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Dissertation Awards

2010

Essays on the Economics of Local Labor Markets: Dissertation Summary

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This thesis studies the economics of local labor markets. There are three chapters in the thesis, and each one examines how economic outcomes are affected by local labor market conditions.

Chapter 1

The first chapter analyzes the incidence of local labor demand shocks. It begins from the observation that low-skill workers are comparatively immobile. When labor demand slumps in a city, college-educated workers tend to relocate, whereas noncollege workers are disproportionately likely to remain and face declining wages and employment (Glaeser and Gyourko 2005). A standard explanation of these facts is that mobility is more costly for low-skill workers (Topel 1986; Bound and Holzer 2000).

In this chapter, I propose and test an alternative explanation that focuses on why low-skill workers may be disproportionately compensated during adverse labor demand shocks, rather than why it may be disproportionately costly for them to migrate. This explanation has two components. First, I document that adverse shocks substantially reduce the cost of housing. This fact and the existing evidence that the expenditure share on housing declines with income imply that low-skill workers are disproportionately compensated by housing price declines. Second, means-tested public assistance programs disproportionately compensate low-skill workers during adverse shocks. I document that, not surprisingly, aggregate transfer program expenditures are highly responsive to local labor market conditions.

These two different types of explanations (one based on mobility costs and one based on compensating factors) are not incompatible; however, their relative importance ultimately determines the actual incidence of local labor demand shocks. If out-migration of workers is low primarily because of mobility costs, then the incidence of local labor demand shocks will be primarily borne by workers; additionally, to the extent that mobility costs are greater for low-skill workers, they may disproportionately bear the incidence of the adverse shock. Alternatively, if the incidence of adverse local labor demand shocks is primarily borne by immobile housing and social insurance programs, then low-skill workers will be disproportionately compensated and, consequently, less likely to out-migrate.

I develop and estimate a spatial equilibrium model that captures how wages, population, housing prices, and transfer payments reequilibrate following a shift in local labor demand. The model is based on the spatial equilibrium model in Roback (1982). Following Glaeser and Gyourko (2005), the model allows for a concave local housing supply curve, arising from the durability of the local housing stock.[1] While the Glaeser and Gyourko model assumes perfect mobility, I allow for heterogeneous mobility costs that limit spatial arbitrage, as in Topel (1986). Unlike the preceding models, I explicitly model local labor demand.

The two primary empirical implications of the model are 1) if positive labor demand shocks increase population more than negative shocks reduce population, it suggests the existence of a concave housing supply curve and/or heterogeneous mobility costs; and 2) if positive shocks increase housing prices more than negative shocks reduce housing prices, that is consistent with the existence of heterogeneous mobility costs.

The model guides the empirical strategy, which consists of two steps. In the first step, I test for asymmetric responses of wages, employment, population, and housing prices to symmetric labor demand shocks. The validity of this exercise requires constructing plausibly exogenous positive and negative shifts in local labor demand of equal magnitude. I follow Bartik (1991) in constructing an instrumental variable for local labor demand shocks by interacting cross-sectional differences in industrial composition with national changes in industry employment shares. I find robust evidence using U.S. census data that positive local labor demand shocks increase population (and employment) more than negative shocks reduce population (and employment), and that this asymmetry is greater for low-skill workers. These robust asymmetric relationships for local population and employment contrast sharply with the absence of any evidence of a similar asymmetric relationship for (any measure of) wages, housing values, and rental prices, though all of these other variables are consistent with an asymmetric housing supply curve and limited mobility costs.

To quantitatively estimate the magnitude of mobility costs by skill and the shape of the housing supply curve, in the second set of empirical analyses I estimate the full model using a nonlinear, simultaneous equations generalized method of moments (GMM) estimator. The GMM estimates suggest that the housing supply curve is concave (so that housing is more elastically supplied following increases in housing demand than following decreases in housing demand) and that (over decadal time horizons) mobility costs are not large and are comparable for both high-skill and low-skill workers. The GMM results reveal several other important findings. First, the observed asymmetric population responses are primarily accounted for by an asymmetric housing supply curve rather than due to substantial barriers to mobility. Second, the results suggest that the observed difference in out-migration by skill is primarily accounted for by transfer payments rather than to differences by skill in housing expenditure shares. Lastly, the results suggest that the primary explana-

tion for the comparative immobility of low-skill workers is not higher mobility costs, but rather a lower incidence of adverse local labor demand shocks. Consequently, much of the incidence of adverse labor demand shocks is diffused to homeowners, landlords, and public assistance programs.

Chapter 2

The second chapter, written jointly with Daron Acemoglu and Amy Finkelstein, studies how local area health spending responds to permanent changes in local area income. This chapter is motivated by the fact that health expenditures as a share of GDP in the United States have more than tripled over the last half century, from 5 percent in 1960 to 16 percent in 2005 (Centers for Medicare and Medicaid Services 2006). A common conjecture is that the rise in the share of income spent on health care expenditures is a direct, or at least a natural, consequence of the secular increase in living standards—because health care is a "luxury good."[2] The *Economist* magazine stated this as a conventional wisdom in 1993, writing: "As with luxury goods, health spending tends to rise disproportionately as countries become richer" (quoted in Blomqvist and Carter [1997], p. 27).

This view has recently been forcefully articulated by Hall and Jones (2007). They argue that extension allows individuals to escape diminishing marginal utility of consumption within a period. The Hall-Jones view also receives indirect support from the very high estimates of the value of life and value of health provided by Nordhaus (2003) and Murphy and Topel (2003, 2006). The fact that most other Organisation for Economic Co-operation and Development (OECD) countries have also experienced substantial growth in their health sector over the last half century (OECD 2004) also makes the secular rise in incomes a natural candidate to explain the rise in the health share of GDP in the United States.

Understanding the extent to which the rise in the health share of GDP is a direct consequence of the rise in living standards is important for several reasons. First, it enables a proper accounting of the notable growth in the United States (and OECD) health care sector over the last half century. Second, it is necessary for forecasting how health care spending is likely to evolve in coming years. Finally, it is a crucial first step toward an assessment of the optimality of the growth of the health care sector. In particular, if health spending is strongly increasing in income, so that rising income can explain most or all of the rising health share, it would be more likely that the increasing share of GDP allocated to health is socially optimal.[3]

The relationship between income and health spending is the subject of a voluminous empirical literature. Remarkably, however, virtually all existing estimates are based on simple correlations of income and health care spending, across individuals, across countries, or over time. These correlations are consistent with income elasticities ranging from close to 0 to substantially above 1.[4] In light of the paucity of existing evidence, Hall and Jones (2007) conclude their paper by stating that, "Our model makes the strong prediction that if one looks hard enough and carefully enough, one ought to be able to see income effects [with elasticities above 1] in the micro data. Future empirical work will be needed to judge this prediction."

The objective here is to provide causal estimates of the effect of income on aggregate health spending. The strategy is to exploit the time-series variation in global oil prices between 1970 and 1990, which impacted incomes differentially across different parts of the Southern United States that vary in the oil intensity of the local economy. In our baseline specification we approximate local economies by economics subregions (ESRs), which consist of groups of counties within a state that have strong economic ties. We focus on the southern United States to increase the comparability of the ESRs, in particular to minimize the likelihood of differential trends in health care expenditure driven by other factors. Our empirical strategy exploits the interaction between global oil prices and ESR-level importance of oil in the economy as an instrument for income. Our main proxy for the importance of oil is the size of preexisting oil reserves in an ESR. The identifying assumption is that the interaction between global oil price changes and local oil reserves should have no effect on changes in the demand for health care, except through income. We provide several pieces of evidence that are supportive of the validity of this identifying assumption. Using this instrumental-variable strategy we estimate an elasticity of ESR-level hospital spending with respect to ESR-level income of 0.72 (standard error = 0.21). Point estimates of the income elasticity from a wide range of alternative specifications fall on both sides of our baseline estimate, but are almost always less than 1.

Because our instrument impacts incomes at the ESR level (rather than individual income), our estimates correspond to local general equilibrium effects of income changes, but will not capture any global or national general equilibrium effects.[5] Of particular concern is that if the growth of the health care market resulting from the rise in global incomes induced more innovation, our estimates may not incorporate the implications of these induced innovations on health expenditures. Our analysis suggests that significantly larger elasticities resulting from these induced innovation general equilibrium effects are unlikely for two reasons. First, the same induced innovation effects working at the national or global level should manifest themselves as increased technology adoption or entry of new hospitals at the local (ESR) level. However, we find no statistically or substantively significant effects of local income on hospital entry or on various measures of technology adoption at the ESR level. In this light, a significant global-induced innovation effect seems unlikely. Second, technological change should be more rapid for sectors that are expanding faster than others (e.g., Acemoglu

2002; Acemoglu and Linn 2004). Since health care appears to have an income elasticity above 1, induced innovations should relatively favor the non-health sectors that have an income elasticity above 1.

We therefore use our local general equilibrium income elasticity estimate to perform a back of the envelope calculation of the role that rising income has played in the rising U.S. health share. Our central point estimate of 0.72 suggests that rising income would be associated with a modest decline in the health share of GDP. Perhaps more informatively, the upper end of the 95 percent confidence interval of this estimate is 1.13; this allows us to reject the hypothesis that rising real income explains more than 0.5 percentage points of the 11 percentage point increase in the health share of U.S. GDP between 1960 and 2005.

Chapter 3

The third chapter of the dissertation, written jointly with Kory Kroft, studies theoretically and empirically how optimal Unemployment Insurance (UI) benefits vary with local labor market conditions. This chapter is motivated by the fact that existing studies on the effect of unemployment benefits on unemployment durations (e.g., Moffitt 1985; Meyer 1990; Chetty 2008) do not distinguish between changes in benefits when local labor market conditions are good and changes in benefits when local labor market conditions are poor. As Alan Krueger and Bruce Meyer (2002, pp. 64–65) remark: "[F]or some programs, such as UI, it is quite likely that the adverse incentive effects vary over the business cycle. For example, there is probably less of an efficiency loss from reduced search effort by the unemployed during a recession than during a boom. As a consequence, it may be optimal to expand the generosity of UI during economic downturns . . . Unfortunately, this is an area in which little empirical research is currently available to guide policymakers."

If the moral hazard cost of UI depends on local labor market conditions, this may imply that optimal UI benefits should respond to shifts in local labor demand. However, there exists little empirical evidence on measuring how local labor market conditions affect the moral hazard cost of UI, since many of the studies that conduct a welfare analysis of UI do not consider whether and to what extent UI benefits should vary with local labor market conditions (Baily 1978; Chetty 2006, 2008; Shimer and Werning 2007; Kroft 2008).

In this chapter, we conduct both positive and normative economic analyses to investigate how local labor market conditions affect the moral hazard cost of UI. On the positive side, we consider the disincentive effect of UI and the unemployment rate. We first consider workers who set a reservation wage and face an exogenous arrival rate of job offers. In this version of the model, the relationship between the unemployment rate and elasticity of duration with respect to the UI benefit level is theoretically ambiguous; however, when we calibrate the model using realistic parameter values selected from the literature, the duration elasticity is positively correlated with the unemployment rate.[6] This analysis suggests that the moral hazard cost of UI increases with the unemployment rate, contrary to the speculation of Krueger and Meyer (2002), as well as existing UI policy in the United States and many other developed countries.

We extend the search model to encapsulate the more realistic scenario where workers affect the job finding rate by increasing their search efforts. In this model with an endogenous job offer arrival rate, the elasticity of unemployment duration with respect to the UI benefits is the sum of behavioral responses of reservation wages and search effort. We show that whether moral hazard rises or falls with the unemployment rate depends on the relative importance of these two behavioral channels.

Recent empirical work on the behavioral responses to social insurance programs finds that more generous benefits do not lead to higher wages (see Card, Chetty, and Weber 2007). Given that higher UI benefits raise durations, this leads us to suspect that the search effort channel is empirically more important than the reservation wage channel. We examine this question by calibrating the search model with endogenous search effort and considering how variation in local labor market conditions affects the duration elasticity. For different ranges of parameter values, the elasticity can be either positively or negatively related to the unemployment rate. This ambiguity is coming entirely through the search channel—the reservation wage component of the duration elasticity is always increasing with the unemployment rate. We thus conclude from our model and calibrations that the relationship between the duration elasticity and the local unemployment rate is ultimately an empirical question.

To empirically test how the duration elasticity varies with the local unemployment rate, we exploit variation in UI benefit levels within states over time and interact the effect of UI benefit generosity with the state unemployment rate.[7] Our findings indicate that the elasticity of unemployment duration with respect to UI benefits is significantly lower when the local unemployment rate is high. In our preferred specification, the elasticity of unemployment duration with respect to UI benefits is 0.741 (s.e. 0.340) at the mean unemployment rate. However, a 1 standard deviation increase in the unemployment rate (an increase of 1.68 percentage points) reduces the magnitude of the duration elasticity by 0.239 to 0.502 (a decline in magnitude of 32.3 percent). To interpret this finding as evidence that the moral hazard cost of UI falls with the unemployment rate, we conduct a variety of robustness tests to address concerns that the interaction effect we estimate is driven by compositional changes, unobserved trends, sample selection, and liquidity effects, and find no evidence that any of these concerns are primarily responsible for our effect. We therefore conclude that the association between the duration

elasticity and the local unemployment rate indicates that the moral hazard cost of UI varies systematically with local labor market conditions.

Finally, we show that when the moral hazard cost of UI depends on local labor market conditions, this has important implications for the welfare consequences of UI. We develop a simple formula for the optimal level of unemployment benefits which takes into account how the behavioral response to UI benefits varies with local labor market conditions. The formula is stated in terms of our reduced-form parameter estimates and is thus in the spirit of the "sufficient statistics" approach to welfare analysis (Chetty 2009). The primary advantage of this method is that it can be implemented with relatively few parameter estimates.[8] Furthermore, these parameters can often be empirically estimated using a credible quasi-experimental research design. One disadvantage of this approach is that it is not well-suited to out-of-sample counterfactual analysis because the sufficient statistics are only valid for relatively "local" changes in the policy-relevant parameters. Using our reduced-form empirical estimates to calibrate the optimal UI formula implied by our model, we find that a 1 standard deviation increase in the local unemployment rate leads to a 6.4 percentage point increase in the optimal replacement rate. To give a sense of the magnitude of this policy change, it is roughly equivalent to a 1 unit change in the coefficient of relative risk aversion in the model (e.g., from $\gamma = 2$ to $\gamma = 3$).

Notes

1. Throughout the paper I use the term "concave housing supply curve" to imply that positive housing demand shocks increase housing prices less than equal-sized negative shocks reduce housing prices. More formally, a concave housing supply curve implies that $\partial^2(\text{housing price})/\partial(\text{housing supply})^2 < 0$.
2. Throughout we use the term *luxury good* to designate an empirical income elasticity greater than 1 (and similarly "necessity" refers to an elasticity less than 1). This responsiveness to income may result from preferences, policy or other factors.
3. Of course, a large role for income would only be suggestive, not dispositive. A systematic analysis of social optimality would also have to consider potential externalities in health provision and in health R&D, as well as informational and institutional constraints in the health care market.
4. OECD (2004) provides a survey of the large empirical literature on the correlation between income and health spending (see, particularly, Annex 2B). The cross-sectional relationship across individuals between income and health spending tends to be small or negative (e.g., Newhouse and Phelps 1976). In contrast, cross-country analysis tends to suggest income elasticities greater than 1 (e.g., Newhouse 1977; Gerdtham and Jonsson 2000), as do time-series analyses of the relationship between income growth and growth in health spending for individual countries (e.g., Fogel 1999).
5. We also present results at the state level rather than the ESR level. This reduces our cross-sectional variation in oil intensity but allows us to capture general equilibrium effects at a higher level of geographic aggregation than the ESR. The results are similar.
6. Additionally, we show that we can resolve the theoretical ambiguity by making assumptions on the distribution of wages. If the distribution of wages has a nonincreasing hazard rate (as would be the case if wage offers had a Pareto distribution), then the duration elasticity will be increasing in the unemployment rate.
7. In ongoing work we are constructing variation in state unemployment rates that is driven by plausibly exogenous shifts in local labor demand by following the procedure in Bartik (1991).
8. We cannot conduct a full sufficient statistics analysis without reduced-form estimates of how the consumption smoothing benefits of UI vary with local labor market conditions. We hope that future work will build on Gruber (1997) and investigate this reduced-form effect.

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