A note on the second linearity critique

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The purpose of this note is to further clarify the issue mentioned in Peretto (2016), providing detail that does not belong in the paper but that might nevertheless be useful to fully appreciate the debate.

As I say in the paper, there is a second linearity or knife-edge or razor-edge critique. First popularized in a short review article by Jones (1999), and further elaborated in Jones (2005), it consists of the claim that to sterilize the (strong) scale effect the models proposed by Dinopoulos-Thompson (1998), Peretto (1998), Young (1998), and Howitt (1999), assume that the mass of products/firms, \( N \), is exactly proportional to population size, \( L \). The reality is rather different.

1) The mentioned articles do not assume that \( N \) is proportional to \( L \) but obtain such proportionality as an equilibrium relationship.

2) The mentioned articles obtain \( N \) exactly proportional to \( L \) because of specific simplifying assumptions (on price-cost markups, the structure of spillovers and so on); there are many other contributions that do not use those simplifying assumptions and obtain relationships between \( N \) and \( L \) that are much richer and definitely not proportionality. See, e.g., Peretto (1994, 1996, 1998a, 1999a,b), Smulders (1994), Smulders-van De Klundert (1995, 1996), Peretto-Smulders (2002). The interested reader might notice that many of these papers were already published by the time the second linearity critique was popularized in 1999.

3) The list of contributions that find \( N \) not proportional to \( L \) is getting longer as people keep working on these ideas, experimenting with different assumptions and functional forms.

4) Ultimately, however, the final arbiter is empirical evidence — which is clearly in favor of this class of models. For examples, see Zachariadis (2003), Laincz and Peretto (2006), Ha and Howitt (2007), Ulku (2007), Madsen (2008, 2010), Madsen and Ang (2011), Madsen, Ang and Banerjee (2011), Greasley et al. (2013), and, most recently, Bollard, Klenow and Li (2014).

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5) Indeed, the most striking feature of the data is how hard it is to reject the hypothesis that $N$ is proportional to $L$.

Scientifically, therefore, despite its rhetorical flair, the second linearity critique fails twice. First, it fails because it is a grossly inaccurate characterization of the theory it claims to describe. Second, it fails because it is empirically irrelevant: the evidence does not reject that to a first approximation $N$ is proportional to $L$.

References


