

## **Globalization, Innovation, New Economy: An Explanation for Reduced Productivity**

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### **Abstract:**

This study examines a reason for the decrease in productivity in a globalized world with increasing innovation and technological development. In the last two decades productivity in advanced countries is decreasing in spite of a change similar to the industrial revolution with newly developed information and communication technologies like the Internet, computers and mobile phones. By economic definition, new technologies need to increase productivity; however, the opposite experience may be due to some overlooked variables. This study argues that the unnoted variables are the patent laws and monopolized global "New Economy" companies. In order to defend this thesis, the definition of globalization, its historical process, and its important effects are explained in the first part. In the second part, technological developments, information and communication technologies that contribute to the New Economy are examined. The conclusion part brings together information from all the other parts and tries to prove the thesis.

**Keywords:** Globalization, New Economy, Innovation, Patent, Productivity

**JEL Codes:** C72, O14, O33, D42, L11, F61

## 1. Introduction

Information and communication technologies (ICT), the Internet, computers and mobile phones have created a change similar to the industrial revolution in the last two decades and there are other new technologies in development. In economic theory, a new technology is defined as anything that increases the amount of output (increasing productivity) that can be produced with a particular input (Taylor, 2007). According to this definition, new technologies have to increase productivity; however, productivity in developed countries is decreasing. This study examines a reason for the productivity decline in developed nations in spite of the fact that there is a continuous innovation process due to technological developments with globalization that enables easy access to scientific knowledge. This may be due to overlooked variables; namely, patent laws and monopolized global new economic companies.

In order to defend this idea; the definition, historical process of globalization and its important effects are explained in the second part. In the following third part, technological developments and ICTs that contribute to the New Economy are examined. Afterwards, what is the New Economy is defined and the emerging monopoly in this economy is summarized. The last section is used to bring together all the information and to arrive to a conclusion using the clues from all other sections.

## 2. Globalization

In this section; the definitions, history and effects of globalization that support the thesis of the study are given briefly. Although the term globalization is widely used to describe the deep changes that occur in the world, the nature and meaning of these changes remains controversial questions. This chapter provides an insight into the phenomenon of globalization, which is intended to contribute to an understanding of what is happening in the past and today.

### 2.1. What is Globalization?

Very widely, as a very long-term process or as a short-term process, the most important single defining feature of globalization is thought to be increasing (sometimes interdependent) connectivity (Robertson & White, 2007). Despite the rapidly growing literature on globalization and its effects, there is a disagreement about conceptualizing what is happening (Teeple, 2000). Globalization and globalization processes have been widely discussed, but unfortunately they are misunderstood because they only take into account economic changes and processes (Iyall Smith, 2012).

#### 2.1.1. Definitions

Social changes resulting from the increase in activities and cultural interaction between people in the world economy is a definition used for globalization. Increasing international exchange and liberalization are terms used in conjunction with economic globalization (Wikipedia, 2019a). Globalization can also be defined as self-generating capital at the global level and operates independently of national interests and control (Teeple, 2000).

Globalization can also be defined as the process of the development of transnational socio-economic relations and activities among actors in very remote regions in a way to increase transnational interdependence (Giddens, 2013; Beck, 2000; Scherer & Palazzo, 2008). In

addition, it can be defined as a solution of the contradictions between the continuously expanding capital; national, political and social formations (Teepie, 2000).

### 2.1.2. Historical Process

The globalization process reached today is as a result of multiple factors affecting the world through separate channels in history. Using Robertson (1992) and Held, McGrew, Goldblatt and Perraton (2000), the stages of globalization in the world can be given as follows:

- Pre-modern (pre-1500): Globalization at this time was based on regional, political and military empires and peoples' movements in uncultivated areas in Eurasia and the America.
- Early modern (1400-1750): The expansion of the Roman Catholic Church; the widespread adoption of the Gregorian calendar, the emergence of mapping and modern geography, the growth of national communities and the state system.
- Early modern (1500-1850): This time span is marked by the rise of the West and the European movement to America and then to Oceania. It is the time period in which the religions of the world spread and the most important cultural influences, especially when Christianity and Judaism have attained a global distribution.
- Early modern (1750-1875): The introduction of countries outside Europe into an “international” society dominated by Europe and the emergence of internationalism in the form of international relations.
- Modern globalization (1850-1945): This period witnessed the acceleration of global networks and cultural flows dominated by European powers, particularly the British, and the migration of European peoples to the New World. By the mid-nineteenth century, European peoples, ideas and religions changed America in the second half of the nineteenth century with rapid advances in transport and communication technologies (e.g. telegraph, telephone, radio, railways, maritime transport, canals, etc.). Economic and political connections increased and the first global “world” conflict between 1914-18 emerged.
- Modern globalization (1925-69): The struggle for the sovereignty phase with the Second World War, as well as the establishment of the United Nations and other organizations and the spheres of duty.
- Globalization today (since 1969): The end of the Cold War; moon landing and explorations on the planet; the emergence of global institutions and global mass media; worldwide discussions on race, ethnicity, gender, sexuality and human rights. Environmental problems and new patterns of global migration emerged. A world-wide system of nation states has emerged, including the combination of regional and global regulation and governance. America and Europe are less dominant in the contemporary globalization process.

At the end of the Second World War, the General Agreement on Tariffs and Trade (GATT) is an important factor in the liberalization of the world economy (Hoekman & Kostecki, 1995). Politicians with the belief that free and open trade would prosper worldwide and in turn reduce the likelihood of war and strong conflicts, politicians from more than twenty countries at Bretton Woods at the end of World War II decided how the post-war economic order would be. GATT and later World Trade Organization member states decided to reduce tariffs and gradually reduce non-tariff trade barriers. This liberalization process in trade and investment between countries was accompanied by a liberalization and privatization policy in many industrial countries in the Western world. State-owned or controlled companies; highly regulated industries with monopolies such as telecommunications, public transport, electricity and water were privatized. In the 1980s, the collapse of the Communist regimes in Eastern Europe and many other countries led to another removal of trade barriers and encouraged intense cross-border trade and investment (Scherer & Palazzo, 2008).

Until the 1970s, the expansion of capital has always been in the form of national capital expansion; capital with specific regional and historical roots and character. Subsequently, the

capital expanded more than ever, with the change in the restriction of ownership of companies to national geography alone. Just as capital once had to create a national state and a defined region, it had to remove or transform this shell to create and facilitate global capital accumulation by creating new institutions in the form of transnational corporations. Globalization is the closure of the history of national capital and the beginning of the expansion of non-national capital (Teepel, 2000).

Despite the rapidly growing literature on globalization and its effects, there is disagreement about the conceptualization of the process. Although this term is widely used to characterize the deep changes that occur around the world, the nature and meaning of these changes remains controversial questions (Teepel, 2000).

### 2.1.3. Effects and Characteristics of Globalization

Lash and Urry (1994; 1987) identify the characteristics of contemporary globalization as increased interstate ties and diminishing impact of state policy; increased transnational communication and activities; a decline in the importance of the nation state; the emergence of global political, economic and cultural organizations, bureaucracies; the emergence of global cities as local links to global interaction (such as London, New York, Paris and Tokyo); a large increase in the flow of goods and cultural products; and world-wide spread of Western-style consumption.

## 2.2. Economic Impacts of Globalization

### 2.2.1. Direct Effects

Today, there is a transition period in globalization. Nation states and national markets are transformed into a single world market, large and growing percentages of all economic activities are carried out by several hundred companies and world trade is among these companies rather than increasingly international (Teepel, 2000).

The globalization of the markets is approaching the end of the multinational (national) trade of multinational companies. The multinational company and the global company are not the same thing, because the multinational company operates in many countries, adjusting its products and applications to each of them - at high relative costs. The global company operates decisively in the appropriate place at low relative cost, as if the entire world (or its major regions) is a single entity / market; it sells the same things everywhere (Levitt, 1993, p. 249).

### 2.2.2. Indirect Effects

A small number of global companies work economically solely for their own profitability, while there are indirect effects that support them. Of particular concern is the concentration of global media production ownership and the concentration of (mostly American) companies. For example, over the last two decades, pop videos in the US, Europe and Asia have witnessed a major expansion in the pop music industry with the development of MTV 24-hour music channels. Communication satellites are now embracing the planet and pop music can barely enter the national boundaries. However, 70 percent of all pop music is produced and distributed by a handful of large multinational companies that combine production, transmission and promotion, ensuring that the voices and faces of Michael Jackson and Madonna are everywhere: on television, video and film; CDs; in magazines and newspapers; in magazines and advertisements; radio and cassettes; pop artists on baseball cap and t-shirt (Benyon & Dunkerley, 2019; Negus, 1992; 1996). This indirectly increases the consumption of the products produced by these companies.

Globalization means that everyone on the planet, directly or indirectly, affects the life, age, class, ethnicity, gender, or wherever they live. In this sense, it can be argued that globalization is the defining feature of human society at the beginning of the twenty-first century (Benyon & Dunkerley, 2019). For example, an important aspect of globalization, making Western goods for Western markets in many economies outside the West into is largely dependent: 40 percent of Levi's jeans (one of America's greatest symbols) are produced in Tunisia, 30 percent in Turkey and the UK 30 percent share is produced. Indeed, in terms of the global fashion industry, countries such as Taiwan, Bangladesh, South Korea, Hong Kong and China have become mass clothing manufacturers for the West (Craik, 1994).

The world has become a major market. The rapid progress of globalization; every country, city and region must compete with each other in order to get more shares from consumers, tourists, investors, students, entrepreneurs, international sports and cultural events in the world by attracting the attention and respect of the people of international media, other governments and other countries (Anholt, 2007, p. 1).

Giddens (2013) and Wallerstein (1979; 1984) are somewhat indecisive about humanity in terms of any long-term benefit that globalization can provide (Benyon & Dunkerley, 2019). Giddens (2013) predicts a developed world market for capital, commodity, labor and communication, but with deadly weapons and sophisticated surveillance technologies, it can be a future that will truly have a global impact. Perhaps for this reason, one thing that can be said with certainty is that globalization points to an unpredictable future. Wallerstein (1979; 1984) predicts a world that is increasingly dominated by capital controlled by the west.

### **2.3. Monopolistic Companies and Globalization**

In summary, it is seen that countries, beliefs or capital wanted to dominate the world as well as global and multinational capital. Global companies with higher incomes and costs have emerged than small countries. Technological developments, rights recognized after the Second World War and new marketing strategies emerged with the new nature of large companies that are becoming global. For these companies, the national economy and its associated boundaries, policies and programs - are almost meaningless and at the same time power a global monopoly system. In addition, as mentioned in the next section, patent laws specifically allow global innovation companies to become legal monopolies for a while. The effects of this situation on productivity will be discussed in the following sections.

### **3. Information and Communication Technologies (ICT)**

In pioneering studies on the impact of ICTs on the economy, it was found that on average two-thirds of the improvement in labor productivity for the US was due to ICT (Jalava & Pohjola, 2002); In 1997, the ICT industry accounted for 10-25% of exports, 6-9% of value added, 3-4% of employment and 25-40% of research and development expenditures for countries such as the European Union (EU), Japan and the United States. (Kallio, Mallat, Riipinen, & Tinnilä, 2004) and ICT expenditures are correlated with the income level, but there are still significant differences between countries with the same income exists since they are at different stages of transition (Jalava & Pohjola, 2002; Shao & Shu, 2004). Therefore, it can be said that ICTs have a positive effect on the economy and provide evidence for the existence of the new economy.

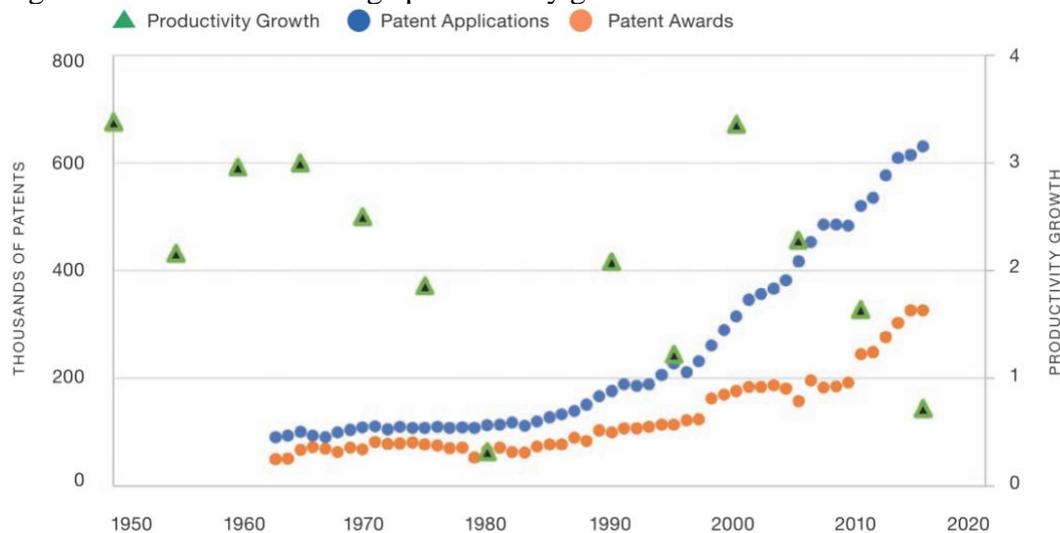
### 3.1. Technological Developments and Patents

In the last 20 years, patent analysis has become an important method for examining innovation studies (Funk, 2018). Innovation in economic terms; development of ideas and technologies that improve goods and services or make production more efficient (ECB, 2017). The method that brings the innovator profit is patent rights. The patent is defined in the Turkish Patent and Trademark Institution as “Monopoly rights granted to the patent holder for a limited period (20 years) and place by third parties in order to prevent unauthorized production, sale, use or import of the invention (TPMK, 2018). As can be understood from the definition, the patent is given for a new invention, so the number of inventions made is an indicator for technological development. Patents can also be a preliminary indicator for innovative products that may be available on the market. This is because the patented study shows a method or a new product that has not been done before. If this method or product is introduced to the market, it can provide benefit to the consumer and increase the profitability to the producer.

Figure 2.1 shows patent applications and the average productivity increase over time in the USA with five-year averages. The number of US patent applications remains constant until the mid-1980s. After this date it began to increase rapidly; between 1984 and 2003 more than tripled and by 2015 more than six-fold. Global patent applications quadrupled between 1980 and 2015, while global licensing revenue from patents grew even faster (Funk, 2018).

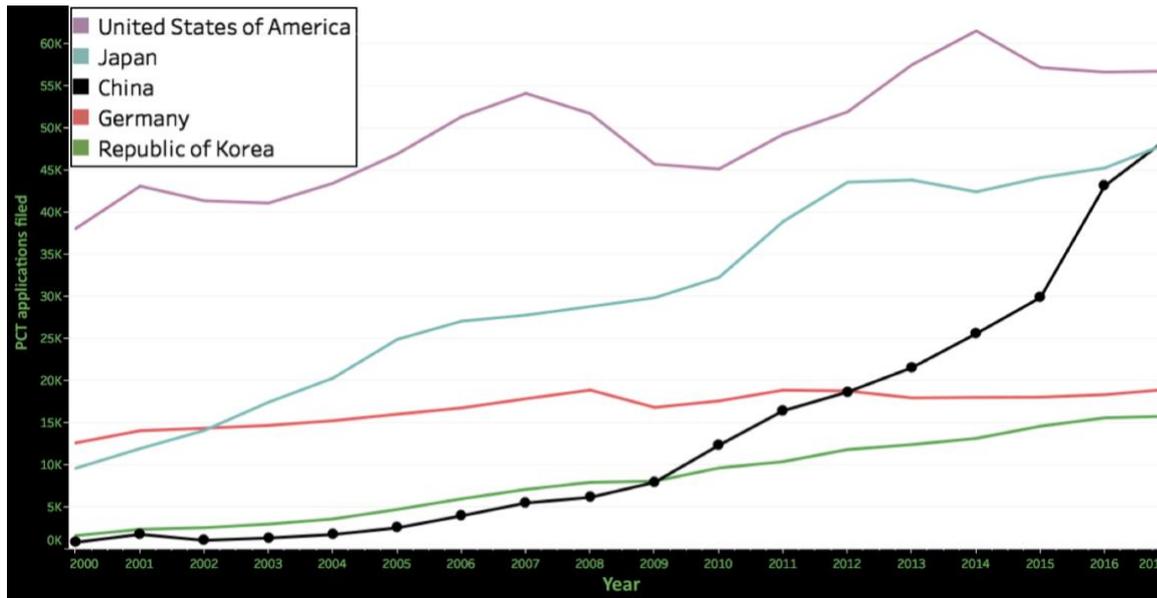
In economic theory, a new technology is defined as anything that increases the amount of output (increasing productivity) that can be produced with a particular input (Taylor, 2007). Figure 2.1 gives an opposite information to this definition. If patenting activities were a good indicator of innovation or technological development, the increase in productivity should probably have increased with some kind of delay (Funk, 2018). The increase in patent applications is seen in other important technology countries, as shown in Figure 2.2, but efficiency is reduced in these countries as shown in Figure 2.3.

Figure 2.1 Patents and average productivity growth in the United States



Source: Funk (2018).

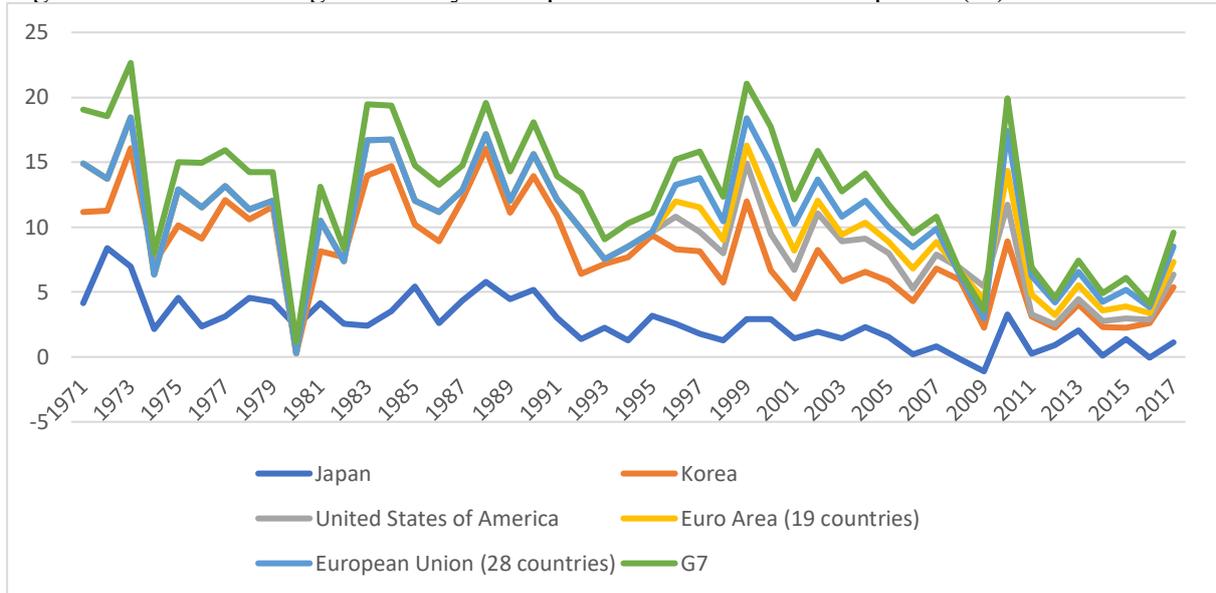
Figure 2.2 Patent applications according to the Patent Cooperation Agreement



Source: Hunt (2018).

When Figure 2.1 to Figure 2.3 are examined, they support the hypothesis that the increase of patent applications will have no increasing effect on productivity. However, it is seen that the growth in US and world productivity has slowed down since 1970. It will be possible to understand the reasons for the slowdown in economic productivity growth and the decline in R&D efficiency by examining the impact of other variables.

Figure 2.3 Annual change in hourly GDP production with constant prices (%)



Source: OECD (2019).

### 3.2. ICT Changes and its Economic Impacts

Rapid technological developments in the communication industry have led to a significant reduction in communication costs. Perraton, Goldblatt, Held, and McGrew (1998) report that the cost of a 3-minute phone call from New York to London dropped from US \$ 244.65 in 1930 to US \$ 3.32 in 1990 (based on 1990 prices). Advances in telecommunications, computer technology and the development of the Internet have made it possible for people to communicate with each other across virtually every point in the world. Gates (1999) describes

how aircraft designed in a virtual computer environment are more fuel efficient; how a company moved to a virtual Internet environment and improved financially; also it provides information on how companies make phone calls over the Internet and reduce costs.

Along with the decrease in communication costs, there has been a significant decrease in transportation costs (Perraton et al., 1998). Using these technologies, Kimberly-Clark increased productivity across the entire distribution network, lowered operating costs, and managed inventory more efficiently (Stewart, 2000); Ford was able to reduce costs from 60000\$ to 200\$ per accident, using computer simulations in crashing cars (Van Damme & Dellaert, 2001); ICT products improved the financial position of companies (Tapscott, 1996).

Innovation usually begins on a small scale; for example, a new technology is first introduced in the company where it was developed. However, in order to realize all the benefits of innovation, it must spread to the economy and provide equal benefits to companies of different sectors and sizes. Experts call this process the spread of innovation (ECB, 2017). The following section summarizes Roger's Theory of the Diffusion of Innovations.

### 3.3. Roger's Diffusion of Innovations Theory

Roger's Diffusion of Innovations Theory (RDIT) is an important study of the adoption of innovations, which provides theoretical details of the process of using an innovation in economic life. By definition, my publication can be summarized as the process of transmitting an innovation over time through some channels among members of a social system (Rogers, 2003).

This theory covers the roles of organizational and social systems in the diffusion of innovations, how communication affects this process, the characteristics of those who adapt these innovations and the effects of economic actors on this process. Gosling and Braithwaite in medicine (2003) give examples supporting RDIT for clinical teamwork. Jacobsen (1998) gives examples supporting RDIT in the computer sector (Dickerson & Gentry, 1983), personal computers (Ram & Jung, 1994), and school counselors in education (Casey, 1995). It is seen that companies from many different industries, from agriculture to marketing, have adapted innovative products and practices according to this theory (Surry & Farquhar, 1997).

In the RDIT, multiple causes interact together to influence the diffusion of innovation, but the four main elements explain that innovation itself, the transmission of information about innovation, the time and the social system in which innovation enters. All these four factors determine the rate at which companies adapt to innovations at five different stages, at different time intervals and at different time intervals for each company. These five stages consist of being aware of innovation (knowledge), seeing the benefits of innovation (persuasion), adapting innovation (decision making), enforcing the decision and realization (Rogers, 2003). An important conclusion from this theory is that in the first stage, when innovative companies start using a product, other followers will have to use it in the future.

## 4. New Economy

### 4.1. What is the New Economy?

#### 4.1.1. Definitions

Globalization of companies, developments in ICT and economic transformation worldwide. A public opinion survey conducted in 2000 found that most US consumers believe that the US

economy has shifted from an industrial economy to a very different economy (Kallio, Mallat, Riipinen, & Tinnilä, 2004). After Shepherd (1997), this economy became known as the New Economy. The basic statistics are given in Section 3.2 and they reinforce the relevant ideas of the existence of the New Economy.

There are many definitions and names about the new economy. The New Economy can be defined as adaptation of globalization and ICT to the production and trade processes of the old economy. The reason for the use of this definition is the assumption that productivity, inflation-unemployment dilemma, cyclical fluctuation and evaluations of enterprises have changed in the New Economy (Deardorff, 2016; Qi & Ying, 2019).

#### 4.1.2. Globalization, ICT and New Economy

There is a link between the new economy, globalization and ICT-driven economic growth. In general, innovation (technological development) leads to higher efficiency, which results in more output being produced with the same input. As productivity increases, more goods and services are produced - in other words, the economy grows. Innovation and productivity brings great benefits for consumers and businesses. As productivity increases, workers' wages increase. There's more money in your pockets and so you can buy more goods and services. At the same time, businesses become more profitable, which allows them to invest more and hire more employees (ECB, 2017). In particular, the rapid developments in ICT and the opportunities for storing, sharing and analyzing information provided to different sectors of the economy are among the main factors contributing to the New Economy. These developments result in the increase in the quality of the tools used by the companies or the decrease in the prices adjusted according to the quality and increase the efficiency. As a result of this preference, the capacities of the companies increased in the sectors, increasing capacities brought about productivity and productivity growth brought about economic growth (Kallio, Mallat, Riipinen, & Tinnilä, 2004). Because of this reason, as in the USA in the 2000s, there was an increase in production and the idea that inflation would not occur due to the falling prices of ICT products.

#### 4.1.3. New Economy and Markets

Kiracı (2007; 2008a; 2009) studies have established models that simulate the status of old economy companies in the in the New Economy. In the Kiracı (2013; 2015; 2010) studies by using more advanced models, monopoly companies producing innovative products and patents were added to the model and it was found that the market balance points has multiple equilibria. Another contribution of these studies is the pricing strategy of ICT companies that produce innovative products and the adaptation of innovative companies to prove that they can change the structure of the (even from the perfectly competitive market to the oligopolytic) market (Kiracı A. , 2008b).

In the New Economy, monopolistic New Economy firms encourage the use of ICT products by emphasizing the economic-strategic advantages of ICT products, especially when entering the Internet pages of companies producing ICT products and searching with the terms “success stories” or “competitive superiority”. In these examples, the best opportunity that a company will have compared to its competitors, competitive superiority and consequently increased productivity, differentiated product-service approach, service to the customer with a different shopping experience and most importantly, the increased profitability at the first level with the use of the product are emphasized. With RDIT, innovative old economy companies are encouraged to use this product and guarantee the follower companies. Therefore, it can be foreseen that adapting innovations in the new competitive environment will enable it to become automatic. This is a indication of a constantly increasing new cost for the old economy companies, because ICT companies are increasingly introducing new products. For example,

Microsoft has introduced 28 Windows TM operating systems for computers in the last 30 years (Wikipedia, 2019b). In the previous paragraph, this and the following information are summarized in the studies mentioned.

There are different marketing strategies possibilities of innovative companies with global patent rights. The first possibility is that ICT companies are able to convince innovative companies with short-term gains and sell their products as shown in Kiracı (2013; 2015; 2010) studies, but after all companies receive these products, all companies work with less profit than before and this results in a prisoners dilemma.

The second possibility is that ICT companies sell their products only to their preferred innovative companies and this way both innovative and follower companies transfer all producer surplus to the monopolistic firm.

This latter situation is highly likely to occur because monopoly companies that produce an innovative product have the right to legal monopoly through patents. Even if a monopoly company adopts the second possibility, and even if a product that increases productivity is sold to the old economy companies, the number of companies in the market will decrease, the costs and prices will increase, in short, despite the technological development in the West, the problem of decrease in productivity will arise.

## 5. Conclusion

As explained in part 2, the ongoing trend in globalization for centuries has created the dominance of transnational global corporations. Part 3 summarizes the increasing number of technological innovations and patents resulting in innovative products. As explained in Sections 3.2 and 3.3, globalization and ICT make the most important contributions to the New Economy. Global companies around the world (Apple, Microsoft, Google) get patents and try to sell their products for the highest profit.

In section 4.1.3, if these global companies are involved in market competition by selling their products to companies close to them with their legal monopoly rights, the number of companies in the market will decrease, costs and prices will increase, and in short, productivity problems will emerge despite technological developments in the West. In short, despite the technological development shown in Section 3.1, the reason for the decrease in productivity may be the global New Economy monopoly companies. As described in Section 2.1.3, their transnationality will have a supportive effect on actors close to them in global markets. This has the effect of reducing competition and productivity, but being transnational makes it difficult to control these companies. Hence nations cannot hinder productivity decline.

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