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Modeling Economic Inefficiency Caused by Public Transit Subsidies

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Public transit in the United States is highly subsidized. As economists have shown us, subsidies can cause distortions in the market; if the market were otherwise perfect, the subsidies would create inefficiencies which prevent the economy reaching an optimal level. The authors of this book use statistical methods to determine the nature and extent of the inefficiencies in public bus agencies.

The authors start with an overview of transit subsidies and how subsidies cause inefficiencies. They discuss the history of subsidies from early in the century when transit firms made profits and didn't need subsidies through the growth and subsequent decline of Federal subsidies. They also discuss the varied objectives of transit subsidies, for example, trying to extend fixed route bus into low density areas where it is ill-suited or trying to maintain low fares to keep transit affordable to the poor. The difference in objectives is of interest later in the book when it becomes clear that evaluating the effectiveness of a subsidy must take into consideration its purpose.

They describe both technical and allocative inefficiencies. A technical inefficiency exists when the output of a firm is less than the maximum possible given the amount of resources (labor, fuel, or buses) used. Allocative inefficiency , as they use the term, is the use of input resources in less than optimum proportions, given the price of the resources. The nature of the distortions that subsidies might produce include having an excessive number of buses, increasing the wage rate of labor, or providing too much service among others.

The second chapter goes into greater detail about the trends in subsidies using Section 15 data (i.e., information collected by the Federal Transit Administration) from 1983 to 1992 for bus only transit agencies. The data clearly show that as Federal subsidies dropped for operating and capital expenses, the states picked up more of the operating costs and the local governments picked up more of the capital. The chapter is marred by poorly labeled tables; it is frequently not clear whether numbers are in dollars or percentages, or, if dollars, whether constant or current.

The next chapter presents the theory linking subsidies to inefficiency, and the fourth chapter develops the model forms for testing the impact of subsidies on the cost of bus transit. The next three chapters quantitatively estimate the inefficiencies resulting from the subsidies using three different statistical methods: an iterative non-linear three stage least squares approach, data envelopment analysis, and a stochastic frontier model. They use these approaches to look at the proportion of fuel, labor, and capital used.

The concluding chapter summarizes the results and draws some policy recommendations from them. The analysis shows that the nature of the inefficiencies varied by type of transit agency, that is whether the firm was public or private, purchased service, and was a small, medium, or large firm. The different statistical approaches seem to produce different results, a not uncommon finding. However, in almost every case the firms appear to use excess labor given their capital.

I had looked forward to the authors' policy recommendations, but did not find those useful. Some are too obvious to be meaningful; for instance, "The nature of the distortions differs by type of firm so that policies to reduce them should differ among firms. This policy recommendation must be applied to an individual transit firm only after all efficiencies and their sources are fully examined." Others do not seem to recognize the environment in which transit agencies exist; for instance " The federal subsidy formulae must take into account local and state funds and must reflect the marginal subsidy rates of inputs to each firm to determine the overall amount and type of subsidy to be offered." But if the Federal government bases its subsidy on how much the sate and local governments are providing, the state and local governments will surely reflect that in their decisions. And some do not recognize the political pressures on transit managers; "To ensure Pareto optimality, fare subsidies should be based upon the inverse of elasticity of average cost, or the inverse demand elasticity rule commonly used in establishing prices for various submarkets."

While in many ways the book is interesting, it is also frustrating. The organization seems as if each chapter had originally stood on its own (which it very likely had as a journal article); thus, discussions of the effect of subsidies and types of grants available seem to keep reappearing, rather than being completely covered in one place. The impact of politics on subsidy and fare decisions is incorporated in one of the models, which includes a variable representing the presence of a congressman from the transit agency's state on a committee that influenced transit subsidies; however, for the most part the political and other pressures on the local managers is left out.

The preface states that the book is aimed at "students of public transit economics," but would be useful to people in transportation and urban planning. I suspect that while it would be of interest to the former, the latter would find it heavy going and a great deal more than they want to know about the topic.

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