

DISSERTATION PROPOSAL

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“Essays on Urban Agglomeration”

Friday, October 1, 2010

10:00 am

324 GSIA (West Wing)

Essay 1: Agglomeration externalities and the dynamics of firm location choices

We develop a new dynamic general equilibrium model of firm location choice that can explain the observed sorting of firms by productivity and is consistent with the observed entry, exit, and relocation decisions of firms within an urban economy. We discuss existence of equilibrium of and characterize the stationary distribution of firms in each location. The parameters of the model can be estimated using a nested fixed point algorithm. We implement the estimator using data collect by Dunn and Bradstreet for the Pittsburgh metropolitan area. The data suggest that firms located in the city are older and larger than firms located outside the urban core. As a consequence they use more land and labor in the production process. However, they face higher rental rates for land and office space which implies that they operate with a higher employee per land ratio. We find that our model explains these observed features of the data well. Finally, we consider the impact of different relocation policies that provide targeted subsidies to new start-ups and superstar firms.

Essay 2: Agglomeration, Transportation Technologies, and the Structure of Cities

This paper develops and estimates a general equilibrium model of business and residential location in the presence of agglomeration externalities and commuting costs. The model is based on the theory introduced by Lucas and Rossi-Hansberg (2002), but adds a congestion cost in addition to a distance cost of commuting. This specification allows for the investigation of the effect of different transportation technologies (i.e. transit or automobile infrastructure) on the spatial structure of cities. In addition, a specification of complementary land services is added which better explains the extent mixing of uses found in the data. I introduce data on commercial and residential densities, commuting times, and wages paid, to illustrate the structure of cities and highlight the trade offs faced by businesses and individuals in location decisions. The model is estimated using a method of moments procedure, and the estimates are used to illustrate the quantitative aspects of equilibrium. Policy experiments show that decreasing congestion costs relative to distance costs (a policy akin to increasing transit provision) increases the relative concentration of employment in the center city as well as exurban regions and increases residential density in inner ring suburbs.