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38 Demography, firm dynamics and regional labour markets: useful metaphors?

Sierdjan Koster, Viktor Venhorst en Jouke van Dijk

Nature, or ...?

In the early 1950s, economists Edith Penrose and Armen Alchian engaged in an entertaining and somewhat villainous debate in *The American Economic Review*. It concerned the use of biological analogies in analysing and understanding economic phenomena, in particular firm dynamics. The start of the exchange was Penrose's response to an article by Alchian in which he proposed that changes in firm populations can be understood in a framework that is akin to the idea of natural selection in biology. Or, as Penrose puts it: *"...a natural selection analogy, dubbed by one writer viability analysis"* (Penrose, 1952, p. 804). Penrose is not a fan and she goes on to argue that the use of biological analogies in the economy is inherently problematic as the dynamics in firm populations are governed by 'willful' behaviour of businesses and their owners rather than by genetic imprinting and random adaptations of DNA. She concludes: *"To treat the growth of the firm as the unfolding of its genetic nature is downright obscurantism."* (ibid, p. 819). Alchian responds: *"..., I could stop if Mrs. Penrose had criticized only the analogy, for then her criticisms would have been irrelevant. But some of her criticisms are directed at the theory, and they are incorrect."* (Alchian, 1953, p. 601).

From biology to demography

The exchange between Penrose and Alchian is entertaining not only because of its form. The use of biological metaphors is widespread in economics and dates back at least to the work by Marshall who compared a population of firms to trees in a forest with some falling down and others thriving. And, arguably, biological analogies have become more prominent over time. Evolutionary economic geography is currently one of the main approaches in economic geography. And also, although not fully comparable, demographic approaches to firm dynamics are still used frequently. Demography concerns itself with the birth, health, mobility and demise of individuals. In recent decades great strides have been made in the field as demographers developed a greater understanding of the drivers of these macro level outcomes, as they linked them to context and micro level characteristics. Related to biology, and biologic drivers of macro level demographic outcomes, this involved the inclusion of behavioural approaches, developing what can be considered a model of "demographic man" shaping their

life in a context of opportunities and constraints (De Bruijn, 1999). In light of these developments, it is still relevant to ask the question to what extent biology and demography inspired approaches to firm dynamics are appropriate.

Handle with care

In 1999, Leo van Wissen was appointed as Professor of Demography of Firms at the Department of Economic Geography at the Faculty of Spatial Sciences (FSS) in Groningen. He introduced demographic concepts for the analysis of economic geography and regional labour market dynamics, used for example in the dissertations of Sierdjan Koster (2006) and Viktor Venhorst (2012) which he supervised together with Jouke van Dijk. Later his chair was repositioned as professor of Economic Demography in the Department of Demography. In light of these positions, Van Wissen (2002) asked the same question as Penrose and Alchian with regards the demography of the firm. Is it a useful metaphor and, possibly more important even, does a demographic approach to firm dynamics lead to new insights? Van Wissen, as Penrose, is hesitant in taking the analogy too far. Demographic events that are univocally defined at the level of individual people and households become somewhat muddy when transferred to the realm of firms and organization. For the birth of firms, for example, it is unclear what the population at risk is. Are they started by people active on the labour market or are they the offspring of the existing firm population (spin-offs)? Similarly, the death of a firm has many dimensions to it. It can be seen as a sign of under-performance and failure as it is not able to hold its own in the market. At the same time, if a start-up is purchased by another firm, it is recorded as an exit from the market but it arguably constitutes the pinnacle of success for many entrepreneurs. In a more philosophical sense, one could even debate whether the dissolution of the start-up is in fact an exit as the business continues to be active although in another organizational form. Van Wissen (2002, p. 267): *“The exact nature of entry and exit processes is, of course, different from human populations, and it is a mistake to pursue the demographic metaphor too far in this direction.”*

The contribution of demographers

What then is the possible contribution of a demographic approach to assessing firm dynamics? *“The demographic metaphor does not arise because of applying biological laws to firms, but because of the methodological similarities in population dynamics and micro-macro linkages.”* (Van Wissen, 2002, p. 277). Even though firms and biological entities are different beasts, the aggregate dynamics in their populations can be studied and understood with the same analytical toolbox. By and large, there are three ways in which the demographic

approach contributes to firm dynamics. Firstly, it offers a set of instruments, measures and (projection) models to document and predict firm events. These include (dynamics in) birth rates, mortality and survival rates as well as relocation rates. Secondly, demography offers a rich conceptualisation of time which includes three dimensions: age, cohort and period. Thirdly, and related to the previous, a demographic frame inherently comes with a focus on the entire life-course instead on the current situation or a single event only.

Moving forward

In our observation, there has been little conceptual progress in the use of demographic measures in firm dynamics in the last decades. The measurement of firm events in terms of birth rates, survival and death has remained more or less the same in the last twenty years with the same criticisms (Van Wissen, 2002 and Penrose, 1953) still applying. Also, while different dimensions of time are recognized, the full methodological and conceptual toolbox that demography offers, is scarcely used beyond simple time controls in empirical studies on firm dynamics. Adopting a longer-term perspective on firm dynamics, in contrast, has become more common, not in the least in the economic geography group at FSS.

The advent of large, longitudinal and micro-level datasets has made it possible to follow people, their position in firms and firms proper over a much longer time. The relevance of a life-course perspective on firms and their owners also increased as average firms size decreased over time. In fact, in the Netherlands, the number of employing firms has remained more or less stable in the last 20 years. The number of single person firms has instead skyrocketed. With this development, labour market dynamics are now more prominently at the root of many dynamics that we see in the firm population as well. Arguably, the two fields have moved much closer to one and other.

Adopting a labour market perspective on firm dynamics more explicitly opens up the demographic toolbox to understanding firm dynamics. Starting and owning a firm can be conceptualized as a labour market status that is weighed against other options on the labour market. The long term expected pay-out – in a neoclassical framework – is then the benchmark against which a choice between self-employment/firm owner and wage employment is made. From this perspective, firm dynamics are, at least partially, influenced by the career path of individuals. The success of firms can then not only be understood at the level of the firm but also in the career progression of the owner (see, for example, Bay and Koster, 2023). In this way, the marriage of firm dynamics and labour market dynamics has opened up quite a natural road to include a demographic frame-

work in understanding not so much the dynamics in firm populations, but rather the antecedents and success of firms and their owners. This goes some way in addressing the wish by Van Wissen (2002): *“For instance, a multidimensional model of the transitions between the states of unemployed, employee, self-employed and employer might prove very valuable here.”*

Such a micro-demographic longitudinal perspective opens the door to a deeper understanding of labour market and firm dynamics, as this career is then viewed in the context of other states and events in the individual’s life course. Residential location, the presence of a partner and/or children, coupled with the individual’s educational profile, work experience, mobility preferences and timing relative to life events and wider societal changes can together be understood to, for example, determine one’s flexibility in responding to adverse economic shocks (Venhorst, 2017). This has profound implications for understanding inequalities and differences in regional economic dynamics.

Conclusion

The, in the spirit of Van Wissen, careful and measured application of the macro level and more formal demographic framework, in spite of its conceptual limitations, has served to increase our understanding of firm dynamics, by providing a consistent apparatus to identify key events and adequately measure their risk of occurrence. From this, and spurred by the increased availability of high quality longitudinal micro data, there is an opportunity for the field of firm demography to capitalize on the increased conceptual prowess in main stream demography. For example, the life course helps identify new background characteristics, not in the least those related to the labour career of the individual, thus generating novel insights in the contextual factors shaping the behaviour of (potential) entrepreneurs and their macro level outcomes. In addition, opportunities continue to arise by drawing lessons from a perhaps more classic demographic focus on the quality of measurement, such as the careful definition of population at risk and the rich conceptualization of time and timing of events. A productive line to carry forward: *“It is the link between the micro processes of selection and change, and their macro consequences at the population level that is the potential added value of demographers in this field.”* (Van Wissen, 2002, p. 267).

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