Abstract:

We study the Melitz (2003) model under the H.S.A. (*Homothetic with a Single Aggregator)* class of demand systems to understand how competitive pressures affect selection and sorting of firms with different productivity. H.S.A. is tractable, because its single aggregator serves as a sufficient statistic for competitive pressures, and, due to its homotheticity, competitive pressures act as a magnifier of firm heterogeneity. It is also flexible enough to allow for the choke price, Marshall's 2^{nd} law of demand--"a higher price leads to a higher price elasticity"--, and what we call the 3^{rd} law of demand--"a higher price leads to a smaller rate of change in the price elasticity." We show, among others:

i) More productive firms, with higher profits and revenues, have higher markup rates under the 2^{nd} law and lower pass-through rates under the 3^{rd} law. Employments are not monotone in firm productivity; they are *hump-shaped* under the 2^{nd} and 3^{rd} laws. The 2^{nd} law also implies the procompetitive effect and strategic complementarity in pricing.

ii) *A lower entry cost* leads to more competitive pressures, which reduces the markup rates of all firms under the 2^{nd} law and raises the pass-through rates of all firms under the 3^{rd} law. The profits of all firms decline (at faster rates among less productive firms under the 2^{nd} law), which leads to a tougher selection. The revenues of all firms also decline (at faster rates among less productive firms under the 3^{rd} law). *A lower overhead cost* has similar effects when the employment is decreasing in firm productivity, which occurs under the 2^{nd} and the 3^{rd} laws for a sufficiently high overhead cost.

iii) *Larger market size* also leads to more competitive pressures, reducing the markup rates of all firms under the 2^{nd} law and raises the pass-through rates of all firms under the 3^{rd} law. The profits among more productive firms increase, while those among less productive decline under the 2^{nd} law, which leads to a tougher selection. The revenues among more productive firms also increase, while those among less productive decline under the 3^{rd} law at least when the overhead cost is not too large.

iv) The impacts on the masses of entrants and of active firms depend, often crucially, on whether the elasticity of the distribution of the marginal cost is increasing or decreasing with Pareto-distributed productivity being the knife-edge case.

v) Both a lower entry cost and larger market size may cause an *increase* in the average markup rate under the 2^{nd} law and a *decline* in the average pass-through under the 3^{rd} law due to *the composition effect,* since they also lead to a tougher selection, forcing less productive firms with lower markup rates and higher pass-through rates to shrink and to exit. This suggests that a rise of the markup may occur due to *increased* competitive pressures, causing a shift from the less productive/smaller to the more productive/larger.

vi) In a multi-market setting, competitive pressures are stronger in larger markets. And more productive firms sort themselves into larger markets under the 2^{nd} law. Due to this *composition effect*, the average markup (pass-through) rates can be *higher* (*lower* under the 3^{rd} Law) in larger (thus more competitive) markets. This result suggests a caution when interpreting the evidence that compares the average markup and pass-through rates across markets with different sizes.