



## MACRO ECONOMIC EFFECTS OF THE NEW ECONOMY

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### Abstract

Looking at the recent developments in the field of science and technology it seems that it is a very rapid transformation. This transformation affects many aspects of the society such as economic, social, prosperity, communication, but this paper will focus especially on the economic effects of scientific and technological developments. Looking at the countries that are leading the world economy it is inevitable that the common aspects of these countries are in the field of information and technology. Many things in the world are changing very quickly now. This change has been observed in this report on the basis of some macroeconomic indicators that the countries that have been in a better position to succeed in the economic arena have not succeeded in this change or those that are late in making up. Especially the efforts of countries such as USA, China, Japan, which are a serious force in the world economy, have shown the most important differences in science and technology from other countries played an important role. In this study, it was tried to determine the level of the role of scientific and technological developments in developments in the world economy by using macroeconomic indicators in general. This study also analyzed the countries' R & D expenditures, Technology levels, Welfare levels, growth and development rates.

**Keywords:** employment, economic growth, foreign trade, economy knowledge

### 1. Introduction

It is seen that the significant changes taking place in the information and communication sectors in the world economy, especially developed countries have caused various effects on macroeconomic indicators directly or indirectly recently. Depending on these effects, a lot of concepts in economic fields have lost their previous impacts level due to the meaning change. It is noticed that the new concept is being

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stated in various terms, such as ‘innovation economy’ and ‘knowledge economy’ in economy literature.

There have been serious changes in economy thanks to the characteristic of knowledge disseminated among countries quickly and in low cost. It is seen that the new technologies based on knowledge in the world is one of the crucial reasons why information is so important. Also, it is noticed that the economic products including higher percentage of information cause changes in the basis of economies. Today, it is highly remarkable that the industrial working class, known as Blue Collar, gives way to the information workers. (Özgüler, 2002).

It is important to observe and assess the sociological, economic, political and technological improvements of both developed and developing countries in 21<sup>st</sup> century. For this reason, countries should ask themselves what the other countries are doing for a better economy and what they can do. They should also observe the changes in the world economy and try to answer the questions of how to be a developed country, as well as how to reach a higher level in terms of economy. While doing so, they should not consider it just a plan but to put it into practice carefully. It is seen that information and technology based economies are used effectively when the economy of developed countries are taken into account.

In this study, the changes in the field of knowledge and technology will be dealt with and these changes will be assessed under the name of ‘innovation economy’ and ‘knowledge economy’.

## **2. The New Economy**

Information economy is defined as a new economy with knowledge based. The information economy seems to contain important elements suitable for the world conjuncture. It is observed that just as information is the main focus of activities carried out, it is also information that differentiates the competitive environment. The main two factors of the information economy are the information and communication technologies. The information economy is a long and comprehensive process involving the processes of information delivery, processing and transformation as well as distribution processes. It appears that information has begun to play an important role in effectively integrating human, physical and information capital in the field of information economy. The economic system, in which economic events are carried out on the basis of information, emerges as a knowledge economy. The information economy is called a new order that brings the economic basis of the global integration ideal known as globalization. The New Economy is known by many names and many concepts such as information economy, network economy, digital economy, new economy, intellectual capital terms are used in this sense. (Özgüler, 2002).

Some market observations it might look as if there is a new economy. But could it just be a new sphere for value creation? The so-called intangible sphere or intellectual capital sphere. (Edvinsson, 2000).

The concept of the New Economy has become one of the most debated and on the agenda since the late 1990s. Despite the fact that there are many studies by scientists specializing in the new economy, it seems that there is no complete consensus about the concept of the New Economy and the content of the New Economy. In the same way, it seems that the debates that are constantly present in the field of New Economy have failed, because the concept of New Economy has different meanings to different people. Some experts seem to favor the New Economy concept from a broad perspective, including the notion of globalization and deregulation, while others view intensive investments in information and communication technologies as positive effects on productivity and growth (Saatcioğlu, 2005).

When we look at the definitions made about the new economy concept, it is stated that the new economy includes growth, minimum inflation, minimum unemployment level, and broad meaning such as globalization, as well as the fact that knowledge is the most important production factor. It is possible to summarize what areas the new economy concept covers in the main headings (Akyazı and Kalça, 2003).

The new economy:

- Increased partnerships to access to new markets,
- The access of the new firms and products to markets suddenly, and the direct communication with the customers,
- Being able to present the new products into market in the same opportunities for the firm making themselves accept in the market and supplying a significant amount of profit for Entrepreneurs and investors,
- Offering Growing international trade and increasing direct capital and low national tariffs,
- The existence of easier, less costly and lifelong learning opportunities,
- Offering facilities such as shopping at home, communication, bill payment, trade or holiday planning.

The concepts of science, technology and innovation are intertwined. The increase in one of these concepts depends on the rise of the others. From this point of view, there is a complete coherence between innovation policies and science, as well as technology policies. Often science and technology policies, naturally, seem to include the innovation economy. When one country's innovation policy is mentioned, it is inevitable that there is also a science and technology policy behind this policy. In the world economy, especially after the Second World War, a new economy was needed in the new world order. For this reason, research and development expenditures and the resulting new scientific and technological discoveries have become a matter of gaining and developing the ability to transform the science and technology produced to

economic and social benefit. Therefore, this new economy, which is used only as the concept of "Innovation Economy" at the same time, emerges as a "science, technology and innovation economy"(Özsağır, 2013).

### **3. The Development of the New Economy**

It is known that Fritz Machlup is the person who first brought the concept of innovation economy to the world economy. In 1962, he conducted a study to measure the production and distribution of knowledge. At the end of the study, it was found that almost 29% of the US GDP belonged to the information economy. Studies that Machlup has done have contributed significantly to the measurement of the information economy and to the expansion of the literature on information economy politics. It seems that the first wave of this literature is the 1970s, when the information economy was the forerunner. Using Machlup's calculation methods and the National Accounts System as a resource, M.U. Porat noted that the Innovation Economy was responsible for 46% of US GNP and 53% of labor income in 1967. The second important process related to the information economy began at the beginning of the 1990s and continues to be as effective as everyday (Işık, 2013).

Analysis of Information Communication Technologies (ICT) industry growth and investment patterns demonstrates not only that ICT industries are now a major force in the U.S. economy, but also that their economic importance began to grow dramatically in the middle of the last decade. Although many factors contributing to the digital revolution were in place well before the mid-1990s, it was then that their combined effect and potential first became evident and the new economy began to take shape (Dalton, 2000).

Masuda (1981), accepted post-industrial society, expressed as an "information society" as the conclusion of "computerization" like Lyotard (2000), and advocated that the most advanced form will come to the end of the information society at the end of a four-stage process. The first step is Science and Technology Based Computing: It was a period between 1945 and 1970 and is defined as the "great science" stage. This period particularly points to the period when computers were more widely used in national projects, such as national defense and national astronomy studies. The second stage is Management Based Computing: It is a process which is valid between 1955 and 1980 and the computerization activities have been started to be used effectively both in public sector and private sector management areas. The difference from the first one is that it is intended to increase the utility of computer use operations at this stage. The third stage is Community Based Computing: it is the phase in which the use of computers is made available to the benefit of society, which began in the 1970s and lasted until the 1990s. At this stage, computer use has begun to be used towards social needs. It seems that there is a trend of computerization aimed at solving problems,

particularly in the whole of social life. In the last phase, it is seen that it is individual-based computerization.

Masuda argued that this phase would cover between 1975 and 2000. He argued that the computerization is going to be individualized from the society and each individual will have computer, as well as the fact that they can easily access the information they need to solve problems. It is emphasized that this stage will be the stage of mass production of information, which is equivalent to the stage of mass consumption, and also which is the most advanced stage reached by industrial society. In the end, the society in which we have lived in the present day is called information society (Özcan, 2007).

#### **4. Basic Differences between New and Old Economy**

With the new economy, many of the country's productions, income and profits have increased, through which considerable advantages in terms of time and costs have been achieved. One of the most important features of the information economy is the knowledge of its raw materials. According to the new economics, technology is based on knowledge, that is, the starting point is knowledge; It seems that it is not just about the fact that information is based on technology, as it is in technological revolutions that have taken place before. The World Bank has listed four important characteristics of the information economy as follows (World Bank, 2004):

1. Establishment of an appropriate economic tendency and institutional system that promotes intensive use of national and global knowledge in all areas of the economy, encouraging entrepreneurship, which is open to economic, social and cultural transformations brought about by the era of knowledge, and the establishment of the legal grounds of the information society.
2. The introduction of a society that is well-rounded by experienced, variable, and innovation-oriented people, where qualified education and lifelong learning become accessible to the whole community.
3. The introduction of an innovative information industry and creating an effective information infrastructure that leads to clear, effective and competitive information and communication services and tools for the transportation of the entire community
4. The formation of companies that contribute to a rapidly expanding global information network, who adapt this network to national needs, use new products, services, and new forms of business to take advantage of it, as well as influential nationalities that support innovation and entrepreneurship in a way that includes universities, intellectual centers of production, Innovation system and business environments.

We can briefly summarize the differences between the New Economy and the Old Economy as follows:

**Table 1:** The Differences between the Old Economy and the New Economy

The change	The Old economy	The New Economy
Production and Competition Area	National	Global
Organization Shape	Hierarchical-Bureaucratic	Network Braid, Network
Production Organization	Mass Production	Flexible Manufacturing
Factors Affecting Growth	Capital, Labor Force	Innovation, Inventions-Knowledge
Factor Determining Technology	Mechanization	Digitization
The Source of Comparative Excellence	Scale Economies, Less Cost	Scope Economies, Innovation and Quality
The importance given to Research and Development	Low , middle	High
Relations with Other Companies	Stand Alone	Cooperation, Partnership, Synergy
Purpose of Labor Policy	Full Employment	High Real Fee
Education level	Towards a Professional Diploma	Lifelong Learning
The Nature of Employment	Stable	Full with Risk and Opportunities
Regulations	Controlled	Flexible
Human Capital	Production Indexed	Customer indexed
Workforce	High	Low
The Structure of the Workforce	Expert in a specific field	Versatile skill owner
Assets	Material Assets are important	Intangible Assets are important
Sectoral Structure	Agriculture and Industry Sector	Service industry

Source: ([http://www.canaktan.org/yeni-trendler/yeni-ekonomi/ozellikleri.htm#\\_ftn1](http://www.canaktan.org/yeni-trendler/yeni-ekonomi/ozellikleri.htm#_ftn1))

#### 4.1. Advantages and Disadvantages of the New Economy

Despite many developments in the field of "Innovation Economy" in the Turkish economy in recent years, it is seen that they are still progressing in a more adequate level and that development does not take place. Table 2 and Table 3 below show the strengths and weaknesses, opportunities and threats of Turkey in terms of the new economy.

**Table 2: Strengths and Weaknesses of Turkey in terms of New Economy**

<b>Strengths</b>	<b>Weaknesses</b>
Presence of active population	The lack of capital
The high entrepreneurial spirit	Insufficient technological infrastructure
A country open to innovation	Continuous increase of the informal economy
Realizing the concept of Research and Development	Low number of people who know a foreign language
Increased patent applications	High production costs
Practical intelligence of Turkish people	The inadequate human capital
Dynamic and a society which is eager to learning	Lack of concrete products in academic work
Bridge between East and West	Bureaucratic and legal obstacles
Incentives paid to Research and Development	Lack of expert personnel in Research and Development
The existence of a large number of SMEs	Inter-institutional communication and coordination problem

**Source:** Özsağır, 2012: 249-250.

**Table 3: Opportunities and Threats of Turkey in terms of New Economy**

<b>Opportunities</b>	<b>Threats</b>
Experienced countries	Inefficient technological investments
Rapid access to Information and Technology	Becoming a global market
Turkey's becoming a global marketplace	Low efficiency problem
Business partnership between business world and universities	The problem of trust in electronic commercials
Strategic position	Prejudices against Turkey
Stable growth policies	Late in technology integration
New employment areas in long run	Inadequate accumulation compared to competing countries

**Source:** Özsağır, 2012: 250-251.

#### **4.2. The Impacts of New Economy on Macroeconomy and Turkey**

The new economy has now been accepted as an important criterion of the development in the world economy and has been one of the most important goals for the countries. The new economy never accepts that there is no future, lack of tolerance and lack of

innovation. Developing countries, not only developed countries, are also trying to assess the opportunities that the new economy presents and to have the necessary understanding to ignore the threats that may arise and it seems that the new economy is in the race to fulfill what they absolutely agree with. It has emerged that Turkey needs to develop more detailed information in order to produce more information, efficient and efficient use of the produced information (Gürdal, 2004).

#### 4.3. The Impact of the New Economy on Economic Growth

Research and Development expenditures, which are important for determining the effect of technology in the new economy, are also an effective factor for measuring economic competitiveness as well as global competitive power. In most research conducted to date, it is clear that spending on Research and Development affected both developed and developing countries economy positively. Also, it has turned out that there is a positive relationship between Research and Development expenditures and economic growth (Özsağır, 2013).

**Table 4:** The percentage of Research and Development expenditure in GDP

Countries	2010	2011	2012	2013	2014*
EU (28 countries)	1.93	1.97	2.01	2.03	2.03
Euro zone (19 countries)	1.99	2.04	2.1	2.11	2.12
Turkey	0.84	0.86	0.92	0.95	0.96
Russia	1.13	1.09	1.13	1.13	1.19
USA	2.74	2.77	2.81	---	---
Japan	3.25	3.38	3.34	3.47	---
South Korea	3.47	3.74	4.03	4.15	---

**Source:** EUROSTAT, 2010 -2014 data \*Estimated values in 2004

It is seen that the countries with the highest rates since 2010 are South Korea and Japan in Table 4 and this is followed by The USA, Euro Zone and America, respectively. Over the years, rates in all regions have continued to increase in general and it is seen that the ranking is almost the same as in all years. When Turkey is investigated from 2010 to 2014, it is seen that Turkey's share of Research and Development spending has increased steadily in recent years. According to Eurostat's 1998 data, Turkey's Research and Development expenditure was just 0.37% of GDP, which now shows that Turkey gives so much importance to Research and Development. In addition, although the growth rates of the Turkish economy since 2002 has fallen in some periods, the reason why the growth is so high in other periods is without doubt Research and Development expenditures.



#### 4.4. The Impact of the New Economy on Employment

There is a substitute relationship between technology and labor in industrial economies and the new economy seems to have left this relationship to a complementary relationship between technology and information workers. Since a great deal of work in the new economy requires high level of knowledge and skills, it seems that in this sense the labor force replaces the low-skilled workforce as the demand grows. Therefore, investments in information and communication technologies and qualified workforce are seen as complementary elements. When the sectoral distribution of employment is examined, the workforce consisting of blue-collar workers (physical workers) concentrated in the industrial sector in the industrial economies has begun to turn into a structure composed mainly of white-collar workers (information workers) with the transition to the new economy (Özsağır, 2012).

**Table 5:** Sectoral Distribution of Employment in the New Economy Process

Sectors	Agriculture%		Industry %		Services %	
	1994	2010	1994	2010	1994	2010
Turkey	44.0	22.0	23.0	27.0	34.0	51.0
Canada	4.0	2.0	22.0	20.0	73.0	78.0
China	50.0	3.0	21.0	44.0	12.0	49.0
Japan	6.0	4.0	34.0	25.0	60.0	70.0
USA	3.0	2.0	24.0	17.0	73.0	81.0

**Source:** World Bank employment data

Table 5 shows that developed countries such as Canada, China, Japan and the United States have moved away from the agricultural sector and given importance to the industry and service sector. Looking at the sectoral distribution of employment in Turkey it is observed that there has been a serious shift in recent years from the agricultural and industrial sectors towards the services sector. But the most important problem in Turkey's adaptation to the new economy is that it has not yet completed its industrialization. After that, it is necessary to change the technological structure and go from production-intensive technology to advanced technology-based production management.

The fact that employment shifts from the agricultural sector to the services sector is actually revealing a fact, which is a marginal change in the conditions demanded by people who work in the face of serious transformations. The required conditions in the new economy are especially rapid problem solving ability, good communication ability, high business intelligence, taking responsibility, self-confidence, initiative, flexibility, unlimited imagination, creative intelligence, continuous learning desire, knowledge acquisition and information sharing. (Duman, 2004). It is inevitable that educational policy should be technology oriented in order to be a good business owner in the new economic order.

#### 4.5. The Impact of the New Economy on Foreign Trade

The new economy has positive effects on growth and employment as well as on foreign trade. Especially the service sector, which consists of information, communication and technology products, has played an important role in export figures of countries.

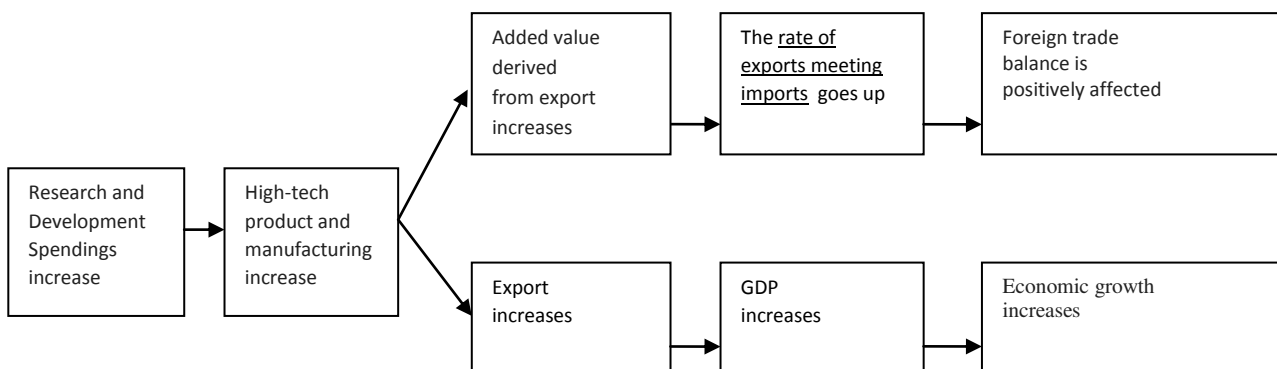
**Table 6: Service Trade Statistics in the World and Turkey**

Total Export (Billion \$)						Total Imports (Billion \$)					
Rank	Country	2010	2011	2012	2013	Rank	Country	2010	2011	2012	2013
1	EU-27	684	789	841	880	1	EU-27	598	638	646	667
2	USA	515	578	621	662	2	USA	358	390	411	427
3	China	170	182	190	207	3	China	192	236	280	329
4	Japan	138	142	142	144	4	Japan	155	165	175	161
5	Singapore	112	125	112	116	5	India	117	130	127	127
6	India	110	148	141	152	6	Singapore	96	99	118	122
16	<b>Turkey</b>	33	38	42	44	23	<b>Turkey</b>	<b>18</b>	<b>19,6</b>	<b>19</b>	<b>22</b>
	<b>World</b>	<b>2.795</b>	<b>3.177</b>	<b>3.541</b>	<b>3.744</b>		<b>World</b>	<b>2.705</b>	<b>3.026</b>	<b>3.515</b>	<b>3.675</b>

Source: WTO International Trade Statistics, 2014

In Table 6, export and import figures for countries' service trade are given. Looking at these figures it is seen that the EU countries are in the first place both in service exports and in service imports. After the EU, service exports and imports are also seen to be very important in the US. There is a considerable amount of service trade in China, Japan, Singapore and India. However, it seems that Turkey has lagged far behind other countries in service trade. This may be explained by the fact that Turkey's R & D (Research and Development) expenditures are lower than those of other countries.

**Figure 1: Impacts of R & D (Research and Development) Spending on Foreign Trade**



By looking at Figure 1, it can be seen that the increase in R & D (Research and Development) expenditures causes the changes in foreign trade. Especially an increase in R & D spending will increase technology exports and thanks to this technology, countries will produce better quality and more goods, as a result of which there will be an increase in the exports of the countries. Hence, this will show a positive relationship

between R & D expenditures and the development of foreign trade. The more advanced the foreign trade of an country is, the more likely it is to be affected positively by all macroeconomic indicators of that country, as understood by its growth, employment and export figures.

## 5. Conclusion and Evaluation

The world economy has entered into a new phase, and the economists describe this stage as a new economy. Structural features of the new economy include; Flexibility in production, risk, uncertainty, change, advanced technology, R & D expenditures and lifelong learning. Products and services belonging to the new economy are called products and services based on information and communication technologies. It seems that the new economy is endless and has a dynamic structure with many alternatives. Developed and developing countries have begun to produce more products in less time thanks to the new economy, leaving behind other countries especially in the economy and foreign trade.

It has become clear that Turkey needs to adapt quickly to this process of change. In the process of transition to the new economy, it is necessary to complete the industrialization process on the one hand and change the technological structure on the other side to shift rapidly to advanced knowledge-based economy instead of labor intensive economy. Therefore, the share of national R & D on R & D should be increased, technological innovation and development should focus on open investments. Lifelong education should be emphasized in order to develop the qualified workforce that the new economy needs.

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