CURRENT ISSUES IN BUSINESS

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CONTENTS

PREFACE

Prof. Dr. Sadettin PAKSOY **1 - 2**

CHAPTER 1:

IoT BASED SOLUTIONS AND MARKETING 4.0

Dr.Cüneyd İkbal SARIOĞLU **3 - 44**

CHAPTER 2:

THE EFFECTS OF TOTAL ENTREPRENEURIAL ACTIVITIES ON PER CAPITA GDP IN THE CONTEXT OF POLITICAL AND FINANCIAL RISK

Assist. Prof. Dr. Mustafa TORUN

Assoc. Prof. Dr. Feyza BALAN **45 - 87**

CHAPTER 3

THE EFFICIENCY OF MONETIZATION IN PRODUCTION: A CASE OF TURKISH ECONOMY (2005 – 2018)

Assist. Prof. Ömer Uğur BULUT

Lecturer Hikmet YILMAZ **89 – 119**

PREFACE

Enterprises are the basis of an economy. Corporation is called as economic units that produce goods and services to meet human needs. Production factors are also needed to produce goods and services. As it is known, production factors are natural resources (land), labor , capital and entrepreneurs. Entrepreneur brings together other production factors and produces goods and services to meet human needs and contributes to the growth of the economy in which it operates. In spite of all risks and uncertainties; is the person who finds capital, makes production and markets what it produces. Approximately 50% of the world's population consists of men and 50% consists of women. However, the share of women in industrial production is very low. The conduct of economic activities, regardless of gender, should be the basis. Because the core of the economy is business and the core of the business is human (male-female). Therefore, the place and importance of the human element in the business is very large.

In this book, there are specific studies about business. This book, which is called Current Issues in Business ", consists of two chapters;

-1. IoT Based Solutions and Marketing 4.0

- 2. The Effects of Total Entrepreneurial Activities on Per Capita Gdp in the Context of Political And Financial Risk

-3. The Efficiency of Monetization in Production: a Case of Turkish Economy (2005 – 2018)

I would like to thank all the authors for their contributions.

Prof. Dr. Sadettin PAKSOY

CHAPTER 1:

IoT BASED SOLUTIONS AND MARKETING 4.0

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INTRODUCTION

The Internet has been a phenomenon that has been developing and growing day by day. In the early days of the Internet, this progress was slow. Nowadays, the communication capacity and speed of the internet, which is expressed as the network of networks, has reached extraordinary levels compared to the early times. It is foreseen that approximately 20 billion objects will be connected to the internet until 2020, which is a huge network system that started with ARPANET (Advanced Research Projects Agency Network), which emerged in 1969, which enables communication of very few devices and forms the basis of the Internet (Evans, 2011). Today, the developing technologies of the Internet allow any device/object to connect to itself. Therefore, connected objects (things) becomes more popular in every area of life. In this context, today, the concept of "Internet of Things (IoT)" is used to define these connected objects/devices.

The concept of Internet of Things (IoT) is a new concept that is growing in popularity thanks to the development of modern wireless technologies. The basic formation of this concept is to develop applications aimed at facilitating human life by

communicating the objects in the world with each other (Atzori et.al, 2010). IoT is the communication of objects that are based on standard communication protocols and that can be addressed, via the Internet (EC, 2008). By 2025, many objects such as furniture, paper documents, foodstuffs, electronic devices will be connected to the Internet.

Nowadays IoT which are frequently used in many fields is also used in the field of marketing. In this context, the solutions and innovations brought about by the concept of Internet of Things in Marketing will be examined in this section of this book.

1. Internet of Things (IoT)

The first application of the Internet of Things in History is the sharing of images of a coffee machine with a camera system connected to the internet by a group of academicians at Cambridge University in 1991 (Armentia et al., 2012). The inventor of the Internet of Things concept is Kevin Ashton, one of the founders of the Auto ID Center, established in 1995 at MIT. Although the concept was first used in 1999, the cost of the sensors that could be inserted into the objects in those years was not very popular due to the high cost of wireless internet

technology in the present period (Ashton, 2009). On the other hand, today, thanks to the developments and innovations in Micro Electro-Mechanical Systems (MEMS) and Information Technologies (IT), many objects can be connected to a network as seen in Figure 1 (Patel and Patel, 2016).

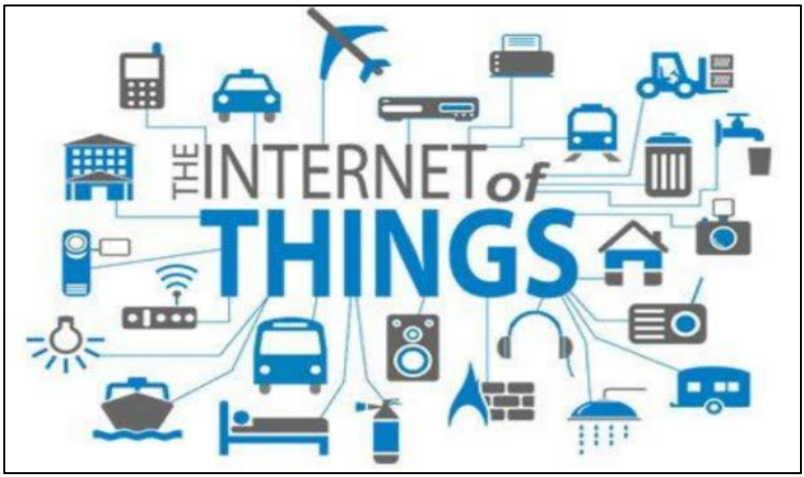

Figure 1. IoT topology and connected objects

Source: Patel and Patel, 2016.

IoT is a new term that combines different technologies and approaches based on the connection between physical objects and the Internet. IoT is defined as a world in which physical objects integrate seamlessly into the information network and where physical objects can become active participants in

business processes. In general, IoT can be defined as the internet connection between physical objects in the workplace, people, systems and information technology systems (Pereira and Romero, 2017).

The International Telecommunication Union (ITU) stated that a new dimension has been added to the world of information and communication technologies. Thanks to this new dimension it would be possible to connect to anything at any time, rather than to connect to something in someplace. ITU defined the Internet of Things as the dynamic network of networks and, unlike Auto-ID central members, stated that not only RFID-tagged objects but many different objects that could be identified by a single identity could constitute the infrastructure of the Internet of Things (ITU, 2005).

Another definition was made by the Cluster of European Research Projects on the Internet of Things (CERP-IoT). The Group defined the Internet of Things as a dynamic and self-configuring global network infrastructure based on standard and interoperable communication protocols. In this network, objects are identified virtually by identification numbers, using intelligent interfaces and continuously integrated into the

information network. Objects are expected to actively participate in business, information and social processes. The term object refers to objects with the following properties. These objects (CERP-IoT, 2009):

- Can interact with each other and the environment, communicate, exchange data and information,
- Can react independently to real world events,
- Are capable of conducting processes directly or without human intervention to initiate specific tasks and produce services.

IoT is a paradigm in which everyday objects are equipped with the capabilities of identification, feeling, networking and processing, and these features allow objects to communicate with each other and other devices through the Internet to achieve a number of goals (Sağ, 2015). In IoT, the Internet serves as an electrical system (Greengard, 2015). However, non-internet based Bluetooth, RFID and so forth technologies are used extensively within IoT. IoT gives physical objects the ability to see, hear, think and come together to talk in order to share information and make decisions together (Aktaş, et al., 2016).

Indeed, the sensor, microchip, label, etc. anything that can be placed in any receiver will be included in the IoT ecosystem. Food, products, books, home and kitchen utensils, trees, roads, fields, even animals and people, they can all be part of the IoT platform. Therefore, Cisco Systems and some other authorities use the concept of "Internet of Everything (IoE)" instead of the Internet of Things (Greengard, 2015).

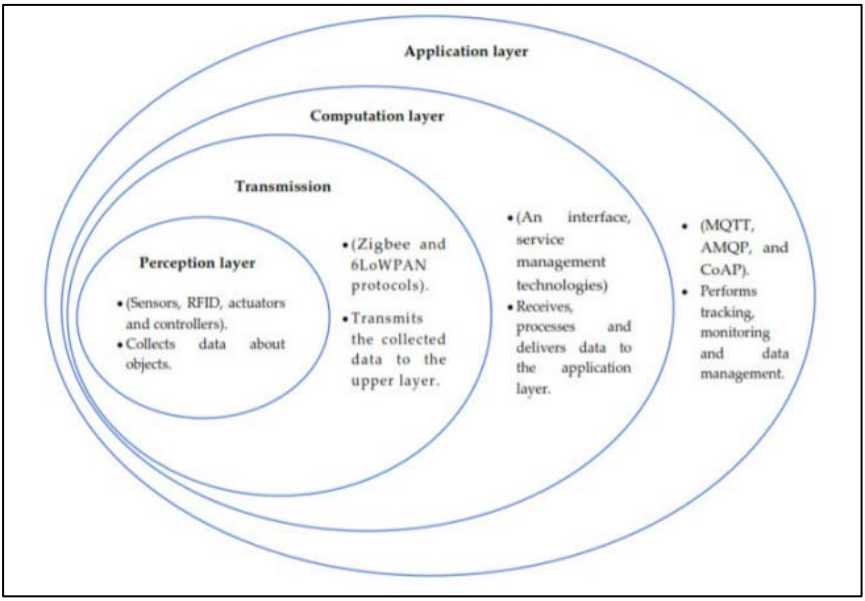

Figure 2. Layers of IoT architecture.

Source: Mostafa et.al, 2019.

The Internet of Things architecture consists of four basic layers explained as follows (Çeltek, et al. 2015; Mostafa et.al, 2019):

a) Perception Layer

This layer is the five sensory organs of IoT. There are two main purposes in this layer; identify objects and collect data of objects. RFID (radio frequency identification) is the most widely used basic recognition and identification tool. RFID is an automatic recognition system consisting of a reader and a label and it is based on the communication between the reader and the label through electromagnetic waves (Aktaş, et al., 2016). RFID is currently used in contactless payment systems, collecting road tolls, tracking animals, placing data in passports, product control and shipments in the warehouse, and so on used in dozens of points (Greengard, 2015). Short-range radio communication channel NFC (near field communication) provides contactless technology in a 10 cm range, unlike long-range RFID. In addition, due to their integration to smartphones, IoT can be used many areas such as mobile payment, banking, e-ticket, electronic pass systems. Barcodes, QR codes, and watermarks are some other identification tools used in this layer. Data

collection from objects is fulfilled by sensors that sense mostly heat, pressure, sound and so on (Çeltek, et al. 2015).

b) Network and Transmission Layer

The interaction and communication organ of the Internet of Things. Each object within the IoT environment must be uniquely addressable. Therefore, each object must have an IP (internet protocol) address in order to connect to the internet. The increase in the number of objects connected to the Internet day by day caused the current IPv4 to be insufficient and necessitated the transition to the IPv6 standard. This standard corresponds to 340 decillion addresses (3.4×10^{38}) (Aktaş, et al., 2016). As a matter of fact, this gigantic number is large enough to give an IP address to every grain of sand in the world (Çeltek, et al. 2015). There are two main tasks in the network layer of a connected device. These are data transmission and processing and converting data into information. Bluetooth, beacon (Bluetooth based interaction technology), wi-fi, GPRS, Zigbee, 4.5 and 5G are main information transfer protocols that are used between physical layers of connected devices in a network. IoT can use one of these protocol in order to exchange information.

c) Computation Layer

This layer enables secure and efficient services to the application layer and the transmission layer. In this layer, an interface technology is utilized to provide efficiency and security of the exchanged data. A service management, responsible for services like exchanging, collecting and the storage of data is used in this layer (Lin et al. 2017).

d) Application Layer

This last layer refers to the platform on which the information from the technical levels (for example, sending the training data to the application on the smartphone via the person's smart wrist) is presented to the end user via an application. Today, there are more than 1 million applications in smartphones and tablets in the App Store and Google Android Market, but it is difficult to predict the number of applications that will be available in a much more connected life with IoT in the near future (Çeltek, et al. 2015).

The concept of the Internet of Things does not only have a static structure consisting of technical components but also includes various social dynamics (Alter, 2013; Krotov, 2017). In this

context, Table 1 presents the environmental layers (technological, physical and socio-economic) of the IoT and the elements that make up these layers.

Table 1. Environmental factors of IoT

Internet of Things		
Technological Domain	*Physical Domain*	*Socio-economic Domain*
Hardware	Objects with which people interact directly (laptop, smartphone, etc.)	Participants (Users or not users)
Software	Physical objects	Consumers
Network	Physical environment; physical space (room, parking, etc.) or physical material (air, water, etc.)	Legislation authorities
Integrated platforms (Cloud based platforms etc.)	Services	Industrial unions
Standards (Created by industrial unions)	Competition environment	Consumer privacy organizations
Data	Cultural effects	Entrepreneurs

Source: Alter, 2013; Krotov, 2017.

As can be seen in Table 1, the Internet of Things concept is an important and up-to-date research topic for researchers working in the fields of marketing or consumer behavior. Because consumers, both on an individual and organizational basis, are an element of the socio-economic environment in this new

technology and they are the buyers of this new technology. And even consumers can be the most important element of the socio-economic environment since they will be the determinants of the success or failure of the discovery of IoT based technologies (Krotov, 2017). Similarly, “participants” are also important, as they generally involve consumers and can provide a comparative analysis by examining the characteristics of non-users. In addition, the confidentiality of the steps of consumers, which are already very important, is another element of the socio-economic environment. In this context, it is important for both businesses and business literature to examine new product and service groups offered to consumers and to analyze changing and emerging market dynamics by addressing the issue from the perspective of “consumer” and enterprises”.

2. Marketing 4.0 and IoT Based Solutions in Marketing

Marketing 4.0 is an effort to look at marketing from a different perspective. There are differences between traditional marketing dominated by one-way communication and the new marketing approach dominated by connectivity and technology (Krauss, 2017). There is a return from the concept of “vertical”, which means exclusive and individual, to the concept of “horizontal”,

which means inclusive and social. Social media eliminates geographical and demographic barriers to people's ability to connect and communicate which allows companies to innovate in cooperation. Although customers have a more horizontal orientation, they care about their social environment and take into account both real-life and online evaluations in the decision-making process of purchasing products (Kotler et.al, 2016). In this context, a new marketing approach becomes necessary in the present age. The concept of Marketing 4.0 stands out in meeting this requirement.

Marketing 4.0 has emerged as a result of rapid changes in technology, new types of consumers, intense global competition (Vassileva, 2017). Marketing 4.0 is operated in a highly active marketing system where commercial transactions and customer activities can be monitored in real time (Dholakia et al., 2010). At this point, the importance of online connected objects comes to the fore. This makes IoT important and basic component for Marketing 4.0.

Marketing 4.0 focuses on satisfying customer needs, providing customer satisfaction like Marketing 1.0 and 2.0, and strives to create value for all assets like Marketing 3.0. In addition, it

allows consumers to interact directly with products with advanced technology (Jara et al., 2012). Thanks to Marketing 4.0, consumers can view the properties of the product and purchase products by scanning matrix barcodes, radio frequency identification (RFID) and near field communication (NFC) tags (Tarabasz, 2013). These technologies form the basis of IoT used in marketing.

Since technology is constantly evolving, it affects business and social life. The main purpose of Marketing 4.0 is to anticipate future marketing activities based on future developments in the market. Therefore, consumer trends, data management, and advanced analytics are among the key factors in Marketing 4.0 to predict future trends (Vassileva, 2017). In this context, IoT based solutions have a key role to gather information about consumer trends and consumer feedback.

Table 2 summarizes the marketing phases from Marketing 1.0 to Marketing 4.0. AS seen in the table while Marketing 4.0 is virtual marketing-oriented, on the other hand, Marketing 1.0 is product-oriented, Marketing 2.0 is customer-oriented and Marketing 3.0 is value-oriented (Tarabasz, 2013). At this point, the IoT plays an important role in providing this interaction. For

example, providing feedback to the manufacturer via a product purchased by customers can help improve the product.

Table 2. Evolution of Marketing

Criteria	*Marketing 1.0*	*Marketing 2.0*	*Marketing 3.0*	*Marketing 4.0*
Purpose	Selling product	Customer satisfaction	Making the world more better place	Creating tomorrow today
Enabling power	Industrial revolution	Information technology	New wave technology	Cybernetic Revolution and Web 4.0
Key marketing concepts	Product development	Differentiation	Value	Production according to the customer and just in time production
Value suggestion	Functional	Functional and emotional	Functional, emotional and spiritual	Functional, emotional, spiritual and self-creativity
Interaction with customers	One-to-many	Peer-to-peer	Mant-to-many	Collaboration and co-creation with many-to-many

Source: Tarabasz, 2013: 130.

On the other hand, the use of IoT within the scope of marketing 4.0 has become widespread especially with the use of NFC technology with mobile phones and the increasing number of applications such as e-Wallet. The main IoT applications in the

field of marketing are listed below (Lou, 2011; Reaid et.al, 2014; Pourghomi, 2014; Verdouw et.al, 2016).

- NFC payment transactions in location and activity centered areas such as public transportation, sports halls, amusement parks and so on,
- Smart shopping practices that can advise customers at points of sale according to their habits, preferences, as well as allergic components for them,
- Intelligent product management systems for the rotation control of products on shelves and warehouses to automate stock renewal processes,
- Supply chain control practices that monitor storage conditions throughout the supply chain for product tracking.

2.1. Supply Chain Management Systems

The Internet has emerged as an effective means of maintaining information integration and sharing for a supply chain, as well as supporting various coordination mechanisms throughout the supply chain. However, there is a gap between the information flow in a supply chain and the material flows, as it is impossible

to understand the supply chain process in real time, as the information flow does not always reflect the material flow in real time. IoT, which is a comprehensive extension of the Internet and at the same time capable of collecting common connections between objects, gathering information and in real time, can close the gap between objects in the material world. Thus, it can monitor the supply chain process in real time and further improve the efficiency of the supply chain (Lou, 2011). Internet technologies allow supply chains to dynamically utilize virtualizations in operations management processes. This enables supply chain stakeholders to monitor, control, plan and optimize their business processes remotely and in real time over the Internet, based on virtual objects, rather than on-site observation (Verdouw et al., 2016).

The identification, traceability and real-time tracking of objects in the supply chain have always been difficult because of the heterogeneity of the platforms and technologies used by the various stakeholders of the chain. The emergence of the Internet of things and cloud computing brings a new approach to collecting, transferring, storing and sharing information about logistics flow for better collaboration and interoperability

between supply chain partners. The problem addressed here is the development of cooperation between supply chain stakeholders to facilitate the flow of the process in the supply chain. Existing platforms have problems to collect data directly from sensors, define a common policy and communication protocol for all stakeholders, provide information from mobile devices for remote processing and updating of data, solve the problem at some key points, such as managing multiple interactions between supply chain partners. To address the above-mentioned shortcomings, a collaborative cloud-based platform is needed to support data sharing, integration, and processing requirements for logistics product tracking. The benefit of this architecture is the integration of different IoT, sensor, data transfer and cloud storage layer, and ultimately adjust the collected data for users. Therefore, it is to facilitate information sharing in logistics flows for traceability, cooperation, and interoperability between different actors in the supply chain (Gnimpieba et al., 2015).

2.2. Logistics Systems

The main IoT applications used in logistics systems are as follows (Macaulay et.al, 2015; Tadejko, 2015):

- Vehicle tracking systems,
- Ensuring the quality of shipment conditions by monitoring vibration, impact, openings of containers and cold storage for insurance purposes,
- Determination of the location of goods in large areas such as warehouses or ports,
- Detection of storage incompatibilities inflammable goods stored close to substances in containers containing explosives,
- Fleet tracking systems for the control of roads for sensitive goods such as medical drugs, jewelry or dangerous commercial goods.

At this point, it is observed that IoT based solutions are used for these applications mentioned above. The Internet of Things provides the distribution industry with an ideal platform for centralized administrations without repositories.

The tools used to manage the flow of products in logistics are mostly based on information systems such as ERP, WMS, TMS or other legacy systems. With the development of cloud systems and the Internet of Things, transfer, storage, processing, and sharing have been added to relevant information systems. In addition, every event related to logistics flows is reported for the development of better cooperation and interoperability in the supply chain. Gnimpieba (et al., 2015) proposed a collaborative platform architecture based on advanced technologies related to Internet of Things, cloud systems, GPS and RFID in their study to address these issues. In another study, Reaid et al. (2014) proposed a collaborative warehouse order infrastructure based on multi-agency system and communication with RFID. This consists of a physical layer of devices, a media platform, a multiple agency systems, and an enterprise resource planning. It is integrated with decision support mechanisms, such as organizational and negotiation protocols, among agencies based on competition and cooperation. This approach has been chosen to improve the response capabilities of decentralized management in a dynamic environment. A common warehouse example was created to demonstrate the proposed infrastructure implementation. In this example, IoT based devices formed the

basis of this architecture to ensure connectivity between all components of the proposed logistic system (Reaid et al., 2014).

2.3. Payment Systems

Near Field Communication (NCF) is an IoT based solution commonly used payment systems. This technology is a short-range radio communication channel that allows data exchange between devices. NFC provides contactless technology for transferring data between personal computers, personal digital assistants, smartphones and POS (Point of Sale) devices. This allows the mobile phone to act as an ID and credit card for customers. However, the NFC chip can act as a card reader and can also be used to design symmetrical protocols (Ondrus and Pigneur, 2007). The NFC ecosystem is owned by third parties and does not have a common standard, claiming that all parties have access to customer information (such as bank account information), which affects the security of the technology. The dynamic relationships of the parties in the NFC transaction process make them common in a way that shares their access permissions in applications running in the service environment. These parties only have access to their own parts and are not aware of the rights and access permissions of the other parties.

The lack of information between the parties complicates the management and ownership of the NFC ecosystem. To solve this problem, a security module called Secure Element (SE) is designed to be the security base for NFC. However, SE personalization has some security issues with its management, property, and architecture, which can be exploited by attackers and delay the spread of NFC payment technology. Existing ecosystem models have been expanded to reorganize this technology for success and identify what is required, and accelerate the development of this business area. One of the technologies that can be used to provide secure NFC transactions is Cloud Computing, which offers broad advantages over the use of SE as a single element in an NFC-enabled mobile phone. Cloud Computing NFC can solve many problems in terms of application management. For this reason, a new payment model called NFC Cloud Wallet was proposed. This model is presented as a reliable structure of the NFC ecosystem that is systematically manageable and effectively meets the requirements of an NFC payment during development (Pourghomi, 2014).

Figure 3 shows an example of a scenario in which a customer can interact with a product in a shopping mall with a reader and a personal device such as a smartphone or the device shown on the Internet (Jara et al., 2012). This is an example of IoT based solution for payment systems. In this example, the mobile phone and POS (Point of Sale) device ends IoT components that enable the payment via internet connection on both devices.

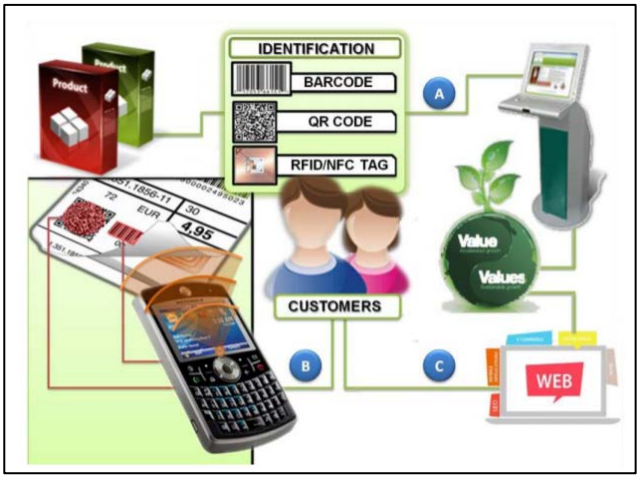

Figure 3. Marketing 4.0 scenario using IoT technology

Source: Jara et.al, 2012

To interact with a product, the first step is to identify the product. For this purpose, technologies such as barcode system, matrix

codes or RFID / NFC tags are used. Once the product has been identified using one of the technologies mentioned above, the customer can go to a social networking platform in the manufacturer-specified area, can reach detailed descriptions of product features, and can get additional information on value-based actions (Łukowski, 2017).

2.4. Observation, Customer Feedbacks, and Promotion

The Internet of Things, implemented in the areas of monitoring and control, big data and business analytics, information sharing and collaboration, makes a significant contribution to improving customer value. It makes it possible to obtain information, at any time and in any place, in real time, such as the monitoring and control of objects, the performance of the objects observed, and the energy consumption. The information obtained enables potential areas of improvement to be revealed, optimizing products and services by lowering costs and increasing their efficiency (Lee and Lee, 2015), identifying marketing strategies and supporting marketing managers in making specific decisions (Jara et al., 2013).

The monitoring and control function through the Internet of Things enables customers to offer different value propositions. For example, security and energy savings within smart home applications can be offered as a customer value proposition (Lee and Lee, 2015). For example, a calculation with the help of a bulb's recorded hours of use in a smart home means that the life of the bulb is reduced and when a replacement is needed, via the Internet of Things technology to the host's smartphone (Leung, 2014). This information is also transmitted to the bulb manufacturer. The bulb manufacturer, who can get information about how long a consumer consumes the bulbs are broken through the Internet of Things technology, can carry out a marketing campaign to emphasize the new features of the bulbs by improving the quality of the bulbs by increasing customer satisfaction (Jara et al., 2013).

The Internet of Things technology creates a huge amount of data and can transmit it to business intelligence and analytics applications. Based on this data, managers can identify operational problems, use these data to solve problems and make decision-making processes (Lee and Lee, 2015). With this technology, it is possible to collect sales data in real time, such

as which products of a company are sold to whom, when and where. By analyzing the collected data in real time, it is possible for marketers to carry out their marketing efforts in a targeted manner and to make better decisions. It is possible to achieve a higher return on investment in the future through targeted marketing efforts (Cutler, 2016; Dubash, 2016; Leung, 2014). It is also possible to send customer-specific messages on the basis of data related to customers' buying behavior or to present the product in a customer-specific manner (Shannahan, 2016; van Rijmenam, n.d.).

Being aware of changes in market conditions and / or customer behavior through the Internet of Things, the marketing manager can make decisions about increasing customer satisfaction and providing services that provide additional value to the customer. For example, the Oral-B Pro 5000 developed by Procter & Gamble offers intelligent, interactive electronic toothbrush users with personalized oral care. This toothbrush is capable of recording the user's habit of brushing teeth and providing oral care recommendations. Tests with this toothbrush have shown that a manual toothbrush takes less than 60 seconds of toothbrushing, which can be increased by 2 minutes to 16

seconds with an interactive toothbrush, with a toothbrush time of more than 2 minutes recommended by dentists. The mentioned advantages of the interactive brush are an important value proposition for customers (Lee and Lee, 2015). In this example, even a toothbrush becomes an IoT component that transfers data form consumer to the manufacturer via an Internet connection.

The Internet of Things also contributes to information sharing and collaboration. Knowledge sharing and collaboration can be interpersonal, between person and object or inter-object (Lee and Lee 2015). The Internet of Things allows customers to interact directly with the product, allowing customers to share their experiences and ideas with other customers and access other customers' experiences and information. This leads to the transformation of classical marketing into participative marketing (Jara et al., 2013; Jara et al., 2014). With this technology, the customer can make instant feedbacks. If a particular product does not meet the customer's expectation, the company may be aware of the situation immediately and avoid damages caused by dissatisfaction (Dubash, 2016; Leung, 2014).

The Internet of Things also contributes to the transformation of potential customers into real customers. The information about the product (eg promotional information) sent to the smartphone of the prospective customer who has spent a long time in front of a particular product in a store (eg promotional information) can cause the potential customer to decide to buy the product and become a real customer (Dubash, 2016).

The Internet of Things also has a positive effect on the click-through rate. In the example of the smart home mentioned above (bulb example), the Internet of Things technology can be sent to the host's smartphone to inform that when a light bulb in the home is shortened and when replacement will be required, a coupon can be used to purchase a light bulb. While the consumer does not waste his time thanks to receiving advertisements of interest to him, companies do not waste their money in vain by not sending his ads to unrelated consumers. The fact that the ad reaches the relevant consumer increases the likelihood that a visible ad will be clicked (Leung, 2014).

2.5. Data Acquisition for Marketing

It is stated that the main benefit of the internet of things for companies is data acquisition. The collected data is open to continuous and simultaneous access and data acquisition and sharing processes are performed in a powerful and efficient manner (Yang and Plotnick, 2013). This data can be transmitted to business intelligence and analytics applications. Based on the data obtained, managers can identify business problems, use data to solve problems and make decision-making (Lee and Lee, 2015). With this technology, it is possible for a company to collect real-time information about which products are sold to whom, where, when. Through real-time analysis of the information collected, marketers play an active role in conducting marketing efforts towards goals and making better decisions. A higher return on investment is likely to be achieved in the future through targeted marketing efforts (Cutler, 2016). However, it is possible to send special messages to the customer or to present the product specifically to the customer by means of the data that is analyzed and data related to the purchasing behavior of the customers (Dubash, 2016).

When examined IoT solutions for business, the Internet of Things concept provides specific benefits in various areas. IoT-based solutions in the manufacturing sector provide the following benefits thanks to the ability to collect information (Alan et al., 2018: 307):

- Reduction of maintenance and repair costs, improvement of machine efficiency,
- Developing existing products for suppliers and construct their future growth strategies on objective data,
- Obtaining feedback for the field of research and development and anticipating consumer needs,
- Optimizing retailers, better positioning in terms of autonomy, control, and monitoring, acquiring new capabilities, and developing more effective communication strategies,
- Gaining more options in order to provide consumer-brand interaction in terms of marketing, linking with the consumer, providing and automating the customer experience.

3. Conclusion

Today, people live in a completely new dynamic world. The known structures and approaches have undergone huge changes. Integrating connectivity and transparency, the internet has been largely responsible for these power changes. These changes have been reflected to consumers and thus to the industry. In this study, this dynamic environment has affected marketing approach as all aspects of human life.

Globalization and advances in technology provide unprecedented increases in innovation, competitiveness and economic growth worldwide. Industry 4.0, the digital industrial revolution represents the fourth industrial revolution in manufacturing and industry as a joint whole of information technologies and industry. The field of marketing was also closely influenced by the revolution. In this context, it is determined that IoT, which is one of the components of Industry 4.0, is also frequently used in the field of marketing. It has been seen that Marketing 4.0 uses IoT based solutions in order to collect customer feedbacks and evaluate customer satisfaction, gather data about consumer behavior, inform consumers about

products, etc. All these events provide an interactive marketing approach that enables many-many interaction.

It has been observed that IoT based technologies are used in the field of marketing by taking part in information gathering, promotion, product development, supply chain management, logistics, payment systems, and customer satisfaction. As a result, it was understood that IoT based solutions in the field of marketing increased efficiency and profitability by increasing automation.

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CHAPTER 2:

THE EFFECTS OF TOTAL ENTREPRENEURIAL ACTIVITIES ON PER CAPITA GDP IN THE CONTEXT OF POLITICAL AND FINANCIAL RISK[1]

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INTRODUCTION

The concept of entrepreneurship is a general name given to the process of innovating in the literature, finding new markets for the realized innovations, carrying out production by undertaking various risks in the market. According to Morris et al (1994) the entrepreneurship; is a value creation process that brings together the resources to identify and take the opportunities and transform them into data for success.

According to Wennekers and Thurik (1999) entrepreneurship is to introduce the wishes and abilities of the individuals and their ideas by perceiving and creating new economic opportunities (new products, new production methods, new organizational schemes and new product markets) within the existing organizations, either on their own or within the team in spite of the uncertainty and other obstacles by making decisions on the use of the place, the shape and the resources and on the institutions.

Internalization of the technological progress as a production factor in the growth models and the entrepreneur factor, brought to agenda, are the resources of technological progress in the model. In this context, the entrepreneur who takes place as a production factor in the market is an important dynamic of economic growth. As of this position, the human capital investments that underlie in the entrepreneurial activities are a factor that supports the physical capital investments in production. In this regard, the human capital investments made by the public are important for the effective realization of entrepreneurship activities and supporting the economic growth. On the other hand, the sustainability of economic entrepreneurship activities is closely related to the stability provided.

The aim of the study is to indicate the potential of growth by determining the effects of the entrepreneurial activities and the financial and political stability that are thought to be effective in the economic growth of countries and to emphasize the concept of stability in this process and to make policy proposal by determining the importance of the entrepreneurial activities in order to ensure effective economic growth. With this aim, the

relationship between the entrepreneurship, stability and economic growth in European Union countries is examined.

1. THE LINKAGES BETWEEN ENTREPRENEURSHIP, STABILITY/RISK AND ECONOMIC GROWTH

Economic growth is considered as a key to the economic development and progress in all economies. Hence, determining the elements of economic growth is important. When it is dealt within the framework of economic growth models, it is seen that initially the Neo-classical growth model that placed the physical capital on the basis of the economic growth and that the technological change is an external factor in the model. In the neoclassical growth model, Solow (1956) argues that the basic dynamics of growth are investments and that there is a saving rate that optimizes the investments in the economy, that technological progress is regarded as an external variable and in this case the developing countries grow faster than developed countries and therefore The differences of intercountry developments will be eliminated.

The only factor that can increase per capita income in the model is the externally accepted technological progress factor in the model. Over time, reaching the results of the fact that economic growth is largely achieved to a large extent by technology which considered external in the model and that the share of the other production factors underlying the model is relatively small have led to a reduction in the degree of confidence in the model through the empirical studies on the Neo-classical growth model (Ercan, 2000: 130). In this context, "new growth theories" (the theory of internal growth) have been developed which place internal factors into the source of the economic growth. Here, the dynamics of the economic growth are made up of the factors found in the economic system, and the determination of the factors affecting these factors are important for the economic growth.

When it is considered in the context of internal growth models, it is possible to mention about four mainstream ideas. These are sorted as the human policy model (Lucas, 1988), information transmission models (Romer, 1994), the public policy model (Barro, 1991) and the R & D model. In the human capital model, Lucas emphasizes the importance of the concepts of education

and learning by practising as the factors that develop the labour in this process, and argues that the labour, the increase of labour productivity, the investments made to the labour are related drawing the attention the labour factor in the economic growth equation.

In the model which emphasizes that the human capital is a production factor like physical capital, it is dwelled on the importance of investments made in the human capital for the support of the economic growth and the externalities of these investments and its all economic effects. In Romer's model of information overload, is mentioned that the externalities created by internalizing technological improvement growth model and technological progress developed can be used as free input in other sectors. In the public policy model, the goods and services produced by the public are considered as a factor of production and it is suggested that the economic growth can be achieved by the concentration of public expenditures in the areas of education, health, R&D, technological progress. The

externalities created by human capital and R&D investments in the R&D model developed through the studies of Romer (1990), Grossman and Helpman (1991-94), Aghion and Howit (1992-98) increase marginal productivity of the capital and support economic growth.

The first study investigating the relationship between entrepreneurship and economic growth in the literature belongs to Schumpeter. Schumpeter extends the concept of technological innovation, which is the dynamics of the economic growth, to the development of a new production method, finding a new market, the discovery of a new raw material and the development of the industry structure, in addition to producing a new product different from the neo-classical movement. The development of one or more of these factors is defined as technological innovation or entrepreneurial activity. According to Schumpeter, entrepreneurship and economic growth include a mutually reinforcing process.

With the characteristics listed above, the entrepreneurial activities increase the economic growth and support the entrepreneurial activities in economic growth (Işık et al., 2011: 156). Schumpeter's concept of innovation dealt in relationship

between entrepreneurship and economic growth is getting effective by the creative destruction mechanism. In the process of creative destruction, the economic development consists of four stages. In the first stage, there is a starting balance that is driven by the habits of the economic actors. In the second stage, the process that creates the economic development is the initial equilibrium that is distorted by an entrepreneurial group's quest for innovation. In the third stage, the innovation movements leave many companies in the system out of competition and sharpen the lines of the creative destruction process. The process that takes place in the last stage consists of a combination of the existing balance and the new imbalances that have arisen. While the process of creative destruction makes the market /company, where the innovation is realized, develop; on the other side it causes the disappearance of many markets/companies outside the innovative process under the competition conditions (Özkul, 2007: 356-357).

In addition to the consideration of the technological and entrepreneurial activities that are internalized in the economic growth equation as a production factor, one of the factors that determine the realization of the investments in the economic growth process is stability. The financial and political stability provided in the country a factor that has a direct impact on economic growth. Thus, the linkages between political and financial instability and economic growth have been well documented in the literature on subject. But, the debates have continued about these relationships since results have not suggested a specific direction.

2. LITERATURE REVIEW

The study focused on the relationship between the economic growth and political, financial stability and entrepreneurship. In the literature, the relation between the economic growth and these variables is considered separately. For this reason, within the scope of the literature review, the studies dealing with the political, financial stability and entrepreneurship and its relation with the economic growth have been studied separately.

According to Busse and Hefeker (2007), political risk gives the information about a country's quality of corporate structure. The

authors showed that low level of corporate quality and political inconsistency, political risk decreases the investors' profitability. It also showed; according to the model established in the study Azazi and Kılıc (2019), there is a statistically significant and negative relationship between economic and financial risk and real sector confidence index.

Ake (1975) focuses on the view that the stability influence the whole economy and social life through institutional channels and organizations in his study in which he explained the political stability and the subfactors. Venieris and Gupta (1986) mention about the negative effect of the political instability on saving. They argue that the incomes and savings of the middle class and the middle-lower class erode in an environment of political instability. Mbaku (1988) states that in the sub-Saharan African countries where political stability cannot be achieved, the development and growth processes have not taken place. According to Alesina and Perotti (1993), in their study in which the examined the linkage between the political risk and the

income distribution and investments, they reached the conclusion that the instability destroys the distribution of income and reduced the investments - especially foreign investments - .Drazen (2000) emphasizes that political instability affects economic actors and institutions and changes their future economic behaviours as they create an ambiguity about the future. Besides, secondly he expresses that the political instability deteriorate the market conditions and economic relations and reduces the productivity.

Focusing Gur and Akbulut (2012) on the impacts of political stability on economic growth in 19 developing countries during the period 1986-2003. The research findings showed that political stability is positively related with economic growth.

When examined as a relation between the financial stability and economic growth, Sahay, Cihak, N'Diaye et al. (2015) investigated whether the financial stability in developing economies there is an exchange relationship between financial stability and economic growth; financial deepening capital accumulation; and growth and financial stability. Gurgul and Lach (2012) examined the relationship between political risk and economic growth in 10 Central and Eastern European

countries during the period 1990-2009. They suggested that political risk has affected negatively on economic growth.

Similarly, investigating the effects of political risk on economic growth for 169 countries in the period 1960 to 2004, Aisen and Veiga (2013) showed that political risk negatively affects economic growth by using the system-GMM estimator. Vasileiou (2014) investigated the causality relationship between political stability and economic growth in the 27 European Union member countries in the period 2002-2012. Examining Granger causality analysis, the results of the study showed that political stability causes economic growth, while the opposite is not valid for the EU countries.

Another risk variable, financial instability has led a loss of economic confidence in the financial system. Therefore, an occurred financial instability will led to cancel investment projects and hence, it performs a sharp drop in output (Eichengreen 2004).

Allen, Baker, Bhattacharya et al. (2003) investigate how the stability of the financial sector affects the growth in developing countries in their study. According to the study, 1994 Tequila Crisis, 1997 Asian Crisis, Russia and Brazil crises, 2001 Turkey's financial crises have shown that the financial system has not deepened and the institutional structure of the financial system is not fully developed in developing countries. Financial liberalization in non-transparent economies, where appropriate monetary and exchange rate policies have not been applied, has led to the collapse of economies. In 2003, it was argued that in the study that express that the effects of these crises are diminishing, especially on the growth, the re-growth could be initiated in the countries which achieved the financial stability. Rama (2016) studied through the panel data analysis method the relationship between finance and growth for the countries of South Western Europe in the period of 2002-2014. In his study in which he examined the economic regulation and the impact of financial regulations on national income, he reached the conclusion that the growth of the financial sector and its stability has positively affected the growth for the current countries.

When considered as a relationship between entrepreneurship and economic growth, the Acs (2006) examines the relationship between the per capita GDP and the entrepreneurial activities for eighteen countries in the period 1981-98 in his study. As a result of the study, it is detected that the economic growth is high in the economies where economic activity is high. Salgada and Banada (2007) investigated the relationship between entrepreneurship and economic growth for 22 OECD countries in the 1980-95 period, and found that there is a positive linkage between entrepreneurship and economic growth, as assessed within the scope of patent applications. Acs and Amoros (2008) investigated the effect of entrepreneurship on growth in countries in the stage of activity oriented development from the point of the U-shaped relation between the economic growth and entrepreneurship.

One of the findings that they have achieved is that the countries in the activity-oriented phase need to reduce the need-oriented entrepreneurship. Secondly, the effect of enterprises turned to

the exportation on economy is positive in developed countries, while it is negative in developing countries. The reason for this is that exportation in the developing countries in the activity-oriented stage are made by large and multinational companies, not by small firms. Thirdly, the high-impact enterprises also affect negatively the economy because these companies operate in the innovation-oriented phase. Audretch and Thurk (2001) have concluded that there is a positive linkage between entrepreneurial activity and per capita GDP in their study of the relationship between entrepreneurship and economic growth for 23 OECD countries. Gerni et al. (2013) it the study in which they investigated the transition economies and the economic growth for Turkey in the period of 2008-2011 and the role of the entrepreneurship in the development process, reached the conclusion that the increase in the level of entrepreneurship had a positive impact on economic growth.

The aim of this study is to examine the effect of total entrepreneurial activities on economic growth in the context of political and financial stability channels in the selected European Union countries including Germany, Italy, England, France and Spain during the period 2001-2014.

METHODOLOGY

To test the presence of the linkages among economic growth, political and financial risk and total entrepreneurial activities, it has been selected a sample of five big countries in Western Europe (France, Germany, Italy, Spain and United Kingdom) covering the period 2001 to 2014.

3.1. Model and Data

In the analyzing of the relationships between the variables, the study considers the following panel data specification:

$$growth_{it} = \delta_0 + \delta_1 pr_{it} + \delta_2 fr_{it} + \delta_3 tea_{it} + u_{it} \quad (1)$$

The variables included to the regression are:

Political risk (pr). Political risk data are from the International Country Risk Guide (ICRG) (2010). The ICRG political risk index has occurred from 12 different elements. This data

includes scores on countries' government stability; socio-economic conditions; the investment profile; international conflict; external conflict; military in politics; religious tensions; ethnic tensions; corruption; democratic accountability; bureaucracy quality. As this index increases political stability provides.

Financial risk (fr). Financial risk data are retrieved from the International Country Risk Guide (ICRG) (2010). The data includes scores on foreign debt as a percentage of GDP; foreign debt service as a percentage of exports of goods and services; current account as a percentage of exports of goods and services, net international liquidity and exchange rate stability. As this index increases financial stability provides.

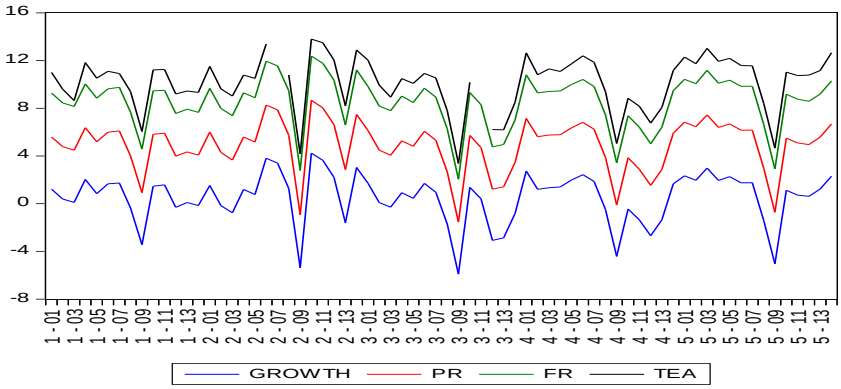
Growth in GDP per capita (growth). The data are retrieved from the World Bank's World Development Indicators database. The data is divided by the consumer price index.

Total early-stage Entrepreneurial Activity (tea) is used to measure entrepreneurship. This data means the percentage of

18-64 population who are either a nascent entrepreneur or owner-manager of a new business. This data obtained from Global Entrepreneurship Monitor (GEM).

Figure 1 illustrates the trend of the four variables (PR, FR, TEA, GROWTH) for the 5 Big EU countries during the period 2001 to 2014.

Figure 1: Political Risk, Financial Risk, Total Entrepreneurial Activities and Per Capita GDP Growth of 5 Big EU Countries for 2001-2014.



3.2. Panel Stationarity Test

This study investigates cross-sectional dependence across countries through Breusch and Pagan (1980)'s CDBP test. For this aim, we employed the Z_A^{SPC} test statistic by proposed Hadri and Kurozumi (2012). Under a null hypothesis, the test states that series are stationary, while an alternative hypothesis states that series contain unit root. Moreover, the test allowing serial correlation and cross-sectional dependence can be used in which both T<N and T>N (Hadri and Kurozumi, 2012).

3.3. Panel VAR Approach

The Panel Vector Autoregressive (PVAR) approach works by integrating the traditional VAR framework with the panel data where unobserved individual heterogeneity is permitted. In order to examine the dynamic relationships among the four variables, pr, fr, tea and growth, we employ the PVAR method developed by Love and Ziccino (2006). Similar to the traditional VAR model, PVAR approach examines that all the variables in the system are endogenous.

The general form of each equation in the PVAR systems with a first-order presented above is:

$$x_{it} = \Gamma_0 + \Gamma_1 . x_{it-1} + \mu_i + \varepsilon_{it}$$

where x_{it} is a vector of endogenous variables, μ_i denotes the vector of country specific effects, and ε_{it} is the vector of idiosyncratic errors.

Determining of the lag length of the VAR is a critical component in the specification of VAR models (Ener et al. 2015). The lag length is usually determined explicitly using model selection criteria.

Another implication from VAR estimation is impulse response functions (IRFs) values. An impulse response function measures the time profile of the effect of shocks at a given point in time on the future values of variables in a dynamical system (Pesaran and Shin 1998).

The other implication from VAR estimation is forecast error variance decompositions (FEVD). FEVD measures the contribution of each type of shock to the forecast error variance (Meniago et al. 2013, Ener et al. 2015).

ln this study, we use the generalized impulse response functions (GIRF) proposed by Pesaran and Shin (1998) instead of the basic IRF. Because, the generalized impulse responses are invariant to the reordering of the variables in the VAR (Meniago et al. 2013; Pesaran and Shin 1998).

4. EMPIRICAL FINDINGS

4.1. Findings of the Cross-Sectional Dependence Test

The empirical results of CD_{BP} test are shown in Table 1. According to Table 1, the null of no cross-sectional dependence across the countries is rejected for all variables and the model (1). Thus, it should be applied the second generation tests, taking into account cross-sectional dependence.

Table 1: Findings for Cross-Sectional Dependence Test

Variable	CD_{BP} test statistic	prob. value
PR	24,576***	0,00
FR	17,446*	0,06
TEA	12,554	0,25
GROWTH	13,621**	0,04

***,**,* indicate rejection of the null hypothesis at the 1% , 5%, 10% level of significance respectively.

4.2. Findings of the Panel Stationarity Test

Table 2 reports the results of the Hadri-Kurozumi (2012) test. According to this test with the null hypothesis is that all the panels are stationary, the null hypothesis cannot be rejected. So, all the variables are stationary at the significance level of 1%.

Table 2: Findings for the Hadri-Kurozumi (2012) stationary test

Variable	Z_A^{SPC} Statistic	p-value	Variable	Z_A^{SPC} Statistic	p-value
PR	0,175***	0,431	TEA	-0,806***	0,79
FR	1,213***	0,11	GROWTH	-1,239***	0,89

*** indicates rejection of the null hypothesis at the 1% level of significance.

4.3. Results for the PVAR Approach

Before proceeding with estimating the PVAR, it must be made a choice regarding the number of lags to use in the system of equations. Table 3 reports that the appropriate number of lag length of the VAR model through the information criterions. Table 3 showed that the optimal lag length for the VAR model suggested according to LR, FPE, AIC, SC, HQ was 1 lag. Thus we used lag length 1 for our model.

Table 3: VAR Lag Order Selection Criteria

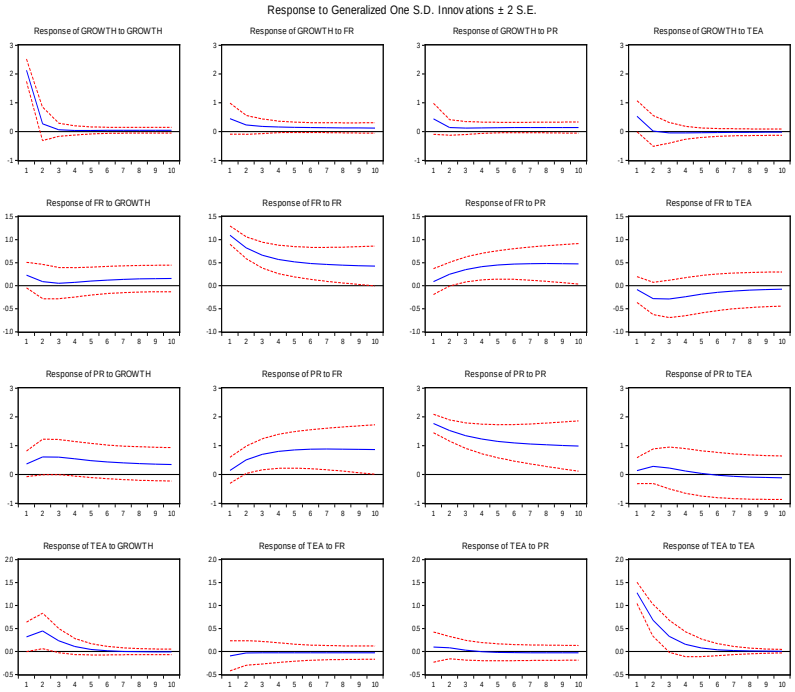
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-304.6717	NA	537.5049	17.63838	17.81614	17.69974
1	-242.3557	106.8275*	38.40222*	14.99175*	15.88052*	15.29856*
2	-230.9635	16.92547	51.97589	15.25506	16.85485	15.80730
3	-220.1059	13.64962	77.21583	15.54891	17.85971	16.34660
4	-201.8101	18.81849	83.42822	15.41772	18.43954	16.46085
5	-183.7624	14.43814	109.3310	15.30071	19.03355	16.58929

* indicates lag order selected by the criterion

The generalized impulse response functions are shown in Figure 2. The impulse response functions of the model showed that a positive shock to PR led to a positive and significant response of

TEA from the first year until the third year, but aftermath of the third year the response of TEA declined gradually and become insignificant. It also showed that an increase of TEA, leads to an increase of GROWTH on impact, but this effect becomes insignificant after four years. When examining the response of GROWTH to TEA, we can say that a positive shock to TEA led to a positive and significant response of GROWTH from the first year until the second, but aftermath of the second year the response of GROWTH become insignificant. On the other hand, we found that there is a positive response of TEA to PR. But, there is no response of TEA to FR.

Figure 2: The Generalized Impulse Response Functions



In Table 4, we report the Variance Decompositions (VDs) for GROWTH, FR, PR, TEA which provide evidence of the importance of FR, PR, and GROWTH for TEA, as well as of the importance of TEA, PR, and FR for GROWTH. According to Table 4, financial risk explains approximately 8% of changes in economic growth, 0,7% of total entrepreneurship activities, and 30% of the changes in political risk of the host country. Also,

political risk explains approximately 6% of changes in economic growth, 0,9% of total entrepreneurship activities, and 25% of the changes in financial risk of the host country.

Moreover, from Table 4 we can say that total entrepreneurship explains approximately 0,2% of changes in economic growth, 0,5% of political risk, and 3,8% of the changes in financial risk of the host country. Other variable, economic growth explains approximately 17% of changes in total entrepreneurship activities, 0,7% of political risk, and 1,2% of the changes in financial risk of the host country.

Table 4: Variance Decomposition of FR, PR, GROWTH and TEA

Variance Decomposition of FR: Period	S.E.	GROWTH	FR	PR	TEA
1	2.132468	0.000000	100.0000	0.000000	0.000000
2	2.158189	0.773580	95.28710	1.727206	2.212115
3	2.168821	1.431244	89.99619	4.786823	3.785743
4	2.178249	1.682785	85.47058	8.386285	4.460353
5	2.187055	1.692730	81.69480	11.99651	4.615953
6	2.195431	1.606877	78.52239	15.33473	4.536001
7	2.203474	1.496788	75.84350	18.29216	4.367545
8	2.211231	1.389876	73.57477	20.85821	4.177146
9	2.218726	1.294280	71.64659	23.06686	3.992269
10	2.225976	1.211025	69.99957	24.96657	3.822842

Variance Decomposition of PR: Period	S.E.	GROWTH	FR	PR	TEA
1	1.097552	0.000000	0.640502	99.35950	0.000000
2	1.406038	0.902066	4.855425	93.86533	0.377182
3	1.607433	1.242142	9.687487	88.62710	0.443274
4	1.761646	1.238490	14.18204	84.20421	0.375252
5	1.890592	1.123961	18.03607	80.52329	0.316677
6	2.004208	0.997561	21.22751	77.47255	0.302381
7	2.107250	0.888471	23.83914	74.94895	0.323436
8	2.202167	0.800306	25.97715	72.85871	0.363826
9	2.290378	0.729724	27.73913	71.11955	0.411593
10	2.372824	0.672604	29.20512	69.66243	0.459840

Variance Decomposition of GROWTH:

Period	S.E.	GROWTH	FR	PR	TEA
1	1.769017	91.95914	4.395220	3.645641	0.000000
2	2.381290	90.67276	5.448351	3.864440	0.014445
3	2.810371	89.78597	6.090124	4.071953	0.051953
4	3.151605	89.01812	6.565844	4.326460	0.089580
5	3.441897	88.30904	6.956452	4.616036	0.118475
6	3.698457	87.64008	7.297241	4.923424	0.139256
7	3.930195	87.00340	7.605951	5.236197	0.154452
8	4.142286	86.39512	7.892109	5.546643	0.166131
9	4.338090	85.81295	8.161073	5.850345	0.175633
10	4.519995	85.25527	8.415993	6.144970	0.183764

Variance Decomposition of TEA:

Period	S.E.	GROWTH	FR	PR	TEA
1	1.277240	6.763454	0.549985	0.656563	92.03000
2	1.474764	14.56224	0.463077	0.824163	84.15052
3	1.520224	16.30936	0.468419	0.811906	82.41031
4	1.530759	16.69269	0.493633	0.800924	82.01276
5	1.533489	16.77076	0.523640	0.809798	81.89580
6	1.534491	16.78004	0.554590	0.831754	81.83362
7	1.535109	16.77374	0.585363	0.860110	81.78079
8	1.535635	16.76399	0.615572	0.891022	81.72942
9	1.536132	16.75361	0.645063	0.922578	81.67874
10	1.536612	16.74330	0.673770	0.953891	81.62904

Lastly, model's estimates are further tested for stability through eigenvalues stability condition. According to Figure 3, the VAR model is stable.

Figure 3: Roots of Companion Matrix

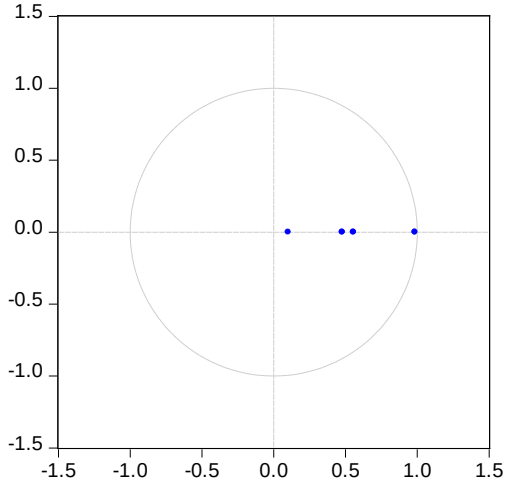


Table 5 and Table 6 show the results of serial correlation and heteroscedasticity test, respectively. According to the results, there is no evidence of both autocorrelation and heteroscedasticity at any lag at the 1% significant level.

Table 5: VAR Residual Serial Correlation LM Tests

Null Hypothesis: no serial correlation at lag order h

Sample: 2001 2014

Included observations: 61

Lags	LM-Stat	Prob
1	14.32565	0.5745
2	13.55603	0.6318
3	22.36879	0.1317
4	25.07476	0.0685

Table 6: VAR Residual Heteroskedasticity Tests

Sample: 2001 2014

Included observations: 61

Chi-sq	df	Prob.
66.79965	80	0.8540

CONCLUSION

Entrepreneurs play a determinant role on the societal, economic and cultural environment of a country. In addition, they are directly affected by socio-economic, cultural and political environment of a given country as well. By taking into consideration that entrepreneurs are an important influence over a given country's economic success, it is clearly desirable to know what sorts of social institution provide a favorable climate for developing qualities of entrepreneurship (Kılıç et al. 2013).

This paper examined the effect of total entrepreneurial activities on economic growth in the context of political and financial stability channels in the selected European Union countries including Germany, Italy, England, France and Spain during the period 2001-2014. The empirical findings showed that that an increase of total entrepreneurship activities leads to an increase of economic growth on impact, but this effect becomes insignificant after four years.

When it was examined the response of economic growth to total entrepreneurship activities, it could be seen that a positive shock to total entrepreneurship activities led to a positive and significant response of economic growth from the first year until

the second, but aftermath of the second year the response of economic growth become insignificant. On the other hand, it was found that there is no response of total entrepreneurship activities to financial risk. Moreover, the findings showed that an increase of financial risk leads to an increase of political risk on impact. Similarly, an increase of political risk leads to an increase of financial risk on impact.

Also, it was investigated the variance decompositions for economic growth, financial risk, political risk and total entrepreneurship activities. According to the findings, financial risk explains approximately 8% of changes in economic growth, 0,7% of total entrepreneurship activities, and 30% of the changes in political risk of the host country. Also, political risk explains approximately 6% of changes in economic growth, 0,9% of total entrepreneurship activities, and 25% of the changes in financial risk of the host country.

In addition, total entrepreneurship explains approximately 0,2% of changes in economic growth, 0,5% of political risk, and 3,8%

of the changes in financial risk of the host country. Other variable, economic growth explains approximately 17% of changes in total entrepreneurship activities, 0,7% of political risk, and 1,2% of the changes in financial risk of the host country.

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CHAPTER 3

THE EFFICIENCY OF MONETIZATION IN PRODUCTION: A CASE OF TURKISH ECONOMY (2005 – 2018)

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INTRODUCTION

McKinnon (1973) and Shaw's (1973) hypothesis of financial liberalization described credit growth, capital movements and interest rate constraints as financial pressure before the 1980s and argued that these policies reduced economic growth. Eichengreen, Rose & Wyplosz (1995) and Kaminsky & Reinhart (1999) associated financial pressure with economic and financial crises.

Financial liberalization, the theoretical foundations of which were laid by McKinnon (1973) and Shaw (1973), was implemented by many countries, including the Turkish economy. In theory, it is emphasized that policies such as interest rates and restrictions on capital movements, defined as financial pressure and applied under the influence of Keynesian approach until the 1980s, adversely affected growth by decreasing the efficiency of savings and investments. Countries affected by this view implemented financial liberalization policies in the 1980s, which in turn, led to an increase in economic and financial crises. The crises brought along criticism towards the financial liberalization hypothesis. These criticisms were mainly brought about the effect of increasing

financial deepening, meaning monetization of production, during the process of financial liberalization.

As mentioned in the hypothesis of financial liberalization, the share of financial assets diversified by financial expansion and intermediary activities between the fund supply and demanders and the service area of financial institutions in the national income is an indicator of financial deepening (Aslan & Korap, 2006, pp.2-6).

Indicators of financial deepening are based on monetary aggregates. One of the indicators pointing to financial depth in economic literature is the share of money supply in the gross domestic product (GDP) in a broad sense (M2/GDP). The M2/GDP ratio is an indicator of the extent to which all financial institutions providing services develop through financial liberalization (Mercan & Peker, 2013, p.100-101). This ratio is an indicator of the degree of monetization of production as well as the confidence of the economic individuals in the banking system and their level of use (Öztürk, Barışık & Darıcı, 2012).

For the Turkish economy, the impact of production on the economy gradually decreased with the financial liberalization.

In addition and in parallel with this, due to the insufficient level of domestic savings, more attention was paid to financial deepening and monetization in order to attract external capital. However, the view that the high interest rates mentioned by the financial liberalization hypothesis could increase investments through savings did not apply to Turkey. Because until 2006, there was no effective financial deepening. Even with the increase in financial deepening in 2006, savings could not be achieved to increase investments, and the monetary indicators in the financial system rather than production led the economy.

In developing countries such as the Turkish economy, financial deepening corresponds to monetization of production. When we look at the related literature, it is seen that financial deepening is generally associated with economic growth, and various time series analyzes are performed in this regard.

Onur (2005), using the data of 1980-2003 period, investigated the effect of financial deepening on economic growth for the Turkish economy through Vector Autoregressive (VAR) model. According to the results of the VAR model, long-term financial deepening reduced growth in the relevant period. Güneş (2013) examined the causal relationship between

financial development and growth by using the six-month data of the Turkish economy for the period 1988-2009 over the same model. Empirical findings pointed to no causal relationship from financial development to economic growth. Oruç and Turgut (2014) examined the relationship between financial deepening and growth by using Vector Error Correction (VER) Model and Granger causality analysis with the data of 1990-2010 period. According to empirical findings, there is a long-term inconsistency between financial deepening and economic growth, but this inconsistency will be resolved in the short term.

Türkoğlu (2016) used Granger analysis for the causal relationship between financial development and economic growth. In the study which analyzed the data of the Turkish economy for the period 1960-2013, a causal relationship was found between the related variables. Öztürk and Çoltu (2018) investigated financial deepening and economic growth for the Turkish economy in the long run by Toda-Yamamoto causality analysis and determined the existence of a causal relationship.

Based on these findings and views, in our study, the effectiveness of monetization of production, which is an important result of financial liberalization, is analyzed through

the main macroeconomic indicators. Our study differs from the existing literature in terms of using three different econometric methods.

The aim of this study is to investigate the existence of long- and short-term interaction and causal relationship between the monetary macroeconomic indicators and the monetization of production considering the increasing financial pressure environment in the 2000/2001 Turkish economic crisis and 2008 global crisis. For this purpose, this study will seek answers to the following questions:

1. In the short and long run, is there any interaction between the monetization of production and the main macroeconomic indicators?
2. Is monetization of production an important factor in the main macroeconomic indicators in the short and long run?

DATA SET and METHOD

The quarterly data of the period 2005Q1-2018Q4 were used in the study, in which the impact of monetization of production on the main macroeconomic indicators was examined. The

variables subject to econometric analysis were seasonally adjusted and logarithm was taken by "Moving Average" method. Since the current account deficit had negative values in some periods, its logarithm could not be obtained. Related variables are given in Table 1. The data is taken from the Electronic Data Distribution System of the Central Bank of the Republic of Turkey (CBRT). E-Views 10^{+} package program was used in the analyses.

Table 1. Variables Used in Econometric Analysis

Monetization Indicator in Production	**Basic Macroeconomic Indicators**
Share of Broad-Based Money Supply in National Income (parasa)	Current Account Deficit (cariasa)
	Short Term External Debt Stock (dborcsa)
	Credit Growth (kredisa)
	International Reserves (rezervsa)
	Industrial Production Index (uretimsa)

Before moving to econometric analysis, stationarity testing of all variables was performed by Zivot-Andrews Unit Root test. For short- and long-term interaction and causality analysis, Johansen Cointegration, Vector Error Correction (VER) Model, Autoregressive Distributed Lag (ARDL) Boundary Test, and Toda-Yamamoto Causality Analysis were used.

ECONOMETRIC FINDINGS

In this study, Zivot-Andrews (ZA) unit root test, which examines the structural breaks in the relevant period, was used. "This test internally identifies the structural breaks in time series" (Zivot & Andrews, 2002, p. 67). “In the Zivot-Andrews unit root test, the series is considered to be stationary if the calculated t-statistic is greater than the Zivot-Andrews critical value (Korkmaz, Zama & Çevik, 2008, p.25; Temurlenk & Oltulular, 2007)”. According to Zivot-Andrews unit root test results in Table 2, except for the industrial production index, the other variables were stationary. The causality analysis was examined by Toda-Yamamoto test because the related variables appeared to be stationary at different degrees.

Table 2. T-Statistical Values Calculated by Zivot-Andrews Unit Root Test

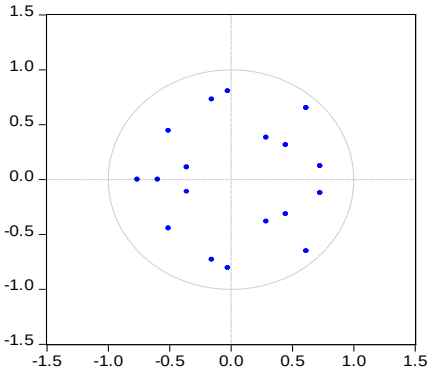
Variables	Constant	Constant & Trend
parasa	-4.697937 (2007Q3)	-1.119949 (2009Q3)
dparasa	-7.483364 (2008Q3)	-8.853824 (2008Q2)
cariasa	-4.565575 (2010Q3)	-4.585977 (2010Q3)
dcariasa	-5.032813 (2010Q1)	-4.956488 (2010Q1)
dborcsa	-3.039373 (2010Q3)	-3.324842 (2012Q1)
ddborcsa	-6.053356 (2009Q3)	-6.042801 (2009Q3)
kredisa	-3.769281 (2007Q4)	-4.047545 (2009Q3)
dkredisa	-5.075696 (2011Q1)	-4.815623 (2015Q3)
rezervsa	-3.748110 (2014Q3)	-3.745719 (2012Q3)
drezervsa	-6.726142 (2007Q3)	-7.121389 (2010Q3)
uretimsa	-5.188968 (2008Q3)	-5.119639 (2008Q3)

"In Table 2, the values at the 1%, 5% and 10% significance levels for the break point in constant are respectively -5,34, -4,93 and -4,58. The values for the constant and trend at the same significance levels are -5,57, -5,08 and -4,82. The dates in parantheses show the break point years (Tapşın & Karabulut, 2013, p.201)". "d" represents the first difference of variables.

The lag length (k) was determined by VAR model before the Toda-Yamamoto causality test. The lag length (*) indicated by the FPE, AIC and HQ information criteria in Table 3 is 6. However, structural problems such as autocorrelation and varying variance were encountered in this lag length. The lag length without structural problems is 3. The results of the compatibility test of the VAR model in 3 lag lengths are shown in Graph 1, Table 4 and Table 5.

Table 3. Determination of Appropriate Lag Length to Toda-Yamamoto

Lag Length	LogL	LR	FPE	AIC	SC	HQ
0	-85.99	NA	2.20e-06	3.99	4.46*	4.18
1	-25.42	101.36	8.21e-07	2.96	4.85	3.70
2	14.24	56.65*	7.66e-07	2.85	6.09	4.08
3	55.23	48.52	7.67e-07	2.64	7.28	4.40
4	96.11	38.38	9.58e-07	2.44	8.47	4.73
5	153.79	40.02	8.86e-07	1.56	8.97	4.37
6	249.51	42.98	3.72e-07*	-0.88*	7.92	2.46*



Graph 1. Inverse Roots of Autoregressive Characteristic Polynomial to Toda-Yamamoto

The VAR model is stable and stationary since the reverse roots of the autoregressive characteristic polynomial in 3 lag lengths are located within the unit circle. Besides, according to Lagrange Multiplier and White test in Table 4 and Table 5, the probability values are higher than 1% significance level, indicating that this lag length is appropriate.

Table 4. Autocorrelation Lagrange Multiplier (LM) Test to Toda-Yamamoto

Lag Length	Probability Values
1	0.4493
2	0.0455
3	0.5798
4	0.7694
5	0.8236
6	0.3405

Table 5. White Heteroskedasticity Test to Toda-Yamamoto

Chi-Square Values	Probability Values
813.9416	0.3398

“In the Toda Yamamoto causality analysis, if there is any structural problem in the artificially predicted VAR model, the structural problem or problems are taken into consideration and corrected by using the Newey-West method (Lütkepohl & Kratzig, 2004, p.148)”. Based on the results of Zivot-Andrews unit root test in Table 2, the maximum degree of integration (d) for the Toda-Yamamoto causality test appears to be 1. The k + dmax value for causality test is 4, and since the variance and autocorrelation problems are encountered in the VAR (4) model, these problems are solved by Newey-West method, and the model is formed. The results are given in Table 6.

Table 6. Toda-Yamamoto Causality Test

Direction of Causality	**Chi-Square Probability Value**
DPARASA → DKREDISA	0.0357
DPARASA → DDBORCSA	0.0667
DPARASA → DREZERVSA	0.7382
DPARASA → DCARIASA	0.6186
DPARASA → URETIMSA	0.6305

"If the test statistic calculated in Toda Yamamoto analysis is greater than the chi-square probability value or the probability value is less than the significance level (0.1, 0.05, 0.01), the presence of causal relationship is accepted (Tapşın & Karabulut, 2013, p.201)". According to Table 6, since the probability value of Chi-square statistics is less than 0.05 and 0.1, there is a 5% and 10% causality from the monetization of production to credit growth. From the monetization of production to short-term external debt, a causal relationship of 10% was observed. There was no causal relationship with other macroeconomic indicators.

In our study, cointegration test will be performed according to Zivot-Andrews stationarity test results. "For the cointegration test to be performed, I (0) should not be stationary at the level of the series (Tarı, 2010, p.415)". "According to the cointegration analysis, if the non-stationary variables in I (0) remain stationary in their first differences I(1), the linear combination can be stationary (Gujarati, 2009, p.426)".

Johansen cointegration analysis was conducted to examine the existence of long-term relationship between the monetization of production, short-term external debt, international reserves and current account deficit variables which turned out to be stationary in their first differences. As with the Toda-Yamamoto analysis, the optimal lag length was not selected from the information criteria. In Table 7, structural problems with lag lengths 1, 5 and 6, which are indicated by various information criteria, were encountered. As shown in Table 8 and Table 9, the model with 2 lag lengths is stable and stationary.

Table 7. Determination of Appropriate Lag Length to Johansen Cointegration

Lag Length	LogL	LR	FPE	AIC	SC	HQ
0	-286.86	NA	0.098775	11.87	12.26	12.02
1	-109.37	305.27	0.000224	5.77	7.11*	6.28*
2	-79.61	45.24	0.000192	5.58	7.88	6.46
3	-45.36	45.21	0.000146	5.21	8.46	6.45
4	-21.85	26.33	0.000185	5.27	9.48	6.88
5	19.25	37.81*	0.000134*	4.63	9.79	6.60
6	51.67	23.34	0.000171	4.33*	10.45	6.66

Table 8. Autocorrelation Lagrange Multiplier (LM) Test to Johansen Cointegration

Lag Length	Probability Values
1	0.2650
2	0.0930
3	0.3194
4	0.3388
5	0.9080
6	0.9298

Table 9. White Heteroskedasticity Test to Johansen Cointegration

Chi-Square Values	Probability Values
460.1191	0.7354

The results of the Johansen Cointegration test in Table 10 show that the variables of monetization of production, short-term external debt, international reserves and current account deficit move together in the long run. The null hypothesis (*), which states that there is no long-term relationship in the track statistics test, cannot be accepted. In addition, the null hypothesis (**), which states that there is at most one cointegrated vector, cannot be accepted as well. Accordingly, there are no more than 2 cointegrated vectors among the relevant variables. According to Maximum Eigenvalue statistics, there is no more than 1 cointegrated vector among the variables of monetization of production, short-term external debt, international reserves and current account deficit. Accordingly, the null hypothesis (**), which states that there is no long-term relationship, cannot be accepted.

Table 10. Johansen Cointegration Test Results

Trace Test Statistic				
Hypotheses	**Eigenvalue**	**Trace Statistic**	**%5 Critical Values**	**Probability**
r = 0*	0.709869	115.8154	69.81889	0.0000
r ≤ 1**	0.390810	50.23208	47.85613	0.0294
r ≤ 2	258689	23.96395	29.79707	0.2020
r ≤ 3	0.140259	8.099212	15.49471	0.4549
r ≤ 4	0.001689	0.089615	3.841466	0.7647
Maximum Eigenvalue Test Statistic				
Hypotheses	**Eigenvalue**	**Max-Eigen Statistic**	**%5 Critical Values**	**Probability**
r = 0*	0.709869	65.58336	33.87687	0.0000
r ≤ 1**	0.390810	26.26813	27.58434	0.0729
r ≤ 2	0.258689	15.86474	21.13162	0.2329
r ≤ 3	0.140259	8.009597	14.26460	0.3777
r ≤ 4	0.001689	0.089615	3.841466	0.7647

After the determination of the cointegrated relationship between monetization of production and macroeconomic indicators with the cointegration analysis, it is aimed to determine the causal relationship and direction between the relevant variables. "When the variables are cointegrated, it is

more appropriate to conduct causality analysis between the series with the Error Correction Model (ECM) (Granger, 1988)". "The error correction coefficient in the generated Error Correction Model is negative and statistically significant, indicating the presence of causality (Arısoy, 2005, pp.73-74)".

Table 11. Vector Error Correction Model Results (Long Run)

	D(PARASA)	D(KREDISA)	D(DBORCSA)	D(REZERVSA)	D(CARIASA)
ECM_{t-1}	-0.477414	0.181390	-0.032933	-0.281366	-789.0989
	(0.07025)	(0.12939)	(0.09851)	(0.06350)	(4732.03)
	[-6.79588]	[1.40192]	[-0.33431]	[-4.43078]	[-0.16676]

**** Values in parentheses indicate probability values, and square brackets indicate t-statistics.***

The existence of a short-term deviation from equilibrium between the monetization of production and macroeconomic indicators, which were stationary in their first differences and were determined to have long-term relationship, was investigated through the Vector Error Correction Model (VECM). According to Table 11, these variables are consistent since ECM_{t-1} is negative for the error correction parameter

coefficient of monetization of production, international reserves and current account deficit. In addition, since T-statistic values are higher than 1.96, it is seen that monetization of production is an important factor in the changes in international reserves in the long term.

When the short-term causality results in Table 12 are considered, the chi-square probability value is less than 5% and 10% meaning level, pointing to a causality from monetization of production to credit growth.

Table 12. Vector Error Correction Model Results (Short Run)

Direction of Causality	**Chi-Square Probability Values**
DPARASA → DKREDISA	0.0285
DPARASA → DDBORCSA	0.6750
DPARASA → DREZERVSA	0.4124
DPARASA → DCARIASA	0.8259

“ARDL (Autoregressive Distributed Lag) approach can be applied regardless of whether the variables are stationary at their level I (0) or first differences I(1) (Öztürk & Acaravcı, 2013)”. "With a dynamic unlimited error correction model (UECM) created with this method, short-term dynamics and long-term equations can be integrated (Shahbaz & Lean, 2012, p.475)”. Two critical limits are used in the ARDL method. If the obtained F statistical value exceeds the critical upper limit, null hypothesis (H_0) is rejected, that is, it is assumed that there is a long-term relationship between the relevant variables. If the statistical value F is below the critical lower limit, H_0 cannot be rejected and it is concluded that there is no long-term relationship between related variables. “In the ARDL approach, the critical values found by Pesaran, Shin and Smith (2001) cannot be used if one of the variables has a unit root degree greater than I (1). These critical values are based on I (0) and I (1) (Öztürk & Acaravcı, 2013)”.

Table 13. Determination of Appropriate Lag Length to ARDL Model

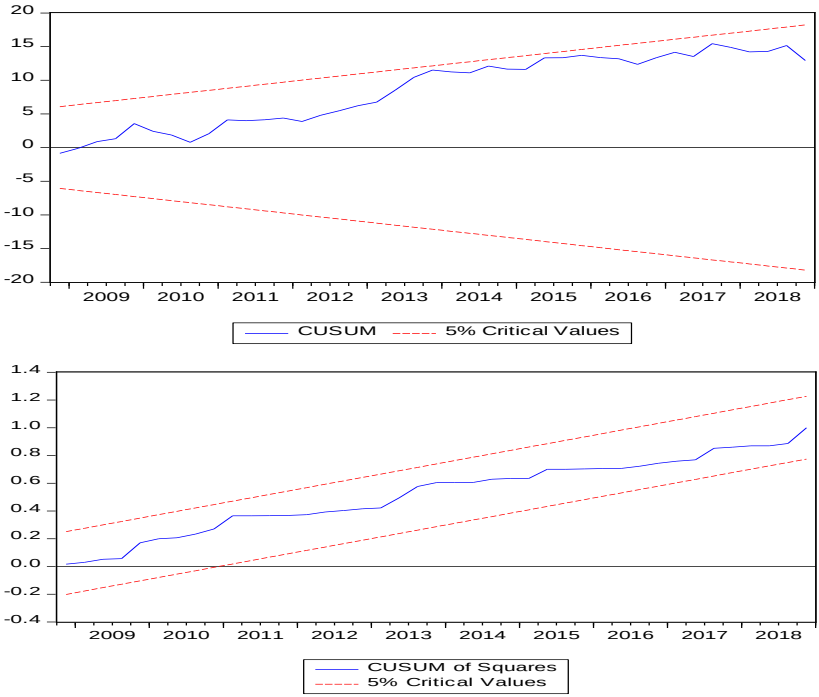
Lag	LogL	LR	FPE	AIC	SC	HQ
0	85.57	NA	0.001672	-3.556011	-3.477281	-3.526384
1	88.92	6.29	0.001512	-3.656355	-3.538261	-3.611915
2	89.81	1.62	0.001520	-3.651434	-3.493975	-3.592181
3	92.09	4.07	0.001440	-3.705833	-3.509009	-3.631767
4	93.72	2.85	0.001403	-3.732897	-3.496708	-3.644018
5	97.12	5.79	0.001267*	-3.835068	-3.559514*	-3.731375*
6	97.34	0.36	0.001312	-3.801683	-3.486764	-3.683177
7	97.68	0.56	0.001351	-3.773809	-3.419526	-3.640490
8	100.20	3.96*	0.001269	-3.838404*	-3.444756	-3.690272

Table 14. ARDL Model Compatibility Test Results

Breusch-Godfrey Autocorrelation Lagrange Multiplier (LM) Test	
Lag Length	**Probability Values**
5	0.0837
Harvey Heteroskedasticity	
Probability Values	0.6847

The long-term relationship between the monetization of production and industrial production index variables, which are stationary at different degrees, was examined with the ARDL model. The lag length was determined by VAR model before

proceeding to ARDL limit test. In Table 13, the lag length indicated by the information criteria (*) is 5. The compatibility test results of the VAR model with 5 lag lengths are given in Table 14. According to Breusch-Godfrey and Harvey test, there are no variance and autocorrelation problems as the probability values of statistical values are high according to the meaning level of 5% and 10% in five lag lengths.



The ARDL model with 5 lag lengths can be seen from the following CUSUM and CUSUM of Squares tests. In these graphs, it is seen that CUSUM and CUSUM of Squares test statistics are within the critical limits at 5% significance level. This means that monetization of production and industrial production index are stable during the period examined.

Table 15: ARDL Boundary Test Critical Values

ARDL Boundary Test Results	
Estimated Equation	uretimsa=f(parasa)
F Statistic	2.04
Maximum Lag Length*	ARDL(5, 3)
Critical Values **	**Lower Limit**
%10	3.47
%5	4.01
%2.5	4.52
%1	5.17

*** AIC has been used to determine the lag length.**

**** Critical value limits has been taken from Pesaran et al. (2001).**

Table 15 shows the cointegration results after estimating the ARDL model based on 5 lag lengths. The null hypothesis, indicating that there is no cointegration relationship, was tested

against the alternative hypothesis pointing to the cointegration relationship. Since the F statistics, which were calculated in the test for the monetization of production and the industrial production index variable, are lower than the critical values determined by Pesaran et. al. (2001) in all four significance levels, Ho hypothesis cannot be rejected and long-term relationship cannot be mentioned among the related variables.

CONCLUSION and EVALUATION

In our study, where the impact of monetization of production on the main macroeconomic indicators for the Turkish economy was analyzed by using quarterly data for the period 2005-2018, three different econometric models were used since all variables were not stationary at the same degree. According to the results of the Toda-Yamamoto causality test, a causal relationship emerged from monetization of production in the short term to credit growth and short-term external debt. As a result of Johansen Cointegration analysis, it is seen that long-term monetization of production and credit growth, short-term external debt, international reserves, current account deficit and industrial production index move together. As a result of the vector error correction model, it is seen that monetization of

production is an important factor in explaining international reserves in the long run and credit growth in the short run. Apart from this, no long-term relationship was detected between the monetization of production and the industrial production index from the ARDL model. The results of this study provide important clues to the decision-making mechanisms and policy makers in the Turkish economy about the financial liberalization policies applied since 1989.

Even though the Turkish economy has a rising financial depth due to the increasing money supply since 2005, it is not possible to say that it has a strong financial system because the Turkish economy does not have sufficient accumulation in terms of savings. What is more important than providing financial depth is that resources can be directed to effective and productive areas. Credit growth increased with the development of the financial sector, intermediation activities, and improving the efficiency of diversified financial instruments to increase market efficiency and production can accelerate growth by transforming already low levels of savings into investments. In addition, since foreign direct investments help finance savings and investments that are

required for economic growth but remain insufficient, their share in capital movements should be increased.

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