are likely to be helped by being explicit about the relationship between transportation infrastructure investments and population.

With regard to the impact of uncertainty associated with population projections on transportation investments, the researchers have found that the confidence intervals for state and metropolitan statistical area level population projections based upon our regional open economy equilibrium approach are quite narrow. The impact of this form of uncertainty will be less important than the gain from using the open economy framework and estimating the responsiveness of population to transportation infrastructure investments correctly.

BENEFITS

This research points to important ways in which planning for major transportation investments at the state and local levels can be improved by explicitly taking account of the response of population to such investments in a modern open regional economy. In particular, more accurate evaluation of the costs and benefits of such projects can lead to improved returns to the state from transportation investments. The report will serve as a first step in the forthcoming update of the Florida Transportation Plan. It will lead to further discussions that will address, for example, issues dealing with the true goals of transportation in Florida and the ways in which more realistic statements may be incorporated into the FTP so as to lead to sounder policies.

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