

“Cattle, Steaks and Restaurants: Development Accounting when Space Matters”

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Referee Report

This paper connects the city model of von Thuenen with the literature on structural change among agriculture, manufacturing, and services. The authors assume that these three sectors differ in three dimensions: the income elasticity of demand; the share of land in the production function; the transportation costs. The authors characterize an equilibrium in which services are produced closest to the city center and agriculture furthest away from it. They show that richer cities have larger service cores, higher service prices, and lower labor productivities in services.

The question raised in this paper is interesting. Unfortunately, the paper is not well written and the execution of the analysis is not convincing. To make the paper publishable in the *Review of Economic Dynamics*, the authors would have to rewrite it completely and would have to redo part of the analysis.

I have the following particular problems with the paper.

The authors motivate their work with the claim that “*land is conspicuously missing from development accounting*” and that the novelty of their work is to introduce it into development accounting. Both claims seem false to me. The former claim is false because one of the contributions of Herrendorf and Valentinyi (JEEA, 2012) was to offer a development accounting exercise that explicitly introduced land as a factor of production in all sectors, along with capital and labor. I suspect that the authors may not be aware of this because they started to think of their project before the paper by Herrendorf and Valentinyi was published (I recall seeing an early version of their paper at a workshop many years ago). But they should still do justice to the literature. The latter claim seems false too because after developing their model, in which land does have a role, the authors never come back to development accounting. In particular, they never link their city results back to sector-wide or country-wide observations, which are the usual objects of interest in development accounting.

As a result of the previous point, it remains in the dark what the paper is really about. The conclusion states: “*Richer cities have higher service prices and relatively less output per worker in services.*” I agree that this sounds like what the paper shows, but I am not sure what this has to do with development accounting. To link these results to development accounting, one would have to answer important questions like the following: What are the sizes, numbers, and the relative incomes of cities in rich and poor countries? How many people live in cities in rich and poor countries? What prices and

productivities apply to people who don't live in cities (which in poor countries is still the majority of people)?

A second, and related, problem with this paper is that it assumes that all consumption is done in the center of each city and that cities are in autarky. While both of these features are present in the von Thunen model, they both lead to issues when one wants to connect the model to the data and do a development accounting exercise that talks about entire economies. For example, a sizeable part of household expenditure on services is devoted to residential housing, which is consumed where the households live (typically not the center of the city but a suburb or outside of cities altogether). This point is consistent with the fact that Figure 2 seems to suggest that many services are still produced far away from the city center. Moreover, a sizeable share of agriculture is produced outside of cities in the countryside and shipped to consumers in different cities.

I don't understand the part of the calibration of the model that is related to the land shares. The authors take the land shares of Herrendorf and Valentinyi's work for the US and then add an additional indirect land share. This indirect land share is calculated by assuming that a certain share of household expenditure is spent on residential housing and a certain share of these expenditure is spent on land. While that logic is correct, I am under the impression that these payments to land are already included in the land shares that Herrendorf and Valentinyi calculated. One reason for saying that is that Herrendorf and Valentinyi work with final expenditures, the input-output tables, and the total requirement matrix. So if, for example, a chicken is sold at Wholefoods, then the payments to agricultural land that was used to raise the chicken and the payments to urban land that is used for the store are both accounted for in the land share of the expenditure on this chicken. A second reason for saying this is that, without the land payments from residential housing, the land share of services would not be as large as the one that Herrendorf and Valentinyi report.

I have no idea what to make of the introduction of establishments in the regression on page 13. There are no establishments in the model, so I don't know what the assumption means that they all consume the same amount of land. If the model had establishments, then it would be reasonable to have a size distribution and have different establishments use different quantities of land in a given sector. So the assumption underlying the regression that all establishment use the same land amounts is not credible.