**Economic Growth, Geography and Inequality:**

**Who Benefits from Productivity Gains?**

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A well-established fact in macroeconomics is that in the long run, increases in workers' standard of living in a country are tightly linked to productivity growth in that country. For example, in the United States growth in real per-capita income over the last two centuries tracks very closely the growth of labor productivity (See, for example, Acemoglu, 2010 or Hall and Jones, 1999).

But productivity shocks are rarely uniformly distributed over space. For example, for the past three decades, metropolitan areas in the United States have experienced increasingly different trends in productivity growth and therefore in average nominal salaries. In particular, productivity and average salaries in American metropolitan areas have been diverging, with metro areas with initially high productivity and salaries experiencing faster gains than metro areas with initially low productivity and salaries. This divergence has its origins in the 1980s, when the economic fate of American cities started to be increasingly defined by their residents' average levels of education. Cities with many college-educated workers and productive employers started attracting even more, and cities with a less educated workforce and less productive employers started losing ground.

The end result is the most unequal economic map that America has seen in half a century. Most of the literature on labor market inequality has focused on differences between skill groups. But today, the productivity and nominal salary of the average high school graduate in cities at the top of the distribution is two times higher than in cities at the bottom of the distribution. For college graduates, the divide is even larger: The productivity and nominal salary of the average college graduate in cities at the top of the distribution is three times higher than in cities at the bottom of the distribution (Moretti 2011).

The goals of this project are: 1) to study the incidence of productivity differences across metro areas; 2) to quantify how much of the rise in welfare inequality among workers in the United States can be attributed to geographical differences in productivity; and 3) to understand what type of local policies can alleviate these differences across cities and workers.

The project will first present a simple general equilibrium model of the labor and housing markets at the metropolitan area level. The model is useful because it clarifies what factors determine the incidence of localized productivity and nominal wage differences. Cost of living differences offset some of the differences in nominal wages. In versions of the model where workers are perfectly mobile across cities and housing is inelastically supplied, cost of living

differences completely off-set nominal wage differences (Roback 1982). In this case, there is no welfare difference between workers in cities with high productivity and workers in cities with low productivity. But in more general versions of the model --- where workers have idiosyncratic preferences for certain locations over others so that local labor supply is not infinitely elastic and the housing stock is allowed to increase in response to demand increases --- the incidence of productivity shocks will depend on the relative magnitude of the elasticity of local labor supply and housing supply.

The project will then estimate differences in productivity growth across metro areas for the period 1982-2007. These localized productivity shocks will be quantified using estimates of Total Factor Productivity (TFP) from plant-level production function based on confidential Census of Manufacturers longitudinal data. Plant-level TFP will be aggregated at the metropolitan level area. Then, changes over time in wages and local housing costs across metro areas will be related to metro-area TFP shocks using an instrumental variable technique, to estimate the incidence of TFP shocks.

A particularly important part of the analysis will be one where the local productivity shocks are not only localized, but also skill-biased, i.e. they favor skilled workers over unskilled workers in some cities. We know from the previous literature that on average skill biased shocks are responsible for a significant portion of the overall increase in wage inequality in the United States. But these skill-biased shocks are unlikely to have affected all metro areas in the United States to the same degree (Moretti, 2011). The distributional consequences crucially depend on the endogenous reaction of cost of living. For example, a shock that increases the productivity of skilled workers in a city, but not the productivity of unskilled workers there, is likely to reduce the welfare of inframarginal unskilled workers in the city through increases in the cost of housing. Using empirical estimates of skill biased productivity shocks, this project will quantify the effect on welfare inequality.

The final part of the project will discuss the role of local economic policies in reducing welfare inequality, with a special focus on policies intended to help mobility of workers and increase the elasticity supply of housing. The theoretical framework makes clear that the decline in welfare for unskilled workers in cities where skilled workers become more productive is larger the smaller the local elasticity of housing supply and the smaller their propensity to mobility. Policies intended to make housing supply more elastic (for example, “smart growth” housing development policies of the type promoted by modern urban planning standards) and policies intended to make workers more mobile (assistance to mobility) will be analyzed. The idea of mobility assistance is not completely new. The US government already provides a limited relocation allowance as part of Trade Adjustment Assistance, a federal aid program that helps workers who have lost their jobs as a result of foreign trade. If inframarginal unskilled workers are not relocating due to mobility constrains of some type (example: credit constraints) mobility assistance can be welfare improving and could help reduced inequality.

**Budget**

Summer salary: $20,000

Research Assistance (gsr salary): $10,000