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Niche firms, mass markets, and income across countries: Accounting for the impact of entry costs

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ABSTRACT

I develop a model of monopolistic competition in which I distinguish between niche markets and mass markets, in the spirit of Holmes and Stevens, 2014. Firms choose between entering a small niche market with high markups or a large mass market with low markups. Entry costs and other distortions have a much greater impact on output in the niche market as the gains to specialization are high, relative to the mass market where varieties are highly substitutable. Calibrated to match data from U.S. manufacturing, the model generates an elasticity of total factor productivity with respect to entry costs almost twice that in a model that abstracts from heterogeneous markets. I use data on entry costs across countries to show entry costs alone can account for 23 percent of the cross-country variation in income per worker.

1. Introduction

The income gap between rich and poor countries is enormous, and a consensus has emerged that attributes most of this gap to differences in total factor productivity (TFP). But observed policy differences still fail to generate large TFP differences in our quantitative-theoretic models.[1] A recent study by Holmes and Stevens (2014) suggests that these quantitative models may be suffering from aggregation bias. The authors document how firms within the same disaggregated industry can differ dramatically in the types of markets they cater to. Accounting for these heterogeneous markets changes how we interpret firm-level data, and thus, how we calibrate our models.

In this paper, I extend a simple model of monopolistic competition by distinguishing between niche markets and mass markets within the same industry. A good real-world example of this distinction is mass-market furniture manufacturers who create standardized products for markets across the world versus Amish furniture manufacturers catering to a local niche market. Another example is firms producing after-market auto parts for a wide variety of automobiles versus firms producing specialized parts for particular models. While in the standard model we assume all firms in an industry produce for the same market, here I allow each firm to either cater to a niche market characterized by a low elasticity of substitution between varieties, or to a mass market characterized by high substitutability between varieties.[2] By keeping the model as

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[1] See Hopenhayn (2013) for a discussion of this point.

[2] That elasticities of substitution vary across markets within each industry should be uncontroversial. Broda and Weinstein (2006) report a wide range of elasticities for different goods within disaggregated industries.

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simple as possible, I am able to show how heterogeneous markets can be incorporated into the wide variety of different frameworks which have been developed to think about industry dynamics with heterogeneous firms.

Incorporating these heterogeneous markets magnifies the impact of policy distortions significantly. In the model, aggregate distortions reduce the number of niche and mass-market firms proportionately. But the impact on aggregate TFP from the reduction in niche firms is far greater than that from the reduction in mass-market firms. I can compare the model in this paper to the standard model by ensuring that the *average* elasticity of substitution across all varieties is the same in both models. I show that for any targeted average elasticity, the impact of distortions on aggregate TFP is higher when both niche firms and mass-market firms are allowed for. Mechanically, this follows directly from an application of Jensen's Inequality. For a given average elasticity of substitution across varieties, a higher variance in elasticities across varieties implies a bigger drop in aggregate producitivity from a given distortion. To see the intuition here, imagine niche varieties are perfect compliments, while mass-market varieties are perfect substitutes. In such a senario the number of mass-market varieties is inconsequential, as two units of one variety is as good as one unit each of two varieties. But a decrease in the number of niche varieties would be catastrophic, as final-good output would drop to zero.

Calibrating the model to match moments from U.S. manufacturing data, I perform a counterfactual experiment in which I increase one particular distortion, the cost of entry for new firms, and observe the resulting change in aggregate TFP. I find that the elasticity of TFP with respect to entry costs is 0.32, almost twice that in the standard model without heterogeneous markets. I perform a second experiment in which I predict output per worker across 136 countries by feeding cross-country data on entry costs from the World Bank into the model. I find the model explains 23 percent of the variation in output per worker, much higher than the 7 percent explained by the standard model, and closer to the empirical estimate of one half implied by recent studies.

I focus on entry costs as a good example of the failure of current models to generate large impacts from observed policy differences.[3] While recent empirical studies by Barseghyan (2008) and Herrendorf and Teixeira (2011) suggest differences in entry costs can explain as much as half of the income differences across countries, a number of recent models exploring the theoretical impact of entry costs all generate a relatively low quantitative impact on aggregate output.[4]

The idea to distinguish between niche and mass-market firms is motivated by Holmes and Stevens (2014), who estimate that almost two thirds of U.S. manufacturing firms cater to niche markets (what the authors call 'specialized' markets). The focus of their paper is on the location decision of firms and the differential effects of import competition on niche firms and mass-market firms, whereas I focus on the aggregate effects of distortions (in particular, entry costs).

Herrendorf and Teixeira (2011) develop a model that allows for a wide array of distortions, calibrate their model to match U.S. data, and then use a wide variety of observed policy and relative price differences across countries to isolate the variation in TFP and output per worker accounted for by entry costs (estimated as a residual). They find that about half of the variation in TFP and output per worker is unaccounted for by observed differences, and attribute this residual to variation in entry costs. Barseghyan (2008) uses a number of different instruments to estimate the impact of regulatory entry costs and various proxies for institutional quality, and finds an increase in costs equal to one half of a standard deviation in his sample is associated with a 22 percent reduction in TFP.

A number of recent papers develop models to investigate various mechanisms through which entry costs affect within-firm and aggregate TFP. Poschke (2010) considers how entry costs negatively affect the investment decisions of firms when markups are endogenous. Barseghyan and DiCecio (2011) and Moscoso Boedo and Mukoyama (2012) show how entry costs decrease the productivity threshold above which firms choose to operate, thus allowing less productive firms to survive in the presence of fixed operating costs. In each of these papers, the elasticity of aggregate TFP with respect to entry costs is less than or about equal to that in a simple model where the elasticity of substitution between varieties is the same for all firms.

The present paper is related to the large recent literature analyzing the effects of various distortions in the prices faced by firms on the allocation of resources and aggregate outcomes.[5] Although the focus of the present paper is on entry costs, I also explain how the model magnifies the impact of distortions more generally.

In the next section I present the model and solve for its steady-state equilibrium. In Section 3 I calibrate the model and show how the benchmark economy behaves when entry costs are increased. In Section 4 I construct a measure of entry costs for 136 countries and use the model to generate output per worker for each country in the sample. I then compare the model-generated outcomes to the data. Section 5 follows with a discussion about how accounting for heterogeneous markets affects the impact of other distortions. Section 6 concludes.

2. The model

My focus here is on the aggregate impact of entry costs rather than the various mechanisms through which entry costs may affect firm dynamics or firm-level TFP, so I abstract from any heterogeneity in firm productivity or fixed costs of

[3] I define 'entry costs' rather broadly to include any fixed costs of doing business.

[4] See Appendix A.4 for additional evidence supporting the conclusions of Barseghyan (2008) and Herrendorf and Teixeira (2011). Poschke (2010), Barseghyan and DiCecio (2011), and Moscoso Boedo and Mukoyama (2012) are some examples of recent models developed to investigate various mechanisms through which entry costs affect within-firm and aggregate TFP.

[5] For example, Guner et al. (2008), Restuccia and Rogerson (2008), and Hsieh and Klenow (2009).