

COMPETITION AS EVOLUTIONARY PROCESS

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Abstract

Economists regard market competition as the basis for the science of economics and most of them understand competition through equilibrium framework. However, some scholars criticize neoclassical approach by allegations that it is wrong to assume perfect competition as a driving force of the market; profit and loss are disequilibrium characteristics.

The market is viewed as one of the firm's main sources and constraints. Each rival seeks to maximise its market share by becoming the most productive, effective and the largest market leader, or by avoiding competition because of differentiation of products.

This paper suggests that innovation is not the only option for competition. The firm may choose to be simpler instead of being more advanced as well. Therefore, firms in more advanced markets that are at the frontier of innovation have no choice and must innovate to keep their positions there. Conversely, in less advanced markets firms are prone to look for easier ways.

Keywords: competition, perfect competition, monopolistic competition, evolutionary process.

JEL Classification: D41, D42, D43.

Introduction

Economists regard market competition as the basis for the science of economics and most of them understand competition through equilibrium framework. Assumptions of a large number of small powerless firms having no significant control on the market are at the core of neoclassical economic approach of perfect and pure competition.

However, some scholars criticize neoclassical approach by allegations that it is wrong to assume perfect competition to be the driving force of the market; profit and loss are disequilibrium characteristics. It cannot explain how competition contributes to the innovation process and growth of firms and the economy. After all, monopolistic competition theory can explain how and why rivals are able to invest in innovation. For those scholars who defend the latter position, it is typical to argue that only advanced firms, operating on the frontier in innovation may compete successfully in the market. Therefore, perfect competition might be a part of the wider approach to competition only.

This paper aims to provide contribution in the on-going discussion by submitting approach to competition as an evolutionary process. Such an approach might contribute to government's competition policies.

First, market is viewed as one of the firm's main sources and constraints. Each rival seeks to maximise its market share. A firm, seeking to hold on to the market share it has, or to gain a bigger market share, may choose from several strategies. The first one is of the most productive, effective and the largest market leader. Others are competition avoidance strategies when the firm differentiates its services or products, when rival escapes from competition into a new market due to implemented innovations and when rival occupies niche market and holds it.

Second, this paper provides evidence that innovation is not the only option for competition. The firm may choose to be simpler instead of being more advanced as well. It depends on the market conditions which the firm must adapt to. Therefore, in more advanced markets firms being at the frontier of innovation have no choice and must innovate to keep their positions there. Conversely, in less advanced markets firms prone to look for easier ways than innovation that requires investments of capital and knowledge.

Thus, government economic policy could contribute to the development of such market conditions, when a company is more profitable choosing the path of innovation. Economy would benefit from such policies of more intensive growth inspired by new products and services.

Third, firms tend to avoid perfect competition choosing the easiest way of course.

So this approach suggests that firms are going to choose a path of innovation when it faces fierce competition and cannot avoid it by merging or managing protection from government administration or choosing to be simpler.

This paper covers the review of many scholarly studies seeking to ground the approach presented herein. The article is based on comparative and empirical analysis.

Criticism of neoclassical approach

Defining the nature and boundaries of evolutionary economics is difficult. There is no shared model or modelling approach. The modern wave of evolutionary economics began in the 1980s, particularly after the publication of Nelson's and Winter's (1982) *Evolutionary Theory of Economic Change*. Since then evolutionary economics quickly established an impressive research programme and had a major impact on economic policy, particularly in the areas of technology policy, corporate strategy and national systems of innovation (Dosi et al., 1988, Geoffrey MH et al., 2011).

According to Schubert C. (2011) for Schumpeter, Walras' equilibrium theory of perfect competition and concept of rational behaviour should be seen as a result of behavioural routines. The assumption that conduct is rational is in all cases a fiction, but it proves to be sufficiently near to reality, if things have time to hammer logic into men (Schumpeter JA, 1963).

These statements imply that neoclassical approach has met some opposition from its beginning. So still there are some differences between the neoclassical and the evolutionary approaches.

Mainstream economics is about how rational agents economize on a given and closed set of scarce resources. So the approach rests on thesis that optimality is reached as soon as the economizing has been done, with all resources being allocated in an efficient and stable equilibrium. This state of minimal waste is realized under conditions of perfect competition (Witt, 2008), and welfare came to be defined as the satisfaction of given and perfectly consistent (complete, transitive, reflexive and stable) preferences when they are indicated and defined by choices. So revealed preferences approach still constitutes the hard core of standard welfare economics.

Those who are for the conceptual basis of evolutionary economics (Nelson, 1995; Witt 2008) reject mainstream conception in favour of more complex view: economics is understood as being about the way heterogeneous, boundedly rational and creatively learning agents bring about novelty at all levels of economic life. Stable equilibrium, should it ever appears, is of little interest. Hayek FA (1948) sees it as all economic problems are created by unforeseen changes, which requires adaptation. Individuals experiment and learn in a time – consuming and “wasteful” process which involves their acquiring new preferences, and which leads to the creation of coordination – based dynamic order rather than equilibrium. In the world of flux, there is no perfectly stable and desirable state of optimality that could ever be reached.

The only thing that can be said from an evolutionary perspective is that normative issues arise whenever agents confront change, and, as a consequence thereof, their values, goals and aspirations change as well. This is a necessary implication of genuine uncertainty which forces agents to learn. It has far-reaching implications: when preferences change (as a response to changes in an economy) they cannot be used as a measuring rod for evaluating states and processes of the economy. Therefore a broad set of standard welfare criteria is called into question, in particular the criteria of Pareto and Kaldor – Hicks efficiency.

Evolutionary processes are based on the generation and diffusion of knowledge, while progress in knowledge is “necessarily non uniform” (Metcalfe, 2001). This scholar believes that economic change itself necessarily proceeds in an uneven way: “advance in some directions is associated with deterioration in others”, even inevitably “creative destruction implies the destruction of some activities as a necessary element in the growth of others”.

In a new way G.L. Nell (2010) challenges the neoclassical model which describes an efficient market, in “perfect competition” equilibrium, as containing a large number of firms, selling identical products all at the same price. He challenges concept of perfect competition arguing that the economic model, where product's price is equal to its costs, took place in reality some time ago and collapsed in the social economy of Soviet Union. The lack of profit and loss eliminates signals which product is being under produced or over produced – profit drives innovation, and loss weeds out undesirable production.

Firms are price takers because of their willingness to perform worse at any other price. In the core of competition is differentiating products, creating new products, and reducing costs – generally considered to be a vital part of an economy with tough competition. In order to differentiate a product, a cost must be incurred what leads to price increase. So prices of differentiated products are higher due to risk of differentiation, as well as creating new products require to set a higher price and retain additional profit. Cost reductions allow a firm to make additional profit and to further reduce the price of its products.

Perfect competition induces inefficient allocation of resources: labours, capital, goods, transport and supply lines. Lack of profit prevents firm from local adjustment of prices to fix errors of resources allocation

through competition. In a healthy economy due to competition firms adjust supply, innovate, and produce new technological advances.

Competition requires disequilibrium activity, due to these aforementioned market realities. An economy without this activity remains static and dead economy unable to correct errors and unable to advance. In the market economy the market is always out of equilibrium due to better technology acquired by one firm or better, or differentiated its product. If we assumed that innovation is frozen, the other firms would not be able to compete down price simply.

G.L. Nell (2010) argues that competition is not about equilibrium only but much more about the evolutionary process. According him there are not two separate processes; the entrepreneur driving force of the economy is the same force that balances the supply and demand of goods on the ground of information carried in the price. He claims that competition is not even a uniform movement in the direction of some general equilibrium – it is a progress. So, in competition actually coordination, not equilibrium, does matter namely: progress depends only upon right and corrected, if wrong, decisions. By learning from mistakes, it works if entrepreneur receives signals about wrong and right decisions. Both success and failure drive an economy forward, toward the better satisfaction of the consumer's needs, market progression or evolution.

G.L. Nell (2010) adds that competition is also the way that economies grow.

The authors of the paper point out that in aforementioned approach of competition as an evolutionary process content of the evolution process itself and mechanism how it works is missed. There are placed some arguments against equilibrium approach of competition in the market and arguments for the evolutionary approach as well mainly. However, there are many empirical studies about competition and related topics as well. The authors try to examine how the concept of evolutionary competition process matches with already made findings on the topic, how we can reproduce competition process, its impact to evolution of the market and economy, and growth as well.

Other potential empirical evidences in favour of the evolutionary approach

According M.E. Porter (1985) corporate success depends on its competitive advantage, which may be achieved by adopting a cost-leadership strategy or via the differential route. The first way means offering products which are equivalent to those offered by competitors, but doing so far more efficiently and therefore at lower cost than competing organisations. In practice, there might appear one or few cost-leaders in the market only. Therefore other companies achieve competitive advantage via the differentiation of its products.

So in the market a firm may compete via cost – leadership strategy by achieving bigger economies of scale and production capacity; more than any other enterprises focus on research and experimental development. Mergers or take overs performed by rivals help to pursue the same purpose of market leader.

The authors note that purpose of all these competition routes is one only – to take control over the whole market – the main resource and premise of rivals' survival. Since perfect competition always means one output only – one or few winners, losses and no profit, rivals ought to choose from a few choices: to become a leader or try to avoid and escape direct competition. By last strategy, rivals aim to cut substitution effect and/or to build entrance boundaries.

Such behaviour of rivals suggests on monopolistic competition when every firm strives to avoid competition and occupies its own niche of the market despite whatever strategy is chosen. For this reason firms are able to contribute into the innovation process, growth of firms, and the economy.

According S. Berger (1981) in the market only the largest firms are able to develop and exploit the new technologies and optimal firm size for efficiency, profitability, and competitiveness shall adjust market's requirements.

There is also the approach that the enterprise, which seeks to strengthen competitive positions in foreign markets, uses production capacity, which is created, in national state (Ajami et al. 2006). There may be added P. S. Mehta's (2006) ideas, that, in particular, the governments of developing economies should support their national enterprises which are able to achieve economies of scale, carry out research and compete with international enterprises and have innovative trading partners.

J. M. Glachant et al. (2003) state that enterprises, which plan production, must take into account the production capacity. C. Decker (2009) notes that enterprises, which act in oligopolistic markets, have not strong position regarding the development of production capacity. The importance of production capacity, in particular, is emphasised by D. B. Yoffie (1993). He argued that seeking to increase export volume, it is necessary to develop production capacity (to plan which plants may serve specific foreign markets, which

are located, for example, in different continents). As well the attention shall be drawn to the national state's regulation (Quack et al. 2000).

According P. Geroski (2005) both of these arguments of the global market and scale of economy turn on the same three basic points: there is a certain critical mass that a firm needs to achieve in order to survive and compete effectively in what is a global market, this critical mass is larger than the market in most national economies and this critical mass has to be consolidated into a single firm if it is to be effectively developed.

The authors note that quality matters too. Sutton (2007) suggests the model therein firm's competitiveness depends not only on its productivity but also on the quality of its product, with productivity and quality jointly determining a firm's "capability". This firm's capability maintains lower and higher bounds of products price – quality combinations ("window") and if a firm has a product whose price – quality combination is superior to that of its rivals, the firm ought to grab bigger market share.

So it is a crucial purpose to strive raising their capabilities for any firm struggling for better position in the market.

Actually rivals may try to increase those capabilities buying them by acquisition of other ones or mergers. J. Suedekum (2007) concluded that globalization makes the foreign takeover more likely in countries where foreigners do not bias the government against acquisitions of national firms, but scholar's model revealed that in countries which demonstrates economic patriotism globalization makes national mergers more likely as a reaction to takeover attempts. The same results raise from S. Dinc and I. Erel (2009) empirical study.

The differentiation of products rests on the concept of the extended product where a product is conceived of as a "bundle of attributes". Some of these attributes comprise "core product" which is closely related to the "core benefit". Together with assisting attributes (e.g. length, power, weight) the "core product" creates so called "recognized product". Whole host of other attributes (e.g. price, delivery on time, reputation) are associated with product within the customers mind despite they are not a part of it physically. Hence, all aforementioned attributes comprise the extended product and form the building blocks of a product's differential advantage. Various products may contain many of these attributes (e.g. screw conveyor project contains 53 extended product attributes (Walley et al.1994)).

By possibility to measure and compare the attributes of different extended products, you are allowed to identify attributes which need resources investing in them to achieve better competitive advantage. Sometimes some attributes may be introduced deliberately to gain differential advantage over competitors and such a product is known as "augmented product".

In competitive markets if company augments its product and therefore gains competitive advantage, its rivals seek nullify the threat by adding a similar attribute to their own product. Hence, customers come to expect this attribute in all of the products. It means that, in order to maintain competitive advantage there is an ongoing need to innovate by adding new attributes or developing existing ones; or through innovation in the processes and systems which generate the products and services as well.

D. B. Yoffie (1993) emphasizes that a significant impact on the competitiveness of enterprises has their specialization. So, that leads to monopolistic competition which for Schumpeter were much "more valuable practically" than either perfect competition or the assumption of a single monopoly, and of more general importance "in a theoretic sense".

Innovation is not only firm's way to adapt and survive in the market

These aforementioned empirical evidences suggest that firm not necessarily needs to innovate aiming to remain in the market. There are many more classic choices that lead to rivals acquisitions, mergers, and limitation of production in small niche markets or facing economic crisis.

This finding may be crucial and to be worth of further empirical researches. It is contrary to widely spread approach that firms shall innovate and generate common wealth and growth of the economy.

Such evidences may find approval in empirical studies of the innovation process.

According Aghion et al. (2006) empirical research firms or industries close to the frontier (maximum efficiency or higher bound of the window) are expected to be spurred by competition to innovate and increase their efficiency ("escape competition effect"), and those firms far from frontier (near the lower bound) are not willing to innovate and fall further behind.

Some empirical researches have confirmed that Schumpeterian effect dominates in industries with laggard firms whereas the competition promotes investment with high performing firms. Yet some empirical

evidences suggested that firms further away from the frontier are less likely to innovate (Y. Gorodnichenko et. al., 2008).

In his comprehensive empirical research Hashmi, A.R. (2011) has found a positive relationship between competition (as measured by the inverse of mark-ups) and innovation (as measured by citation-weighted patents) in USA while UK data shows opposite results: there is a negative relationship between competition and innovation. The scholar makes theoretical assumption that the USA manufacturing industries are technologically more neck – and – neck than their counterparts in the UK. So the higher degree of neck – and – neck ness leads to a more positive relationship between competition and innovation then any policy to reduce. The allocative inefficiency also promotes innovation and hence growth.

These Hashmi, A.R. findings and theoretical implications may be appended with research provided by Foster, J.B. et al. (2011) where scholars reveal that both the number and percentage of U.S. manufacturing industries (for example, automobile production) that have a four-firm concentration ratio of 50 percent or more have risen dramatically since the 1980s. More and more industries in the manufacturing sector of the economy are tight oligopolistic or quasi-monopolistic markets characterized by a substantial degree of monopoly, and this trend is accelerating.

So these empirical studies reveal that firms itself is not willing to innovate and generate additional value unless pressure from the competitive market forces to choose: avoid competition in the ways mentioned herein before or yet to innovate.

Conclusions

Evolutionary economics challenges the neoclassical model which describes an efficient market, in “perfect competition” equilibrium, as containing a large number of firms, selling identical products all at the same price.

Criticism of the neoclassical model, among other arguments, rests on evidence that the economic model where product’s price is equal to its costs had taken place in reality some time ago and collapsed in the social economy of Soviet Union. The lack of profit and loss eliminates signals which product is being under produced or over produced – profit drives innovation, and loss weeds out undesirable production.

Defining the nature and boundaries of evolutionary economics is difficult. There is no shared model or modelling approach.

So this empirical study suggests that firms are going to choose a path of innovation when they face fierce competition and cannot avoid it by merging or managing protection from government administration, or just choosing to be simpler.

A firm not necessarily needs to innovate aiming to remain in the market. There are many more classic choices that lead to rivals acquisitions, mergers, and limitation of production in small niche markets or facing economic crisis.

So it is new in evolutionary approach that a firm aims not as much to innovate as just adapt to the market. Both choices may rather be acceptable: to innovate or become simpler. Implication of this finding might mean that it is up to government and its agencies to regulate markets in such way which ensures their competitiveness.

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