

# Tracing empirical trails of Schumpeterian development

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**Abstract.** Schumpeterian development is characterized by the simultaneous interplay of growth and qualitative transformations of the economic system. At the sectoral level, such qualitative transformations become manifest as variations in the sectoral composition of production. Following the implementation of Harberger's method of visualizing the impact of differential productivity growth, dynamic panel estimations are applied to a standard growth model modified to include specific structural variables for both the manufacturing and the services sectors. Covering 28 countries over the period between 1990 and 2000, the results give empirical substance to the evolutionary emphasis on Schumpeterian development as opposed to mere aggregate growth.

**Key words:** Structural change – economic growth – Schumpeterian development – evolutionary economics

**JEL Classification:** O11, O30, O41

“As a matter of fact, capitalist economy is not and cannot be stationary. Nor is it merely expanding in a steady manner. It is incessantly being revolutionized from within by new enterprise, i.e. by the intrusion of new commodities or new methods of production or new commercial opportunities into the industrial structure as it exists at any moment” (Schumpeter, 1942/50, p. 31).

## 1 Introduction

A major source of distinction between neoclassical and evolutionary economics is that the latter replaces conventional emphasis on mere growth with the broader

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concept of *Schumpeterian development*, which is characterized by the simultaneous processes of growth and qualitative transformations in the economy (Schumpeter, 1911/34).<sup>1</sup> Qualitative transformations arise as a result of the continual tension between the disequilibrating force of entrepreneurial 'creative response' and the equilibrating tendencies in terms of 'adaptive response' to such disturbances (Schumpeter, 1947).<sup>2</sup> Although the central idea of endogenous technological change through creative destruction also resides prominently in the latest generation of endogenous *Schumpeterian growth models*,<sup>3</sup> it is fair to say that these remain subservient to the restricted framework of steady state equilibrium analysis and thus bypass the more complex evolutionary dynamics of Schumpeterian development.<sup>4</sup>

Conversely, evolutionary analysis in the tradition of Nelson and Winter (1982) characterizes the market economy as a process of continuous change and qualitative transformation. Its dynamics are also driven by innovation; but "[i]nnovation is a matter of differential behaviour and differential behaviour is the basis for structural change" (Metcalf, 1998, p. 37). As the fundamental diversity of micro-behavior involves dynamics that are much richer than those in steady state growth models, simple aggregation cannot do away with the fact that the potential paths of development are various and depend on the idiosyncratic characteristics of an economy, including among other elements its sectoral composition of production. From the evolutionary perspective, structural change is therefore an inevitable companion of growth, and the notion of Schumpeterian development the more relevant description of aggregate dynamics.

The importance of structural change to economic growth might prove to be the ultimate empirical test of the general relevance of the evolutionary agenda. Due to omnipresent diversity in firm behavior and performance, most sceptics would accept that an evolutionary view offers a more realistic description and explanation of micro-economic processes. But, based on the claim that such variations only represent unsystematic noise, tied down sufficiently by the forces of gravitation towards general equilibrium, they can still insist on its overall irrelevance to the analysis of aggregate phenomena. If we are not able to demonstrate the importance of evolutionary change to aggregate development, the neo-classical reduction by

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<sup>1</sup> Building upon the classic contribution of Nelson and Winter (1982), recent examples of evolutionary approaches to growth and development are presented e.g. in Silverberg (1988), Silverberg and Verspagen (1997), Metcalfe (2001), and Montobbio (2002). Fagerberg (1994) and Verspagen (2001) survey the empirical evidence of technological change and growth from an evolutionary perspective.

<sup>2</sup> Our interpretation of Schumpeterian development thus encompasses both radical and incremental changes.

<sup>3</sup> The Schumpeterian kind of endogenous growth models are typically characterised by innovation races, a replacement mechanism and temporary monopoly power. Examples are the models in Grossman and Helpman (1991), Aghion and Howitt (1998) or Dinopoulos and Thompson (1998). Cheng and Dinopoulos (1996) present a rare example of a multisectoral endogenous growth model, where, depending on the choice of assumptions, the steady-state equilibrium can be replaced by deterministic cycles.

<sup>4</sup> For example, Aghion and Howitt (1998) are very precise about the limitations of steady state analysis: "The economy is always a scaled up version of what it was years ago, and no matter how far it has developed already the prospects for future developments are always a scaled-up version of what they were years ago" (Aghion and Howitt, 1998, p. 65).