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School finance reform: Assessing general equilibrium effects

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Abstract

In 1994 the state of Michigan implemented one of the most comprehensive school finance reforms undertaken to date in any of the states. Understanding the effects of the reform is thus of value in informing other potential reform initiatives. In addition, the reform and associated changes in the economic environment provide an opportunity to assess whether a simple general equilibrium model can be of value in framing the study of such reform initiatives. In this paper, we present and use such a model to derive predictions about the effects of the reform on housing prices and neighborhood demographic compositions. Broadly, our analysis implies that the effects of the reform and changes in the economic environment are likely to have been reflected primarily in housing prices and only modestly on neighborhood demographics. We find that evidence for the Detroit metropolitan area from the decade encompassing the reform is largely consistent with the predictions of the model.

JEL classification: H42; H71; H73; I22
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1. Introduction

The last thirty years have witnessed intense activity in school finance reform. Numerous states have centralized, in varying degrees, the funding of their public schools. While most states have done so prompted by their state courts, in 1993 Michigan centralized public school funding through the decision of its Legislature. Instead of being determined by individual school districts, school revenues are now determined by the state through a foundation grant system. The new system has given large absolute and relative revenue increases to low-revenue districts and has capped revenues of high-revenue districts. In addition, property taxes have been dramatically reduced and state taxes increased.

The reform had two clear goals: to lower property tax burdens and to reduce variation in revenues across districts. Both goals were accomplished. However, a reform of this kind and reach has the potential of leading to other effects as well. In metropolitan areas where public schools have residence requirements, households choose locations and schools jointly given the housing prices, property taxes and public school qualities that prevail in the different

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jurisdictions. By affecting property tax rates and public school revenues, this type of reform can alter housing prices and public school quality. In addition, the changes in relative school funding levels (and possibly qualities) across districts might induce households to move from one district to another.

We examine whether these general equilibrium effects took place in the Detroit metropolitan area,[1] which is the largest metropolitan area in Michigan and comprises about 41% of the state population. We use a multi-community equilibrium model to develop qualitative predictions about the effects of the reform, and investigate whether these predictions hold empirically. For analytical purposes we decompose the reform into two elements: a tax reform, and a change in the level and distribution of revenue. Furthermore, over the nineties the metropolitan area experienced a significant change in the shape of the income distribution. Although all segments of the distribution experienced an increase in real income, the lower and upper segments benefited from greater proportional increases.[2] To gain insight into the effects of these income changes, we decompose them into a proportional increase in all incomes, and a mean-preserving income change. Controlling for the effects of changes in the metropolitan income distribution proves to be important for empirically assessing the effects of the reform.

We investigate the predictions of the model using data from the Detroit metropolitan area before and after the Michigan school reform, and find empirical support for them. This, in turn, has important policy implications. A central insight from the model is that, unless the revenue component of the reform alters the pre-existing ordering of districts by revenue, the primary effects of the reform will be reflected in property values with relatively little impact on household location. Changes in property value may be accompanied by changes in school quality to the extent that expenditures impact quality. However, absent household relocation, such expenditure changes will not be accompanied by demographic changes that might affect peer qualities. This prediction rests on assumptions about the geographic distribution of housing, assumptions that we argue are likely to hold at least approximately in many metropolitan areas.

The Michigan reform created little incentive for relocation in the Detroit metropolitan area because it did not alter the pre-reform ranking of revenue across districts. In all fairness, the expenditure changes mostly aimed at small, rural districts (Courant and Loeb (1997)), so it should not come as a surprise that the Detroit metropolitan area did not see greater revenue gains. However, the very design of the reform limited the kind of general equilibrium relocation effects described above, which, via peer quality changes, might have further helped low-achieving urban districts such as Detroit Public Schools. Although the district's fourth grade pass rate in math tests rose from 16 to 50% between 1991 and 1999, and the seventh grade pass rate in math tests rose from 8.6 to 34.5%, this only meant going from the sixth to the thirteenth lowest place in fourth grade math among the 83 districts in the metropolitan area, and from the third to the fourth lowest place in seventh grade math. Moreover, as we discuss later, there is reason for caution in taking these measured gains at face value.

This paper makes several contributions to the analysis of school finance reform. First, we build on the work of researchers who have examined the general equilibrium effects of school finance reform using calibrated models (see, for instance, Nechyba (2004), Fernandez and Rogerson (1998, 2003)), by empirically evaluating these effects.[3] Second, we extend the work of researchers who have focused on specific types of effects emerging from the Michigan reform (achievement in Cullen and Loeb (2004), Papke (2005) and Roy (2003), capitalization in Guilfoyle (1998a,b)), by studying general equilibrium effects and providing an analytical framework to this end. Third, we study a specific metropolitan area, Detroit, rather than the entire state (Roy (2004)) in order to focus on a geographic context in which households have access to roughly the same set of residential and school choices. Finally, our analysis provides insights that are relevant not only to Michigan but also to other states, given that a number of recent state aid reforms have reduced property taxes while increasing state funding, and have embraced a state aid system with some similarities to the one adopted in Michigan (Yinger (2004)).

Furthermore, this paper makes a contribution to the analysis of the effects of changes in the metropolitan area income distribution on house prices, an issue which has not been, to our knowledge, systematically explored thus far. This framework may prove helpful in shedding light on the dynamics of house value appreciation and its variation across metropolitan areas. While being of interest in its own right, this analysis also provides a method for studying the effects of school reform while controlling empirically for changes in the income distribution.

[1] Throughout we define the Detroit metropolitan area as the counties of Wayne, Macomb and Oakland.

[2] Using national data, Autor et al. (2005) document similar changes in the U.S. income distribution.

[3] Loeb (2001) calibrates her model to Michigan data in a partial equilibrium framework.