ECONOMIC ISSUES II

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PREFACE

For the solution of different economic problems, economists studying in various research areas need multi disciplinary approach. To improve quality of people's lives as well as wealth, economists need to analyze different economic issues to understand the dynamics behind them and to forge a link between related issues. These investigations may lead to solutions to overcome many economic problems. During this investigation, one of the most important impediments that prevents analyst to make a comprehensive analysis is the fact that economics has multi-dimensional and multi-disciplinary characteristics. Therefore, this book consists of selected papers from different disciplines in social sciences as chapters presented in 6th European Congress on Economic Issues held in Kocaeli in November 2019 and it is printed as a continuation of first “Economic Issues” book containing chapters presented in first ECOEI.

We would like to thank all the invited speakers, reviewers, authors and organizers participating in 6th ECOEI. This book is the result of not only their contributions, time, and efforts but also their dedication to science. The high-quality scientific contributions included in this volume serve as extensive documentation basis for those interested. We hope that this book can serve a very important purpose and it brings a real added value to the related literature.

Ş. İstıl AKGÜL
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1. INTRODUCTION

The subject of this research; the development of blockchain technology and the use in all business sectors after the effects of the enterprise. As the blockchain technology has been commenced to be implemented in varying fields, its effects can be observed in many innovations. Since it is already one of the most popular technology of our present time, it will be ensured that all kinds of operations will be made reliably by using blockchain technology in the fields of state, institutions, industrial activities, industry and health. This technology is foreseen by a number of sectors, which will bring huge added value to enterprises, and the applications made with this technology in the near future will supersede other classical applications.

The aim of this research is to be informed about how this blockchain technology will be used in all sectors in the future and how it will affect their businesses. Furthermore, an application that has never been implemented by blockchain technology; The integration of libraries in the world with blockchain technology has also been investigated.

In 2008, Satoshi Nakamoto announced the blockchain technology and in 2009 Bitcoin has been activated as the first crypto money in in the world. He explained that this technology was made by demonstrating the solution to the mediator problems in international trade in the event of the 2008 global financial crisis and the lack of confidence in the financial sector. Although newly announced technology has not been given credit much in the beginning, after comprehension of what it is and how it works, it began to spread across the world. With increasing confidence in blockchain and crypto money, over 1000 cryptocurrencies have been issued. Today, there are stock markets in which these currencies are exchanged and traded with. These trades and exchanges with cryptocurrencies are being held in the blockchain structure formed by interconnected computers, by using P2P (peer-to-peer) protocols. Ethereum and similar cryptocurrencies enable their users to develop their own applications which uses their own cryptocurrencies and infrastructures by providing their users APIs(Application Programming Interface). The Ethereum project, which defines itself as a blockchaining application platform, expects to develop a unique blockchaining development. It has started to use blockchain technology in cyber security applications, government social security, tax and all digital applications, industry 4.0 applications and various applications of enterprises. A very detailed academic research on Blockchains and new open-ended research is underway. The aim of this research is to provide information on how this blockchain technology, which is used in all sectors, is affected and how it can be used. Furthermore, an application that has never been

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implemented with blockchain technology; the linkability of libraries around the world with blockchain technology has also been investigated.

2.BLOCKCHAIN TECHNOLOGY

Blockchain technology was first introduced in 2008 by Satoshi Nakamoto’s “Bitcoin: Peer-to-Peer Electronic Cash System article. Although it is not mentioned in the Blockchain article, it mentions how its technology works and how to make blocks and chains. Although the word blockchain does not appear in Nakamoto’s article, bitcoin is referred to as a cryptographically encrypted data block using technology that contains crypto money (Nakamoto, 2008). The first application of blockchain technology is the application of cryptocurrency is bitcoin (Iansiti & Lakhani, 2017).

The concept of blockchain technology with TCP/IP stands out conceptual parallels. The first similarities of these development processes are the supporters who contribute in the basis of voluntariness and the formation of network-based technologies. It is also possible that the same TCP/IP achieves the revolutionary impact of information transfer costs while the blockchain technology continues to operate. In TCP/IP, there is “information transfer about assets, while block value transfer is mentioned in the blockchain (Akgiray & Zengin, 2018).

In order to understand the operation of Blockchain technology better, Nikolai Hampton provided a simplified description of Bitcoin Blockchain, the first application of blockchain technology (Hampton, 2016); Bitcoin Blockchain can be thought of as a physical notebook and contains about ten minutes of records of transactions made with bitcoin crypto money on each page of this notebook. When a page fills up with new processes, it is signed with a unique serial number and stamped in the book. Blocks can be considered as page numbers and the chain between blocks can be thought of as serial numbers. The serial number and the serial numbers of consecutive pages, a product of the operations on the page, are locked together with a mathematical operation to form a solid chain of pages. The mathematical operation makes it impossible to change one of the operations without changing the serial number of the pages and thus the connection between that page and the next page. To modify a transaction in the notebook, all pages after the transaction must be removed and populated with new transactions, new serial numbers created, and all pages pasted into the notebook. The users of this notebook always consider the notebook with the most pages as the actual notebook. Therefore, the notebook continues to grow with the addition of a new page every ten minutes, so that the person who wishes to successfully rewrite a transaction history in the notebook will have to work faster than the rest of the community. In such a case, the amount of effort required for a person to do this is far superior to what a single person can do, and therefore this structure is very safe.

In summary, a blockchain consists of a data block produced based on cryptography theory (Nakamoto, 2008). In addition, the system has a structure that allows transactions between individuals without the need for a reliable third party. Anyone can see the entire transaction history. The complete transaction history ensures the validity of each virtual currency and all virtual currencies are traceable from the moment they are created. In addition, it provides backward transparency by providing resolution thanks to its technology. Modifying the current records is prevented. This system eliminates the need
for management. All operations are cost-effective (Beck, Czepluch, Lollike, & Malone, 2016).

**How a blockchain works**

The blockchain acts as a general registry where transactions with Bitcoin are recorded. With an innovative solution, this is done through a blockchain by a network of computers running bitcoin software (Brito & Castillo, 2013). Person A sends an amount of Bitcoin Y to Person B. “is forwarded to each unit connected to the network via ready-made software applications. Units connected to the network can evaluate transactions, attach the message received to them to their registry copies, and share these registry plug-ins with other units connected to the network. Accordingly, users connected to the entire Bitcoin network have their own data chain copy, and at any time, any Bitcoin user can access the transaction history and ownership information of any randomly selected Bitcoin (Antonopoulos, 2014). Bitcoin process scheme is given below.

The blocks are linked to the previous blocks with the hash value. In this process, the overall summary value is formed from the summary value in the previous blocks. A summary of the previous block is also kept in the block. Hash functions are actively used in the blockchain structure. Each block holds the hash of the previous block. Although different algorithms can be used as hash function, BTC uses SHA256 algorithm. Changing a process in the system will also require calculating all the blocks in the chain, which will require a tremendous amount of processing power. For each block in the chain, the other nodes must be persuaded, which is very difficult.

The Hash function marks variable-length data sets to fixed-length data sets. The hash functions are used to find data in the table quickly in the database or to perform comparison operations faster, and to find similar or identical records in a large file (Knuth, 1998). The cryptographic hash function is used to easily determine that an input data is marked to the given hash value (Rosen, Wengrowski, Clark, & Gao, 2014). If the input data is not known, it is very difficult to find input data or equivalent data with only the stored hash expression being known, in which case the transmitted data is intact. The most common way to create a hash function is to repeat a compressed function in the input data (Coron, Dodis, Malinaud, & Puniya, 2005).

Bitcoin uses an algorithm called SHA-256. The algorithm that Bitcoin uses is the most complex of the algorithms. The main reason for using the hash algorithm in Bitcoin system is that it provides both the transfer of input data intact and over time, as well as the fact that it has a closed state for external intervention (Rosen, Wengrowski, Clark, & Gao, 2014).

In the light of the given information, the problem of the study is to determine the basic working principles of Bitcoin especially in the crypto currencies whose effect is increasing day by day in business and finance field and to determine the elements of the subsystems that make up the eco system that makes Bitcoin functional and to use these elements in real currency transactions. Which classic institution or service provider replaces. The main objective of the study is to make a prediction of the future by centering on these new economic elements outlined and to pioneer time-spatial studies in other crypto currencies or in the changing Bitcoin eco-system in the future.
Definition of blockchain
A definition agreed by the researchers about the blockchain is not encountered in the literature and the definitions made differ even though in the details. As a general definition, it is stated by Tian that “the essence of the blockchain is a technical plan of a reliable database that is maintained collectively by decentralized and reliable methods” (Tian, 2016).

The architectural structure of the blockchain is given in Figure 1. The chain starts with the Genesis block. The blocks are connected one after the other with the values contained in them. The block in front of a block is referred to as its upper block, and the block structure can continue in this way and last forever.


Types of Blockchains: Private, Public and Hybrid Blockchain
Although blockchain technology, distributed compromise feature and open structure that are accessible to all, priority has been developed over time, partially decentralized and private blockchain structures have been developed for different needs. In partial central blockchain structures, that is, consortium blockchains consist of structures in which a predetermined limited number of partners manage the compromise system instead of the distributed compromise method. In such structures, the blockchain can be constructed as comprehensive access or mixed access. In special blockchains, the ability to write a new operation to the blockchain belongs only to a specific group or organization. The authority to read the data may be open to the public or may be restricted. Blockchain structures can be classified according to agreement preference or communication preference. In open blockchains, the user can join the network or participate in the reconciliation system (Figure 2) (Usta & Doğantekin, 2017).
Blockchain Platforms

As a popular and widespread technology with Bitcoin, different blockchain platforms have emerged that can be used to develop blockchain and blockchain projects today. These platforms are differentiated according to whether they are open source, pricing structure, language of the programs they support and their support chain block structures (open, private, hybrid). Ethereum and Hyperledger are the most widely used and most widely known platforms in this field. However, different blockchain platforms such as Corda, Tendermint and Ripple are also used (Usta & Doğantekin, 2017). In the meantime, Microsoft has developed popular operating system applications such as windows, Azure on the blockchain platform as a service (Blockchain as a service) is available. IBM and then Microsoft are primarily technology giants who invest heavily in blockchain technology. One of the most interesting points of blockchain technology is its inability to change. The inability to change blockchain technology does not allow the deletion of incorrectly added blockchain data as a result of incorrect processing. Accenture Consulting filed a patent application describing the structure of the interchangeable blockchain (Lumb, Treat, & Owen, 2016).

3. APPLICATIONS OF BLOCKCHAIN TECHNOLOGY IN BUSINESS

The use of blockchain technology, which is known for its first popular virtual money application, bitcoin application, has been realized in many different sectors and research has been started in this direction. Technology has been developed over time and it is foreseen that there will be great diversity in the near future. A list of blockchain technology applications can be given below (Usta & Doğantekin, 2017):

- Digital Identity
- Your Know Your Customer (KYC)
- Global Payment Systems
- Sermaye Capital Needs for Enterprises
- Fundraising and Management
- Property and Accident Insurance Compensation Process
- Internet of Things (IoT) Blockchain
- Syndication Loan
- Automated Adaptation Mechanism
- Oy Proxy Voting
- Supply Chain Management
- Copyright Recording Systems
- Land Registry Systems
- Public and Health Records and Tenders
- Emir Military Command Command Chains
- Copy Product Protection
- Notary practice Crypto Coins and Finance

Crypto Coins and Finance

Many financial institutions and banks are investigating areas of blockchain technology that can be used other than crypto currencies and investing in new solutions. Based on research published in various sources, some of the financial uses are given below (Kehoe, Dalton, Leonowicz, & Jankovich, 2015), (Cognizant, 2016), (Everis Next, 2016), (Evans, 2015):

- Trading Platforms
- Money Transfers
- Payment Transactions
- Authorization, Verification
- Digital Identity Management
- Document Management
- Barter Management
- Islamic Banking Applications

Security

Blockchain technology offers solutions in security application areas. Stocks, private markets, debt markets, capital markets and derivatives markets are areas that require high security and blockchain technology will enable safer transactions in these areas (Usta & Doğantekin, 2017).

Property

It offers blockchain technology solutions in the areas of property application such as intellectual property, supply chain, ownership and identification. Particularly in the supply
chain, solutions are offered to companies under the leadership of companies such as IBM (Usta & Doğantekin, 2017).

**Smart Contracts**

Smart contracts are independent from the sector or one of the most important fields of application that can affect many different sectors. Numerous agreements between partners can be defined by blockchain technology. The Bitcoin transaction structure, with its defined smart contract structure, ensures the realization of the intended transaction by providing the necessary logical conditions specified in the contract content. Ethereum has become the most preferred smart contracts platform in 2014 with its infrastructure announced as blockchain 2.0 in 2014. Making digital contracts between partners without the need for a central authority and following contract conditions and performing the targeted transactions automatically enabled blockchain technology to become one of the most exciting applications (Ünsal & Kocaoğlu, 2018).

4. APPLICABILITY OF BLOCKCHAIN IN ALL LIBRARIES IN THE WORLD

As the blockchain technology develops, application areas will increase and many studies are being made in this direction. The idea of integrating libraries in the blockchain involves the digitalization of all the books in the libraries and the subsequent introduction of these large digital books to the readers more effectively, which means that the libraries can maintain their assets by making a certain amount of digital revenue for the sale of digital money. They can. As this proposal includes a method of earning income, libraries will also continue to operate as enterprises. Thanks to the digitalization of the books and their place in the e-book in the blockchain, the books will be completely prevented from being destroyed due to natural events or other similar terror, fire and war. Readers’ quick access to e-books will save paper and help to preserve the ever-decreasing green nature of nature. So we’re going to reduce our carbon footprint (Ünsal & Kocaoğlu, 2018).

**How Blockchain Fits the Sector**

Although a blockchain developed for libraries has not yet been developed, the idea of building it is increasing day by day. Digitized books will be very convenient to process on the blockchain. Considering smart contracts, e-books can be placed on the blockchain by the same method. When libraries have a blockchain structure, book readers will be able to access millions of books very quickly. Constraints on the spread of information in the world will also disappear. Accessibility to all books from anywhere in the world, even in rural life anywhere in the world, will enable hungry communities to access information through the library blockchain (Ünsal & Kocaoğlu, 2018).

**Determination of Business Processes**

In this application, business processes (Gupta, 2018) will consist of different stages and are given below;

- Digitalization of books,
- Uploading the e-books to the computers that will be placed in the blockchain,
- Networking of e-books with blockchain technology,
- Adaptation to digital currencies for the possibility of renting or selling e-books,
- Creating wallets for readers to access library blockchains,
• Announcing libraries to readers.

**Digitalization of Books**

Numerous books are already digitized, but their rich work in libraries needs to be digitized and converted into e-books without damaging them. Especially old books with great value of works should be converted into e-books by using special methods. Visual books for children, audio books for the blind and illiterate can also be created. E-book making program, iPad, Android tablet, Ebook Reader for devices such as e-book programs can be made with digital books can be made simply (Gupta, 2018).

**Uploading eBooks to Computers to be Inside the Blockchain**

This step is the step of uploading the e-books that will be in the blockchain to the computers or servers connected to the blockchain as library assets. Depending on the size of the libraries, it may be necessary to use powerful servers, which can be found with engineering calculations and suitable computers can be used. It is also possible to provide solutions with computers rented in the cloud (Gupta, 2018).

**Networking of Blockchain Technology and Computers with E-Books**

Once the computers are joined to the network as open or private blockchain network, the definitions are made. If there will be a private network, the network is expanded by giving security certificates, and no security certificate is required for open networks. Libraries can take their place on the network after their installation and all libraries will be in a blockchain using blockchain technology. Being one of the first in the network will always give priority, and the first to start the blockchain will be the first to start the genesis chain (Gupta, 2018).

**Adapting to Digital Coins for E-Book Rental or Sell**

A platform can be selected for the wallet, and then each library and readers can have their own wallet. When e-book rental or sales are made and the digital money received and given to the transaction every time the transaction will be made in the wallet (Gupta, 2018).

**Announcing Libraries to Readers**

After the libraries are located in a network with a blockchain technology and for access to the libraries this blockchain can be announced to the readers via social media. It can be made up of readers, researchers, school libraries, non-governmental libraries, students and people with internet access who want to read e-books. Readers will be involved in opening a wallet and notebook account to the library blockchain network. Readers should be connected to the library blockchain network in the easiest way. Considering the smart contracts made on the blockchain, digitized books (e-books) can also be placed on the blockchain by the same method. Considering that smart contracts are shorter than e-books, a very large blockchain structure can emerge with all books in the blockchain. In future, the classification of e-books can be solved for problems that may arise for the large blockchain structure (Gupta, 2018).
Selecting an Appropriate Use Case

When selecting a use case, it must be done making sure it is exactly what it is trying to accomplish. Assuming that it has to pass 4 valid acid tests, the library blockchain will be constructed in accordance with these tests.

The use case must pass the following four acid tests:

- **Consensus:** Does it benefit to agree that each transaction is valid across the network?
- **Evidence:** Is it important to maintain a full audit trail?
- **Accessibility:** Is it important that transactions are clear enough to be tampered with?
- **Accuracy:** Is there a need for an agreed “registration system in the business network?” (Gupta, 2018).

Targeting your blockchain network

When all libraries are connected to the network and all books are digitized, the blockchain can reach very large dimensions. Considering the blockchain size of Bitcoin for the last 10 years, it can be thought that there will be no problem or e-books can be classified and solved. With the library blockchain, the reader will be able to access the e-book he / she wants to read very quickly and the e-books will be transmitted to the reader in a way that prevents the copying. Thanks to the library blockchain, both the reader and the publishing rights of the libraries will be protected (Gupta, 2018).

Determination of Dependencies

Where appropriate, what else is needed should be considered in addition to the internal resources available to start the blockchain project. A service partner may be needed to deploy the first project. There may also be a need for a platform or structure to achieve specific regulatory or compliance objectives.

In the case of many parties, a blockchain network is the most successful and becomes more valuable and efficient as the blockchain grows. Businesses need to learn a new ecosystem-based process model (Gupta, 2018).

Choosing a Blockchain Provider and Platform

The provider and platform that best suits your industry and business needs should be selected (Gupta, 2018). When comparing the eligibility of different providers and platforms, the following questions should be sought:

- Is an allowed network needed?
- Should identities in the business network (such as compliance with anti-money laundering regulations) be known?
- Are there frequent exchanges with others that are automatic and pre-programmable, freeing up valuable time and resources?
- Should the transaction be resolved in minutes instead of days or weeks?

Developing and Deploying Smart Contracts

The next step in the first blockchain project should be to develop and deploy a blockchain implementation and network. In this application, it is necessary to ensure that all libraries in the world are located in the blockchain network to be established. When a start is made,
many libraries will want to switch to this blockchain. When the blockchain technology is considered as the technology of the future, each library will be willing to take part in the library blockchain (Gupta, 2018).

**Testing and Fine Tuning Application and Network**

The installed library must be tested and revised if necessary before publishing the blockchain application. As the distribution increases, settings should be thoroughly tested from the beginning as this will be difficult to make (Gupta, 2018).

**Implementation**

When the testing and adjustment process is over, the libraries should be contacted and published all over the world to expand the network. The first process is started with the Genesis block, and all subsequent operations are added to this block. As new libraries are added to the network, this library blockchain implementation will become extremely valuable in terms of content (Gupta, 2018).

**5. CONCLUSION**

Blockchain technology was first implemented with crypto currency application bitcoin and it was seen that this technology could be used in many fields over time and then it started to be applied rapidly in many fields. At first, many crypto currencies emerged with blockchain technology and today it is known that there are more than 1000 crypto currencies. Along with crypto currencies, various platforms have shown that the blockchain application can be used in other finance, property, smart contracts and security areas. Various platforms have created their own solutions especially for the use of public and enterprises and made them available to their customers. Some states also work to create their own solutions for public-related transactions using blockchain technology. In this study, blockchain technology is tried to be explained and the idea of combining libraries which have not been studied so far with blockchain has been examined and suggestions have been given on how and how. IBM’s steps to create a blockchain network from scratch were tried to create a blockchain network to which all libraries can be connected. Considering the existence of public, schools, universities and private libraries in the world, the number of libraries increases to millions. Combining these libraries in a blockchain network will allow users to access all kinds of information very quickly. Even if these libraries are physically bad, nothing will happen to the information contained in the blockchain network. Considering the destruction of many libraries in the history of the world due to fires, wars and natural disasters, most of the libraries in the world will want to be included in the blockchain network to be established. The library blockchain network can be started among the most researched universities and spread this network to the whole world. The university library that will create the starting block (Genesis) will also have the first registration information in the notebook. For this reason, it will be usual to start at universities with library blockchain learning and research centers. Firstly, the blockchain that the universities in our country will establish among themselves can spread to the whole world and become a pioneer in this field.
REFERENCES


1. INTRODUCTION

When they want to invest in a company investors take some factors into consideration such as economic influences, industry factors, product demand, earnings, dividends etc. They try to reach an actual value for the company’s securities by using information coming from these factors and they make investment decisions by comparing these values with the securities’ current prices. This fundamental analysis is exposed to critique that market price of any given security reflects all financial data and information of that security. However, technical analysis studies the given stock’s analysis by using historical data of that stock and with the help of this, future returns of related stock could be predicted. But technical analysis and fundamental analysis should be used together for making a correct investment decisions. Success of technical analysis require many factors all of which are needed by a potential investors in managing his portfolio. Efficient Market Hypothesis is one of the approaches aiming to explain the behavior of stock markets.

A lot of research were made to investigate the stock market efficiency and its important role in financial resources for the past few decades. Eugene Fama (1965) was the first economist introducing the term Efficient Market. A key principle to measure the efficiency in the stock market is the existence of correlation between prices and all the information presented in a market. Random Walk Theory (Kendall, 1953) (or Efficient Market Hypothesis (EMH)) is the evaluation if the equity value of a listed company reflects all relevant data of its business value. Efficient stock market is the situation where stock market prices are quickly and accurately adjusted to relevant information. Random walk process characterizes the efficient stock market indicating that any profit prediction is not possible by using historical data of stock market returns.

2. THEORETICAL BACKGROUND

According to Fama (1965), prices always fully reflect all the available and relevant information in an efficient market. Jensen (1978), on the other hand, states market participants cannot exploit the information set to earn excess profit. Fama et. Al. (1969) indicates that markets adjust to the new information sharply in the validity of efficient market hypothesis. When new information reaches to the market new information is processed by the market and there is no any systematical mistake. In this sense, changes in stock prices could happen only if new information arrives to the market. As there is no any possibility to predict future information it is impossible to forecast future stock price changes with the help of information set available. Thus, available information does not make excess profit possible.

However, it is impossible to have the complete informational efficiency for a market according to Grossman and Stiglitz (1980). Stock prices cannot fully reflect the all

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information in the prices because gathering information has some costs. The new information couldn’t create an income to cover their expenses if prices fully reflected all the information investors spending their resources to obtain. Assumption of Fama (1991) implies that prior condition in EMH is zero information and transaction cost. The other condition for EMH is not to have monopoly on information and data and to have transaction costs competitively determined. Because EMH might fail in the existence of imperfect market.

EMH has three different form based on information set. One of them is efficiency in weak form meaning that past prices is reflected by the current prices. Current stock prices reflect all the available information in the past stock prices. That is, future prices cannot be forecasted by using the past set of information and this means any strategy to gain excessive profit is useless. Second form is semi strong-form which not only reflects the information in the past but it also reflects publicly available information in the present. Finally, strong form of market efficiency reflects inside information in current stock prices in addition to semi-strong form. Weak and semi-strong form versions of EMH are encompassed by the strong form of efficient market hypothesis.

When markets are not efficient developing a model is the best way to predict the finalised stock exchange prices and in this way, one can create some opportunities to gain excess profit from stock exchange transactions. Government authorities, as policy implication, can affect the volatility in prices of securities, evaluate the possible results of different economic policies and have an impact on inefficient stock exchange market. Efficiency implies that stock exchange prices respond quickly and accurately to new relevant information.

Unit root process (random walk) characterizes the market efficiency and mentions that historical data of stock exchange prices cannot have any effect on prediction of future prices. Any stock exchange following random walk process will have permanent effects when exposed to shocks and it won’t be inclined to return its own trend path over time. The random walk property points out that future returns from the securities cannot be predicted based on observations in the past and that stock exchange volatility can grow without bounds in the long run. On the other hand, shocks in the mean reverting, or trend stationary, process is and stock exchanges return back to the trend over time.

The article tests the weak form efficiency of stock exchange market by applying non-linear econometric techniques.

3. LITERATURE REVIEW

Zeren, Kara and Arı (2013) applied Lanne et al. (2002) and Saikkonen and Lütkepohl (2001) non-linear unit root tests with structural break to test the market efficiency in weak form for BIST 100 over the period 1.11.1987-30.11.12. Their results show the weak form efficiency of Turkish stock exchange market. Coşkun and Seven (2016) employed KPSS, LS and NP unit root tests in addition to DF and ADF unit root tests to analyze the weak form market efficiency of BIST 100 index for two different periods 1993-2002 and 2003-2015. Normal distribution test results indicate non-normal distribution of the series. According to them, this result is a finding which might show series follow a random walk process and they applied ADF and KPSS unit root tests to support their claim. Findings
point out the random walk process meaning the validity of weak form efficiency for the BIST. But LS (2003) and NP (2010) tests don’t indicate efficient market features for the BIST 100 series. Coşkun and Seven (2016) assert unit root tests with structural breaks are more reliable and they take results of the tests with structural breaks into consideration. Return of BIST 100 index and its subindexes’ returns which are industry, technology Finance and Service indexes are analyzed whether or not they have linear structure by Malcıoğlu ve Aydın (2016) for the period 03.07.2000 ile 22.09.2015 with the help of Harvey linearity test. Findings indicate all the variables have non-linear structure, thus, it is concluded BIST 100 and its subindexes are not efficient in the weak form. Özcan and Gültekin (2016) applied panel stationarity test allowing smooth and sharp breaks developed by Bahmani-Oskooee et. Al (2014) to monthly stock exchange market closing prices data of G-20 countries covering 1990-2015 period to test the validity of market efficiency. Their results show the invalidity of market efficiency for Argentina, Canada, China and Russia while being valid for other G-20 countries. Anlaş and Toraman (2016) investigate the efficiency of BIST 100 in weak form for the period of 1988-2011. Their analysis considers multiple structural breaks and effect of financial structural changes is taken into account. Their test results are in favor of weak form market efficiency for the BIST 100 index. Gözbaşı, Küçükkaplan and Nazlıoğlu (2014) utilize linearity test developed by Harvey et. Al (2008) and ESTAR unit root test developed by Kruse (2011) to test the efficiency of Turkish Stock Market. Their findings indicate that Borsa Istanbul Stock Price Index series show non-linear features and follow random walk process. So, they conclude that weak form efficiency is valid for Borsa Istanbul. By implementing parametric and non-parametric tests, Daver, Karacaer and Ünlü (2013) analyze market efficiency for Turkish Derivatives Exchange and Borsa Istanbul for the period 12.02.2007 – 08.02.2013 and they use daily log returns. Their findings indicate that random walk process is accepted for the short term.

4. METHODOLOGY AND DATA

This study analyzes the validity of efficient market hypothesis for the Istanbul Stock Exchange 100 (BIST 100) by using logarithmic value of BIST 100 closing value over the period 1997:01-2019:10.

Leybourne, Newbold ve Vougas (LNV,1998) supported the idea that structural changes in economic series should be included in a model gradually instead of instantaneously and suggested a test procedure. In this model, structural changes is modelled in the way that there is a smooth transition between regimes. Three logistic smooth transition regressions are considered for this model.

Model A:

$$Y_t = \alpha_1 + \alpha_2 S_t (\gamma, \tau) + \nu_t$$  

(1)

Model B:
\[ Y_t = a_1 + \beta_1 t + \alpha_2 S_t(\gamma, \tau) + \nu_t \]  

(2)

Model C:

\[ Y_t = a_1 + \beta_1 t + \alpha_2 S_t(\gamma, \tau) + \beta_2 S_t(\gamma, \tau) + \nu_t \]  

(3)

Error term \( \nu_t \) is a stationary process with zero mean and \( S_t(\gamma, \tau) \) is a function controlling the transition between regimes. This function is stated in equation below.

\[ S_t(\gamma, \tau) = \left[ 1 + \exp \left\{ -\gamma (t - \tau T) \right\} \right]^{-1} \quad \gamma > 0 \]  

(4)

In equation 4, \( \tau \) denotes the timing of transition middle point and \( \gamma \) shows transition speed. If \( \gamma > 0 \), then \( S_{\text{as}}(\gamma, \tau) = 0 \) and \( S_{\text{an}}(\gamma, \tau) = 1 \). Accordingly, with the assumption \( \nu_t \) is a stationary process with zero mean, \( Y \) is stationary around gradually varying mean in an interval where \( a_1 \) is the first value and \( a_1 + a_2 \) are the last value. In Model B, mean is varying between \( a_1 \) and \( a_1 + a_2 \) gradually but it has constant trend term unlike Model A. On the other hand, constant variable from \( a_1 \) to \( a_1 + a_2 \) and trend from \( \beta_1 \) to \( \beta_1 + \beta_2 \) vary for one time with same speed and at the same time. So, in this test, there is constraint that transitions in constant and trend should be at the same time and with same speed.

Harvey and Mills (2002) developed new unit root test with two smooth transitions by extending model having one smooth transition developed by Leybourne, Newbold ve Vougas (1998). This unit root test is applied via three models below.

Model A:

\[ Y_t = a_1 + \alpha_2 S_t(\gamma_1, \tau_1) + \alpha_3 S_{2t}(\gamma_2, \tau_2) + \nu_t \]  

(5)

Model B:

\[ Y_t = a_1 + \beta_1 t + \alpha_2 S_t(\gamma_1, \tau_1) + \alpha_3 S_{2t}(\gamma_2, \tau_2) + \nu_t \]  

(6)

Model C:

\[ \text{David I. Harvey, Terence C. Mills, a.g.e., p. 675-683} \]
\[ Y_t = a_t + \beta_t t + \alpha_1 S_{t1} (\gamma_1, \tau_1) + \beta_1 t S_{t1} (\gamma_1, \tau_1) + \alpha_2 S_{t2} (\gamma_2, \tau_2) + \beta_2 t S_{t2} (\gamma_2, \tau_2) + \nu_t \] (7)

Model A allows two transition in mean. In addition to feature of Model A, Model B has a constant trend. Model C allows two transition both in mean and in trend. Error term \( \nu_t \) is a stationary process with zero mean and \( S_{t} (\gamma, \tau) \) is a 22nalysed controlling the transition between regimes. This function is stated in equation below.

\[ S_{t} (\gamma_i, \tau_i) = [1 + \exp \{-\gamma_i (t - \tau_i T)\}]^{-1} \quad i = 1, 2 \] (8)

\( \tau_i T \) and \( \tau_2 T \) are the middle points of two transitions and transition speeds are \( \gamma_1 \) and \( \gamma_2 \) where speed differences are allowed in this model.

5. TEST RESULTS

Validity of weak form market efficiency is tested with the help of unit root tests. Before unit root tests are utilized it is crucial to analyze the structure of data. BDS test suggested by Brock, Dechert, & Scheinkman (1987) are utilized to test whether or not data is independent and identically distributed. BDS test is an independence test but if all linear dependence has already been removed this test can be used to obtain indirect evidence of nonlinearity (Koç and Beşer, 2006). Test results shown in Table 1 indicate data is not independent and identically distributed, therefore, utilizing non-linear unit root test is preferred for application.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>BDS Statistic</th>
<th>Std. Error</th>
<th>z-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0.189877</td>
<td>0.003074</td>
<td>61.76834</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>0.322134</td>
<td>0.004871</td>
<td>66.13578</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>0.41458</td>
<td>0.00578</td>
<td>71.72808</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>0.478318</td>
<td>0.006002</td>
<td>79.69544</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>0.522955</td>
<td>0.005766</td>
<td>90.703</td>
<td>0</td>
</tr>
</tbody>
</table>
It is better to use a model consisting smooth transition when it is looked to the graph of series in Graph 1. LNV model is presented below and test results are shown in Table 2. 5% critical value of LNV model is -4.867 and as test statistics -3.17479 is not more negative than critical value BIST series has random walk process.

\[
\text{Bist}_t = \alpha + \beta_1 t + \alpha_2 \delta_t (\gamma, \tau) + \beta_2 \tau_t (\gamma, \tau) + \nu_t
\]

\[\text{(9)}\]

<table>
<thead>
<tr>
<th>Table 2. LNV Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-Stat</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td>-3.17479</td>
</tr>
</tbody>
</table>

On the other hand, HM model is presented below and findings are shown in table 3. 5% critical value of HM model is -6.21 and as test statistics -2.66770 is not more negative than critical value BIST 100 series has random walk process.

\[
\text{Bist}_t = \alpha + \beta_1 t + \alpha_2 \delta_t (\gamma_1, \tau_1) + \beta_2 \tau_t (\gamma_1, \tau_1) + \alpha_3 \delta_t (\gamma_2, \tau_2) + \beta_3 \tau_t (\gamma_2, \tau_2) + \nu_t
\]
6. CONCLUSION

BIST 100 closing price data is investigated over the period 1997:01-2019:10 to test for evidence weak form market efficiency. After non-linearity of data is analyzed it is decided to utilize non-linear unit root test in order to test the validity of market efficiency for stock exchange market. Our results from these unit root tests conclude that BIST 100 data is not stationary meaning random walk process is valid. Thus, weak form market efficiency holds for Turkey and economic actors cannot gain any profit by predicting values of the stock exchange prices. Evidences obtained from the model verify the opinion that future values of BIST 100 cannot be predicted by using the past values of these series. If the policy makers or market participants use the information provided by stock exchange market expressed as efficient in weak form they cannot have any effect on the market which is an important policy variable. For future research, validity of semi strong form of market efficiency in Turkey can be tested by using different methods. In addition, whether or not EMH is valid can be tested with higher frequency of data such as daily data.

<table>
<thead>
<tr>
<th>T-Stat</th>
<th>Optimal Lag</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2.66770</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 3. HM Test Results
REFERENCES


5. **INTRODUCTION**

Khwarazm is a region of historical significance, located to the south of Aral Sea in the downstream of Amu Darya. The rulers of the region would be referred to as the “Shah of Khwarazm” since the old times. Until the time of the Anushteginids, as our subject matter, three dynasties had ruled using the title of “Shah of Khwarazm.” The first one was the Afrighids (305-995). We see the Ma’munids as the rulers during the time of the Samanids (819-1005). Mahmud of Ghazni (998-1030) interfered with the internal turmoil in Khwarazm and dethroned the members of this dynasty and assigned Altun Tash as the governor of the region (1017). Altun Tash was succeeded by his son Harun (1032). But his ties with the Ghaznavids soon deteriorated. When Mes‘ud I of Ghazni (1030-1041) sent Shah Malik to resolve the problems in the region, Khwarazm was being governed by Ismail from the house of Altun Tash. Ismail sought refuge in the Seljuks upon arrival of Shah Malik. Two years later, Khwarazm was conquered by the Seljuks (1043), who controlled the region until the independence struggle by Shah of Khwarazm Atsiz.

Anushtegin Gharchai, studied here as the ancestor of the Khwarazmian dynasty, was a slave brought to the Seljuk palace. There are differing views on which Turkic tribe he belonged to. Thanks to his personal traits and loyal service, Anushtegin soon became the *tasht-dar* (keeper of the royal vessels) in the Seljuk palace. He was appointed by Sultan Malik-Shah as the Governor of Khwarazm. But he did not go to the region and continued to occupy his position at the palace. At that time, the revenues from Khwarazm would be

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1 Assoc. Prof. Dr., Kocaeli University, Faculty of Science and Letters, Department of History, Division of Medieval History, meryembgurbuz@gmail.com
used to finance the *tasht*-house of the Seljuk palace. Upon his death, his son Qutb ad-Din Muhammad (1097-1128) was appointed as the Governor of Khwarazm in his place. Thus, the Khwarazmian dynasty was established. Qutb ad-Din Muhammad remained loyal to the Seljuks. When he died in 1128, his son Atsiz (1128-1156) became the Shah of Khwarazm.

In early years of his office as the governor, Shah of Khwarazm Atsiz maintained his allegiance to the Seljuks, but it did not take too long before he revolted. Sultan Sanjar, against whom he had rebelled, was one of the most powerful leaders at that time. Moreover, Atsiz made incursions into the Seljuk territories at every opportunity. Thus, immediately after the defeat of Sultan Sanjar in Qatwan (1141), Atsiz made the sermons recited in his name in Nishapur and entered the Merv, the capital of the Seljuks.

Sultan Sanjar launched three military campaigns against Atsiz in Khwarazm. Atsiz was defeated in each of these campaigns, but he did not abandon his quest for independence. Sanjar launched his first expedition against Khwarazm in 1138. Atsiz had to leave the region, but he seized his position again following the return of the sultan. But, his son Atlig was killed by Sanjar. Several months later, Atsiz captured Bukhara, compensating for his losses against Sultan Sanjar.

Sanjar launched another campaign against Khwarazm in 1143 in order to take the revenge of what Atsiz did after Qatwan. Atsiz was not poised to clash with the sultan. He adopted a defensive strategy. At the same time, he sent people venerated by the sultan to ask for his mercy. The sultan found it more strategic to pardon the Shah of Khwarazm, but took with him the treasury which Atsiz had seized from Merv before leaving the region. Yet Atsiz did not refrain from his independent action. He did not keep the promises he made to the sultan. Sultan Sanjar had to go on the third expedition against Khwarazm in 1147. This expedition ended as Atsiz declared his allegiance which Sanjar accepted. Atsiz continued to act in an effort to embolden his reign. He died in 1156, and his son II-Arslan (1156-1172) became the Shah of Khwarazm. Sultan Sanjar died in 1157 and the Great Seljuk Empire collapsed. Claiming for the Seljuk heritage, the sons of Atsiz fought to take the region under their control.

When Atsiz died, II-Arslan easily eliminated his opponents. Under his reign, the Khwarazmians grew stronger. Due to his illness, he could not settle the problems with the

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8 İbnü’s-‘Esir, *ibid*.
Qara Khitai. The Shah of Khwarazm died in 1172. In his place, his son Ala ad-Din Tekish ascended to the throne. Tekish had to fight his brother Sultan Shah for many years. Yet he did not allow this struggle to inhibit the state’s rise. Still, this throne struggle cost him time and resources. Upon the death of his brother in 1193, he started to act more freely. His quick moves brought him success and he managed to take the boundaries of the Khwarazmian state to the imperial limits.

Shah of Khwarazm Ala ad-Din Tekish focused on Iraq in 1193. He defeated Seljuk Sultan Toughrul III (1177-1194) near Ray. Sultan Toughrul died in this battle (1194). Thus, the Seljuk State of Iraq came to an end. Following this victory, Shah of Khwarazm Tekish went to Hamadan and ascended to the Seljuk throne. Thus, the Khwarazmian dynasty became a neighbor of the Abbasid caliphate. When Sultan Ala ad-Din Tekish died in 1200, he had left an extremely strong army and an empire with a sound administrative organization to his son.

In the early years of his reign, Ala ad-Din Muhammad II fought Ghurid Sultans. By taking advantage of the disintegration and collapse of the Ghurid State, he seized Herat and Balkh and defeated the Qara Khitai in 1207. In 1212, he conquered Samarkand. Following the fall of the Ghurids in 1215, he captured the Ghurid territory outside India. At a time when his ties with the Abbasid Caliphate were sour, the Sultan sent an army from Hamadan against Baghdad in 1217, but his army suffered from heavy casualties due to heavy winter conditions and failed to attain any achievement.

In 1220, the events that paved the way for the end of the Sultan and the state developed quickly. During the Genghis Khan’s campaign toward the west, the Khwarazmian territories were invaded and plundered, and the Khwarazmian started to collapse quickly. Between 1221 and 1231, Sultan Jalal ad-Din Khwarazmshah fought the Mongols fiercely and tried to revive the state, but failed. Upon his death, the Khwarazmian State came to an end.

2. STATE AND ISLAM

Like other Turko-Islamic states of the Middle Ages, Khwarazmians relied heavily on religion to define themselves. They referred to the religion in expounding their political formation and raison d’être of their rule. Just as they justified their policies with religious motives, they tried to obtain their legitimacy in this manner. The Khwarazmian dynasty

12 Cüveynî, ibid, p. 257; Kafesoğlu, ibid, pp. 80-83.
13 Cüveynî, ibid, pp. 259-267; Kafesoğlu, ibid, pp. 84-122.
14 Kafesoğlu, ibid, pp. 123-126.
16 For the Khwarazmian relations with the Abbasid caliphate, see Angelika Hartmann, an-Nâsir li- Dīn Allāh (1180-1225) Politik, Religion, Kultur in der späten ‘Abbāsidenzeit, Berlin-New York 1975, pp. 75-86; Afâf Seyyid Sabra, ibid, pp. 128-144.
17 Aydın Taneri, Celâlü’d-dîn Hārizmşah Ve Zamanı, Ankara 1977, pp. 18-83.
was an extension of the Seljuk Empire. They saw themselves as the state that inherited the heritage of the Seljuk Empire following its downfall. The relationship between the state and Islam continued along the same lines as it had been with the Seljuks. As a matter of fact, this relationship was characteristic of medieval Turko-Islamic states.

The Khwarazmian dynasty officially belonged to Sunnism and Hanafism as a religious sect. The second largest sect in the country was Shafism. The religion and religious sects governed the daily lives of society. We can even say that social stratification was based on this distinction. Essentially, the roots of the sects and their relationship and rivalry had a long history in the Khwarazmian geography. In this sense, this survived up to, and continued during, the Khwarazmian rule.

Followers of different sect could be assigned to public office in the Khwarazmian state. For instance, Shams ad-Din Mes’ud ibn Ali al-Haravi, the vizier of Ala ad-Din Tekish, was a Shafi. The conflict among the followers of different sects could escalate from time to time. Indeed, the mosque which the foregoing vizier built for Shafis in Merv was destroyed by Hanafi fanatics overnight. Notwithstanding such incidents, it can be said that the state tried to maintain a balance among the sects. As was with the Seljuks, the Khwarazmians disapproved and combated the Batinis. This Alamut-based group continued to be active during the time of Khwarazmian dynasty as well. This group was known with its assassins who would perform showy attacks that would create far-reaching influence on the public. For instance, in 1200, Vizier Shams ad-Din Mes’ud ibn Ali al-Haravi was stabbed to death by a Batini assassin as he was preparing to mount his horse. Sultan Tekish not only appointed the son of the murdered vizier as his new vizier to assert his policy against the Batinis, but also sent an army against them.

The ties of Khwarazmian rulers with Abbasid caliphs were not stable. We know that the relationship between the two Islamic states had an effect not only on the regional politics, but also society.

The activities of Khwarazmians in Persian Iraq and Ala ad-Din Tekish’s accession to the throne in Hamadan after defeating Toughrul II of Iraqi Seljuks constituted a turning point in their relations with the Caliphate. Despite his policy of fomenting turmoil in the region, Abbasid Caliph Al-Nasir Li-Din Allah knew that his new powerful neighbor would be threat to him. Yet, it was him who had recently incited the Shah of Khwarazm to deal with the Iraqi Seljuk sultan. The army he sent against Tekish was defeated. Al-Nasir Li-Din Allah sent the following message to the Shah of Khwarazm: “...Your father and your ancestors had taken their sustenance from us. We had given it to you as well. Content yourself with it and do not attempt to engage in meaningless errands. Otherwise, everyone in the country will rebel against your and there will be bloodshed.” Tekish’s response to

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19 Akîlî, ibid., pp. 267-268; Cüveynî, ibid., p. 276; İbnü’l-Esîr, ibid., Vol. XII, pp. 134-135.
this threatening message was harsh: “The authority belongs to Amir al-Muminin (Commander of the Faithful). I am his suzerain. I have many enemies and I am stronger than all of them. The military council has given 170,000 cavalries to our order. The needs of this army cannot be satisfied with that livelihood. If you give me Khuzestan with your benevolence, the needs of my subordinates will be met.”

The ties with the Caliph became sourer during the reign of Ala ad-Din Muhammad, who succeeded Tekish, as the Khwarazmian sultan came to the point of not recognizing the Caliph. Sultan Muhammad claimed that the Abbasid caliph had usurped the caliphate unfairly. He argued that the legitimate caliph should descend from Ali. He attempted to remove the name of the Caliph from the sermons recited in the country. He even moved to punish Li-Din Allah for usurping the caliphate, but he failed to achieve his goal.

The ties with Baghdad were not perfect during the reign of Jalal ad-Din Khwarazmshah either. He even made incursions into the Caliph’s territories. Later, the Caliph sent his envoys with a robe of honor (khilat) and gifts to the Khwarazmian sultan when he laid siege to Khliat (1230), but it was no longer possible to establish good relations. Moreover, any political alliance that could be established between them would hardly stand a chance against the Mongol invasion. The unfriendly ties, rivalry and power struggles served the Mongols well. Referred to as “infidels” by the Muslim world, the Mongols first destroyed the Khwarazmian dynasty and then conquered Baghdad in 1258.

3. RELIGIOUS ASPECTS OF THE RULER

According to the dominant view of the Khwarazmian era, the state would be represented and governed by a ruler. The power of the ruler came from God. The ruler was the person selected by God to rule the people. For this reason, God “shows mercy so that this power continues and the state is protected.” This mercy was “so great that it cannot be properly described or even imagined.” As a consequence, the Khwarazmian rulers saw themselves as the defenders of Islam and the patron of Muslims. Indeed, they referred to the Khwarazmian palace as a “place to which people can apply if the face of oppression and destitution.” It followed that the Khwarazmian rule was the person who would dispense justice.

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23 Taneri, ibid, pp. 51-56.


The primary characteristics of a ruler who was believed to be authorized by God to rule the land included fear of God in his actions and "holding Islam in high esteem is his affairs."\(^{26}\)

In line with the general understanding in Islamic states of the time, they thought that a ruler should "fear from God" and "be pious" so that he could attain "respect and majesty."\(^{27}\)

Such a ruler would be fair, generous and virtuous and protect people from oppression. The frequent emphasis on the need for a just ruler in the sources from the era is indicative of the immense search for justice at that time. For instance, during the ceremony of ascension of Ala ad-Din Tekish to the throne, Rashid al-Din Vatvat recited a quatrain (ruba‘i) as a eulogy to the new sultan: "Your grandfather had erased the word 'tyranny' from existence. The justice of your father had bound up wounds."\(^{28}\)

The ruler was supposed to do the things that would please God. This could be done by keeping away from oppression and establish justice. Only in this way could a ruler permeate his power and account for his actions in the Hereafter.\(^{29}\) The correctness of the ruler’s actions would be benchmarked against the religious values: "God’s assistance is with us in every action we have decided to take as regards the state and religion, country and nation."\(^{30}\)

The religious emphasis in the royal insignia used by the Khwarazmian rulers in line with the traditions of the time is important in that they bring the relationship between the ruler and the religion into view. For instance, the titles and designations used by the Khwarazmian rulers included “zillullah-e fil-Ard” (the God’s shadow on earth), “Abul-Fath” (the father of the conquest), “Ala ad-Dunya wal Din” (the best of the world and the religion), “Qutb al-Islam wal-Muslimin” (Pole of Islam and Muslims), “Taj ad-Dunya wal-Din” (Crown of the world and the religion), “Burhan al-Amir al-Muminin” (Proof of the Commander of the Faithful), and “Taj al-Ummat al-Bahira” (the crown of the luminous believers).\(^{31}\) Coins, too, are among the signs of the sovereignty and they may indicate independence or suzerainty. At the same time, they may attest to the relationship between the religion and the ruler. The Khwarazmian rulers included the name of the Caliph in the majority of the coins they minted.\(^{32}\)

The robes of honor (khilat) and embroideries on them (tiraz) are the most valuable royal insignia where the religious emphasis is most visible as they are decorated with the titles and designations of the ruler.\(^{33}\)

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29 The approach, in force during the Khwarazmian rule, had been formulated in the Siyasatnama by Nizam al-Mulk, see pp. 8-9.
32 Gürbüz, ibid, pp. 79-80.
33 Ibid, pp. 91-93.
The religious sermons in which the name of the ruler is recited is another sign with religious significance. It both accounts for and announces the relationship of allegiance between Muslim rulers. Indeed, an edict of appointment of an orator from the time of the Khwarazmians reads as follows: “Select your words in your sermon in a way that your speech will be clear and fluent. Use your words in the correct senses. Say the prayer that will be used for the running of the state’s affairs considering the current situation in the country.”

4. ECONOMY STRUCTURE OF THE KHWARAZMIAN STATE

The Khwarazmian economy relied mainly on agriculture, animal husbandry and trade. The Khwarazmian country was famous with its gardens, orchards and agricultural produce as well as its fertile lands. For instance, there were cultivated arable lands along the banks of Amu Darya. Khwarazm was an important agricultural region. In addition, the Balkh region was covered with extensive agricultural fields. Indeed, the diversity of the agricultural produce in this region was visible in the diversity of the taxes imposed. Khwarazm, a major source of income for the state, also provided suitable setting for animal husbandry, another major source of income for the state. Khwarazmian rulers supported agriculture and animal husbandry as a state policy. For instance, they gave the lands that belonged to foundations to farmers in an effort to enhance agriculture. In addition, they built irrigation canals to improve productivity.

In addition to agriculture and animal husbandry, the revenues of the Khwarazmian state included incomes from trade, taxes, and spoils of war. The economic institutions of the state were divided into central and peripheral organizations. Accordingly, the powers and authorities related to economic activities belonged to the ruler as was the case with other areas of the state system. All the civil servants were working by representing the ruler and with the ruler’s graces. In economic affairs, the vizier enjoyed the second most important powers and authorities. The vizier was followed by the branches of the Divan-i Ala (Supreme Council) that related to the economic affairs. The first one was Divan-i Istifa-i Memalik. This council dealt with the financial affairs of the state. “It is the state’s highest financial authority.” This council was headed by the mustawfi (the state treasurer). He was also the head of all civil servants working in the field of finance.

Divan-i Ishraf-i Memalik served as the authority to control and inspect finance and administration. This council, too, was one of the members of the Supreme Council. It was headed by the Mushrif. This council was described as the “highest accounting authority”.

34 Reşidüddin Vatvat, Arâis, pp. 56a-58a.
36 Cüveyni, ibid, p. 151.
37 Bahâeddin Muhammed b. Müeyyed el-Bağdadi, et-Tevessül ile’t-teressül, pub. Ahmed Behmenyar, Tehran 1315, p. 54; Reşidüddin Vatvat, Arâis, pp. 56a-58a; Toyserkanî, ibid, p. 41; Nesevî, ibid, pp. 192-193.
38 Horst, ibid, p. 36.
39 For an edict related to the Khwarazmian Divan-i İstifa, see Reşidüddin Vatvat, Ebkâr, pp. 37a-39a.
40 Horst, ibid, p. 38.
and its head would be characterized as “reliable,” “trustworthy” and “having strong piety.”

The economic organization outlined above was modeled also in the provinces. A prince, prince regent or governor appointed to a region would be considered as the officer with the highest level of authority in that region. The iqta system was at the heart of the provincial economic administration. The Khwarazmian ruler had turned the country into various regions which were governed by the officers who were assigned by the ruler and who used part of the ruler’s authorities on his behalf. The regions would be divided into iqtas which would be granted by the ruler or his assignees to favorable people as a blessing and the iqta holders would be held responsible for the administration of these lands. In the Seljuk time, administrative iqtas emerged when the military iqtas were transformed into provincial administration, and the Khwarazmians continued to implement it as such.

The provincial administration was conducted through the councils as well. The council system was copied to the provinces. The civil servants who dealt with financial affairs in the provinces included amils, amids, muhtesibs and mutasarrifs.

5. THE EFFECTS OF INFIDELS ON THE ECONOMY OF KHWARAZMIAN DYNASTY

For the Khwarazmian state, kuffar (infidels) were non-Muslims. The state saw them as a threat and combated them. Non-Muslim Turks, the Qara Khitai, Georgians and Mongols fell into this category. The relations with the infidels had various effects on the state’s economy. These relations can be grouped as positive and negative ones.

5.1. Positive Effects

The military campaigns the Khwarazmians launched against the infidels brought a considerable amount of revenues. Indeed, these revenues helped Atsiz as the governor of Khwarazm to muster power, especially military power in his quest for independence. At the same time, these revenues were crucial in the deterioration of his ties with the Great Seljuks, of which he was a suzerain, as he sought to keep this income to himself.

Atsiz was appointed as the governor of Khwarazm in 1128 upon the death of his father Qutb ad-Din Muhammad. His previous achievements as a commander in the Great Seljuk army showed that he had strong military acumen. When he started to govern Khwarazm, Atsiz followed a smart policy by turning his attention toward the north. Non-Muslim Turkic tribes were living in the north, i.e., in Ustyurt, Mangyshlak and beyond. His success in military campaigns in this region could contribute to the image of Atsiz as a leader.

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41 Bağdâdî, ibid., p. 120.
43 Gürbüz, ibid., pp. 203-205.
44 Ibid., pp. 215-220.
this way, he could ensure that his would be heard across the Muslim world. A ruler who protected Muslims and engaged in conquests would be appreciated in the Muslim world, and, at the same time, this would bring certain political advantages. This was what happened. Shah of Khwarazm Atsiz became popular with his military expeditions against the infidels and his achievements. He soon took action to be recognized by the Abbasid caliph. Some of the letters he had sent to the caliphate survived to our time. In his letter to Caliph Al-Muqtafi Li-Amrillah (1136-1160), the Shah of Khwarazm said: “The greatest obstacle for me to visit you is that the territories of this subject are neighboring the infidel Turks. Most of the time, this subject fights the enemies of the religion, trying to keep them away from the Muslim lands. If I leave here even for a short time, the residents of this area would be without a protector.”\footnote{Heribert Horst, “Arabische Briefe der Horazmsahs an den Kalifenhof aus der Feder des Rasidad-Din Watwat”, ZDMG, 1966, Vol. CXVI, p. 34.} In another letter, he wrote: “This subject launches military campaigns twice a year in various seasons in order to protect the Muslim territories.”\footnote{Horst, \textit{ibid}, p. 35; see also \textit{ibid}, pp. 36-37.} The revenues from the infidels that contributed to the Khwarazmian economy came from these expeditions conducted during the time of Atsiz. Moreover, a letter Atsiz sent to the Caliph reveals that such expeditions had been conducted previously as well. Referring to his father, Atsiz wrote: “He served Islam for 80 years... At the age of 20, he started to launch campaign against the lands of infidels. Thus, the people of Khwarazm and Khorasan could feel the security of lives and property.”\footnote{Horst, \textit{ibid}, p. 30.} Although Atsiz referred only to the difficulties he faced and the significance of his deeds, it is clear that these campaigns had brought substantial spoils as well.

Atsiz’s campaigns in Ustyurt, Mangyshlak and Jand made great contribution to the state’s economy, but it was not without risks. Indeed, Seljuk Sultan Sanjar did not like his activities because Atsiz was growing stronger by bringing non-Muslim nomadic Turks under his rule. These campaigns were not only powering up the economy, but also providing the much needed manpower. Relying on this power, Atsiz went further and arrested the Sultan’s men in Khwarazm and confiscated their property.\footnote{Köymen, \textit{ibid}, pp. 321-323, Kafesoğlu, \textit{ibid}, pp. 46-48.}

Sultan Sanjar launched his first campaign against Khwarazm in September 1138. In the battle fought in November, Atsiz’s soldiers were ineffective. Approximately 10,000 Khwarazmian soldiers were lost including the causalities and captives. Atsiz fled, and he was official removed from office as Seljuk prince Malik Ghiyath al-Din Suleimanshah ibn Muhammad was appointed as the governor of Khwarazm. However, after Sultan Sanjar left the country, Atsiz returned to Khwarazm and easily defeated Suleiman and expelled him away from the region with support from the people.\footnote{Köymen, \textit{ibid}, pp. 321-323, Kafesoğlu, \textit{ibid}, pp. 46-48.}

Atsiz’s independent actions urged Sultan Sanjar to launch another expedition against Khwarazm. In Sanjar’s last expedition against Khwarazm in 1147, Atsiz was defeated.
When he came to the presence of Sanjar in the banks of Amu Darya on June 2, 1148, Atsiz failed to comply with the loyalty ceremony of the time. He just greeted the Sultan with his head and left the area. But the Sultan did not make a fuss over his disrespect. Kafesoğlu was right when he said: “Sanjar’s act against his move by the Shah of Khwarazm, who rebelled against him three times and was defeated in each time, can be explained with the Great Sultan’s generosity, but he might also hope something from the existence of this courageous and obstinate man whom he had prevailed over even at the most critical moments, as in the wake of the battle of Qatwan.”51 In our opinion, in Sanjar’s efforts to thwart the threats from the Qara Khitai and Oghuz tribes, Atsiz helped him by protecting the Seljuk territories against the incursions from the infidels.52 Even though Atsiz frequently rebelled, it was in Sanjar’s benefits to keep Atsiz in place at a time when he had to deal with numerous enemies.

Then, Atsiz turned his attention toward the infidels in the north. He first assigned his elder son Il-Arslan to Jand to secure the area before launching a military expedition against Sighnaq, a central Kipchak city. What stopped him from making this campaign against the infidels was the Seljuk sultan’s being defeated and enslaved by the Oghuz. Shah of Khwarazm Atsiz carefully watched this turmoil in Khorasan. When he had defeated the Sultan in Qatwan in 1144, he had ventured to march against the Seljuk capital and he had even taken Sanjar’s treasury to Gurganj.53 Now, the Oghuz invaded the entire Khorasan (1153), but he did not take action for independence. He captured the castle of Amuye for the security of his own country. He also contacted the rulers in the region trying to mobilize them against the Oghuz, but in vain.54 Meanwhile, the Oghuz conquered many cities, killing many people. The Seljuk capital was plundered extensively twice.

Shah of Khwarazm Atsiz died in 1156. The most important factor in his being regarded as the founder of the Khwarazmian State was his campaigns against the infidels. The expeditions Atsiz launched in an effort to security the northern parts of his country made it possible for him to establish a state in Khwarazm. His and his successors’ presence in the region ensure that the traders could be active in Khwarazm as a major transit trade center, which eventually consolidated the country’s economy.

Ascending to the throne after his father, Il-Arslan continued to following his father’s policies. In early years of his reign, he had to deal with the problems in Jand and Mangyshlak. In the Middle Ages, a ruler’s death could lead to uncertainties which might be brief or long. Fights for the throne in particular could allow foreign powers to interfere with the domestic affairs and could even result in loss of lands. Such a death could even create a suitable environment for attacks against the country or the loss of subjugated territories. Indeed, immediately after Atsiz’s death, infidels attacked Jand and Mangyshlak.

51 Kafesoğlu, ibid, p. 59.
52 Kafesoğlu, ibid, p. 60.
54 Kafesoğlu, ibid, pp. 59-60.
Il-Arslan made a political move by supporting the Qara Khitai against the Qarluqs, but he did not get what he sought with his move.\textsuperscript{55} Still, it is important in terms of following the state’s “infidels” policy.

Ala ad-Din Tekish, who ascended to the throne in 1173, was the elder son of Il-Arslan. When his father died, he was the governor of Jand, which was the most important region at that time. In order to fight his brother Sultan Shah for the throne, he received assistance from the infidel Qara Khitai, but later he waged war against them. For instance, he personally led his army against Transoxiana and seized Bukhara.\textsuperscript{56}

The policy Sultan Ala ad-Din Tekish developed against Kankalis-Kipchak tribes, who were involved in the “infidels” policy, gave the Khwarazmian State its character and, at the same time, influenced the Turkic military, linguistic and cultural history. After 1195, Sultan Tekish had to focus on the problems in the eastern parts of his country. When he launched a campaign against the Kipchaks, his former ally, the Urans changed sides. Therefore, the Sultan was defeated (1195). Although Tekish later reinforced his army and became successful and even took Kipchak ruler Qatir Buqu, he knew that this was not sufficient for a definite result. The Sultan followed a policy to ensure the allegiance of non-Muslim Turkic tribes including the Uran and Kankalis along with the Kipchaks. He married Terken Khatun, the daughter of one of the influential Turkic chieftains in the region.\textsuperscript{57} Thus, the Kankalis-Kipchak influence started to be felt in the Khwarazmian State. The tribes started to have a say in the military and administrative organizations. Although they were regarded as infidels until that time, these Turkic tribes were involved in the Muslim country, becoming the state’s major components.

The “infidels” policy had positive effects during the reign of Sultan Ala ad-Din Muhammad as well. His struggle against the Qara Khitai fell into this category as well. The ruler of Samarkand, Osman, who descended from the Kara-Khanids, terminated his allegiance to the Qara Khitai in 1207 and had the name of Shah of Khwarazm Muhammad recited in the sermons and minted on the coins.\textsuperscript{58} The Qara Khitai did not like this change in Samarkand. The Gur Khan sent an army which defeated the Khwarazmian army. As a matter of fact, this was the first defeat of the Sultan. Muhammad’s reaction to the increasing pressures from the Qara Khitai was harsh. He had the Qara Khitai envoys executed for behaving disrespectfully, and defeated the Qara Khitai army led by the Tayangyu. The Sultan even pursued the fleeing Qara Khitai troops and captured Otrar. This victory had massive repercussions. Even the Qara Khitai capital expected that the Sultan would come as a savior. The Sultan celebrated his victory against the “infidels” who had long been exerting pressures on his country by assuming the title of “Iskender-i Sani”

\textsuperscript{55} Cüveyni, ibid, p. 256.
\textsuperscript{56} Kafesoğlu, ibid, p. 113.
\textsuperscript{57} Kafesoğlu, ibid, pp. 130-131.
\textsuperscript{58} Ibnü’l-Esir, ibid, Vol. XII, p. 122.
Despite this success, Shah of Khwarazm Muhammad lasted until the destruction of the state by the “infidels.” This was discussed under the following heading.

The campaigns against the “infidels” proved beneficial also during the reign of Sultan Jalal ad-Din Khwarazmshah. Jalal ad-Din Khwarazmshah had great success against the Georgians. These victories earned him popularity across the Muslim world. For instance, he defeated the Georgians in 1225 and captured Tbilisi in 1227. The Shah of Khwarazm obtained substantial spoils from his expeditions against Georgia. Indeed, he needed a strong and well-equipped army in order to survive in the region and fight the Mongols. This meant money.

5.2. “Infidels” and Trade

The positive effects of the “infidels” to the Khwarazmian economy also came through trade. For the Khwarazmians, trade was one of the essential elements of economic life. The region had already enjoyed commercial significance even before the Khwarazmian State was established. The Khwarazmians inherited the existing commercial environment and benefited from it.

In geographical terms, Khwarazm connected Asia to Southern Russia. It served as a hub for distributing the goods coming from China and India to Siberia and Scandinavian countries. In addition, the goods were also sent to Baghdad before being transported to Egypt and Africa by land and to Spain by the sea. Obviously, this trade network was multinational and multi-congressional. Khwarazmians were known as dexterous tradesmen. They received a great share of this commercial boom. The arrival of a great variety of goods brought by the caravans in Khwarazmian markets was praised in the resources of the time.

The commercial importance of the region dominated by the Khwarazmians had not changed for long, i.e., since the 10th century. The capital city of Gurganj enjoyed a special place in the commercial life. Gurganj had long been a commercial center and it was second most important commercial center after Kath in the 10th century. According to the accounts by Muslim geographers, these cities relied mainly trade for their revenues and big caravans would depart from these cities. In addition, Khwarazmian tradesmen would transport their goods with their larges vessels through the Caspian Sea. Under the Khwarazmian rule, the former capital lost its luster and Gurganj emerged as the main commercial hub. There

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60 For the military campaigns of Jalal ad-Din Khwarazmshah against the Georgians, see Taneri, ibid, pp. 47-51.
were not only the goods in which Khwarazm served as a transit route, but also the goods which were produced in the country and exported to other countries.

Since the 10th century, there had been trade of animals between Khwarazm and the regions where non-Muslim Turkic tribes lived. The goods that came to Khwarazm included the furs of sables, foxes, rabbits and other animals, honey, wax, fish teeth and glue, animal skins, clothes, swords, armor, wool, etc. Khwarazmians produced and exported cotton and wool clothes, covers, fabrics and cotton oil. Slaves constitute a major trade item. The slaves brought from the “infidel” countries would be distributed from this center.

As in the 10th century, this region continued to be an important commercial center under the Khwarazmian rule. Commercial activities continued uninterruptedly thanks to the secure environment provided by the Khwarazmians until the Mongol invasion. Khwarazm was a trade hub and shown in our resources as a place where caravans stopped over. The state did its share to ensure the smooth continuation of this commercial life. As clearly noted in the sources that survived to our time, special importance was attached to the security of the routes. For instance, it was stated in an iqta edict that it was the responsibility of the iqta holder to ensure the security of the routes. The letter urged the iqta holder to “refrain from neglecting the protection of the routes even for a moment” and act decisively in punishing those who compromised security.

Jand served as a center for the relationship between the Khwarazmians and infidels. Attaching military significance to the region, the Khwarazmians used this region as a base for their military campaigns toward the north. The commercial importance of the city of Jand deserved the significance attached to it by the state. It was no coincidence that the older princes were assigned to the administration of the region. The security of this region was crucial for commercial activities. This was because Jand was an outpost on the commercial route to Khwarazm. It was the region where the trade with the infidels occurred. In the conquest edict of Jand, the city was defined as the “border of Islam.” The city was also a commercial boundary between the Muslim countries and the “infidels.”

The edict with which Sultan Ala ad-Din Tekish gave the city to his son Nasir ad-Din Malik-Shah testified to the commercial significance of the region. In this edict, it was emphasized that he should “ensure the security of the routes, protect the lives and property of the traders, and prevent attacks against their lives and property.”

64 Şeşen, ibid, pp. 162, 172.
65 Şeşen, ibid, p. 102.
66 Şeşen, ibid, pp. 161-162, 172; Agacanov, ibid, p. 151.
67 Cüveynî, ibid, p. 149.
68 Bağdadî, ibid, p. 36.
69 Reşidüddin Vatvât, Ebkâr, pp. 31b-34a; Toyserkânî, ibid, p. 71.
70 Bağdadî, ibid, p. 13-29.
In the Khwarazmian state, there were troops which secured the routes and they were called the “guardians of the routes.”71 In addition, traders would be issued permits to facilitate their transactions.72

5.3. Negative Effects

The negative effects of the “infidels” to the Khwarazmian economy included the Mongol invasion. Moreover, the Khwarazmians had paid tributes to the Qara Khitai until the reign of Sultan Ala ad-Din Muhammad. The state would gain economic income from the military campaigns against the “infidels”, but it still paid tribute to the “infidels.” This was closely related to the political situation. The Khwarazmians were trying to gain their independence while the Great Seljuk Empire was collapsing, and at the same time, they were trying to inherit the Seljuk territories while combating the other powers trying to do the same. As they tried to dominate the region absolutely, they paid tribute to the Qara Khitai although they were “infidels.” This was a necessity.

Yet the Mongol invasion led to the collapse of the Khwarazmian State. The damage this invasion did to the region’s economy continued for many years even after the destruction of the Khwarazmian dynasty. Moreover, the Mongol invasion affected not only the Khwarazmian dynasty, but also Baghdad and Anatolia.

When the Mongols got organized and got into action under the rule Genghis Khan, the Khwarazmian State was one of the strongest countries in economic and military terms in the region. The relations between the Mongols and the Khwarazmians started with an economic agreement in 1218. Under this agreement, both parties would do their share in providing security for commercial activities.73 This agreement with the “infidels” would bring substantial gains for the Khwarazmian economy while ensuring that the products not found in Genghis Khan’s land were provided to Mongols. Indeed, the trade along this route was dominated by Muslim traders. Indeed, the traders whom Genghis Khan contracted for doing trade on his behalf were Muslim. According to the historical resources, Genghis Khan attached great importance to this deal as well as to the economic chain in which Mongols had involved. The traders who held “permits,” which Köymen defined as a sort of “passports,”74 would freely trade goods between the two countries.

However, the peaceful climate between the Mongols and the Khwarazmians did not last long. When Sultan Ala ad-Din Muhammad captured Samarkand, he planned to use it a center for his actions. In some sources, it was noted that Samarkand became the second capital. When the Sultan was in Samarkand, he encountered a Mongolian unit which was returning from the pursuit of the Merkits. The reason for this act was not certain although various reasons were reported in the sources. The nature and consequences of the attack

71 Cüveyni, ibid, p. 288.
72 Köymen, ibid, p. 554.
73 For the commercial relations, see Cüveyni, ibid, pp. 116-117; Nesevi, ibid, p. 48.
74 Köymen, ibid, p. 554.
were significant. The Sultan was defeated by this Mongolian unit. When the fierce battle ended, the Mongols were not persistent and left the region.\textsuperscript{75} But in terms of international relations, the Sultan had attacked the soldiers of a country with which he had made an economic agreement. Genghis Khan did not show any reaction to this incident. We gather that he did not want to disrupt the good relations. Yet, the Otrar incident was the last straw.

When a trader caravan including the Mongol envoys reached the Khwarazmian border city of Otrar, the governor of the city, Inalchuq arrested and killed them. All traders in this 450-people caravan were Muslim. Various explanations were offered in the sources to this move by the governor. Some stressed Inalchuq’s ambitions, arguing that he did this in order to capture the wealth of the traders. Some sources suggest that the Sultan had his hand in this incident.\textsuperscript{76} Whatever the reasons were, the incident had significant consequences.

In the face of the incident, Genghis Khan pursued a cool-headed policy. His policy sought not to break the agreement. He asked the Sultan to punish the governor. He should either penalize Inalchuq himself or send him to the Khan. Shah of Khwarazm Muhammad did not penalize the governor of Otrar.\textsuperscript{77} His attitude indicated that the war was inevitable. Now, Genghis Khan could act with a legitimate reason to take the revenge of the killed delegation. This was what happened. Referring to the Otrar incident, Genghis Khan launched a military campaign toward the west.

Shah of Khwarazm Ala ad-Din discussed the military strategy they should follow against the Mongolian army in the war council, and although he received many suggestions, they paid no heed to any of them. He thought that a defensive tactic would be sufficient. He assumed that he could restrain the Mongols by reinforcing the castles and sending military reinforcement to the cities.\textsuperscript{78} This strategy proved ineffective at the very begging. Genghis Khan severed the connection between the cities and captured them one by one. He recruited some of the qualified manpower from the conquered cities and sent them back to the Mongol country. He killed the rest or used them as a human shield in attacking the next city. Thus, the qualified workforce in the Khwarazmian country was virtually destroyed. Considering that those who survived moved to other regions, it is clear that the Mongol invasion dealt a fatal blow to the region’s economy. The Khwarazmian cities –Otrar, Bukhara, Samarkand, Sighnaq, Jand, and Barcinlik– fell one after another. Eventually, the capital city, too, was seized and destroyed by the Mongols. Shah of Khwarazm Muhammad fled. He went to Abaskun in the Caspian Sea, where he thought he could be safe. He soon died there (1220).\textsuperscript{79}

\begin{footnotesize}
\begin{enumerate}
\item Kafesoğlu, \textit{ibid}, pp. 238-240.
\item Kafesoğlu, \textit{ibid}, pp. 240-243.
\item Ibnü’l-Esîr, \textit{ibid}, Vol. XII, p. 325.
\end{enumerate}
\end{footnotesize}
A struggle for the throne erupted following the Sultan’s death, but Uzlaq-Shah and Ak-Shah were killed in a battle against the Mongols, and Jalal ad-Din Mingburnu, whom the Sultan had declared as his crown prince in his last days in Abaskun, became the new sultan. But, having no capital or throne to claim, Jalal ad-Din sought refuge in India. In 1224, he returned to his country, believing that the time was ripe for struggle against the Mongols. Jalal ad-Din went to Persian Iraq and tried to get a hold in Azerbaijan and then in Khliat in his fierce struggle against the Mongols. He spent all his life in trying to revive the state after becoming the sultan, and he was killed in 1231 when he was fleeing from the Mongols near Meyafarikin (Silvan, Diyarbakır). Upon his death, the state came to an end. 80

6. CONCLUSION

The “infidels” effect on the Khwarazmian economy was both positive and negative. The most important source of revenues for the newly establish state was the military expeditions against the “infidels” and the spoils earned in them. The trade with the infidels also made contributions to the empowerment of the Khwarazmian state. Yet, the state came to an end with the Mongol invasion. This invasion destroyed the cities, and undermined the trade, causing many people to die or migrate. The Mongol invasion put an end not only to the Khwarazmian dynasty, but also the economic life in the region.

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80 Taneri, ibid, pp. 20-83.
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Foreign Aid Effectiveness, Corruption and Economic Growth: A case study of
selected South Asian countries

Muzammal Afzal¹

1. INTRODUCTION

A feature of the world is the difference between per capita incomes among the countries. A controversy presides within the idea that whether there is convergence or divergence of relative incomes. But one thing is certain that there is a huge and absolute difference between rich and poor countries (Baroo, J. Robert 1990). Foreign aid is transfer of money, resources or goods from rich to poor countries, used as an instrument to alleviate poverty and bridge the gap between incomes of poor and rich countries. In recent decades aid to poor countries has increased in volume, increasing from 3.89 to 9.52 of donor countries’ GDP during 1960s to 1990s.

Donors are constantly providing capital inflows to developing countries with the aim of helping them to become self-sustaining and to reduce the gap between developed and developing countries. Most of these capital inflows are in the form of foreign aid. International programs for poverty alleviation and self-substance of poor countries include bilateral aid to poor countries, multilateral aid from international organizations, loans below the market rate, debt forgiveness and technical assistance etc. It is however uncertain that this foreign aid achieve its objectives of ensuring positive impact on development outcome of recipient countries. Many structural problems prevailing in the developing countries which play as a major obstacle for foreign aid to achieve its objectives. Poor governance, bureaucratic structure, political instability and prevailing corruption in the developing countries is considered to be the problem. For example, research has established that systematic corruption is a major constraint on effectiveness of aid flows in South Asian countries.

According to World Bank and Transparency international corruption is defined as the use of public power and resources for private benefits. It is the abuse of public office by public officials for personal gains. The motive of corruption is to provide one with unfair advantage at the expense of another individual or a country or province. There are two perspectives regarding the role of corruption in developing countries. First view considers corruption desirable for increasing the efficiency of the economy. Leff, 1964, argued that “Corruption can, in extreme cases, be not only desirable but essential to keep the economy going”. The second perspective disagrees with this role of corruption. They argue that corruption will only help in countries where it has been adopted as a way of life and where agents believe that their work is going to become easier by offering bribes (World Bank, 1997). They found corruption a destructive force that reduces economic growth by affecting investments, diverting public expenditures, reducing taxes and the efficiency of foreign aid in recipient countries (Lambsdorff, 2005).

But on the other hand however; it also increases the dependency on foreign aid by plummeting growth and development of developing countries. While further exploring the

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counter phenomenon, Alesina and Weder (2002) examine whether less corrupt governments are rewarded with increased bilateral aid. They find that, if anything, it is more corrupt countries that receive more aid. These authors also take a first look at the reverse direction of causality and find weak evidence that aid causes corruption to increase. Factors behind aid decisions are to be investigated for a clear picture.

When developed countries increase their aid flows due to developing country’s low unearned income, foreign aid can either increase or decrease corruption depending upon the donors decisions. But Knack (2001) found that foreign aid has actually increased corruption in developing countries because more resources become available for the concerned people to fight over. Basically foreign aid is the transfer of capital from developed to developing countries on concessional terms. It includes all financial flows from developed nations to developing countries, including official grants and loans, trade financing and military assistance and assistance funded by non-governmental organizations (NGOs). Donor countries and international organizations argue that their aid policies are meant to be selective and favour reforming government. According to development assistance committee (DAC) of the Organization of Economic Cooperation and Development (OECD), foreign aid or the Official Development Assistance (ODA) consists of official grants and highly concessional loans from bilateral or multilateral donors to developing countries aiming to promote economic development and welfare (DAC, 1970). The foreign aid allocation is criteria based i.e. ODA should satisfy three criteria:

1. Aid is given by the official sector of the donor country
2. With the objective of promoting economic development and welfare in recipient countries
3. Loans are given with grant element.

Problem statement and significance of study:
The effectiveness of foreign aid in hampering or stimulating a country’s economic growth has been a debate of interest in the economic array. One cause which gives way to the debate is the ubiquitous nature of foreign aid’s reception globally. Foreign aid is provided by the donors with a purpose that it will improve public service delivery. Literature shows that foreign aid has been a valuable tool to achieve development goals. However, specific observations made in the case of Africa and South Asia affirms the ineffectiveness of foreign aid. The outcomes of the multiple research carried out to find the efficacy of foreign aid indicate that it is unlikely for foreign aid to always ensues a positive impact on economic stability and growth of the recipient country. On the contrary, foreign aid is found likely to instigate and foster corruption and often viewed as a significant source of rising corruption, which itself is presaged as an impedance to economic growth.

The present study therefore, aims to be a supplement to the existing literature on the subject. The study concentrates on examining the outcomes of foreign aid on economic growth and corruption in sample region i.e. South Asia. The influence of corruption on development will also be analysed to find whether it sands or grease the South Asian economy.

This study is an analytical inquiry investigating the aid outcomes on economic growth in the presence of corruption plaguing the South Asian as a major deterrent to economic growth. The study has explored the impact of aid on corruption which is a smoldering issue not only in South Asia but other developing countries as well. By focusing on aid-corruption-growth nexus and South Asia specifically, this study yield noteworthy importance for the policy makers and donors.
Research Questions:
Historical background of foreign aid and literature review raises many questions about:

- What is the nature and magnitude of relationship of foreign aid and economic growth in developing countries?
- Does foreign aid corrupt countries?
- What are the factors behind decision making of aid allocation?

To find the answers of these questions this study analyses the impact of foreign aid on corruption in selected South Asian countries namely Pakistan, India, Sri Lanka and Bangladesh. These countries are selected because this region is beset with high corruption and aid dependency. If increasing transfers of foreign aid are not contributing towards development and growth of these countries, then it must be affecting corruption. This study gauges the impact of foreign aid on corruption in South Asian countries. Existing literature focuses on the impact of foreign aid on development and governance reform in developing countries, but scarce are the studies which focused on corruption and South Asian countries specifically as the subjects of the study, this lack of research will make this study particularly important to donors for aid decisions. Following are the objectives of the study:

1. To find out the impact of foreign aid on economic growth in South Asian Countries
2. To find out whether foreign aid increases or decreases corruption in South Asian countries.
3. To find out the impact of corruption on economic growth in South Asian countries.

Definitions, Concepts and Statistics:
The Official Development Assistance (ODA) is sought to meet three criterions if it is to qualify for dispensation to the recipient countries. These criterions include, (i) aid is imparted by the executive sector of the patron country; (ii) aid should be given with the objective of encouraging economic development and prosperity in the beneficiary country; (iii) it is mandatory to give the loan with grant element, i.e., the unconditional subsidy integrated in the loan an amount comparative to the loans’ face value of at least 25 percent to be calculated as the quotient of the grant equivalent share of the loan to the nominal value of a concessional loan and markdown rate of 10 percent. It excludes military support, political development agendas, trade acclimation, and debt clemency for military advances.

Aid is the flow of capital and technical assistance to evolving nations directly from the ruling regime of developed countries or from organizations such as the World Bank.

Financial Aid
The austere form of capital influx is the provision of alterable foreign exchange. However, a small amount of foreign capital so conveniently arrives to the under-developed world. The claim that except for financial aid every other form of aid comes with obligations is certainly untrue because almost all foreign public capital has some compulsions to it. Financial aid is divided into different sub-forms i.e.

Tied Aid
Tied Aid is divided into two types which are, Nation Tied Aid and Project Tied.

- **Nation Tied:** Nation tied aid is the conditional aid given to a country on the condition that the recipient country is bound to utilize the donor agency as its exporting
agent or that the recipient country will spend the aid to assist the donor country in stimulating its export and solve BOP problems.

- **Project Tied**: The Project tied aid is specifically given for some developmental or growth projects. The recipient country does not bear the flexibility to invest this aid into other than the project it has been allocated for.

- **Double Tied**: The combination of both, nation tied and project tied aid is called the double tied aid.

**Untied Aid**
The untied aid is the aid which does not bound the recipient country to serve national interest of the donor country or to allocate the foreign aid into specific projects suggested by the donor. Untied Aid is assumed as the best kind of aid because it has the scope of being utilized more efficiently by the recipient country.

**Loans**
A loan can be defined as the borrowing of foreign trade by a poor country from a rich country in order to finance short term or long term projects.

**Grants**
The grant is a form of aid exempted from both the payment of the principal and interest. The grant is interest or principle free gift from one government to another or from an organization to a regime.

**Commodity Aid**
The commodity aid comes under the banner of tied-aid. The donor country supplies products or provisions to recipient country in the form of aid.

**Technical Aid**
Technical Aid is the dispensation of technical services and training to the recipient country. The technical aid is good for a country because it accelerates a country’s economic growth.

**Foreign Direct Investment**
Foreign Direct Investment (FDI) also falls in the category of foreign assistance or aid. In South Asian countries like Pakistan and India, Lever Brothers, Reckitt and Colman, Bata, and Philips etc are the examples of FDI. Foreign Direct Investment is considered as a much cheaper investment in the recipient country because it comes without any principal or interest payment from the recipient country.

**Military Aid**
Military sector of developing countries that face political, military instability due to conflict of international powers, war, proxy wars receive huge amounts, which are tied to policies of “Do More” militarily and strategically. However, such aid does not induce any effect on the growth of economy in the recipient country. Therefore, it is considered that the military aid if provided by a donor country often has certain political motives behind it. An important fact, which is not to be ignored, is that military aid data is not issued for public consumption, and this makes the politics of foreign aid complex and dubious.

**Political Economy of Foreign Aid**

**Why Donors Give Aid?**
Donor’s motives can be defined as the interests of the donor while granting the foreign aid to a country. Donor countries provide aid primarily concurring to the policies concerning their political, strategic, or economic interests. The motives of donors behind the allocation of aid are defined below.

**Moral Reasons**
The aid governed primarily to address imminent humanitarian needs such as famine, earthquakes or any other natural disaster, falls under the moral reasons for aid and known
as the grant aid. Free of any conditionality, the grant aid is typically provided on the basis of extending help to another nation on humanitarian grounds. However, under normal circumstances i.e. other than the humanitarian conditions, no historical evidence exists to support the grant aid to other nations without any political, economic, and military motives of the donor.

**Aid with Political Strings Attached**

Developed countries often provide monetary packages to developing countries which are tied with political conditions. For a capitalist economy like US, it is unlikely to provide aid exempt of any political motivations. The aid flows in every region are a tool of promoting donor’s interest in the region. The course of fund deployment is dependent on the donor’s political analysis of changing international state of affairs rather than on the immediate requisite of prospective recipients.

The aid released from the former Soviet Union follows the same pursuit of political and strategic motivations behind granting the aid. However, the conventions of the socialist aid was different from that of the capitalist model. These socialist aid conventions model sporadically show its existent even after the demise of Soviet Union. For example, the Persian Gulf War of 1991 witnessed aid flows aimed towards the friendly allied regimes like Egypt and Turkey. Furthermore, in 1990s, the aid was heavily reliant on the donor’s willingness to encourage free markets, transform its politico-economic system and open its economy thus both bilateral and multilateral aid was subjected to donor’s political principles (democratic or capitalist). Also, by the end of 1980’s the US deployed hefty amounts of ODA towards Pakistan in order to contain the soviet regime prevalent in Afghanistan. The aid deployed by the US was utilized to ensue insurgency in Afghanistan.

**Economic Motivations and Self-interest**

Economic motives and self-interest can be defined as the donor’s interest of benefiting from the recipient economy and to expand its trade in the economy. Much of the donor’s nations have a strong economic rationale behind implying aid to some region. For instance, Japan deploy aid to countries with the intention of promoting extensive private investments and acceleration of trade.

The increasing interest based donation to the developing countries hence qualifies for loans in spite of the consummate grants [interest-based loans now make-up over 70% of all foreign assistance, paralleled to less than 40% in the previous eras (1960s)]. During the past few decades the aid has inclined towards tying the exports of donor countries to the recipient countries as a result of providing the tying aid, this increasing phenomenon has captivated many least-developed countries (LDCs) with apparent debt repayment inconveniences.

**Why Developing Countries Accept Aid?**

It has been observed that until recently the recipient countries are also inclined towards the reception of foreign aid regardless of its restrictions and ties. However, no or less attention has been paid to the subject, majorly, the interest of donor has been the topic of debate in research on foreign aid. There are three reasons which can be identified as the factors why the recipient countries show eagerness towards the reception of foreign aid.

**Economic Reasons**

One of the major reason for the recipient countries to accept aid is clearly economic. Developing countries have uncritically assumed foreign aid as a crucial growth accelerating feature. From the recipient’s perspective the foreign aid increase the scarce domestic provisions, it helps transform the economy physically and assist in the achievement of economic self-sustainability to the developing economies. Therefore, it
becomes apparent that the economic rationale of the recipient country is a reflection of the donor’s perception of economic development in poor countries. The recipient economies therefore, do not negate the concept of foreign aid hence are more inclined towards achieving the maximum of it with minimum or no strings attached to it.

However, terms of repayment and debts ensue conflicts between the recipient and donor countries. The recipient countries prefer the unbound aid i.e. they do not consider long-term importance of the export tied aid.

**Political Reasons**

Some countries tend to perceive the aid as the tool to provide greater political leverage to the existing regime while diminishing the opposition and maintaining the existent regime in power for a long term, this phenomenon is prevalent in both, the donor and recipient countries. However, once the recipient country binds itself to the aid, it signs off its power of maintaining the countries sanctity to the donor country. The recipient countries become obliged to the terms and conditions set by the donor countries therefore, they remain unable to prevent the donor’s meddling in political or strategic affairs of the country. Afghanistan, Iraq, Egypt, Pakistan etc are among the recipient of foreign aid for political reasons.

**Moral Motivation**

The wealthy or financially sound elites consider it their obligation towards the poor to give some part of their money to them. The moral motivation in financial aid thus can be defined as the rich nations perceiving the help of developing nations as their moral and conscientious responsibility or obligation. This financial help extended from the developed nations towards the developing nations is imparted for the purpose of economic and social betterment of the developed nations’ poor counter-parts. The developed nations with the aim of creating financial independence for the developing economies grant the foreign aid. Example of this phenomenon was at the 1992 Earth Summit (UNCED) held in Rio de Janeiro where the developing nations expressed their need for the appraisal of foreign aid in order to enable the developing nations to initiate environmentally defensible programs. Also, the developed countries were accused of accelerating pollution, hence they morally were in no position to tell the LCDs to relax their accelerating growth in order to save the planet. Similarly, if the relationship between aid allocation and poverty is examined, even stranger results might be awaiting us.

**Evolution of the Foreign Aid: Background, Shifting Paradigms and Development**

Twentieth century was a period of great scientific advancement along with the massive destruction brought by two major world wars. The modern era development of foreign aid includes the effect of political reformation and the progress of development thinking (Akramov, 2006). Foreign aid originated in early 1940’s and increased after the World War II. As a result of the Second World War, an effort to recuperate the paralysed economical structure of Europe several initiatives were taken from which the concept of foreign aid originates. These initiatives include the Marshal Plan, the rebirth of League of Nations as the United Nations (UN), the establishment of International Bank for Development and Reconstruction, the modern day World Bank and the International Monetary Fund. The measures taken up as an effort to wrench the war-ravaged Europe towards stability became the origins of foreign aid which with passing times became and effective tool pronounce the US Foreign Policy globally. The inclusion of aid in US foreign policy resulted in
Foreign Aid gaining prominence as the resource to help the developing countries in their development from their rich world associates. However, this effort was entertained as US’s attempt at ceasing the developing countries from falling prey to Communism. (Kanbur, 2006) The Cold War era was mainly driven by introduction of a number of policies to contain the Communist regime. Marshall Plan, UN System including the IMF and World Bank had a dual agenda after supporting the poor countries financially. US initiated the financial aid to contain the wide-spreading Communist regime by supporting the poor or developing countries financially. Economists detect the apparent analytical disconnection between the means and objectives of foreign aid, such as Bauer (1971) and Friedman (1958) found the means of economic foreign aid inapt to the objectives of foreign aid. The debate on the foreign aid’s capability of initiating dependency and replacing the maturation of institutional development emerged. Frank (1996) claimed that the foreign aid is a resource limited to the reach of elites (only) in recipient countries.

In addition to it, the 1970’s is regarded as the era when evolution of foreign aid witnessed a period of exemption from the political influence with profound focus on the development of human kind by introducing many productive initiatives which include the Demographic and Health Surveys, International Development and Food Assistance Act and USAID’s expanding focus on sharing the technical expertise along with foreign aid. However, the balance-of-payment problems and mounting external debts altered the focus of foreign aid from basic human needs to the realm of macro-economic reforms and market liberalization.

The evolution of foreign aid has undergone many nucleus shifts, such as in 1950’s it was used to restrict the Communist regime, in 1960s and 1970s it focused mainly on development of productive sector and programmes while having the agenda of confining the Soviet influence. In 1980s the focus of foreign aid again rolled back to the state and its agencies whereas, in 1990s the economists have found the foreign aid’s focus shifting back again to the state to support political and economic transition in European states and the developing countries. The reallocation of foreign aid brought extensive prominence and powers to the International Monetary Fund (IMF) and the World Bank. The shifted focus of international aid was further exacerbated by the emergence of non-governmental channel (NGOs) which became source of dispensing the aid into their respective regions. Since the 1980s USAID and DFID exempted themselves from the independent allocation of international aid resources and started drifting towards the NGOs for implementation of aid. The growing trend of NGOs and their firm grip over the international aid can be gauged through the statistics which indicates that currently the USAID is associated in a work relationship with more than 3500 resources and 300 private charitable organizations. The foreign aid industry underwent three important changes in the next decade that is the 1990 where eastern European and former Soviet amalgamation emerged as the aid recipient nations, poverty solely grasped the attention of aid donors and the deteriorating socio-economic situation of former Soviet Union and eastern European states (Milanovic 1998). The quality governance of recipient countries gained consideration of donors as a necessary consequence of the aid and the focus again treated the elimination of poverty as the prior agenda of foreign aid which included introduction of various new schemes such as the New Poverty Agenda refusing to allocate aid to the countries where no significant changes occurred in terms of governance as an expected outcome of the foreign aid hence, rejecting the former agenda of initiating ‘friendly regime’ through allocating the international aid to developing countries. Thus the introductory four decades of foreign aid
agency endured significant shifts and underwent huge changes. The flickering nature of foreign aid welcomed the 21st century with its usual macro-economic policy reformation at nucleus with human needs revolving around it.

The twenty first century began with the Millennium Assembly taking place at United States in September 2000. The Millennium Assembly was the unification of major world leaders to determine the targets of the century to be achieved, mainly 18 targets and 8 goals were analysed known as the Millennium Development Goals (MDGs) as an effort of the conference for the betterment of humankind which entails the eradication of poverty, women empowerment, achieving necessary primary education globally, reducing child mortality rate, combating diseases such as the HIV/Aids, Malaria and Polio, ensuring sustainability and participation the development of the poor countries. However, after the attacks on September 11, 2001, ensuring global security became an important goal. To achieve this particular goal the world leaders joined hands with South Asian and African countries to fight the war on terror. As a result an enlightened donor emerged in the foreign aid agency aware of the importance of eradication of poverty and disease in the global fight against terror. A third significant change which shaped the present role of foreign aid agency emerged in 2002 when in International Conference on Financing for Development it was ascertained that the poor countries cannot sustain large capital investments because they lack the basic infrastructure, therefore the finances for economic development shall also be dispensed to the poor countries. Realizing the urgency and importance of the issue all the donor countries including the United States readily agreed upon the inclusion of aid for economic development in the existing foreign aid structure. The evolution of foreign aid underwent four apparent stages of economic and thinking progression. In the introductory decade of foreign aid largely focused the economic development of poor countries driven solely by the economic development theories of big push, take-off, stages of economic growth and economic dualism. These theories were developed by Rosenstein-Rodan (1943), Rostow (1956), Lewis (1954) the central argument in these theories emphasized the lack of capital and domestic savings as the main hindrance to economic development in the poor countries. As per Ruttan (1996), maximum number of developing countries lack both physical and human capital to draw private investment which leaves no other alternative for the developing countries except for the foreign aid as a source of capital.

The development of these theories and models was expanded further by Chenery and Strout (1966), McKinnon (1961) and others. According to them, the growth in developing countries underwent three stages of development known as the skill limited, savings-limited, trade-limited. According to the theorists the any two of these binding constraints can limit the growth to overcome which, foreign aid is the only solution ahead. This model portrays the foreign aid as a tool for the developing countries to invest more than their domestic savings allow them while justifying the need of technical assistance to developing countries as well. The further modification and advancement in the studies led to the emergence of the model of ‘dual gap’ on which the World Bank and donor agencies relied to determine the nature of donation for the recipient countries.

The modification of theories and the advancement of thinking in 1970s lead to the reaffirmation of existence of several dimensions in the economic development objective working hand in hand with the poverty alleviation, employment and income distribution. Under the influence of these observations an explanation of the transformation in the field of agriculture and the role of informal sector came into existence which highlighted the inter-dependence between economic and demographic developments and the determinants
of the rural migration. After these speculations were made the focus of foreign aid shifted from that of achieving economic development and stability to achieving agricultural and urban advancement. The World Bank and USAID sought to invest in agricultural projects, education and health and involved in direct transfer of technical assistance to benefit the poor recipient countries.

The third stage of foreign aid evolution encountered sudden rise of debts which started from the Mexican Financial Crisis of 1982, the financial crisis gave way to many factors such as the debt crisis and increasing budget deficits, Asian financial crisis, collapse of income and transition in transformation which became the driving force behind the transitioning objectives of foreign aid. The objectives of foreign aid now focused the achievement of macro-economic equilibrium both internal and external. With regressive research and the outcomes of debt crisis it was concluded that there should be only one core ‘market’ driving the foreign aid agency. Therefore the international development policy became the promotion of market oriented economic system. The main functions of the foreign aid now were assistance of developing countries in clearing off their debts, and implementation of appropriate macroeconomics and structural adjustment policies through conditional program lending. At end of the Cold War, in 1989, most aid has been targeted to promote economic growth in the developing and underdeveloped countries. During the 1990s, it was given with the aim to promote economic growth, encourage the development of democratic institutions, and provide for humanitarian needs. After the 9/11 attack, the United States began giving huge amounts of bilateral aid to countries cooperating with its fight on terrorism. Billions of US dollars have gone to newly allied countries such as Pakistan, Afghanistan and Iraq. For instance, since September 2001 Pakistan has received about USD 8 billion for cooperating in a fight against terrorism and about USD 3 billion for economic and development assistance (CAP, 2009).

The increasing research into the role of institutions in economic development and their impact on the aid allocated to the recipient countries marked the fourth stage of foreign aid evolution. The role of institutions and governments was taken into consideration with regards to the economic development policies and endogeneity. This stage of foreign aid evolution is marred by endogenous growth theory which identifies human capital bequest as the determining factor of the economic growth which might be achievable through the industrialization. As the result of advancement of thinking and development models, theories and policies the donors became aware of the need of an overall macro-economic policy, the donors came to realize the connection between the achievements of those policies is directly linked to the institutions and governments and thus they started allocating performance and result based foreign aid. Thus the current model of the foreign aid evolution is a result of the political changes, a rigorous series of changes occurring during the previous five decades and the current state of development thinking. Following table provides a helpful overview of the main developments in the history of modern foreign aid:

<table>
<thead>
<tr>
<th>Decade</th>
<th>Dominant or rising institutions</th>
<th>Donor ideology</th>
<th>Donor focus</th>
<th>Types of aid</th>
</tr>
</thead>
<tbody>
<tr>
<td>1940s</td>
<td>Marshall Plan and UN system (including World Bank)</td>
<td>Planning</td>
<td>Reconstruction</td>
<td>Marshall Plan was largely programme aid</td>
</tr>
<tr>
<td>1950s</td>
<td>USA, with Soviet Union gaining importance from Anti-communist,</td>
<td>Community Development</td>
<td>Food aid and Projects</td>
<td></td>
</tr>
</tbody>
</table>
mid 1950s | But with role for the state | Movement | Bilateral donors gave TA and budget support; multilateral donors gave project aid
---|---|---|---
1960s | Establishment of bilateral programmes and regional development banks (including ADB, AfDB and IDB) | As for the 1950s, with support for state in productive sectors | Productive sectors (e.g. support to the green evolution) and infrastructure
1970s | Expansion of multilateral donors (especially World Bank, IMF and Arab-funded agencies) | Continued support for state activities in productive sectors and meeting basic needs | Poverty, taken as agriculture and basic needs (such as health and education)
1980s | “Washington Consensus” and rise of NGOs from mid-1980s | Market-based adjustment (rolling back the state) | Macroeconomic reform and liberalization
1990s | Eastern Europe and FSU become recipients rather than donors; emergence of corresponding institutions (EBRD) | Move back to the state toward end of the decade | Support to political and economic transition, poverty and governance
2000s | Bilateral aid agencies expanded aid flows (especially USA, establishment of MCC) and surge in private aid (remittances) | Move toward performance based aid allocation | MDGs, global health (HIV/AIDS), security and governance

Source: Akramov (2006), p.16,

**Defining Corruption and Basic Concepts**

Klitgaard (1998) has given an extremely straightforward meaning of this multidimensional subject as: \( C = M + D - A - S \) where \( C = \) Corruption, \( M = \) Monopoly, \( D = \) Discretion, \( A = \) Accountability and \( S = \) Public area salaries. Put in an unexpected way, the level of debasement relies on upon the measure of imposing business model force and unlimited matchless quality that official’s activity and the degree to which they are considered in charge of their activities. The UN’s Dictionary of Social Science clarify as “Corruption out in the open life is the utilization of open force for private benefit, elevation of distinction or for the advantage of gathering or class, in a way that constitutes a rupture of law of norms of high good conduct” (1978:43). By International (TI-2009), debasement is the abuse of endowed political force for individual addition.

**Corruption in selected South Asian countries**

It is also very important to analyse the corruption rankings of the South Asian countries. Following table
Foreign Aid Effectiveness, Corruption and Economic Growth: A case study of selected South Asian countries (Muzammal Afzal)

<table>
<thead>
<tr>
<th>Country</th>
<th>Corruption ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>5.00 3.50 3.50</td>
</tr>
<tr>
<td>India</td>
<td>4.50 3.50 2.50</td>
</tr>
<tr>
<td>Pakistan</td>
<td>4.50 4.00 3.50</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>3.00 3.50 3.00</td>
</tr>
</tbody>
</table>

Source: PRS Group ICRG.

Foreign Aid Statistics and Patterns
The foundation of foreign aid encompass of Development Assistance Committee (DAC) countries also known as the donor countries, third world countries known as the recipient countries, World Bank, International Monetary Fund (IMF) and several private institutions. A general perception regarding the dispensation of the aid is that it will promote financial independence and domestic savings in the developing countries which will lead to a world based on equality and healthy competition however, the research regarding this specific are seems to contradict the widely celebrated view of foreign aid.

The ODA trends globally and in the Asiatic region have been victim of tremendous tumult. Development aid rose by 6.1 % in real terms in 2013 to reach the highest level of aid allocation, despite continued pressure on budgets on OECD countries since the global economic crisis. Donors provided a total of USD 134. 8 billion in net official development assistance (ODA), making a rebound after two years of falling volumes, as the number of countries stepped up their aid allocation. The largest donors by volume were United States, the United Kingdom Germany, Japan and France.

Developing countries receive more amount of foreign aid because of the poor growth performance but it is identified that this aid has contributed less in their development process. South Asian countries prove to be appropriate examples in this regard for they are receiving high aid flows. In South Asia total ODA flows in 2009 are 144.73 USD million (OECD, World Bank, 2009) although the annual growth rates of most of the South Asian countries are decreasing (ADB, 2010). If this aid is not causative to development process, then it might be weakening the governance of recipient countries by increasing the returns to corruption and by increasing the rent seeking activities (Djankov et al. 2008).

A cursory look at the aid statistics of past years assists in drawing sound conclusions regarding the efficacy of foreign aid therefore, data relevant to the scenario of this research both wide and narrow in scope has been provided in detail.

Top Ten Recipients of Gross ODA (USD million)
Table 1.1 highlights the top ten recipient countries of gross ODA;

| Top Ten Recipients of Gross ODA (USD million ) | | | | | |
|-----------------------------------------------|---------------------------------------------|
| Country                                       | Amount of ODA                                |
| 1 Myanmar                                     | 4171                                         |
| 2 Afghanistan                                 | 4164                                         |
| 3 India                                       | 3029                                         |
| 4 Vietnam                                     | 2902                                         |
| 5 Indonesia                                   | 2061                                         |
| 6 Kenya                                       | 1952                                         |
Economic Issues II (Edited by: Ş. İşıl AKGÜL, Selçuk KOÇ, Elşen BAĞIRZADE)

<table>
<thead>
<tr>
<th>No.</th>
<th>Country</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>3-year average</th>
<th>% of DAC countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>United States</td>
<td>8582</td>
<td>7134</td>
<td>7079</td>
<td>7598</td>
<td>31.00%</td>
</tr>
<tr>
<td>2</td>
<td>Japan</td>
<td>2432</td>
<td>3125</td>
<td>5103</td>
<td>3553</td>
<td>14%</td>
</tr>
<tr>
<td>3</td>
<td>Germany</td>
<td>2962</td>
<td>2810</td>
<td>3194</td>
<td>2989</td>
<td>12%</td>
</tr>
<tr>
<td>4</td>
<td>United Kingdom</td>
<td>2147</td>
<td>2176</td>
<td>3049</td>
<td>2457</td>
<td>10%</td>
</tr>
<tr>
<td>5</td>
<td>Australia</td>
<td>1664</td>
<td>2094</td>
<td>1720</td>
<td>1826</td>
<td>7%</td>
</tr>
<tr>
<td>6</td>
<td>France</td>
<td>1039</td>
<td>1017</td>
<td>1552</td>
<td>1203</td>
<td>5%</td>
</tr>
<tr>
<td>7</td>
<td>Canada</td>
<td>948</td>
<td>696</td>
<td>1059</td>
<td>900</td>
<td>4%</td>
</tr>
<tr>
<td>8</td>
<td>Korea</td>
<td>625</td>
<td>680</td>
<td>772</td>
<td>692</td>
<td>3%</td>
</tr>
<tr>
<td>9</td>
<td>Norway</td>
<td>661</td>
<td>641</td>
<td>753</td>
<td>685</td>
<td>3%</td>
</tr>
<tr>
<td>10</td>
<td>Sweden</td>
<td>532</td>
<td>529</td>
<td>634</td>
<td>565</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>Other DAC</td>
<td>2210</td>
<td>2020</td>
<td>2160</td>
<td>2130</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>countries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total DAC countries</td>
<td>23802</td>
<td>22919</td>
<td>27073</td>
<td>24598</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

The table mentioned above demonstrates the ODA statistics for years 2011-2013. The tables elaborate the countries which donated ODA to Asia by percentage and the net disbursements which headed towards the Asiatic region. United States of America tops the list of top ten donors by amount whereas Korea tops the list of top ten donors by share. The amount of disbursements however, seems to be falling down by the accession of each year for example; in the year 2011, amount of net disbursement by USA was 8,582 million USD whereas in the year 2013 it was 7,079 million USD. The net disbursement which Asia got
from USA as an average of these 3 years is 7,598 million USD. By amount the minimum ODA has been delivered by Sweden whereas, Finland has occupied the minimum number of ODA shares in Asia throughout these 3 years.

Table 1.3: Major ODA Recipients in Asia, amount in million USD

<table>
<thead>
<tr>
<th>No.</th>
<th>Country</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>3-year average</th>
<th>% of all recipients</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Afghanistan</td>
<td>6885</td>
<td>6726</td>
<td>5266</td>
<td>6292</td>
<td>16.00%</td>
</tr>
<tr>
<td>2</td>
<td>Vietnam</td>
<td>3596</td>
<td>4116</td>
<td>4085</td>
<td>3932</td>
<td>10%</td>
</tr>
<tr>
<td>3</td>
<td>Pakistan</td>
<td>3508</td>
<td>2019</td>
<td>2174</td>
<td>2567</td>
<td>7%</td>
</tr>
<tr>
<td>4</td>
<td>India</td>
<td>3228</td>
<td>1668</td>
<td>2436</td>
<td>2444</td>
<td>6%</td>
</tr>
<tr>
<td>5</td>
<td>West Bank and Gaza Strip</td>
<td>2442</td>
<td>2011</td>
<td>2610</td>
<td>2355</td>
<td>6%</td>
</tr>
<tr>
<td>6</td>
<td>Bangladesh</td>
<td>1490</td>
<td>2152</td>
<td>2669</td>
<td>2104</td>
<td>5%</td>
</tr>
<tr>
<td>7</td>
<td>Syrian Arab Republic</td>
<td>335</td>
<td>1672</td>
<td>3627</td>
<td>1878</td>
<td>5%</td>
</tr>
<tr>
<td>8</td>
<td>Myanmar</td>
<td>374</td>
<td>504</td>
<td>3935</td>
<td>1604</td>
<td>4%</td>
</tr>
<tr>
<td>9</td>
<td>Iraq</td>
<td>1908</td>
<td>1301</td>
<td>1541</td>
<td>1583</td>
<td>4%</td>
</tr>
<tr>
<td>10</td>
<td>Jordan</td>
<td>979</td>
<td>1417</td>
<td>1408</td>
<td>1268</td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td>Other recipients</td>
<td>13204</td>
<td>10205</td>
<td>14580</td>
<td>12663</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td><strong>Total ODA recipients</strong></td>
<td><strong>37948</strong></td>
<td><strong>33791</strong></td>
<td><strong>44330</strong></td>
<td><strong>38690</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Table 1.3 records the major ODA recipient countries and their statistics from the year 2011 up till 2013, whereas for a comparative analysis the previous records from year 1970 up till 2013 are also present.

Afghanistan has been ranked the highest ODA recipient in Asia receiving an ODA of 6885 million USD in 2011, 6726 million USD in 2012, and 5266 million USD in 2013. While Vietnam secures the second position as the ODA recipient country in Asia with receiving 3596 USD in the year 2011 and gradually upgrading up to 4116 and 4085 USD in the year 2012 and 2013 respectively. Pakistan is the third major recipient of the Asiatic region with an average ODA of 2567 million USD throughout these three years. Iraq and Jordan lies at the bottom of the ODA recipient list attaining an average of 1583 million USD and 1268 million USD from 2011 to 2013.
2. LITERATURE REVIEW


A study carried out by Chervin and Wijnbergen (2009) to find out the impact of volatility of aid flows on economic growth. The researchers conducted a four year panel analysis of 55 countries for the time period 1966-2001. The researchers used different indicators in the growth model to find out the effectiveness of aid and aid volatility, the indicators aid/GDP, aid volatility, stable macroeconomic indicators, and physical and human capital. When the data was processed it was found that foreign aid is positively related to growth only when aid volatility is curbed down while aid volatility has a negative effect on growth. Authors argued that problems such as the Dutch disease problem or by falling short-off to finance basic infrastructure projects are encountered as a negative impact of the aid volatility. Some other impacts of aid and aid volatility which came out as a result of the study includes the negative impact of aid and aid volatility of on investment and the positive impact on consumption.

Ekanayake and Chatrna (2008) conducted a study to analyse the effects of foreign aid on the economic growth of developing countries by using annual data on a group of 85 developing countries covering Asia, Africa, and Latin America and the Caribbean for the period 1980-2007. They tested the hypothesis using panel data series for foreign aid and found that for different time periods, foreign aid has a negative impact on growth while for different income levels; also has a positive effect on economic growth in developing countries.

Kwabena & Elizabeth (2008) investigated the idea of how foreign aid impacts the human capital formation in least developed countries with a focus on foreign aid’s impact on health and education. Researchers used the panel data of large number of developing countries and used dynamic panel data estimation to gauge the relationship. Using fixed effect and random effect models researchers found that foreign aid has a significantly positive relation with primary school enrolment and foreign aid to health sector decreases the child mortality rate in least developed countries. But in case of impact of foreign aid on primary education and health sectors separately, researchers found no empirical result of fungibility of aid to primary education and health sector. Calderon, Chong and Gradstein (2006) examines the effect of foreign aid on income distribution and poverty in aid recipient countries. In the study they analyse data in the light of cross-section and dynamic approach. The findings of study suggests that effectiveness of foreign aid is insignificant in terms of reducing or accelerating income inequality and poverty however, the study supports the idea that good institutions are necessary for the reach of foreign aid to poor.

Vasquez (1998) conducted a study using a sample of 73 countries from 1971 to 1995; he studied the effect of bilateral aid and multilateral aid and found that neither aid per capita nor aid as a ratio of GDP is positively related to economic growth. Rather, he found that aid as a percentage of GDP is negatively related to economic growth.
Keeping in view the relevant studies, question of what effect does foreign aid have on corruption in recipient countries arises. Understanding the effect of aid on corruption is crucial to explaining why aid has failed to promote social conditions and economic growth in the developing countries. Previous empirical studies have investigated the relationship between corruption and official development assistance (ODA) (Knack 2001, 2005; Knack and Rahman 2007). Some scholars have argued that there is a positive relationship between ODA dependence and corruption and have reported empirical evidence to support their respective claim. Tavares (2003), Tanzi and Davoodi (1998), Shang Jin Wei (1997a), Shang Jin Wei (1997b) Lane and Tornell (1996), Alesina and Foster (1999), Jacob Svenson (2000), Tanzi and Davoodi (1997) attempted to investigate the relation of foreign aid and corruption and found significant and positive results. On the contrary very few studies suggest that there is a negative relationship between foreign aid and corruption.

Okada, Keisuke and Samreth, Sovannroeun (2011) in their research suggested that foreign aid with condition reduces corruption in recipient countries. Okada, Keisuke and Samreth, Sovannroeun (2011) investigates the effect of foreign aid on corruption using quantile regression method. The estimation results shows that foreign aid is likely to reduce corruption and in particular its reduction effect is significant in countries having low levels of corruption. Considering the case of foreign aid by donors, the analysis indicates that while the reduction rate of multilateral aid on corruption is larger than bilateral aid from the world’s leading donors, such as France, the United Kingdom, and the United States, which shows no significant effect on corruption. However, bilateral aid from Japan is shown to be statistically significant in lessening corruption.

Some scholars have found empirical support for the notion which follows as, the more ODA a state receives relative to its GDP, the worse off their democratic and bureaucratic performance and corruption levels become (Knack 2001, 2004; Knack and Rahman 2007). For example, Knack and Rahman (2007) estimated the effects of several determinants of bureaucratic quality using the ICRG data and find that quality of bureaucratic services were negatively impacted as the proportion of a state’s ODA raised relative to GNP (Knack and Rahman, 2007).

The ways in which ODA could potentially exacerbate corruption and harm recipient governance has been well documented by Knack (2001, 2005). Knack presented the argument that when aid dependence increases, recipient states are expected to become less accountable for their own actions, and increases incentives for domestic corruption by increasing conflict over aid funds and essentially compensates for economic policies and weak government institutions by offering a ‘crutch’ (Knack 2001, & 2005).

Jacob Svenson (2000) attempted to find out the relation between foreign aid and corruption by using game-theoretic-rent seeking model to assess the effect of foreign aid on rent seeking. The study was based on data derived from 66 aid recipient countries. Estimation results concluded that instead of acting as a reform in the system, foreign aid actually increases the rent-seeking hence creating a deficit in public provisions.

Alesina and Foster (1999) conducted a statistical study in order to find out whether foreign aid reduces or pique corruption. Corruption indications were derived from ICRG, 1997 World Development Report, Standard and Poor, Business International, World Competitiveness Yearbook, and Transparency International. The study’s estimation results suggests that more corrupt government receives hefty amount of foreign aid instead of less. Estimation results also indicated that more foreign aid mean more corruption in recipient country.
Lane and Tornell (1996) in their study based on finding out the aid effectiveness on corruption deduces that foreign aid exacerbates the corruption in government. With the use of quantitative method the study suggests that foreign aid accelerates competition over foreign aid resources among the political faction hence induce corrupt analysis among government.

Corruption has an adverse impact on growth. Some of these growth effects have been statistically confirmed from cross country data. Empirical work on consequences of corruption includes Mauro (1995), Knack and Keefer (1995) and Lambsdorff (1999) Baretto (2001) and Aidt (2009). All of the research has shown a negative impact of corruption on growth. Rehmani and Yousafi (2008) examined the impact of corruption on inflation and found positive relation. Rehmani and Yousafi (2008) in their study “Corruption, Monetary Policy and Inflation: A cross country examination” gauged the impact of corruption on inflation incorporating growth rate of money supply. Researchers used cross sectional data of corruption, inflation and other control variables for 97 countries. Researchers using OLS technique, concluded that corruption has a significant and positive relation with inflation. Even after incorporating growth rate of money supply in the regression, estimation yielded the same results.

Baretto (2001) and Aidt (2009) focused on the role of corruption in economies where it is systematic i.e. linked with political institutions. The data set proposed by Mauro (1995) was used by the researchers which consisted of 58 developed and developing countries. Barreto (2001) examined the efficiency magnifying impact of corruption on economic growth. Aidt (2009) found that in economies where corruption is systematically linked with political institutions the corruption has positive effect on growth but at a decreasing rate (with better political institutions). Study also checked the impact of corruption on sustainable development.

On the basis of corruption ranking data by Business International correspondents in 70 countries, Mauro (1995), found a significant negative association between the corruption index and the investment rate or the rate of growth. He found that a one standard deviation improvement in the corruption index was associated with 3 percent increase in the investment to GDP ratio.

Lambsdorff (1999) conducted a cross country study to examine the impact of corruption on investment, GDP, institutional quality, government expenditure, poverty, international flows of capital, goods and aid and concluded that corruption adversely affect these variables. He argued that corruption reduced capital accumulation and lowers capital inflows by reducing a country’s attractiveness to international and domestic investors which. He also provide strong evidence that corruption has distorted government expenditure and reduced the quality of a wide variety of government services, such as public investment, health care, tax revenue and environmental control thereby inferring large welfare losses from corruption.

Using time series Brunetti and Weder (1998) investigate the impact of openness and democracy on the level of corruption in selected countries over intervals of time. The level of democracy, as reported by the authors show reductions in the level of corruption in South Korea, Paraguay and Bolivia, as measured by the PRS corruption index. Whether these results can be reproduced for Eastern European countries is doubtful. However, on conducting a cross-sectional analysis of the same study, the authors argue that all these indicators represent a form of “exit”, that is, the possibility for the citizens to “substitute” their country with a developing one. This variable contrasts to the chance of fighting corruption by control and participation (voice). It is suggested that this variable be measured by the extent of political rights, democracy and various measures of control over politics and bureaucracy. Also these variables are reported to carry a significant
impact on the level of corruption. Although some final conclusions are still pending it remains noteworthy that both exit and voice contribute to containing the level of corruption.

As complex relationship of foreign aid, corruption and economic growth is reviewed in the earlier sections, it is clear that these three have an impact on each other. Literature suggests that foreign aid which is given with a purpose of providing efficient public service delivery in recipient country. After such detailed review one obvious question rises in the mind of researcher such as what difference it has made? Has it fulfilled the purpose it was given? Some studies also question the fact that why more corrupt countries are given more aid. Following section entails the literature where complex relation of foreign aid, corruption and economic growth in recipient countries is addressed. Varinath (2009), Alessia and Fabrizio (2009), Alesina and Weder (1999), George and Kalyvitis (2004), Tavares (2002), Alesina and Dollar (2002), Gupta, Davoodi and Alonso-Terme (1998) explored the question of effectiveness of foreign aid and its impact on corruption and economic growth in recipient countries.

Another study conducted by Vanarith (2009) examined the effect of foreign aid on economic growth and corruption in developing countries. Using panel data from 67 countries from 1986-2005, in two fixed effect models, he found that, after controlling several other factors, aid has no positive effect on economic growth. However, aid is positively related to corruption. He suggested that aid should not be used in expectation of increasing economic growth of recipient countries rather should be used in improving the quality of governance.

However there is less evidence that foreign aid is granted to countries with good policies or with conditions of low corruption. Alessia and Fabrizio (2009) conducted a study to find the determinants of the relationship between aid and corruption by proposing a static principal-agent model. They covered a sample of 168 recipients and 14 donors for the period 1985-2006. They grouped donors into three categories on the basis of their allocation decisions. The first group allocated less aid to more corrupt recipients; the second category of donors did not seem to be influenced by the level of corruption in allocating foreign aid and for the remaining group, the aid-corruption relationship is positive. Thus there is no such evidence that more corrupt countries will necessarily receive less foreign aid. Alesina and Weder (1999) also confirmed their results by finding that more corrupt governments receive more aid.

Kwabena (2002) conducts a study to examine the impact of foreign aid on economic growth and economic distribution. Researcher used data from the African countries and a dynamic panel estimator to gauge the impact of foreign aid on economic growth and income inequality the dynamic panel estimator allows to obtain consistent estimates of the growth equation in the presence of dynamics and endogenous regressors. The paper indicates that poor are the worst victims of corruption. The results deduce that corruption decreases economic growth and serves as a catalyst to income inequality in the region.

Chang (2002) adopts a nonlinear instrumental variable method to deal with cross-sectional dependence and proves that Dickey Fuller/ ADF statistics are independent when instruments are consisted of lagged dependent variables. From this the researcher argued that the proposed test is valid for both the time series dimension and the cross-section dimension are large. However, in another study of Pesaran et al (2003), proved that the test proposed by Chang (2002) is valid only of cross sections are fixed and time in infinity. Pesaran et al using Monte Carlo experiment proved that Chnag’s test roughly over-sized for decent degrees of cross section dependence.

Literature available on the subject of foreign aid, corruption and economic growth. This section integrates both in favour and disfavour of the foreign aid, its impact on economic growth and
foreign aid’s impact on corruption. The literature review indicates how foreign aid generates a favourable environment for itself in the developing countries which ultimately leads to corruption. Section also highlights how some researchers against others have nullified the impact of foreign growth (if any) on corruption and economic growth of a developing country. However, a comparative analysis reveals that foreign aid does have a massive impact on a country’s corruption and economic growth, different variables, indicators and circumstances are likely to intensify or de-intensify its impact. The similar notion is attached with foreign aid’s negative and positive impact on a country’s economy.
3. THEORETICAL BACKGROUND

South Asia has attracted global attention for rapid economic growth because the subcontinent suffers from many growth-retarding issues—such as corruption, conflict, high fiscal deficits and political instability. According to Transparency International, Bangladesh is considered to be the most corrupt country in the world, yet its GDP continues to grow at 5 percent a year, with per-capita income rising at 3 percent a year. India, which accounts for nearly 80% of the regional GDP, and is the largest country in the region viewed as an emerging economic powerhouse. Remaining South Asian countries are also in a state of transition from low income to middle income. Macroeconomic stability, more open economy, financial deepening and many other variables have contributed positively to economic growth. Along with other variables, foreign aid is also an important determinant of growth in this region. Foreign aid is a source of unearned state income which is needed when a country becomes unable to raise its earned income through taxes (Moore, 2010). This aid dependence has very serious consequences on the governance and economic growth of recipient countries. Recently South Asia is receiving foreign aid to promote its human development and welfare. But foreign aid is found to have an inconclusive effect on growth (Boone, 1996). There are two opposite views regarding foreign aid effectiveness. Advocates of foreign aid argued that aid had a positive effect on economic growth as it would help to build human and physical capital while opponents of foreign aid concede that it affects growth negatively as foreign aid increases corruption in developing countries.

Researchers in existing literature argued that aid does not always have a positive impact on growth and in some cases; it actually has worsened the growth (Friedman and Bauer 1976). They have pointed towards the dependency effect of aid which does not allow the poor people to overcome the vicious circle of poverty and contribute to growth. For example, Boone (1996) found that despite increases in the amount of foreign aid in African countries, they experienced zero per capita economic growth in the 1970s and 80s.

Economists suggest direct and indirect mechanism through which foreign aid transfers could increase corruption in recipient countries. Aid can and does directly strengthen existing corruption patterns in situations where high levels of corruption are already rampant. There is no evidence that donors pay attention to institutional quality or corruption considerations in their aid allocation decisions. Research has found no systematic evidence that aid goes disproportionately to less corrupt governments. In fact, one study provides evidence that patterns of aid allocation by donors are more strongly dictated by the political and strategic interests of the donors than by concerns over low corruption in the recipient nations (Alesina and Dollar, 2002). Knack found that high levels of foreign aid are not only causing corruption in recipient countries but it also increases corruption as there are more resources for the concerned people to fight over (Knack, 2001; Brautigam and Knack, 2004). Following the aforementioned study pattern, Croix (2010) also found that aid given to developing countries with low productivity and poor institutions is “associated with higher levels of both corruption and optimal aid, leading to a positive correlation between aid and corruption” (Croix & Delevallade, 2010).

Foreign aid indirectly increases corruption by inducing an increase in the size of the government sector, which results in increasing opportunities for corruption. Aid transfers in a corrupt setting ultimately end up funding wasteful government spending that is falsely analysed as “development expenditures.” Boone showed that while aid does increase government consumption, this does not typically benefit the poor because money is wasted on expenditures that provide full opportunities for corruption and rent seeking, but do not typically generate any meaningful resource to boost growth. Foreign aid also increases corruption indirectly by allowing
the recipient government to reallocate resources. Donors often provide funding for projects that address specific needs in the country for which the recipient government has already assigned resources from its own budget. The influx of foreign funding makes it possible for the recipient government to reduce its own allocation of resources in the sector that receives the aid, and to reallocate those resources elsewhere. Therefore, it becomes easier for the officials to reallocate and hide some of the surplus funding into wasteful expenditures.

As foreign aid increases corruption, Mauro found corruption as an obstruction to economic growth; it misallocates productive resources, decreases investment, physical and human capital, and reduces economic efficiency (Mauro, 1995). Therefore, the relationship between corruption and economic growth can partly explain why billions of dollars of aid have not produced the expected effects. Corruption is found to have relationships with important determinant of economic growth. It hinders economic growth indirectly by decreasing investment as it increases the risks associated with making investments (Mauro, 1995). Mauro further argue that corruption acts as a tax on the returns to private investment hence reducing the quantity of investment and redirects scarce investment capital to less productive uses, thereby damaging the quality of investment. Corruption also affects negatively on growth by weakening political stability and lowering human capital accumulation. Mauro (1998) indicated that the effects of corruption on human capital, measured by ratio of public education spending to GDP and ratio of public health spending to GDP, is negative. He claimed that public officials do not want to spend more on education and health because those spending programs offer less opportunity for rent seeking. Corruption also lowers government’s revenue by reducing tax collection and increasing the size of underground economy thereby reducing the efficiency and growth of the economy. It also contributes to poverty by diverting public expenditures from health and education to expenditures on capital. It also increases the dependency on foreign aid as it affects the GDP growth of the country negatively by increasing inequality, poverty and reduces human capital formation (Tavares, 1999). In short, foreign aid affects economic growth negatively in most of the aid recipient countries because of the prevalence of corruption which severe the negative impact on economic growth.

It has been widely debated that the existence of rent seeking and corruption divert much of the economy’s resources to unproductive activity, also in and attempt to gain protection form rent seekers and corrupt government officials the external resources imported remain futile. As a result no significant outcome is achieved. An imperative conclusion of these studies focusing on the impact of foreign aid on an economy’s growth concede the technological advancement as the main driver of an economy’s growth. These drivers are mechanized by highly skilled and talented people. Now when the technological mechanism is handed over to rent-seekers akin to incompetent producers because of the unjust reward structure of the economy, the results manifest itself in the form of less or no innovation, technological stunt hence poor or no economic growth. Thus, ensuring a negative impact of rent-seeking and corruption on the economic growth of a country endorse by the studies. Thereby, with little empirical or theoretical emphasis the role of institutions on economic growth has been studied. The lack of pragmatic research and theoretical framework highlights the positive impact of corruption and rent-seeking on inflation which amounts to less or no significance.

The assumption that rent-seeking is an outcome of political manipulation or it benefits certain political groups and allies is also untrue. Since many rent-seekers disregard of any political affiliation seeks rent provided their varying ideological backgrounds. These people just lobby for
rents in government expenditures and their attempts result in an increment in the government expenditure.

The shifting cabinets and seizure of power by a new government brings with itself fresh opportunities of rent-seeking and corruption. The significant feature which garners attention here is that the rent-seekers are able to carry out their business from time to time and remains unaffected by the change of government as well. The effect of corruption on government expenditures, budget deficit, money supply, and inflation endorse this fact. A vital factor which endorses the unending corruption is that when there is the opportunity to make money via rent-seeking, the incentives surface enabling the good people to allocate their time and resources in to rent seeking for which they are obliged to maintain connections with the corrupt officials and higher government disbursements to continue their inflow of rents. The aforementioned reasons present a vivid scenario of why the efforts to end corruption remain futile and how the corruption cycle continues it rotation with no end to it as the changing governments and cabinets play a significant role in it. Therefore, the corruption remains tenacious in many developing countries despite major political and official turnovers. In addition to it the role of corruption in originating inflation remains of great concern. The inflation allows corruption to expand and progress by increasing government expenditures hence creating budget deficit which is financed by printing money.

However, there is an indirect channel through which corruption increase inflation rate. Since the growth rate of GDP is lower when corruption and rent-seeking is higher and since the inflationary effect of the growth in the money supply is higher when the growth rate of GDP is lower, the higher the inflation rate the higher corruption. Corruption is not a cultural or political phenomenon, although cultural, political, institutional and even religious environment can influence its extent. It is an economic phenomenon and the result of rational economic behavior to take advantage of the opportunity that is provided by excessive government interference in the economy.

Role of Foreign Aid

Intense debate has been ensued regarding the role of foreign aid in the growth process of developing economies. Economic effect of foreign aid and effect of private foreign investment both the issues have been laden with disagreements. Foreign Assistance Exertionists claims one side of the debate by arguing that the foreign aid assistance has indeed helped the Lesser Developed Countries in their economic growth and financial stability. For instance, Rehana Siddiqui (2001) Fayissa and El-Kaissy (1999), Dowling and Hiemenz (1982), Burnside and Dollar (2000) and Levy (1998) found the results of their research on role if foreign aid in LDCs positive, i.e. that the foreign aid hampers economic growth in developing countries. Whereas, the Non-Exertionists oppose the idea by claiming that foreign aid assist the developing countries. Instead they argue view foreign aid as an agent influencing the LDCs negatively. The Non-Exertionist argument reveals foreign aid as a tool for substituting the economic dependence of LDCs rather than augmenting the investment and domestic savings. Vasquez (1998), Islam (2002), Duc (2006), Adam and O'Connell (1999), Calderon, Chong and Gradstein (2006), Chervin and Wijnbergen (2009), Angeles and Kyriakos (2006) and Dalgaard and Hansen (2004) found foreign aid to be negatively related to growth.

The Non-Exertionists argument also concedes that corruption is likely to accelerate corruption in the regions it is affluent. However some of the existing literature found the mixed results of foreign aid on economic growth also by exacerbating LDC balance of payments deficits as a result of rising debt
repayment obligations and the linking of aid to donor country exports. These arguments are given below in detail:

**Foreign Assistance Extensionist School of Thought**

Hollis Chennery (19916) is the founder of Extensionist School of thought. In the form of Two Gap Model Chenney (1996), has established a steady foundation of foreign aid briefly. The Two-Gap Model is given below:

Hollis Chennery and other writers have put forth the “two Gap” approach to economic development for the case of development as to how much foreign aid is required in future. It is the most explicit and well-set model for the attainment of self-sustained growth with the help of foreign aid.

- **How Aid helps in Development**

Rehana Siddiqui (2001) underlined non-ideal usage of outside help for Pakistan and translated it as a practical and forthcoming element for higher development, if full scale and miniaturized scale level endeavors are made for ideal use of remote help. Making and supporting institutional situations with responsibility and straightforwardness that are helpful for development (Heckelman and Knack, 2008) Directly expanding development in vicinity of good financial, exchange and money related arrangements (Burnside and Dollar, 2000). Likewise, the accompanying ten noteworthy components, laid out by Ahmed and summers (1992), must be kept in perspective: • Systematic deduction is significant to maintain a strategic distance from awful loaning choices.

- There ought to be close observing of how credit continues are spent.
- Those quitting the global budgetary framework for the most part do more terrible.
- Good national strategies are important for financial recovery and access.
- Economic conformities require some serious energy and maintainability of changes ought to be mulled over.
- There is a convincing requirement for authority activity to beat the free-rider’s issue through purposeful loaning and/or obligation diminishment.
- Without authority activity, obligation issues rot with shocking result for both account holders and the loan bosses.
- Debt decrease is now and again essential yet never adequate to restore outside practicality.
- Building hazard sharing possibilities into money related contracts is significantly less immoderate than renegotiating contracts when things turn out badly. Outer account for venture that comes to low-pay nations must originate from authorized officials.

The current literature quoted above recommends how aid will help beneficiary nation enhancing open administration conveyance. The positive part of aid can be communicated as taking after:

i. To avoid Starvation and Malnutrition:
ii. To Invest More than Savings
iii. Capital Formation and Vicious Circle of Poverty
iv. Cheaper Funds
v. Mechanical Progress
vi. Foundation of Basic Heavy Industries
vii. Establishment of Risky Ventures
viii. Increase in Employment Opportunities
**Non-Extensionist School of Thought**


- Awful arrangement structure, Low starting level of human capital and compassionate guide (Malik, 2008; Burnside and Dollar, 2000).
- Diminished reserve funds and speculations (Lehmann et al., 2009).
- Unwind government’s expense raising endeavors and build the utilization of government (Adam and O’Connell, 1999; Burnside and Dollar, 2000). Moore (2010) discovered foreign aid as a successful wellspring of unmerited state salary which is required when a nation gets to be not able raise its pay through expenses. This aid reliance has intense outcomes on the administration and development of beneficiary nations.
- Poor institutional quality and defilement (Walle, 2007; Duc, 2006).
- (Calderon, Chong and Gradstein 2006) bolsters the thought that great foundations are important for the span of aid to poor.
Open venture is effortlessly controlled by effective political or bureaucratic identities, which regularly brings about ascent to the 69analyzed6969 of higher “commissions” by the individuals who do the task (Tanzi and Davoodi 1998)


Talent (2001, 2005) introduced the contention that when help reliance increments, beneficiary states are required to end up less responsible for their own 69analyzed69, and expands impetuses for residential defilement by expanding strife over aid reserves and basically makes up for monetary arrangements and powerless government foundations by offering a “prop”

How foreign aid hampers development: Negative part of aid in the improvement of creating nations is given beneath:

**Debt Servicing**
There is a weight of obligation administration (reimbursement of main and enthusiasm) for improvement advances. There has been a dynamic ascent in the proportion of obligation to the GDP of creating nations from around 20 percent in the mid-1970s to more than 40 percent in 1990.

**Source Tied Aid is Expensive**
Country tied aid forces a financial expense on the beneficiary if costs in the giver country are higher and the innovation typifying into capital imports is excessively best in class and in this manner wrong for a creating country in monetary terms. Help is costly if the giver does not pay cash rather conditions buy of products, the target of the contributor appears not to give credit but rather to advance its fare. For instance, if Pakistan takes advances from United States and United States forces a condition that Pakistan will need to buy F-16s at any cost. So also costs are given to Pakistan for buy of embellishments too.

**Bilateral Aid is Politically Motivated**
There is an issue that once help is acknowledged, the capacity of beneficiary governments to remove themselves from inferred political and monetary commitments of contributors and keep benefactor governments from meddling in their interior undertakings can be incredibly decreased. A few times IMF or World Bank forced condition on beneficiaries to expand utility costs, charges, so that the beneficiary would have the capacity to reimburse main and enthusiasm to these foundations. Which might thus hamper nearby formative exercises and social welfare level of the general public.

**Unsuitable Models of Development are Imported**
With foreign aid, some of the time unsatisfactory outlandish models of improvement are transported in. Additionally, numerous a period the created nations train labor of LDCs as indicated by circumstances of created nations, which can’t perform a dynamic part in their own particular nations. Alongside this the created nations have progressed in innovation as per their own particular needs. Be that as it may, when such innovation is foreign made by creating nations, it gets to be hard to completely use the innovation. The beneficiary nation goes under the substantial impact of benefactor nation, which can’t be stayed away from in any circumstances.

**Social and Political Tensions**
Foreign aid has hugely affected the socio-political existence of creating nations. It has helped the rulers to extend their limbs to delay their standard and to smother restriction. Along these lines aid advances social and political pressures and in the long run it could bring about ending
financial improvement of a creating nation. This undue expanding pattern of the contributor nation meddling in the political and monetary issues of the beneficiary nation might put its power and confidence in question.

Too Much Dependence on Aid
As a result of foreign aid, a beneficiary nation’s reliance on contributor nations increments exorbitantly. Aid renders a beneficiary nation powerless against obstruction by contributor nations. Help is generally attached to the benefactor nation’s fares and beneficiary nations are compelled to import these products from giver nations. Later on extra parts and substitution apparatus are required to be foreign made from the same contributor nation. Beneficiary nations need to satisfy conditions forced by benefactor nations. Along these lines by tolerating foreign aid, a beneficiary nation turns out to be intensely subject to giver nations.

Reduction in Savings
By examinations made by Griffin and Enos (1970), expressed that for 32 help beneficiary nations, 25 percent of aid results in expanding speculation and imports and 75 percent of aid is spent on shopper products. Along these lines aid results in diminishing local reserve funds as it is utilized as a substitute for local investment funds. A few pundits question their discoveries. On the other hand, they assert that a piece of aid as opposed to being utilized for speculation is utilized for consumption. Jose Taveres (2002) conducted a research to find out the impact of foreign aid in corruption. The researcher used data from International Country Risk Guide (ICRG) and conducted a survey based on certain indicators used widely in economic literature. In an effort to find out the aid’s impact on corruption the researchers found that the aid have a significant impact on the corruption and both the terms are interlinked in their function and nature. Many significant conclusions were drawn by this research.

Figure 3.2: How Foreign Aid Decreases Economic Growth
- **Government Size and Decentralization**
  Government association in private markets is normally seen as a wellspring of defilement. This effect shows up verging on tautological: the abuse of open force will increment with the degree of open force. Such a tautological relationship would be acquired if the Corruption Perceptions Index is misshaped towards nations with an extensive government offer, evaluating more debasement in nations with a bigger open part. With vast governments, fixes to open workers may build in respect to firms’ incomes. This may affect respondents to studies on debasement to survey more elevated amounts of defilement in nations with a bigger open part. It has in this way been proposed that the general size of the legislature spending plan in respect to GDP might be emphatically corresponded with levels of defilement.

- **Institutional Quality**
  Broadmann and Recanatini (1999) show for an example of move economies in Europe and Central Asia that higher obstructions to market section lead to higher defilement. Djankov et al. (2002) are just as worried with the way of section regulation. They decide the quantity of systems required for beginning another business for a cross area of 71 nations, close by with the essential time and authority costs. The creators locate a solid connection of these variables with a nation’s level of defilement for an assortment of particulars and control variables. This effect of defilement backings the contention that section regulation frequently does not serve to revise for business sector disappointment but rather achieves issues of its own.

- **Conclusions on Consequences**
  In a late influx of exact studies the reasons and outcomes of defilement have been researched on the loose. It can be presumed that debasement obviously obliges a low GDP, imbalance of salary,
swelling, expanded wrongdoing, arrangement twists and absence of rivalry. The heading of causality for these pointers, on the other hand, is dubious. Defilement might bring about these variables however is in the meantime liable to be their result too. This proposes nations can be caught in an endless loop where debasement brings down salary, expands disparity, expansion, wrongdoing, approach bends and helps imposing business models to the detriment of rivalry. These improvements thusly heighten defilement. There is a substantial weight set on instrumental variable strategy in attempting to unravel these shared conditions.

There is solid proof that defilement brings down a nation’s engaging quality to global and local financial specialists. This diminishes capital aggregation and brings down capital inflows. Likewise the efficiency of capital experiences debasement. There is similarly solid proof that defilement bends government consumption and diminishes the nature of a wide assortment of taxpayer driven organizations, for example, open venture, social insurance, charge income and ecological control. This supports extensive welfare misfortunes result from debasement.

Foreign aid in a roundabout way builds defilement in economies with poor institutional quality, by instigating an expansion in the measure of the administration segment, increments help designation for erroneously marked improvement consumptions (Boone, 1996), which thus expands open doors for debasement (Adam and O’Connell, 1999; Burnside and Dollar, 2000; Economides et al. 2004). Moyo (2009) found that “foreign aid is fungible – effortlessly stolen, diverted or separated – which encourages defilement” (Moyo, 2009). Castrillo (2011) discovered aid expands debasement in economies with low responsibility and poor observing framework, which permits the procurement of assets “off” seeing natives.

**Figure 3.3:** Foreign Aid and Corruption

As foreign aid expands debasement, defilement is found as a hindrance to financial development as it misallocates beneficial assets, diminishes venture, physical and human capital, and decreases monetary effectiveness (Mauro, 1995). Along these lines, the relationship in the middle of defilement and financial development could somewhat clarify why billions of dollars of help have not created the normal impacts.
Debasement is found to have associations with critical determinant of financial development. It obstructs financial development by implication by diminishing venture as it expands the dangers connected with making speculations (Mauro, 1995). Mauro contended that defilement goes about as a duty on the profits to private speculation thus decreasing the amount of venture and diverts rare speculation funding to less beneficial uses, in this way harming the nature of speculation. Debasement additionally influences contrarily on development by debilitating political steadiness and bringing down human capital aggregation and expanding the measure of underground economy (Mo, 2001; Gyimah and Camacho, 2006).

**Figure 3.4**: Corruption and Economic Growth

From the aforementioned experimental linkages, a hypothetical model to appraise the relationship between aid, monetary development and debasement taking into account neo-established generation capacity with human capital is broke down which fuses the essential variables of the model.

**Theoretical Model**

Study will use a neo-classical model of economic growth which
explicitly assumes human capital presented by Mankiw, Romer and Weil (MRW) (1992). The general form of the production function is:

\[ Y = f(K, H, AL) \ldots \ldots (I) \]

Where \( Y \) denotes the output level (real GDP), \( K \) denotes the amount of capital, and \( H \) denotes human capital and \( AL \) is productivity augmented labor. Assuming constant technology, any increase in the amount of labor and/or physical and human capital will increase the level of output in the economy.

Model used in this study is developed by Ahmadi-Esfahani (2007). The model uses the MRW production function and incorporates corruption in the Solow model as a determinant of multifactor productivity. The model assumes that corruption and foreign aid also affect the output level and growth in the economy (Economides et al., 2004; Farida and Ahmadi-Esfahani, 2007).

Economides et al (2004) incorporated foreign transfers (Foreign aid) and rent seeking (Corruption) into the model of economic growth. Following are the key features of the model used by Economides et al (2004): (a) Domestic tax revenues and foreign transfers in the shape of foreign aid are used to finance the delivery of public services. (b) Only a segment of foreign aid is actually opted as the public service delivery finance. The rest of it can be used for self-interest by the people in power. (c) Extraction comes at some private cost in shape of time and effort. So each individual (household) optimally chooses between the time and effort invested for rent seeking (in addition to consumption and saving) and productive work. (d) The economy of recipient country is so small that it has to take the rest of the world as given. The only link between the recipient and rest of the world is foreign transfers.

Foreign aid is expected to increase the output by providing funds necessary to produce it. Model assumes a small growing open economy which produces only one good and only one source of its finance i.e. foreign aid. In such, a country is an aid recipient economy. But only a part of these funds will be used to finance public good, the rest of them will be extracted by self-interested individuals and therefore, will create a space for corruption. So, foreign aid will not only affect output and growth, but also the corruption in the recipient economy. Corruption is expected to have a negative impact on output and growth. If corruption influences growth then if one of the physical inputs in the production function suffers a quality loss in the presence of corruption, then this will also affect growth and the steady state level of output. Output is produced with a well-behaved neoclassical production function with positive and strictly diminishing marginal product of physical capital. The Inada conditions assure that the marginal products of both capital and labor approach infinity as their values approach zero, and approach zero as their values go to infinity. The functional form of the production function is Cobb-Douglas:

\[ Y_t = K_t^\alpha H_t^\beta [ G_t (\rho) L_t ]^{1-\alpha-\beta} \ldots \ldots (II) \]

where \( Y_t \) is the aggregate level of real income, \( K_t \) is the level of physical capital, \( H_t \) is the level of human capital, \( L_t \) is the amount of labor employed, \( G_t \) is the level of government expenditure, and \( \rho \) is the level of corruption in the country, where \( G'(\rho) < 0 \). Let \( 0 < \alpha < 1, \ 0 < \beta < 1 \) and \( \alpha + \beta < 1 \). These conditions ensure that the production function exhibits constant returns to scale and diminishing return to each point. Time is indexed by the continuous variable \( t \). With the omission of the corruption term, the model yields standard neoclassical results. That is, the growth rate of output per worker is accelerated with increases in investments in physical capital and decreases in population growth, depreciation rate of capital, and the initial level of output per worker (Farida and Ahmadi-Esfahani, 2007, pg. 7).

The steady state equations are:

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\[
\frac{dK}{dt} = s_K Y_t - \delta_K K_t \ldots \ldots \quad \text{(III)}
\]
\[
\frac{dH}{dt} = s_H Y_t - \delta_H H_t \ldots \ldots \quad \text{(IV)}
\]
where \(s_K, s_H, \delta_K\) and \(\delta_H\) are parameters that represent, respectively, shares of income that are allocated to human and capital investment, and depreciation rate of human and physical capital.

Population is exogenously determined. To allow for specificity in the government expenditure function, let,
\[
G_t (p) = G_t e^{-\gamma p} \quad \text{where} \quad 0 \leq p \leq 1, \quad \text{and} \quad G_t = G_0 e \quad \ldots \ldots \quad \text{(V)}
\]
The parameter \(\rho\) is the index of corruption (ICRG). \(\gamma\) determines the magnitude of the effect of corruption on government expenditure. Conventional government expenditure \(G_t\) is exogenous and grows at rate \(g\). Corruption hampers economic growth by acting as an offsetting force to the efficiencies obtained through improvements in multifactor productivity. Corruption has a negative impact on physical and human capital and output per worker. Lower levels of output necessitate a lower level of investments since investment rates are fixed. This will result in a lower level of investment that further contributes to lower levels of output. Hence, there is a negative effect on the growth of output per worker.

The model discussed above proposed by Ahmadi-Esfahani (2007) captures the effect of corruption on economic growth through incorporating rent seeking with multifactor productivity on production function. Incorporating corruption in the production function will capture the corruptive tendencies within the recipient government but it will also capture the corruption effect in the donor governments/ agencies. Hence, this model can be modified to gauge the effect of corruption on economic growth not only through its impact on government expenditure but also its impact via affecting the foreign aid and investment. Therefore, equation (II) can be reproduced in two additional forms:
\[
Y_t = K_t^\alpha H_t^\beta \left[ F_t(p) L_t \right]^{1-\alpha-\beta}
\]
\[
Y_t = K_t^\alpha H_t^\beta \left[ I_t(p) L_t \right]^{1-\alpha-\beta}
\]
Recall equation (II), and replace \(G\) (government expenditure) with \(F\) (foreign aid), then we have
\[
F_t\left(\rho\right) = F_t e^{-\gamma f p}
\]
\[
I_t\left(\rho\right) = I_t e^{-\gamma f p}
\]
\(\gamma\) determines the magnitude of the effect of corruption on foreign aid and investment.

From Theory to Testing:
The following linear regression forms from the above model will be used:
\[
\text{GDP} = f \text{(aid, corruption, control variables)}
\]
\[
\text{Aid} = f \text{(human capital, economy indicators, control variables)}
\]
\[
\text{Corruption} = f \text{(aid, control variables)}
\]

To sum up, in order to examine the effectiveness of foreign aid and its impact of on economic growth and corruption, the model based on neoclassical production function is most suitable. This section establishes the theoretical background of the research. It starts with briefing on the history of foreign aid; how it originated and evolved throughout the time. Different theories from classical to neoclassical to modern and existentialism with regards to foreign aid, corruption and economic growth have been covered in this section. This section outlines the efficacy of foreign aid based on theories while simultaneously representing the inefficacy of foreign aid in the light of economic theories. In summation, the chapter presents all the theoretical views tied to foreign aid. The chapter also attempts to explain the relationship between foreign aid and corruption and...
foreign aid and economic growth. The chapter discusses all the indicators and conditions which are generated by availability of foreign aid while discussing the circumstances and pointers which generate a need for the foreign aid. The chapter is a preface to research in terms of the detailed accounts it entails hence providing the reader a foundation for just analysis and evaluation. Theoretical relation between proposed variables based on the empirical studies defines the manner by which these variables are related to each other. These suggested links along with the hypothesis of the study are used to determine the appropriate methodology for empirical testing of the aid-corruption-growth nexus.

4. RESEARCH METHODOLOGY

Existing literature on foreign aid and corruption has focused developing world at large. This study focuses on four major developing countries of South Asia; Pakistan, India, Bangladesh and Sri Lanka. This study will use data of macroeconomic indicators starting from 1984 to 2014. Since panel data deals with different cross sections over the time, it is expected that results avoid the problem of heterogeneity. Panel data techniques are constructed in a way that it allows individual-specific variables to deal with heterogeneity. When time series and cross sectional observations are combined it results in more informative data, less collinearity and more degrees of freedom hence efficient results. Panel data allows to investigate the cross section observations which suits to study the dynamics of change. Panel data minimizes the bias that might occur if we aggregate individuals into wide-ranging aggregates (Baltagi 1995). OLS estimation on panel data produce estimates which are biased due to the correlation of unobserved variables with the error term. There are many techniques to tackle the factor of unobserved effects in panel data model i.e. Fixed Effect, Random Effect, First Differencing Method etc. Unobserved heterogeneity refers to the correlation between observed variables and the unobserved variables (Baltagi, 2008).

Assuming that the unobservable variable being constant and having a constant partial effect on time is important in the following analysis. In panel data analysis, a time constant, unobserved variable is called unobserved effect. However there are several methods to eliminate the latent variable with fixed effects method, random effect and first differencing method. Fixed effect method argues that an unobserved variable is to be estimated for each cross section. Jaffery M Wooldridge in his books “Economometric analysis of cross section and panel data (2010)” and “Introductory Econometrics (2009)” discusses which is more suitable method to eliminate the effect of unobserved variable with different number of cross section and time series. Author states “When T is large and especially when N is not very large for example in this study T=30 and N =4 research must exercise caution in using the fixed effects estimator”. Although exact distributional results hold for any N and T under classical fixed effects assumption, inference can be very sensitive to violations of the assumptions when N is small and T is large. It may result in the spurious regression. With application of first differencing method it is more appealing to central limit theorem even in cases where T is large and N is small.

This study has a balanced panel as it has same time periods for each cross section observation. The data set consists of large number of time series (30) and small number of cross sections (4). As Wooldridge (2009) suggests that it is more appropriate to use first differencing method than fixed effect. Both First differencing method and random effect techniques will be applied on the data in order to satisfy the traditional way of dealing with panel data.

Following is the basic unobserved effects model in a simple form;

\[ Y_{it} = X_{it}\beta + \mu_{it} \]

\( t=1,2,3, \ldots, T \)
Where $C_i$ is unobserved component or latent variable. In many methodological papers there is a discussion about whether to treat $C_i$ as fixed effect or random effect. Or in other words whether $C_i$ should be viewed as a random variable or as a parameter to be gauged. So in traditional manner to panel data models when $C_i$s treated as random variable it is called random effect and fixed effect when it is treated as parameter to be estimated for each cross section observation. There are many ways to eliminate the effect of $C_i$ and estimate the consistent parameters. One of the many models is pooled ordinary least squares (OLS). This method incorporates the unobserved factor as a part of error term.

Random Effects:

Pooled OLS comes with its own problems of failing to provide accurate results. Random effects (RE) model as with pooled OLS puts $C_i$ into the error term along with imposing some more assumption.

Assumption RE I:

$y_{it} = x_{it} \beta + \nu_{it}$

$E(\nu_{it} | x_{it}) = 0 \quad t=1,2, \ldots , T$

Where

$\nu_{it} = C_i + \mu_{it}$

Assumption RE II

$\text{Rank } E(X_i' \Omega^{-1} X_i) = K$

Second assumption is that the idiosyncratic errors are serially uncorrelated: $f$

$E(\nu_{it}^2) = \sigma^2 \quad t=1,2,3, \ldots \ldots T$

Assumption III:

(a) $E(\frac{\nu_i u_{it}}{x_{it}}, C_i) = \sigma^2 IT$

(b) $E(\frac{C_i^2}{x_{it}}) = \sigma^2_i$

Assumption III (a) assumes that conditional variances are constant and conditional variances are zero. Assumption III (b) is homoscedasticity assumption in the unobserved effect.

First Differencing Method:

First differencing is another econometric method to eliminate the effect of latent variable.

First differencing method is another way to eliminate the effect of latent variable. First differencing method has certain assumption which are given below:

Assumption FD I

For each cross section $i$, the model is

$y_{it} = \beta_i x_{it} + \beta k x_{it} k + C_i + \mu_{it} \quad t=1,2, \ldots , T$

Where the $\beta_i$ are the parameters to estimate and $C_i$ is the unobserved effect.

Assumption FD II

Random Samples are drawn from the cross section.

Assumption FD III

Each explanatory variable changes over time for atleast some cross sections and no perfect liner relationship exist among the explanatory variables.

Assumption FD IV
Foreign Aid Effectiveness, Corruption and Economic Growth: A case study of selected South Asian countries

(Muzammal Afzal)

For each t the expected value of the idiosyncratic error given the explanatory variables for all time periods and the unobserved effect is zero:

\[ E(\mu_{it}|ci) = 0 \]

Assumption FD V

\[ \text{Var}\left(\Delta\mu_{it} | Xi\right) = \sigma^2, t = 2,3, I.T \]

Assumption V ensures that differenced errors are homoscedastic.

The variance of the differenced errors, conditional on all explanatory variables is constant.

Assumption FD VI:

\[ \text{Cov}(\Delta\mu_{it}^{t'}, \Delta\mu_{is}^{s'}) = 0 \quad t \neq s \]

For all\( t \neq s \) the difference in the idiosyncratic errors are uncorrelated (conditional on all explanatory variables). Assumption VI states that differenced errors are serially uncorrelated.

Assumption VII:

Conditional on \( Xi' \), the \( \Delta\mu_{it} \) are independent and identically distributed normal random variables. In simple words the FD estimators are normally distributed and \( t \) and \( F \) statistics from pooled OLS on the differences have the same \( t \) and \( F \) distribution.

Hausman Specification Test

Since the key consideration in choosing between a random effects and fixed effects approach is whether \( c_i \) and \( x_{it} \) are correlated, it is important to have a method for testing this assumption. Hausman (1978) proposed a test based on the difference between the random effects and fixed effects estimates. The Hausman test is the standard procedure used in empirical panel data analysis in order to discriminate between the fixed effects and random effects model. Raymond O'Brien Eleonora Patacchini (2006). In a series of papers by Durbin (1954), Wu (1973, 1974) and Hausman (1978) tests were proposed that can be applied to the problem of detecting endogenous regressors.

Since FE is consistent when \( c_i \) and \( x_{it} \) are correlated, but RE is inconsistent, a statistically significant difference is interpreted as evidence against the random effects assumption RE.1.

The test evaluates the consistency of an estimator when compared to an alternative, less efficient, estimator which is already known to be consistent. It helps one evaluate if a statistical model corresponds to the data. Under the null hypothesis, both of these estimators are consistent, but \( b_1 \) is efficient (has the smallest asymptotic variance), at least in the class of estimators containing \( b_0 \). Under the alternate hypothesis, \( b_0 \) is consistent, whereas \( b_1 \) isn’t.

\[ H = (\beta_1 - \beta_0)'(Var(\beta_0) - Var(\beta_1))(\beta_1 - \beta_0) \]

Ho: difference in coefficients not systematic

Ha: Difference in the coefficients is systematic

The decision to accept or reject the Ho is based on the value of Prob>Chi^2. If the value of the statistics is less than 0.05 we reject Ho. Which means the difference in the coefficients is systematic and we use prefer fixed effect estimation.

This study tests the hypothesis that foreign aid given to countries of South Asia has a positive impact on the human capital and structural growth. This study also examines the aid, growth and corruption nexus for four south Asian countries i.e. India, Pakistan, Sri lanka and Bangladesh. Since this study is cross country analysis panel data techniques is employed. Both first and second generation panel data techniques are used in this research. First generation panel data techniques i.e. first differencing and random effect are used to test the hypothesis. The reason for
second generation methodology is the dependence of cross sections (Pakistan, India, Srilanka, Bangladesh) based on similar social, cultural and historical trends. However first generation panel data technique are also employed in order satisfy the traditional econometric methodology.

**Model Specification**

The study estimates two models separately developed by the Chheang (2009). First model estimates the joint effects of foreign aid and corruption on economic growth and the second model estimates the effects of foreign aid on corruption. The general and estimation forms of the models are as under:

**General Form of Growth Model:**

This model estimates the joint effect of foreign aid and corruption on economic growth. The model tests two hypotheses. First, foreign aid is effective in increasing growth of south Asia and second, nature of the relationship between foreign aid, corruption and economic growth. The model predicts that foreign aid transfers exert a positive impact on economic growth rates which are mitigated by the negative impact of corruption in the sample region. The effectiveness of foreign aid will be tested through series of equations. Equation 4.3 and 4.4 will gauge the impact of foreign aid on per capita gross domestic product and per capita foreign direct investment received.

**Growth Equation**

The following growth equation, based upon the model, are analysed:

\[ y = f(k, Cor, A, X) \]

Where

\[ y \] is real per capita gross domestic product; \( k \) denotes the capital labor ratio; \( h \) is human capital; Cor and A denotes Corruption and aid variables, respectively, and \( X \) denotes the set of other variables that may affect real per capita GDP. \( X \) will include other control variables like population, government size, and life expectancy.

**Per capita growth equation for estimation:**

\[ g_{i,t} = \alpha_0 + \alpha_1 Cor_{i,t} + \alpha_2 NODA_{i,t} + \alpha_3 PCFDI_{i,t} + \alpha_4 TR_{i,t} + \alpha_5 LE_{i,t} + \alpha_6 POP_{i,t} + \varepsilon \]

Where

- \( g_{i,t} \) is the dependent variable which denotes per capita GDP.
- COR donates corruption as measured by ICRG corruption index.
- NODA\(_{i,t}\) denotes net official development assistance to GDP. It will either increase growth or decrease. Therefore it is expected to have positive or negative sign.
- PCFDI donates per capita foreign direct investment in aid recipient countries.
- TR- General government final consumption expenditure (% of GDP)
- LE donates years of life expectancy.
- POP refers to population growth rate.

**Investment Equation**

Foreign aid increases investment in a country which helps the country to build its infrastructure and maintain its long run growth process. Also huge transfers of foreign aid cause corruption in the recipient country to increase which decreases the investment in the country (Mauro, 1995).

To measure the impact of foreign aid and corruption on investment, the following Investment equation will be estimated:

\[ PCFDI_{i,t} = \beta_0 + \beta_1 y_{i,t} + \beta_2 Cor_{i,t} + \beta_3 TR_{i,t} + \beta_4 LE_{i,t} + \beta_5 PCODA_{i,t} + \beta_6 inf_{i,t} + \beta_9 \]

\[ EXP_{i,t} = \beta_0 + \beta_1 pop_{i,t} + \beta_11 PEPLR + \varepsilon \]

Where
PCFDI donates per capita foreign direct investment in aid recipient countries.

• \( y_{i,t} \) denoted per capita income.

COR donates corruption as measured by ICRG corruption index.

TR- General government final consumption expenditure (% of GDP)

LE donates years of life expectancy.

• \( \text{NODA}_{i,t} \) denotes net official development assistance to GDP. It will either increase growth or decrease. Therefore it is expected to have positive or negative sign.

INF donates inflation rate in recipient countries.

EXP donates External balance on goods and services (current US$)

PEPLR donates number of primary education pupils.

POP refers to population growth rate.

Aid Equation

To measure the effectiveness of aid, the following equation will be analysed.

\[
\text{Aid} = \beta_0 + \beta_1 \text{COR}_i + \beta_2 \text{PEPLR}_{i,t} + \beta_3 \text{BQ}_{i,t} + \beta_4 \text{LE}_{i,t} + \beta_5 \text{PCGDP}_{i,t} + \beta_6 \text{INF}_{i,t} + \varepsilon
\]

Where

• Aid is measured by per capita net official development assistance.

• COR donates corruption as measured by ICRG corruption index.

• BQ donates bureaucratic quality.

• PEPLR donates number of primary education pupils.

• LE donates years of life expectancy

• PCGDP donates per capita gross domestic product.

• INF donates inflation.

Aid Corruption Equation

Following model will check the effect of foreign aid on corruption:

\[
\text{COR} = \beta_0 + \beta_1 \text{NODA}_{i,t} + \beta_2 \text{BQ}_{i,t} + \beta_3 \text{PEPLR}_{i,t} + \beta_4 \text{INF}_{i,t} + \varepsilon
\]

Where

• COR donates corruption as measured by ICRG corruption index.

• NODA donates per capita official development assistance.

• BQ donates bureaucratic quality.

• PEPLR donates number of primary education pupils.

• INF donates inflation.

Panel Unit Root Test

Sequentially, to further examine the panel data, it is initially essential to determine the presence of unit roots in the data cycle. Based on the renowned Dickey-Fuller procedure the Im, Pesaran and Shin (IPS) has been chosen for unit testing. Im, Pesaran and Shin designated IPS suggested a test for the existence of unit roots in groups that merges statistics from the time series component from the sample dimension, such that scarcer time observations are necessitated for the test to encompass significance. Subsequently the IPS trial has been located to have exclusive test power by examiners in economics to inspect long-run affiliations in panel data, we will also utilize this technique in this study. IPS commences by postulating a separate ADF reversion for apiece cross-section with discrete conclusions and no time drift:

\[
\Delta y_{i,t} = \alpha_i + \rho_i y_{i,t-1} + \sum_{j=1}^{p_i} \beta_{ij} \Delta y_{i,t-j} + \varepsilon_{it}
\]

where \( i = 1, \ldots, N \) and \( t = 1, \ldots, T \)

Independent unit root tests for the \( N \) cross-section units is utilized by IPS. Augmented Dickey-Fuller (ADF) statistics averaged across groups substitutes as a sound base for the test. In the wake
of assessing the different ADF relapses, the normal of the t-measurements for from the individual ADF relapses,

\[ t_{NT} \left( \theta \right) = \frac{1}{N} \sum_{i=1}^{N} t_{IT} \left( \theta \right) \]

Ho: All the panels contain unit roots
Ha: Some panels are stationary

(4)

The t-bar is then standardized and it is shown that the standardized t-bar statistic converges to the standard normal distribution as N and T→ ∞. IPS (1997) exhibited that t-bar trial has relatively better execution when N and T are small. They propositioned a cross-sectional, debased form of both test to be utilized in the example where the faults in distinct regressions comprise a mutual time-specific feature.

Variables and Data

This study will test the hypothesis for four South Asian countries for which foreign aid and all other relevant variables will be reported over the years from 1980 to 2014 period. Aid data will be taken from OECD Development Aid Committee Database (International Development Statistics) and will be measured as net official development assistance as a ratio of GDP. All other variables including real GDP per capita would be taken from World Bank, World Development Indicators. Corruption measures are available from various sources. Corruption data for this study would be taken from the Political Risk Services Group’s (PRS) International Country Risk Guide(ICRG), and World Bank Governance Indicators, the most frequently used measures of corruption in academic research. The PRS data has been used in numerous recent publications on determinants of corruption (Dollar et al 2001; Knack and Rahman 2007; Charron and Lapuente 2009).

Variables Description

Following is the detailed definitions of the variables used in this research:

**Per Capita GDP**

GDP per capita is a measure of average income per person in a country. This indicator is used to gauge the development level in a country. GDP stands for Gross domestic product. This measure National income / National Output and National expenditure. GDP per capita divides the GDP by the population.

**Net Official Development Assistance**

Net Official Development Assistance (NODA) includes the disbursements of loans given on concessional rate (Net of repayments of principal) and grants given by the official agencies of Development Assistance Committee (DAC), by non DAC countries and by multilateral institutions to promote the welfare in countries registered as recipients in DAC list. Aid statistics is calculated by dividing net ODA received by the population estimate. However it does not include military aid.

**Investment**

Gross fixed capital formation (formerly gross domestic fixed investment) includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. According to the 1993 SNA, net acquisitions of valuables are also considered capital formation. Data are in constant 2005 U.S. dollars.

**Per Capita FDI**
Foreign Direct investment (FDI) is investment made to acquire a lasting interest in or effective control over an enterprise operating outside of the economy of the investor. FDI net inflows are the value of inward direct investment made by non-resident investors in the reporting economy, including reinvested earnings and intra-company loans, net of repatriation of capital and repayment of loans. Per capita FDI means the net FDI divided by the number of population of a country or territory.

**Life Expectancy**
Life expectancy at birth is an indicator which is used to analyse the welfare of the citizens as it is affected by the environment of the country, health facilities, nutrition’s availability etc. Life expectancy at birth shows the number of years a new-born baby would live if existing patterns of mortality were to stay the same throughout his/her life.

**General Government Final Consumption Expenditure (% Of GDP)**
General government final consumption expenditure also known as general government consumption includes all current government expenditure on purchase of goods and services. It also entails the expenditures on defense and security but excludes expenditures which are part of government capital formation.

**Population**
Total population is the count of all residents regardless of legal status or citizenship but it does not include the refugees who are permanently settled in the country of asylum. The values given are midyear estimates.

**Corruption**
Corruption donates corruption as measured by International Country Risk Guide (ICRG) corruption index. This is an assessment of corruption within the political system. Such corruption is a threat to foreign investment and economic growth for several reasons. The most common form of corruption met directly by business is financial corruption in the form of demands for special payments and bribes connected with import and export licenses, exchange controls, tax assessments, police protection, or loans. The index used in the study is produced by ICRG through several surveys. The methodology of these survey is designed in a way that it captures the perception of the citizens, businessmen and government officials about corruption level in the country.

**Inflation**
Inflation as measures by the consumer price index shows the annual percentage change in cost of average consumer of purchasing a basket of services and goods that may be specific or changed at fixed intervals e.g. yearly, bi-annually etc. generally the lespeyres formula is used to calculate inflation.

**External Balance On Goods And Services (EXP)**
External balance on goods and services equals exports of goods and services minus imports of goods and services. It was formerly knowns as resource balance. Indicator is used to gauge the net amount of trade of recipient country with the world.

**PEPLR**
PEPLR donates number of primary education pupils. Primary education pupils is the total number of pupils enrolled at primary level in public and private schools. This indicator is being used in this research to gauge the education level in the recipient country.

**Bureaucratic Quality**
The institutional strength and quality of the bureaucracy is another shock absorber that tends to minimize revisions of policy when governments change. In ICRG data set high points are given to countries where the bureaucracy has the strength and expertise to govern without drastic changes in policy or interruptions in government services. In these low-risk countries, the bureaucracy tends to be somewhat autonomous from political pressure and to have an established mechanism for recruitment and training. Countries that lack the cushioning effect of a strong bureaucracy receive low points because a change in government tends to be traumatic in terms of policy formulation and day-to-day administrative functions.
5. ESTIMATION RESULTS

Data Summary
The table mentioned above is the summarization of all the included indicators and countries. Different numbers are allotted to the countries for ease in estimation, number 1 is allotted to India, 2 to Pakistan, 3 to Sri Lanka and 4 to Bangladesh. The data from 1984-2013 has been derived for all the variables. Number of observations for all the indicators is 120 as mentioned above except the indicator of inflation which has 117 observations as inflation statistics of Bangladesh from 1984-86 is missing. Mean and standard deviation of all the indicators is also given in the aforementioned table. Minimum and maximum values have been given for all the indicators in table 5.1.

Before estimating the equations it is necessary to take difference of some variables first as they were found non-stationary. First difference for all the variables is also required for first difference panel data estimation. First difference of all the variables has also been taken for the estimation.

Table 5.1: Summary statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>years</td>
<td>120</td>
<td>1998.5</td>
<td>8.691733</td>
<td>1984</td>
<td>2013</td>
</tr>
<tr>
<td>country</td>
<td>120</td>
<td>2.5</td>
<td>1.122722</td>
<td>1</td>
<td>4</td>
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<tr>
<td>exp</td>
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<td>-8.54e+09</td>
<td>1.95e+10</td>
<td>-1.23e+11</td>
<td>1.01e+09</td>
</tr>
<tr>
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<td>2.07e+11</td>
<td>3.23e+11</td>
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<td>1.49e+12</td>
</tr>
<tr>
<td>inv</td>
<td>120</td>
<td>5.59e+10</td>
<td>1.03e+11</td>
<td>2.05e+09</td>
<td>4.77e+11</td>
</tr>
<tr>
<td>oda</td>
<td>120</td>
<td>1.90e+09</td>
<td>9.54e+08</td>
<td>3.70e+08</td>
<td>4.61e+09</td>
</tr>
<tr>
<td>pcgdp</td>
<td>120</td>
<td>682.5252</td>
<td>340.791</td>
<td>300.72</td>
<td>2004.26</td>
</tr>
<tr>
<td>inf</td>
<td>117</td>
<td>8.293162</td>
<td>3.924018</td>
<td>1.48</td>
<td>22.56</td>
</tr>
<tr>
<td>le</td>
<td>120</td>
<td>65.1215</td>
<td>4.767832</td>
<td>56.8</td>
<td>74.24</td>
</tr>
<tr>
<td>pop</td>
<td>120</td>
<td>3.24e+08</td>
<td>4.10e+08</td>
<td>1.56e+07</td>
<td>1.25e+09</td>
</tr>
<tr>
<td>def</td>
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<td>8.391917</td>
<td>4.363299</td>
<td>.16</td>
<td>24.89</td>
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<tr>
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<td>2.347167</td>
<td>.8976142</td>
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<td>4</td>
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<tr>
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<td>4.61e+07</td>
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<td>1.40e+08</td>
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<tr>
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<td>.765693</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>pcoda</td>
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<td>13.82313</td>
<td>11.99535</td>
<td>.667205</td>
<td>59.11169</td>
</tr>
<tr>
<td>generalgov-o</td>
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<td>9.837917</td>
<td>3.400009</td>
<td>4.030633</td>
<td>17.61111</td>
</tr>
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<td>7.67e+09</td>
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<td>4.34e+10</td>
</tr>
<tr>
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<td>10.76716</td>
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<td>46.29657</td>
</tr>
<tr>
<td>f</td>
<td>120</td>
<td>2.347167</td>
<td>.8976142</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>core</td>
<td>120</td>
<td>3.652833</td>
<td>.8976142</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

Panel Unit Root Test Results
Following table exhibits the consequences of the IPS board unit root test at level showing that all variables are I(0) in the consistent of the board unit root relapse. These outcomes unmistakably
demonstrate that the invalid theory of a board unit root in the level of the arrangement can’t be dismisses at different slack lengths. We can infer that few of the variables are non-stationary while some are stationary. The non-stationary variables are in with and without time pattern determinations at level by applying the IPS test which is likewise connected for heterogeneous board to test the arrangement for the vicinity of a unit root. The consequences of the board unit root tests affirm that the variables are non-stationary at level. The variables with a steric at the end are non-stationary whereas the others with no symbol are the stationary variables.

Table 5.2: Panel Unit Root Test – Im, Pesaran and Shin (IPS)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Level</th>
<th>Z t titled bar</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCODA (Per capita official development assistance)</td>
<td>-2.5458</td>
<td>0.0055*</td>
<td></td>
</tr>
<tr>
<td>PCGDP (Per capita gross domestic product)</td>
<td>12.4172</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>PCFDI (Per capita foreign direct investment)</td>
<td>2.0999</td>
<td>0.9821</td>
<td></td>
</tr>
<tr>
<td>INV (Gross domestic fixed investment)</td>
<td>9.6975</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>PEPLR (indicator of education primary enrollment number)</td>
<td>2.4347</td>
<td>0.9925</td>
<td></td>
</tr>
<tr>
<td>POP (population)</td>
<td>-4.9538</td>
<td>0.0000*</td>
<td></td>
</tr>
</tbody>
</table>

Note:
* indicates rejection of the null hypothesis of no-cointegration at 5%, levels of significance.

Estimation Results of Growth Model:
Table indicates the results estimation of growth equation. Growth equation is estimated here to gauge the effectiveness of aid on economic growth. Per capita GDP is taken as a dependent variable as an indicator of development level in the recipient country. Investment per capita official development assistance, life expectancy per capita net FDI and government size are the independent variables. Government size is proxy of general government final consumption expenditures. Table 5.3 shows the result estimation of ordinary least square estimation (OLS), first difference (FD) panel data estimation and random effects (RE). R-square for OLS model is 0.9924, 0.495 for first difference estimation and 0.5169 for random effects estimation. As researcher suggest that it is not appropriate to analyze the R-square of panel data estimations to explain the explained variation in the model.

Constant value is -0.1384, -0.1771, -0.1384 for OLS, FD and RE respectively. As the table 5.3 suggests, in OLS model investment has a significant and positive impact on per capita GDP. Per capita official development assistance has a significant and negative relationship with per capita GDP. Life expectancy has a positive and significant relationship with per capita GDP. Results have shown that per capita foreign direct investment (FDI) and government size as proxy of government’s general final consumption expenditure does not have a significant relationship with per capita GDP for South Asia. As mentioned in the research methodology section, that OLS is not an appropriate estimation method to estimate panel data than first difference FD and RE.
In first difference estimation model, investment, life expectancy has significant and positive relationship with per capita GDP. Per capita official development assistance, government size and per capita FDI does not have a significant relationship with per capita GDP. In random effects model, investment, life expectancy has a positive and significant relationship with per capita GDP. It is important to note that foreign aid has a negative relationship with per capita GDP for selected South Asian countries. Foreign Direct Investment and government size does not have a significant relationship with GDP per capita. Estimation results showed that investment and life expectancy has a significant and positive relation with GDP per capita. Estimation results showed that Government size and per capita foreign direct investment has no significant relation with GDP per capita. It is important to note that random effects estimation model has shown significant and negative correlation of per capita foreign aid with per capita gross domestic product which means that if foreign aid increases it will hamper the per capita growth of South Asian countries.

Furthermore, hausman test was also applied to decide between first differentiating method and random effects. The P value of hausman test is 0.2908 which suggests that random effects would be more appropriate estimation model for growth equation. Results of random effects for growth equation suggests that per capita GDP and per capita foreign aid for Pakistan, India, Sri Lanka and Bangladesh.


### Table 5.3: Estimation Results Of Growth Model

<table>
<thead>
<tr>
<th>Dependent variable: Per Capita GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent variables</strong></td>
</tr>
<tr>
<td>Constant</td>
</tr>
<tr>
<td>INV</td>
</tr>
<tr>
<td>PCODA</td>
</tr>
<tr>
<td>LE</td>
</tr>
<tr>
<td>PCFDI</td>
</tr>
<tr>
<td>GS</td>
</tr>
<tr>
<td>R-Squared</td>
</tr>
<tr>
<td>No. of periods</td>
</tr>
<tr>
<td>No. of countries</td>
</tr>
<tr>
<td>No. of observations</td>
</tr>
</tbody>
</table>
*Estimation Results of Investment Equation*

In investment equation, investment is the dependent variable and foreign aid, inflation, population and government size are the independent variables. R-square is 0.9924, 0.0322 and 0.065 for OLS, FD and RE model respectively. Constant co-efficient is 0.1122, 0.1014 and 0.1122 for OLS, FD and RE model respectively.

In OLS model inflation has a significant and negative impact on the investment in the recipient country. Population and government size does not have a significant impact on investment. However, foreign aid has a negative and significant at 10% confidence interval.

In FD model, foreign aid, inflation, population and government size does not have a significant relation with investment. However, it is important to note that foreign aid co-efficient has a negative sign. In random effects model, inflation has a negative impact on investment. Population and government size has an insignificant impact on investment for four selected South-Asian countries. However, foreign aid has a negative and significant relation with investment at 10% confidence interval.

Hausman test was employed to check the appropriate estimation model for investment equation. Hausman test statistics suggests that first random effects method would be more appropriate. The FD model does not show any significant connection between foreign aid and investment in recipient country. RE model estimation suggests that inflation has a negative impact on investment. Government size and population does not have significant impact on investment for four South Asian Countries. As per the Non-Extensionist school of thought which suggests that, foreign aid does not increase the investment level in recipient country, this study has also concluded the similar results for four South Asian countries.

<table>
<thead>
<tr>
<th>Table 5.4: Estimation Results Of Investment Model</th>
<th>Dependent variable: INV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent variables</strong></td>
<td><strong>OLS</strong></td>
</tr>
<tr>
<td>Constant</td>
<td>0.1122221 (0.000)</td>
</tr>
<tr>
<td>INF</td>
<td>-0.0029566 (0.055)</td>
</tr>
<tr>
<td>PCODA</td>
<td>-0.0084014 (0.131)</td>
</tr>
<tr>
<td>POP</td>
<td>-0.7116409 (0.333)</td>
</tr>
<tr>
<td>GS</td>
<td>0.0162584 (0.839)</td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.992499</td>
</tr>
<tr>
<td>No. of periods</td>
<td>27</td>
</tr>
<tr>
<td>No. of countries</td>
<td>4</td>
</tr>
<tr>
<td>No. of observations</td>
<td>114</td>
</tr>
</tbody>
</table>
Estimation Results of Corruption-Growth Model

In growth-corruption equation, per capita GDP is the dependent variable and corruption investment, inflation, life expectancy and education are the independent variables. R-square is 0.5169, 0.4197 and 0.5169 for OLS, FD and RE model respectively. Constant co-efficient are -0.0263, -0.1554 and -0.0263 for OLS, FD and RE model respectively. In OLS model, corruption has a significant and negative impact on growth. Investment, education and life expectancy has a positive and significant impact on per capita GDP growth of the recipient countries i.e. Pakistan, India, Bangladesh and Sri Lanka. Inflation in this model does not have a significant co-efficient and impact on GDP growth. In FD model investment, life expectancy and education have a positive and significant impact on GDP growth. Corruption with a negative sign and inflation also with a negative sign does not have a significant impact on GDP growth. In random effects model, education, investment and inflation have a significant and positive impact on GDP growth. Inflation does not have any significant impact on GDP growth. Corruption as suggested in theoretical background has negative impact on GDP growth in selected South-Asian countries.

Hausman test p value is 0.06 which suggests that random effects method is most appropriate method for this panel data estimation. In RE model estimation, corruption coefficient has a significant and negative relation with GDP per capita for Pakistan Sri Lanka, Bangladesh and India. Life expectancy, education and investment has a significant and positive relationship with GDP per capita. Mauro (1995), Knack and Keefer (1995) and Lambsdorff (1999) Baretto (2001) and Aidt (2009) also found the similar results.

| Table 5.5: Estimation Results Of Corruption-Growth Model |
| Dependent variable: Per Capita GDP |
| **Independent variables** | **OLS** | **FD** | **RE** |
| Constant | -0.0263599 (0.322) | -0.1554145 (0.000) | -0.0263599 (0.322) |
| COR | -0.0071036 (0.000) | -0.0016547 (0.495) | -0.0071036 (0.000) |
| INV | 0.2188644 (0.000) | 0.1829398 (0.000) | 0.2188644 (0.000) |
| INF | -0.0000655 (0.868) | -0.0000481 (0.895) | -0.0000655 (0.868) |
| LE | 0.0011044 (0.002) | 0.0028086 (0.000) | 0.0011044 (0.002) |
| EDU | 0.0890781 (0.013) | 0.0028086 (0.010) | 0.0890781 (0.013) |
| R-Squared | 0.5169 | 0.4197 | 0.5169 |
| No. of periods | 27 | 27 | 27 |
| No. of countries | 4 | 4 | 4 |
| No. of observations | 114 | 114 | 114 |
Estimation Results of Corruption-Foreign Aid Model

In corruption-aid model, corruption is the dependent variable and foreign aid, bureaucratic quality, education and inflation are independent variables.

In corruption-foreign aid equation model, R-square is, 0.5154, 0.2373 and 0.5154 for OLS, FD and RE model respectively. Constant co-efficient is 6.5188, 4.7214 and 6.5188 for OLS, FD and RE model respectively. In OLS model, foreign aid and bureaucratic quality has a significant and negative impact on corruption in the recipient countries. Education has a positive impact and inflation does not have any significant impact on corruption.

In FD model, the only significant variable is bureaucratic quality as it has a negative impact on corruption. However per capita foreign aid has positive and significant relation with corruption at 10 % confidence interval. Education and inflation does not have a significant relation with corruption. In RE model, foreign aid and bureaucratic quality has a significant and negative impact on the levels of corruption in selected South-Asian countries. Inflation does not have a significant impact on corruption it is interesting to report that education has a significant and positive impact on corruption.

To identify the appropriate estimation model, Hausman test was employed. Hausman test p value i.e. 0.0000 recommends FD model to be the appropriate model for corruption equation. RE model estimation suggests that fiscal transfers to Pakistan, India, Sri Lanka and Bangladesh increases the corruption level. The result and findings pertaining to the relationship of corruption and foreign aid of studies conducted by Tavares (2003), Tanzi and Davoodi (1998), Shang Jin Wei (1997a), Shang Jin Wei (1997b) Lane and Tornell (1996), Alesina and Foster (1999), Jacob Svenson (2000) and Tanzi and Davoodi (1997) coincide with the results of this study. The results of all this authenticate the claim of non-extensionist school of thought i.e. foreign aid to selected South Asian countries increases corruption and hampers economic growth.

| Table 5.6: Estimation Results Of Corruption-Foreign Aid Model |
|-----------------------------|----------------------|----------------------|
|                           | **OLS**             | **FD**               | **RE**               |
| **Independent variables**  |                     |                      |                      |
| Constant                   | 6.518862            | 4.721472             | 6.518862             |
|                           | (0.000)             | (0.000)              | (0.000)              |
| PCODA                      | -.3786064           | .1714812             | -.3786064            |
|                           | (0.000)             | (0.309)              | (0.000)              |
| BQ                         | -1.002352           | -.6686454            | -1.002352            |
|                           | (0.000)             | (0.000)              | (0.000)              |
| EDU                        | 3.107367            | 1.821784             | 3.107367             |
|                           | (0.017)             | (0.133)              | (0.017)              |
| INF                        | -.0061189           | -.0150177            | -.0061189            |
|                           | (0.690)             | (0.304)              | (0.690)              |
| R-Squared                  | 0.5154              | 0.2373               | 0.5154               |
| No. of periods             | 27                  | 27                   | 27                   |
| No. of countries           | 4                   | 4                    | 4                    |
| No. of 114                 | 114                 | 114                  | 114                  |
Research Limitations:
As mentioned in that there are no official statistics of corruption for any country in the world, understandably so. Different data sets are generated on the basis of surveys conducted about the perception of businessmen, citizens and government officials about the levels of corruption. Some examples of corruption index is Transparency International corruption index, World Bank corruption index and ICRG corruption data set. All these data set are based on the perception of individuals about corruption hence are not the authentic statistics.

Policy Implications:
As the results of numerical analysis of relationship between foreign aid, corruption and economic growth, has shown that foreign aid has a significant and positive impact on corruption. This study has concluded that foreign aid to the four recipient countries of South Asia provided an opportunity to political leaders, bureaucracy and fund managers to misuse the allocated foreign aid. The study also provides the theoretical analysis of the motives of donor behind foreign aid allocation. It is evident that foreign is not provided with the sole purpose of development in the recipient country. However, this study recommends that capital transfers provided to the recipient countries should be tied with conditions and a rigorous system of accountability. Donor shall allocate the capital transfers to the countries with the conditions of improvement in human development. Recipient countries shall develop a mechanism of oversight and accountability to achieve welfare with the foreign aid.

Further Areas of Research:
This study has covered the various theoretical and analytical aspects of foreign aid i.e. definitions and basic concepts of foreign aid, historical background, statistics of foreign aid, motives of donors and recipients, literature review and numerical analysis of relation between foreign aid, corruption and economic growth for four South Asian countries. Some of the dimensions for future research are identified below:
Most of the aid effectiveness studies does not incorporate the motives of donor and recipient of foreign aid. To analyse the full impact of aid on economic growth in South Asia, a complete analysis of aid effectiveness combining donor’s interest and recipient needs will be a valuable addition in the literature. Researcher recommends the scholars interested in 9analysed90 the development sector and foreign aid should look into micro-level impact of foreign aid. Instead of examining impact of aggregate aid directly on growth or development, aid impact can be checked on different sectors to which aid is allocated and who are major contributors to economic growth such as aid to production sector, social sector, for infrastructure development etc.
This study has used an index to measure the corruption in the recipient country. To 9analyse the aid-corruption-growth nexus more effectively, there is a dire need of research on development of updated and effective tools to gauge the corruption. Focusing and 9analysed90 the factors behind failure of foreign aid to achieve its goal of development is an important area of research for the scholars who want to work in this paradigm. Aid’s effectiveness should also be investigated jointly with governance level and/or transparency and accountability of the region and/or institutional quality of the region and/or democracy level. Present study has 9analysed the impact of aid on economic growth with special reference to corruption in South Asia and overleaped too many issues that should be addressed in future.
To have a complete analysis of the impact of aid on economic growth and development of recipient countries, aggregate aid data should also be analysed by disaggregating it into different components i.e. grants, loan, short term impact aid, project aid etc. With change in the concept of development from mere increase in nuanced growth to also reduction in poverty and improved human development, future research should employ more realistic welfare indicators to measure genuine wealth than measuring mere GDP or growth to check the impact of aid.

6. CONCLUSION

This study explores the effect of foreign aid on corruption and economic growth for four South-Asian countries namely, Sri Lanka, India, Pakistan and Bangladesh. These countries were chosen on the basis of the rampant amount of foreign aid they receive, the status of corruption and economic growth in the above said countries. As found in prevalent researches done in this regard such as studies conducted by Fayissa and El-Kaissy (1999), Dowling and Hiemenz (1982), Burnside and Dollar (2000) and Levy (1998), Tavares (2003), Tanzi and Davoodi (1998), Shang Jin Wei (1997a), Shang Jin Wei (1997b) Lane and Tornell (1996), Alesina and Foster (1999), Jacob Svenson (2000), Tanzi and Davoodi (1997) found positive and significant relation between foreign aid and corruption, foreign aid’s negative impact on corruption and economic growth, this study also concludes that foreign aid when bypassed unchecked becomes a source of exacerbating corruption in the recipient country which rather than contributing to a country’s economic growth, damages it. The results of estimation in the study are the main source of this conclusion. Literature review states that foreign aid is a donor-agenda based fund allocated to developing countries. As evident, the agenda based funding has several political and economic reasons behind it involving many powerful authorities in between, which becomes a source of degeneration for the economy of recipient country. Not only donors, but the recipient countries also vie foreign aid as an easy access to a wholesome amount, which becomes the reason for increased corruption on the recipient country eventually targeting the economic growth of that country. The results of this study are in alignment with the non-extensionist school of thought and further affirms its claim that, the foreign aid propels a negative impact on the administration and development of the recipient country. The study takes into account the fundamentals related to foreign aid allocation which are often neglected. The study concludes that, the foreign aid mechanism which at large remains unchecked or is strategically ignored by donor countries and recipient countries, leaves the economy of the recipient country vulnerable to deterioration. The study suggests that capital transfers provided to the recipient countries should be tied with conditions and a rigorous system of accountability. Donor shall allocate the capital transfers to the countries with the conditions of improvement in human development and good governance. Recipient countries shall develop a mechanism of oversight and accountability to achieve welfare with the foreign aid.
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Potential Effects of Geopolitical Risks on Financial Markets in Turkey

Nuray TERZİ

1. INTRODUCTION

In recent years, geopolitical risks have increased on global economy and geopolitical volatility has become a key driver of uncertainty. Tensions in these areas such as protectionism and trade wars have started to affect on global macro economic performance as well as on financial performance. On one hand, growth in trade openness and global output has started to slow down, and on the other hand, economic crises have continued certain emerging market economies. Moreover, both real sector and financial sector have been affected by these risks.

Turkish economy is also influenced by these developments in geopolitics environment. After financial liberalization in 1980’s, Turkish economy became more open economy, and financial markets depend on very strictly its global economic environment. This led to financial markets to be more sensitive and also vulnerable against geopolitics factors. Financial markets are the most significant factors of development in countries. Therefore, it is essential to understand the impact of geopolitics developments and its result for Turkish economy. In this context, this study aims to analyze the potential effects of geopolitical risks on financial markets in Turkey.

In order to achieve this aim, following section will give an overview of geopolitics and geopolitical risks and focus on the impact of geopolitical risks on the global economy. Next section will analyze to potential effects of geopolitical risks on financial markets in Turkey. Last section will give a conclusion.

2. AN OVERVIEW OF GEOPOLITICS AND WORLD ECONOMY

Historically, geopolitics has been used to describe the practice of states to compete and control for territory. However, in recent decades, the events such as nongovernmental organizations, political parties and corporations have also been classified as element of geopolitics. Therefore, the term of “geopolitics” includes series events with a wide range of reasons and results, from climate change to terrorist attacks, from Global Financial Crisis to Brexit (Caldara and Iacoviello, 2018).

Geopolitics analyzes the relationship of people with the land they live on. This relationship includes military, political and commercial relationship. Term also contain power and competitions in among regions. Additionally, the term of geopolitics concludes political movement and secret armed groups (Boniface, 2018). Geopolitical risks also define as the risk related with, terrorist acts, wars and tensions between countries that affect international relations (Caldara and Iacoviello, 2018). Understanding geopolitics risk is significant in a world that has become more connected thanks to the rise of globalization

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and rapid advances in communications. When building and maintaining a portfolio investment, every investor should take risk into account and that is why is wise to have at least a nodding familiarity with geopolitical risks around the world (Morrison, 2019). Short term volatility from geopolitical surprises and risks can also provide some unexpected opportunities to buy up beaten-down securities. However, geopolitical risk has also the potential to move markets very aggressively in short term periods.

In last two decades, the global economy has been through a complex period. Growth in trade openness has stagnated, and protectionist measures have increased. Additionally, we have seen a political backlash against free trade and globalization in developed countries, including a slowdown in international trade (Burrows et.al, 2017).

There are several factors for these negative events. On one hand, the effect of the information technologies and bubbles in stock exchange has had a negative effect on investment as well as on business. On the other hand, negative shocks have further undermined confidence, such as September 11, other geopolitical tensions – in particular the conflicts in Iraq and Afghanistan. All these factors have created a negative environment on global economy and have led to higher risk. Moreover, financial crises have continued to become main emerging market economies, such as Turkey and Argentina (Caruana, 2003).

Both the financial sector and real sectors have been affected by this series of events. Especially, capital markets have suffered a negative environment in the world. The falling stock prices has declined aggregate demand, although in many economies this negative wealth effect has been offset, at least partially, by a buoyant home market (Caruana, 2003).

Researchers have built barometers of geopolitical risk to help investors measure and tackle the instability brought about by geopolitical events. Geopolitical Risk Index (GPRI) was developed by Dario Caldara and Matteo Iacoviello (2018). They built a monthly index for geopolitical risks by counting the occurrence of words associated to geopolitical risks in popular international newspapers. The GPRI spikes around the Gulf War, after 9/11, during the 2003 Iraq invasion, during the 2014 Russia-Ukraine crisis, and after the Paris terrorist attacks.


Figure 1 shows geopolitical risks index which is developed by Caldara and Iacoviello. The adverse effects of geopolitical risk are mostly driven by the threat of adverse geopolitical events. As following the figure, geopolitical risk rose dramatically in the early 1980s, 1990’s and has followed upward since the beginning of the twenty first century.
Potential Effects of Geopolitical Risks on Financial Markets in Turkey (Nuray TERZİ)

Figure 1. Geopolitics Risk Index
Source: [https://www2.bc.edu/matteo-iacoviello/gpr.htm#data](https://www2.bc.edu/matteo-iacoviello/gpr.htm#data)


3. POTENTIAL EFFECTS OF GEOPOLITICAL RISKS ON TURKEY

3.1 Geopolitical Risks and Turkey

Geopolitical risks may adversely affect Turkey as well as the world economy. Because of more open economy, Turkish economy is more connected to the word than before. After 1980, several events which have affected to Turkey’s economy are given in the following table.

**Table 1. List of Events in Turkey**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-Apr-87</td>
<td>Turkey applies for EU membership (application)</td>
</tr>
<tr>
<td></td>
<td>Turkey</td>
</tr>
<tr>
<td>2-Aug-90</td>
<td>Iraqi invasion of Kuwait</td>
</tr>
<tr>
<td>16-Jan-91</td>
<td>US coalition launches Gulf War</td>
</tr>
<tr>
<td>28-Feb-97</td>
<td>Post-Modern Coup</td>
</tr>
<tr>
<td>15-Feb-99</td>
<td>Capture of Ocalan</td>
</tr>
<tr>
<td>11-Sep-01</td>
<td>WTC Terror Attacks</td>
</tr>
<tr>
<td>20-Mar-03</td>
<td>US invasion of Iraq</td>
</tr>
<tr>
<td>15-Dec-04</td>
<td>EU announces accession talks to start in 2005</td>
</tr>
<tr>
<td>3-Oct-05</td>
<td>Turkey begins EU accession process</td>
</tr>
<tr>
<td>11-Dec-06</td>
<td>EU halts accession process</td>
</tr>
<tr>
<td>7-Jun-15</td>
<td>Parliament elections with Kurdish party</td>
</tr>
<tr>
<td>10-Oct-15</td>
<td>Ankara bombings</td>
</tr>
</tbody>
</table>
The figure below shows GPRI and GPRI for Turkey. When geopolitical risks increase, GPRI for Turkey has also heightened. Especially, geopolitical risks have increased in the end of the 1980s, in the beginning of 1990’s and in the early 2000s. In 1980’s, Turkey had applied for EU membership. During the 1990’s, GPRI include the Iraq invasion, Ocalan’s capture and Gulf War. In the beginning of 2000’s, GPRI include the World Trade Center attacks, US invasion of Iraq and EU process.

Figure 2 shows that geopolitical risk in world economy and in Turkey move together. Therefore, geopolitical risks are a significant factor that should be monitored. All geopolitical movements should be followed up by investors and policy makers to analyze the impact of geopolitical risks on economies and markets. Following section presents potential impact of geopolitical risks on financial market in Turkey.

3.2. Potential Effect of Geopolitical Risks on Financial Markets

Caldara and Iacoviello (2018) also conclude that higher geopolitical risk declines economic activity, stock returns, and leads to flows of capital from developing economies to developed economies. They also point out that higher risk leads to lower stock returns in tandem with increases in VIX and higher corporate spreads.

Geopolitical risks can also adversely affect financial markets and lead them unstable in Turkey. In order to analyze the effects of geopolitical risks on financial markets, money market indicators, capital market indicators, confidence and volatility indicators have been used in this study. GPRI has been provided by Caldana and Iacoviello, and other variables were provided by Turkey Data Monitor (TDM). Data includes several periods between 1987 and 2018, monthly.
In the first stage of study, indicators were selected and organized by using Turkey Data Monitor Program. Real Exchange Rate Index, bank credits and interest rates were used to understand the effects of the money market. Portfolio investments, BIST 100 and sub-indices (financial, industrial, services and technology) have been utilized for effects of geopolitical risks on capital markets. Additionally, economic confidence index and volatility have been compared with GPRI. In the second stage, the trend of selected variables was calculated by using analytical tools. Finally, GPRI was compared by index performance of selected variables. If there is a change in the variables of the financial markets during the higher geopolitical risk index, this means that geopolitical risks can have negative effects on the financial markets.

Money Markets

Figure 3 shows the correlation between the GPR data and the development of REER Index since 1994. According to this figure, there is a relationship between GPR and REERI. When GPRI increased, REERI decreased. In other words, Turkish Lira depreciated compared to other currencies during the geopolitical risks. These periods are between 2002 and 2003, and 2018. On the other hand, when geopolitical risks have decreased, TL appreciated, for example, between 1994-1998 and 2007-2011.

Bank loans are one of the most important sources of financing for SMEs. Bank loans are expected to increase in periods when the risks decrease, and bank credits will tend to decrease in the periods when the risks increase. In Turkey, bank credits continued on an upward trend in periods when geopolitical risks decreased. These terms are between 2006 and 2009, and in the end of 2018.
Interest rates are one of the important indicators of money markets. It can be seen the impact of geopolitical risks on interest rates, primarily. Interest rates have increased at the beginning of the 2000s. During this period, geopolitical risks has increased. At that time, there was a world trade center attacks. In later years, the effect of geopolitical risks has decreased and followed a stable trend and interest rates in Turkey have also stagnated at that time.

Capital Markets

*Portfolio investments are investments made by savings holders in the form of stocks and bonds. It is seen that portfolio investments have entered the country during the periods when geopolitical risks were low, and have exited from the country when the geopolitical risks increased. Portfolio investments between 1992 and 2001 have increased, and geopolitical risks remained at the lower level. However, geopolitical risks have increased in 2002, and portfolio investments decreased in this period.*
The effect of geopolitical risks can also be seen on stocks. Geopolitical risks were effective on BIST-100 especially after 2000. Until this time, the BIST-100 was a rather shallow market. After 2000, when geopolitical risks index has increased, the value of BIST-100 index has decreased in 2005, 2006, 2008 and 2013. BIST-100 has continued to rise in the period when geopolitical risks were low, for example between 2006-2008 and 2009-2012, 2013-2018.

Geopolitical risks may affect certain industries more than others. BIST service, industrial, financial and technological indices were used to measure the effect of geopolitical risks. As you can see following figures, geopolitical risks were more effective on the BIST financial sector. The stocks in banking sector (BIST-F) and the stocks related to the industrial sector (BIST-I) were more sensitive to geopolitical risks. They are quite volatile. However, it can be said that the services sector (BIST-S) and technological stocks (BIST-T) are less sensitive to geopolitical risks. (Figure 8)
Investment funds were created by the use of many different financial instruments. Investment funds in Turkey show a declining trend when geopolitical risks decrease between 2006-2007 and 2013-2014. Additionally, investment funds increase when geopolitical risks decrease as in 2005, 2016 and later (Figure 9).

Volatility

Volatility is the fluctuation of a certain product in the price of financial markets over a period of time. It is usually measured by standard deviation. Generally, volatility is high
in periods of uncertainty. When geopolitical risks also declined and volatility has also decreased after 2003. A similar trend has been shown during 2013 (Figure 10).

Figure 10. Volatility and Geopolitical Risks
Source: Caldara and Iacoviello (2018) and TDM

Confidence

Economic Confidence Index is a composite index that summarizes the evaluations, expectations and tendencies of consumers and producers regarding the general economic situation. The index consists of weighting of sub-indices of consumer confidence index and seasonally adjusted real sector (manufacturing industry), services, retail trade and construction confidence indices. The fact that the economic confidence index is greater than 100 indicates the optimism regarding the general economic situation, and the fact that less than 100 indicates the pessimism about the general economic situation. As can be seen from the figure below, while the geopolitical risks has increased, the economic confidence index has decreased. In times of geopolitical risks has declined, the economic confidence index was above 100.

Figure 11. Economic Confidence Index and Geopolitical risks
Source: Caldara and Iacoviello (2018) and TDM
4. CONCLUSION

This paper has mainly aim to analyze the potential impact of geopolitical risks on financial markets in Turkey. Result of this study indicates that GPRI have potential impacts on financial markets in Turkey. All indicators (money, captial, volatility and confidence) have been affected by GPRI, negatively. When considered in conjunction with market conditions, GPRI can be used to optimize the investment decision making. Additionally, GPR index, if they are studied, it will give similar result for other developing countries. In order to reduce the impact of risks, the integration of financial markets should promote both competition and transparency and should enhance liquidity. Additionally, efficient risk management should be strengh among financial actors. Finally, there should be strong collobaration and coordination among both developed and developing countries.
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Recommendations for Fiscal Policies In Light of the 2008 Crises Effects

1. INTRODUCTION

When the 2008 crisis broke out, its effects were widespread and not limited to the source. In the process of the crisis, the monetary policy alone failed and the importance given to fiscal policy increased. As well as the damage caused by the crisis, the policies that spread over the years have been influenced by the effects of the crisis. It is clear that the steps taken today are determinant by the monetary, financial and structural situation. In this study, after the structure that has been shaped by the crisis to the present day, an evaluation will be made about the suggested solutions that are emphasized in the literature.

Although it has been a long time since the 2008 crisis, its spread over a large area has determined the effects of the policies implemented and the policies of today. In particular, it played an important role in shaping monetary and fiscal policies. After the crisis, the insufficiency of monetary policy emerged and the importance of fiscal policy has increased. With the onset of the crisis, it is known that the monetary expansion programs are in succession, the interest rates are lowered and the insufficiency of the Central Bank’s purchasing interventions is revealed. While a series of expansionary fiscal policy measures were taken to stimulate the shrinking demand and falling growth, this was also considered as the re-activation of fiscal policies.

From 2010 and onwards, the states that want to solve the problem of budget and debt have started to consolidate. All these processes have made the effects of the crisis clear in the long term on the monetary, financial and structural level. Therefore, when evaluating the crisis, it is useful to divide periods 2008-2010 and 2010 to present with the effect of consolidation policies included.

Of course, the impacts of the crisis can be evaluated from many different perspectives and data. It is known that even in the literature each critic has adopted some specific perspectives. However, certain general facts shed light on the reality can’t be ignored.

In this study, general government data like gross debts, revenues, expenditures, fiscal balances and social spendings, unemployment rate, poverty rate, GINI coefficients, tax rates and tax compositions, growth rate, money indexes, price indexes and interest rates will be evaluated from crises to today. These data in general draws the attention on the income and expenditure items of the states, social welfare, growth-debt

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composition and monetary policy primarily. Another point is that these processes have brought about the current problems facing fiscal policy. Considering the problems caused by the crisis, a number of fiscal policies were also proposed. Therefore, this study will focus on the problems caused by the crisis and the presented fiscal policy suggestions.

2. THE EFFECTS OF THE CRISES

The impact of the crisis on the income and expenditure outlook, social welfare, growth and monetary policy of the states has been evident. Therefore, this section will focus on the changes in these items.

- The pre-crisis, crisis period and post-crisis OECD average shows that the general government data has not recovered and the increasing indebtedness has reached an important point. On the other hand, the increasing spending with the crisis has slightly diminished, but partially offset by increased incomes. (Graph 1,2) As a result, it is clear that today we have an more indebted governments with less revenue and diminishing expenditures.

- In the period of and after the crisis, it is seen that all expenditures items have been decreased (excluded social protection and health- even very limited increase). (Graph 3) On the other hand social assistance data showing that health and social protection differences are result of over 65 year olds. In addition it is apparently seeing that all poorers, unemployers and poor workers getting less assistance since 2014 and since 2010 process we expend more for only over 65 year olds. (Graph 4)

- Unemployment level along with the crisis has newly reached the pre-crisis level. (Graph 5) In addition, it is noteworthy that the poverty rate seems crucial after the crisis period. This situation also shows itself with the high GINI coefficient in the inequality data. (Graph 6,7) GINI and poverty rate data also show that the negative effect of consolidation process since 2010. Also, before reaching even the pre-crises level of unemployment, the deterioration of this period couldn’t be disregarded.

- Although the financial balance problem along with the crisis is expected to alleviate by tax revenues, it is clear that net result of this choice is a different tax composition. The most noticeable increase is observed in the income tax item. Value added tax and product and service taxes from final products have also rised. In other words, the steps taken to revive the demand channel along with the crisis ended with the taxes applied to the demand channel. This is also a determinant of real income erosion. On the other hand, tax revenues from institutions decreased. (Graph 8)

- It can be seen that change in growth has occured with the rise of the current account deficit and current surplus countries’ increasing private sector and government debt. Both the current account deficit and the current surplus countries have a preference for private sector debt and state debt, and in both cases, household debt is high. While the relatively low private sector and state debts of the current surplus countries are considered normal, both have high indebtedness level in current account deficit countries. However, when
we look at the holistic picture, it is seen that the growing debts are shifted to the growing economies, and that the most affected group is the household as the increment of household dept in current deficit countries are three times more than current surplus countries. This differences on average approximately 1.3-1.4 times for state and households. However, it is clear that some countries are affected more by the fact that the data reflect the average. Other thing is indebtedness become more problematic in three sides of the current deficit economies. (Graph 9, 10,11) On the other hand growth reflects that the impact of the crisis has not yet reached the pre-crisis level in the OECD. (Graph 12)

- The most significant impact of the crisis observed in the OECD is falling short&long term interest rates and increased liquid money supply. It can be said that the effect of this intervention to revive the market continued in the process that has been going on until today. (Graph 13,14)
- With the effect of monetary expansion, it can be said that there is also an inflationary effect throughout the OECD. However, the remarkable point here is that consumer prices increased more rapidly despite the increase in producer prices. This shows that the price channel is also reflected in consumer sides. (Graph 15)

In summary, the crisis has had a significant negative impact on the social welfare, growth and household-private indebtedness starting from the fiscal balance problem of states. In addition, a significant change was observed in both the tax composition and the growth components. On the other hand, the inflationary effect caused by the expansionary monetary policy is also evident. The insufficiency of monetary policy has been understood during the crisis period and fiscal policies have come into play. At this point, an evaluation will be made on the main problems while the fiscal policy is examined before and after the crisis. The final results reflected in the data are the debt winding in front of the fiscal policy; changing tax composition, consumer inflation, increasing poverty, declining public services, increasing household indebtedness, the demand channel suppresses, limited growth in this scene.

3. RECOMMENDATIONS FOR THE FISCAL POLICY

When the results and fiscal policies of the crisis are analyzed, the need in the current situation is also revealed. The crisis period revealed that the monetary policy was insufficient alone and that the necessity of fiscal policy was revealed in the next process. The effects of the crisis have showed the deterioration of the fiscal balance, social welfare, growth composition, private-real indebtedness level. Wear in real income is not only due to increased poverty, unemployment, but also falling social spending, consumer prices, tax composition, deterioration in growth and increasing household indebtedness. The effects of the crisis have been solved although the debt winding in front of the fiscal policy, correcting the deteriorated tax composition, removing poverty, improving social expenditures, and correcting the problems that
would be caused by decreasing public services. Although the fiscal policies implemented after the crisis tried to improve the situation, the point of the fact is that the demand channel has not been revived as it is seen in the country examples and data, but in the final case it has been further narrowed. This situation has become more permanent with the changing tax and spending composition after the crisis. In summary, the evaluations show that redistribution of the problems faced by fiscal policy, solution of income inequality, debt spiral, support of production, fair regulation of taxes, and recovery of chronic deterioration in demand channel. In this section, an evaluation will be made based on the recommendations in the literature considering the problems.

With the 2008 crisis, more emphasis has been placed on the disparity in income inequality and wealth distribution. This point of view, pioneered by Keynes, emphasized the insufficient demand, not by the interest, but from the speculation and financial growth problem, despite the excessive production in the times when everything was normal. On the other hand, while falling investments inflated the finance, it also reduced employment. Freezing wages and the inequality of income generated by the increasing finance and richness of the rich and the impoverishment of the poor became worse. This inequality caused the households to consume more borrowing and the demand was closed by debt. When the deterioration of health, education, social services expenditures and the real income of individuals is taken into consideration as a whole during this period, total affect of income becomes more clear. Therefore, the shortage of demand caused by the growing inequality has been fueled by the finance caused by the erosion of the real production, and has emerged in the mortage markets as the crisis of demand trying to survive with the debt. From this perspective of view; beyond financial expansion, financial wrong decisions, interest policies or non-rational individuals; the increasing inequality and the impact of this debt seems to the main reasons behind the crisis. Crisis solution policies are also based on the elimination of this inequality. It supports the role of the state in the economy to reduce inequality. The primary social policies for overcoming crises are tax policies that will reduce income inequality with the support of wage growth; they have introduced suggestions such as wealth tax, determination of unpaid taxes in the upper segment. They emphasized the importance of a social state structure. The problem of increasing chronic unemployment, especially in European studies, has been one of the points emphasized with the fact that fiscal consolidation programs make this problem more inevitable.

In the event of a crisis in Keynesian perspective, that is to say, in case of a contraction in a demand, the suggestion is to stimulate private consumption and investment expenditures, which contract with the state’s fiscal policies. In deflationist (inflation) periods where demand is less than supply, governments should increase (reduce) public spending and reduce (increase) taxes. Keynes argues that the revilalist policy and the revival in demand will increase investments. On the other hand, he argues that the downward trend in wages, especially in times of crisis, will not increase the level of employment in all circumstances. Because both labor productivity and real wages vary depending on the effective demand. States need to invest in reducing unemployment. According to this, states should control the effective distribution of the resources for economic growth and development, price stability and full employment, fair distribution of income and ensuring balance of
payments. Keynesian economics argues that the state should use policies such as money, finance, foreign trade and public entrepreneurship. (Aktan, 2004: 10-42, 94-97)

Blanchard, one of the pioneers of the new Keynesian movement, also proposed a Keynesian perspective in fiscal policy. It focused on the financial fragility and the contagious effect of the crisis. He evaluated the steps taken towards improving the overall impact of the crises on total demand, growth and finance. Therefore, as an exit strategy has advocated the development of policies on financial system deterioration, falling demand and confidence. In addition to the expanding and liberating impact of monetary policy, he also stressed the importance of the expansionary impact of fiscal policies that were introduced in this period. (Blanchard 2008); (Blanchard, 2009)

Piketty, on the other hand, evaluated the difficulty in a globalizing and even aging population, which is even contradictory in that the tax revenues in the 21st century are even contradictory. On the other hand, it is impossible to collect these taxes at the same level with the decreases in per capita income. Therefore, a 21st century social state structure should be made. Because the crisis of 2008 is also a crisis of globalized wealth-centered capitalism and will not remain as a last crisis unless increasing inequalities, lack of financial transparency, and other structural problems are addressed. (Piketty,2014:507-529)

Vanderbroucke emphasized that the negative impact of the crisis on Europe’s social policies and welfare could not be overcome by current policies, and that a common and long-term planning was needed. (Vandenbroucke, May 2011); (Vandenbroucke,2012)

In all these evaluations, the contribution of fiscal policy to inequality, inclusive growth, production and redistribution mission has come to the forefront. Therefore, considering the increase in the income need of the states, the problems faced by fiscal policy will be examined through recommendations on tax policies, social policies, egalitarian growth, consolidation, foreign trade and real income growth.

3.1. TAX POLICIES

3.1.1. PROGRESSIVE TAX SYSTEM

Although the current taxation system appears to be progressive, the share of taxes on high income groups is considerably low when the income-tax ratio is analyzed. Therefore, as a solution to the deterioration in the distribution of income and the increasing distribution of income in the aftermath of the crisis, a progressive taxation on income and corporate tax was emphasized. It is aimed to reduce the taxes received from the poor and to revive the economy by increasing the share of taxes from the rich. In addition, the positive contribution of the taxation of speculators to the economy is emphasized. (Stiglitz, 2014: 292-295, 353) Considering that the deterioration in income inequality has increased gradually, it is also emphasized that the tax on the income of the person in the upper segment increases both tax revenues
Recommendations for Fiscal Policies In Light of the 2008 Crises Effects (Tuğba Demirtaş and Prof.Dr. Çiğdem Berna Kocaman)

and equalities, and together with the improvement in the sub-segment with consumption as a result the growth. It is important to adjust the balance in such a way that it does not disturb the need for work. (Saez and Diamond, 2011: 165-167)

3.1.2. REDUCING LEGAL CLEARANCES

In a system where there is a certain tax rate, exceptions, exemptions and preferences are high, corporate tax income is low. One of the recommendations to increase income is that these gaps should be reduced and balanced with less taxation to producers, investors and employers than others. It is recommended to cut the hidden subsidies and expenditures provided to the companies that do not produce. (Stiglitz, 2014: 353) On the other hand, it has become important to eliminate these gaps in areas where tax evasion is widespread. Although the possibility of tax evasion increases as the tax rate increases, it can be said that the tax evasion is widespread in many countries, especially through the use of cash. This rate is increasing especially in countries where informal institutions are high. Therefore, it is also important that the legal gaps be completed by taking into account the tax revenues. (Rogoff, 2016: 59-69)

3.1.3. INHERITANCE, WEALTH AND PROPERTY TAX

It is argued that the fragility caused by the deteriorated income distribution and solidified unemployment can be prevented by taxes that will reduce inequality in wealth and income distribution. (Roubuni and Minh, 2011: 312-315) It is considered that by increasing wealth and property tax, determining the unpaid taxes in the upper segment, income distribution and income need can be eliminated. (Stockhammer, 2016) However, it is criticized for the fact that wealth tax can be purchased only once and has a negative effect on the saving behavior. (Saez and Diamond, 2011: 179) Stock returns are also taxable suggestions. (Stiglitz, 2014: 354)

3.1.4. INDIRECT TAXES

One of the points that attract attention especially after the crisis is the increased indirect taxes. The increase in VAT, especially after the consolidation process, is remarkable. The fact that income inequality becomes more pronounced reveals the importance of taxation based on the value of the goods consumed, taking into account the income level. The recommendations in the litigation are to apply more taxes on luxury goods and products with negative externality (cigarettes, alcohol, gasoline, etc.). These suggestions are also developing towards narrowing the consumption tax base. In any case, the necessity of indirect taxation of taxation taking into account the distribution of income on a global scale is also revealed. (IMF, October 2017: 9-20)

3.1.5. TAXATION OF FINANCIAL SYSTEM

It is emphasized that the financial burden of the financial sector can be met with the taxes applied to the financial sector. In particular, tax policies have come to the
forefront in the importance of control mechanisms for the prediction that interest increases caused by the capital race and the effects of speculations on the country’s crises will continue. Transaction tax, financial taxation and taxation of financial services are among the recommendations. The capital gains tax should be imposed on the entry and exit of the capital movements through taxes or restrictions. In particular, the taxation of short-term capital movements and the Tobin tax were emphasized. (Stiglitz, 2010: 335); (Stiglitz, 2014: 290-291); (Altvater, 1997); (Altvater, January-2009) On the other hand, it is considered that the financial transaction tax may reduce the negative risk of financial market and the negative effect of financial instruments on long-term growth. Negotiations were also held within the European Union on this issue, but could not be implemented due to disapproval of all members. (Vilasenko, 2016) On the other hand, this increase in taxation costs is not preferred due to the negative effect of capital inflows, liquidity and investments. (Harris, Ritter and Scaefer; 2014) However, taxation of finance, if global, is a good option for falling tax revenues and is still considered as an alternative to avoiding risk and speculation.

3.1.6. TAXATION OF NEGATIVE EXTERNALITIES

It is also emphasized that the primary preference of tax is not from production but from negative externalities. In particular, applications that pollute the environment—such as air and water pollution from oil, gas, chemical production—from obesity products such as alcohol, tobacco, etc. more taxes are recommended. (Stiglitz, 2014: 291-292); (Bulbul, 2012)

3.2. SOCIAL POLICIES

Although the impact of social policies on social welfare has been emphasized, the impact of these policies on increasing inequality and real income erosion from the crisis to the present has begun to be of great importance. This is because the states have chosen to use social space as the first area to be saved, especially the consolidation policies and the importance given to this area by the impact of the crisis. For this reason, the lack of social policies, which have actually started to become a global problem, emerges as a contractionary effect on the demand channel, which is especially aimed at increasing the crisis period. This issue has also been mentioned in the literature.

The negative impact of the crisis on increasing unemployment, decreasing social policies and decreasing demand, and the need to produce solutions in the global sense. (Stiglitz, 2014). On the other hand, supported by the data it is clear that reducing the financial expenditures for the households will lead to the need for more financial support in the long term. (Roubuni and Minh, 2011; 312-315)

In addition, it is seen that social state debates will continue in current revenues condition where at the same time expenditures are almost half of national income. In particular, the crisis and then the problems of consolidation in the agenda of the social assistance has opened the debate. (Piketty, 2014; 507-529) There are also
evaluations covering the common policy proposals for increasing social policies in European studies. (Vandenbrouche, May 2011) In this context, suggestions on education, health and social security policies were examined.

3.2.1. ACCESS TO EDUCATION

In order to improve the increasing inequality and income distribution, it is also emphasized that the support to education should be improved and than income level can be supported in the long term. Particularly in countries where paid education is common, it is important to ensure access to education for the poorer population. (Stiglitz, 2014: 354-355)

3.2.2. HEALTH AND SOCIAL PROTECTION POLICIES

Access to health services and the fact that drug costs are difficult to access especially for lower income groups further increase the real income drop and income inequality. For this reason, it is emphasized that social security policies such as health system, and unemployment insurance should be improved. (Stiglitz, 2014: 355-356) Considering the increasing number of poor people, it was also determined that the effects of selective expenditures on health centers and health services would be larger rather than direct expenditures on hospitals. (Davoodi, Tiongson and Asawanuchit, 2010: 27-38)

3.3. EQUAL GROWTH STRATEGY

With the growth composition deteriorating on the causes of the crisis and the new models created by the debt / finance-driven new growth model, there was increasing household indebtedness. For this reason, another problem raised by the crisis is the growth composition and excessive indebtedness. Suggestions to this effect on fiscal policy are also a solution to these problems. In addition to bringing the effects of the 2008 crisis to an unsustainable indebtedness, the impact of the growing financialization since the 1980s increased consumer loans and brought about fiscal tightening and welfare restrictions. The data show that the standards of collective living have decreased and class inequality has increased. For this reason, it is seen that sustainable economic growth will be provided if alternative economic and social strategies bring permanent solutions instead of temporary ones. (Gough, 2011) It is thought that the inclusion of growth can be ensured through fiscal policies that support social welfare and employment. It is emphasized that the importance of the incentives provided by the government through the spending channel towards the investment and employment increasing production. (Stiglitz, 2014: 362-363)

3.4. CONSOLIDATION POLICIES

Consolidation policies have a negative impact on employment, growth and demand rather than constructive and budgetary restorative effects. In particular, the indebtedness and growth of the PIIGS countries, which are obliged to consolidate with increased indebtedness, shows that this strategy increasing the risk instead of
reducing the debt. The suggestion of this condition is that negative effect of consolidation can be balanced with growth-enhancing incentives which debt can be closed to the extent spread over time. (Blyth, 2017: 15-22) It is emphasized that the multiplier effect that will occur in case of the distribution of state expenditures to production and investments will be more than the contractionary effect of interest which is increased with inflationary effect. This is because the impact of such a policy on increasing investments, employment, growth and tax revenues will have a multiplier effect. Here, the necessity to rectify the deterioration in the demand channel before and after the crisis has been revealed that the demand policy should be prefential than supply policy. For this reason, in the plane where the spending and consumption channel is shrinking with increasing inequality, the austerity policies make the situation more inevitable. (Stiglitz, 2014: 311-313) It is seen that the problems of consolidation, which are brought to the agenda especially after the crisis, will open up the social problems. (Piketty, 2014: 507-529)

Another assessment is that the austerity policies applied to reduce the debt after the financial crisis prevent economic growth and turn the crisis into a winding. As a result of the crisis, the real economy crisis, which stood still with the economic performance and unemployment rate, the risk of not being able to find credit from banks, and the debt default that was created by the effect of the taxes raised by the states as a last resort, became a general problem. (Streeck, 2016)

3.4. FOREIGN TRADE POLICIES

The fact that countries are divided into two with a surplus of savings and deficiencies brings about new crises and imbalances, also reveal the necessity to make more investments especially in the countries in need. The comment made in this context is a recommendation to the criticism of the current account imbalances effect on crisis. (Stiglitz, 2010)

3.5. INCREASING REAL INCOME

It is known that tax and social policies aimed primarily at removing the impoverishment strategy in real incomes did not go to a significant increase. In this context, the inadequacy of the measures taken by fiscal policies on a global scale has been revealed. The IMF report also drew attention to this fact and the creation of Universal Basic Income (UBI) was also emphasized. It has brought to the agenda a wide-ranging fiscal policy that includes support for the whole community, including support in many areas such as child benefit, social benefits, tax strategies, wage incentives, education and health. Nevertheless, the financing of such an arrangement is subject to debate on the level of countries that continue to borrow. (IMF, October 2017)
4. CONCLUSION

It is seen that some of the problems faced by the fiscal policy since the 2008 crisis have become more chronic. The increase in indebtedness, impoverishment and income inequality in the real, public and household spiral became evident. There was a significant change in the composition of taxes and the distribution of taxes. This situation has highlighted the mission of redistribution of fiscal policy, solution of income inequality, debt spiral, production support, fairer tax regulation, recovery of chronic deterioration in demand channel on both local and global level. In other respects, it is clear that the policies implemented should support the deterioration of the demand channel in the long term and should be more selective.

The proposed fiscal policies are in fact a solution of these problems. The most controversial issue is to support the increase in tax revenues by providing a fair tax system and to eliminate poverty and real wage wear, which become a structural problem. Considering income inequality in the current system, the issue of taxation is disproportionate with the income level and the progressive rate system is not applied in a real sense. Furthermore, the existence of legal gaps has made the issue of tax evasion constantly controversial. Two solutions are noteworthy. First, taxation of the upper income segment to more efficient asset, wealth and property tax oriented. Second, taxation of more risky and negative than production processes. The financial transactions, which are criticized as central to the crisis, are expected to be taxed on the one hand and on the other hand taxation of the items causing negative externality is required.

The debates on the deterioration of real income and demand channel have led to criticism on both taxation strategies and social policies implemented. This also brought about proposals for changes in the growth strategy, responses to consolidation policies and global real income policy. In the taxation strategy, relatively rapid increase in income and indirect taxes began to suggest alternatives. The priority of preference for goods with luxury goods and negative externality is the point of indirect taxes. Additionally, the cost of reducing education and health policies in the long term is emphasized. Considering the effect of increasing the income level of education, it is thought that the deterioration in income distribution will become more chronic with the support of the states. In health expenditures, the importance of supporting those who cannot reach these services is emphasized. In fact, all these suggestions are policies that can alleviate the debt spiral behind the deteriorating growth composition. Therefore, the issue of egalitarian growth has been discussed in the recent period. In a report on inequality, the IMF has even stopped the determination of a universal income level and accepted the chronic problem. However, this subject seems not to be dealt with critically yet.

Within the framework of these evaluations, the problems faced by the fiscal policy from the crisis to the present day have become more complicated. However, although the problem of fiscal space and increased indebtedness have increased in general terms, some countries are in a much worse situation. In particular, foreign trade policies have been proposed to overcome this imbalance. Therefore, problems need to be solved more globally than local plane and more selectively.
GRAPHS

Graph 1: OECD Average General Government Data (Percentage of GDP)

Source: OECD, May 2019

Graph 2: OECD Average General Government Data (Percentage of GDP)

Source: OECD, May 2019

Graph 3: OECD WA Change in the structure of general government expenditures by function_2007-2016
Graph 4: OECD Average Number of People Taking Social Assistance (2006-2016)

Source: [https://data.oecd.org/](https://data.oecd.org/)
Graph 5: OECD Average Unemployment Rate

Source: OECD, May 2019

Graph 6: OECD Average GINI Coefficient

Source: OECD, May 2019
Graph 7: OECD Average Poverty Rate

![Graph 7: OECD Average Poverty Rate](image)

Source: OECD, May 2019

Graph 8: OECD Average Tax Rates (Percentage of GDP)

![Graph 8: OECD Average Tax Rates (Percentage of GDP)](image)

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Graph 10: 2006-2018 Debt Differences in Current Account Surplus and Deficit Countries

Source: OECD, November 2019
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Source: OECD, November 2019

Graph 12: Growth Rate

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Source: OECD, May 2019

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Source: OECD, May 2019
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Source: OECD, May 2019
REFERENCES


Role of Plants in Roman Economic System in Classical Antiquity

Hüseyin Doğan

1. INTRODUCTION

Historical adventure of mankind constitutes, in a sense, its efforts to make sense of the earth together with its contents, and finally to name and denote them. Naturally, this denotation becomes richer with regard to the objects people interact the most. In this regard, plants provide quite a good example to illustrate the previous sentence. Depending on numerous qualities such as their benefits for humanity, their economic value, the shape of their fruits, the type of their leaves, their tastes, their being edible or poisonous, their having a short or long life cycle, their habitats, plants were given different names by each nation and these names have survived until the present day without much change.

<table>
<thead>
<tr>
<th>In the Assyrian and Sumerian languages</th>
<th>In Latin</th>
<th>In English</th>
</tr>
</thead>
<tbody>
<tr>
<td>As</td>
<td>assa-foetida</td>
<td>Asafoetida</td>
</tr>
<tr>
<td>Azupiranu</td>
<td>Crocus sativus</td>
<td>Saffron</td>
</tr>
<tr>
<td>Anbar</td>
<td>Liquidambar</td>
<td>Sweetgum</td>
</tr>
<tr>
<td>Harubu</td>
<td>Ceratonia</td>
<td>Carob</td>
</tr>
<tr>
<td>Kudimeranu</td>
<td>E. cardamomum</td>
<td>Cardamom</td>
</tr>
<tr>
<td>Karsu</td>
<td>P. cerasus</td>
<td>Cherry</td>
</tr>
<tr>
<td>Murru</td>
<td>C. myrrha</td>
<td>Myrrh</td>
</tr>
<tr>
<td>Nushu</td>
<td>P. dulcis</td>
<td>Almond</td>
</tr>
<tr>
<td>Papa</td>
<td>Papaver</td>
<td>Poppy</td>
</tr>
<tr>
<td>Samassammu</td>
<td>Sesamum</td>
<td>Sesame</td>
</tr>
</tbody>
</table>

Table 1: Currently used equivalents of the names of the plants considered merchantable by the Assyrians and Sumerians and as they were used in the Roman civilization.  

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1 This paper is based on the author's master's thesis entitled "Plants in the Roman Culture." The author expresses his thanks to his thesis adviser Dr. Sema Orsoy.

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3 Howard S. Reed, A Short History of the Plant Sciences, Waltham, Chronica Botanica, 1942, p. 10.
Classification of an object in any way as beneficial or harmful since its existence makes this object compulsory to be identified. Identification is usually based either on inspiration drawn from an object already identified (for example, identification of the plant whose leaves resemble tooth as (Leontodon L.⁴)⁵ or on the most prominent characteristic of the object that needs to be identified. Indeed, this is simply the transfer of traditional knowledge and in time such identification turns into a cultural, or more specifically, professional code. For example, one of the ways Helleborus orientalis⁶ Lam. is extensively named in Turkish is “danabağırtan” (literally, what makes cattle bellow); this plant which grows in the open space on the edge of forests is harmful to herbivore animals; thus, this identification acted as a warning sign in the regions of antiquity such as Rome, economy of which largely depended on farming.

From this perspective, it is no coincidence that plants are given plural names (woods, bushes, the fruits, the weeds etc.) in the oldest language known and even in the dialects of that language.⁷ As early as the prehistoric period, people had named all the significant plants known in the modern world, even used them as healing herbs, and cultivated them for food.⁸ When the need for shelter arose, these people used the trees nearby to build or decorate their caves or houses. The same was also true when the need arose for nutrition and, over time, for health. In the first paragraph of the 12th volume, which is spared for trees, of his book entitled Naturalis Historia (Natural History), Roman natural historian Plinius (Pliny the Elder), explains the onset of the relationship between humans and plants and the use of plants for economic purposes as follows: “The trees and forests being regarded as the most valuable benefits conferred by Nature upon mankind. It was from the forest that man drew his first aliment, by the leaves of the trees was his cave rendered more habitable, and by their bark was his clothing supplied. With the vessel built from the tree, man could discover faraway lands; he used the timber for building homes and even carved his gods from the trees.”⁹

As a consequence of the expansionist policy during both periods, namely when it was a Republic and an Empire, the Roman civilization cultivated either friendly or hostile relations with cultures and nations first in the Balkans and Anatolia and later in the Middle East and North Africa, having been influenced by these cultures or influencing them to some extent. During this phase of interaction, the Roman civilization, not only transferred what he had to these geographies, it also helped values of the Hellenistic civilization, which also bred its own culture, to become more recognized. Moreover, the Roman and Hellenistic civilizations had also remarkably influenced the cultures of Europe and America, currently known as the western civilization.¹⁰ History of plants is one of the ways that leads to the understanding of the cultures, religions, and traditions Rome had

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⁴ In writing the scientific denotation of a plant, the name of plant is followed by the standard abbreviation of the scientist who introduced the plant to the literature and this abbreviation is not italicized. As seen in this example, the genus Leontodon was described first by Carl Linnaeus; so its name is followed by the author's botanical pseudonym L. In the paper, the scientific names of the plants are followed by the pseudonyms of the respective scientists.


⁸ Reed, ibid, p. 7.

⁹ Plinius: XII.1.

interacted with, as well as the economic relations it had set up with them. For instance, when Gnaeus Pompeius Magnus defeated King Mithridates VI of Pontus in Anatolia, he celebrated his victory by exhibiting *Diospyros lotus* L.\(^{11}\) (Caucasian persimmon), which grew in Anatolia.\(^{12}\) Likewise, Lucius Licinius Lucullus exhibited *Prunus avium* L.\(^{13}\) (cherry) plant, which did not grow in Italy beforehand, after his victory against Mithridates VI.\(^{14}\) Both plants first came to Europe through these events mentioned. It was not at all unusual for the above named generals to consider the aforementioned plants as a symbol of victory since they could be regarded as exotic plants in Italian peninsula. Nevertheless, the fact that eleven of the top twenty countries that currently produce the most cherries are located in Europe is a significant example in explaining the economic influence of Rome, which brought this commercially valuable plant from Asia to Europe and helped it propagate around the continent during its long-lived reign over the greater part of Europe.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Production (in metric tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Turkey</td>
<td>480,748</td>
</tr>
<tr>
<td>4</td>
<td>Italy</td>
<td>104,766</td>
</tr>
<tr>
<td>5</td>
<td>Spain</td>
<td>98,400</td>
</tr>
<tr>
<td>9</td>
<td>Ukraine</td>
<td>72,600</td>
</tr>
<tr>
<td>10</td>
<td>Russia</td>
<td>72</td>
</tr>
<tr>
<td>11</td>
<td>Romania</td>
<td>70,542</td>
</tr>
<tr>
<td>12</td>
<td>Greece</td>
<td>60,300</td>
</tr>
<tr>
<td>13</td>
<td>Poland</td>
<td>41,063</td>
</tr>
<tr>
<td>14</td>
<td>Austria</td>
<td>38,680</td>
</tr>
<tr>
<td>16</td>
<td>France</td>
<td>30,440</td>
</tr>
<tr>
<td>17</td>
<td>Germany</td>
<td>23,005</td>
</tr>
<tr>
<td>19</td>
<td>Serbia</td>
<td>22,213</td>
</tr>
<tr>
<td>20</td>
<td>Bulgaria</td>
<td>19,512</td>
</tr>
</tbody>
</table>

Table 2: The top 20 countries with the most shares in cherry production as of 2017.\(^{15}\)

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\(^{11}\) Linnaeus, Tomus II, p. 1057.
\(^{12}\) Plinius: XII.9.
\(^{14}\) Plinius: XV.30.
In the world of antiquity, geographies were mainly known with their resources above the ground, a part of which was the commercially valuable plants. These plants were naturally named after the areas from where they spread. In a way similar to the examples in the modern world, the scientific name of the plant “pomegranate” is *Punica granatum* L.\(^\text{16}\) and the word “*Punica*” means “Carthaginian.” This fruit was sold in the markets of Rome with the label “Carthaginian pomegranate” that was the name of Rome’s fierce enemy; so, it also had a symbolic meaning. As seen in the example above, Pontus was an area where the cherry plant was grown and the fact that this plant was brought to Europe by Rome itself is a concrete indicator that Rome stretched as far as Pontus and economic values of that place was included under Rome’s economic system.

The Roman literature offers a rich variety of texts on plants; and, this might seem as a foregone conclusion when the conditions are considered. This is because each class had direct connection with plants. Various classes of society used plants to earn their living; soldiers learned about plants that could be eaten during military expeditions or used to heal various injuries; the Senate and the bureaucracy class, on the other hand, were interested in plants in a horticultural sense. Characteristically, Rome was a state that was based on agriculture. Therefore, they developed agriculture and increased production. Senior statesman like Cato the Censor wrote works completely devoted to agricultural development and production increase.\(^\text{17}\) This is the first Latin work written about agriculture. It was penned with a pragmatic point of view and aimed to guide Roman farmers about growing grain and legumes with commercial value, as well as growing and caring for fruit trees. In “*Histoire de l’antiquité*”, Diakov and Kovalev describe this situation with the following striking expressions: “Romans managed to dry wetlands sparing a great deal of effort and the whole Latium kept looking like a flower garden until the early times of the Medieval Age. As conveyed by the tradition, even ‘senior senators’ did not despise cultivating their lands in person and making drainage canals.”\(^\text{18}\)

Gardening was regarded as an honorable occupation by the Roman aristocracy even to the extent that many Roman aristocrats preferred plant names as *cognomen*.\(^\text{19}\) The splendor of gardens was so important for the Roman aristocrats that it sometimes caused rivalry among them. As Plinius reports, as a consequence of the rivalry between Gnaeus Domitius Ahenobarbus and Lucius Licinius Crassus, the price of six trees rose to even 10 million *sestertii*.\(^\text{20}\)

### 2. ABOUT THE ROMAN CIVILIZATION

Tekin maintains that historians described “the process of Rome’s establishing sovereignty over the Mediterranean Sea as the Roman Miracle.”\(^\text{22}\) This concept signifies a civilization,

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\(^{16}\) Linnaeus, ibid, p. 472.

\(^{17}\) Greene, ibid, p. 9.


\(^{20}\) For comparison purposes, the following information will be useful: The annual fee of an infantry soldier was 900 *sestertii* during the reign of Augustus (Gaius Julius Caesar Octavianus). See: Michael Speidel, “Roman Army Pay Scales”, Sonderdruck aus: M. A. Speidel, Heer und Herrschaft im Römischen Reich der Hohen Kaiserzeit, Stuttgart 2009, 349-380.

\(^{21}\) Plinius. XVII.1.

which had once been a minor city-state, having survived many traumatic difficulties and confronted many enemies, had established hegemony over a significant part of the world known on that date. On the other hand, the Roman civilization did not influence the modern world not only with its military or political achievements. In the modern civilization, it is possible to see the traces of the Roman civilization in many areas from architecture to art, from literature to law, from culture to belief system and even to the cosmopolitan structure. Although it had experienced fundamental changes in its power device and evolved from being a kingdom to a republic and from a republic to an empire, these regime-related changes did not lead to any interruptions specific to the civilization. Accordingly, the phase of the Roman civilization, which encompasses the period between the arrival of Aenas in Italy and the start of Christianity’s spread, could not be evaluated in a way that is independent of each other.

3. ROLE OF PLANTS IN ROMAN ECONOMIC SYSTEM

Ancient people, no matter what their occupation or rank, were very involved with plants. They were also keen on animals, which they were not familiar with, as well as plants. Either due to religious or economic reasons, it is an obvious fact that plants occupied more place in the lives of ancient people in comparison with the lives of modern people. Plants were first used as nutrient and merchandise, then their healing features were discovered and these discoveries in time culminated in a culture of using medicinal plants.

First, the knowledge of medicinal plants was transferred from generation to generation within families; later, experts on these plants emerged within tribes. Unlike shepherds and farmers, these people not only identified the plants, they also had an insight about their benefits and harms. Herbalists used to pick up the plant parts necessary to make a certain medicine and sell these in places called pharmacopolai and rhizotomoi. In this respect, it is really important that Hercules call god of medicine Aesculapius “an insane person looking for plant roots.”

When the phase of ethnobotany was replaced by natural sciences, which were rising in the Hellenistic and Roman civilizations, the ancient travel writers, who were keen on natural sciences, compiled this information into written documents. This information compiled in written documents spread to the whole world known as a consequence of the cultural interaction of nations.

Numerous works were written on plants due to the fact that plants were regarded as an economic power resource because of their benefits, and that much attention had been attributed to them because of their symbology in the polytheistic ancient world. That the works in question were translated into significant languages of the period such as Latin or Greek ensured the transfer of every new finding regarding botany to the geography of antiquity; by this means, the economic value of certain plants increased, and also the religious or medical significance attributed to them were transferred from one culture to another. These plants will be exemplified in the following sections of our study.

24 Reed, ibid, p. 8.
Although there are many factors that define the market value of a certain plant, this value always peaked depending on the interest of the noble class in the plant. Emperor Vespasianus Augustus initiated the tradition of dedicating cinnamon (Cinnamomum verum) inserted in embossed gold in the Temple of Capitol and Pax the Goddess of Peace. In addition, this plant was specifically produced for use during cremation of the dead; thus, it was believed to have been bestowed to humans by gods for this purpose. Emperor Nero had a huge amount of cinnamon burned at his wife Poppaea Sabina’s funeral. Cinnamon was, on the other hand, used for the purpose of relieving the bad odor caused by the burning of dead bodies. Pliny thinks that cinnamon was indebted its claim to fame to the gods below far more than the gods above, as an allusion to the deification of the Roman emperors by the Senate. Definitely, it was not possible for the public to be able to use as much cinnamon as Nero; yet, they did not from making use of cinnamon for this purpose. Furthermore, in order to increase the price of cinnamon, stories had been made up that this tree was protected by formidable bats and serpents with wings, and this being the case, the price of this plant rose and became astronomically high.

For personal care, the Roman people would use herbal oil instead of being washed using water. The origins of this goes back to the texts written by the historians around Alexander the Great after the defeat (331 BC) of Darius III by him on the perfumes and herbal oils found in Darius’ tent. Herbal oil and perfume were considered luxury goods in Rome. Nevertheless, it is not certain when Rome had first encountered herbal oil and perfume. Yet, the use of herbal oil and perfume was prohibited under the frame of measures of public savings in 189 BC during the censorship of Lucius Iulius Caesar and Publius Licinius Crassus since their use was considered squander. As a result, these goods started to be smuggled and led to the enrichment of a group, which involved some state officials as well.

Papyrus (Cyperus papyrus), grown in Egypt, was used to make paper and thus, it was possible to record events. Marcus Terentius Varro notes that papyrus began to be used for the first time when Alexander the Great founded Alexandria. During the rivalry between Egyptian Pharaoh Ptolemaios and Pergamon King Eumenes II about the size of their libraries, Ptolemaios banned the export of papyrus; and, this led to the discovery of parchment.

The books were covered with the leaves of Citrus, (a species of which orange, whose symbolic equivalence in Roman literature is “generosity” is also a member) species; therefore, it was ensured that the books were protected from worms.

Silphium, which is believed to be extinct today, was highly valuable in antiquity and it was worth its weight in silver denarius. Theophrastus reports that it was impossible to cultivate the silphium plant, which was quite popular in antiquity due to its the aphrodisiac and narcotic potential of its seeds; and, the plant was never seen again after the

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26 Plinius: XII.41.
27 Plinius: XII.42.
28 Plinius: XIII.1.
29 Plinius: XIII.5.
31 Plinius: XIII.37.
32 Plinius. XIX.15.
33 Theophrastus: VI. III.3-5.
period of Emperor Nero (68 AD). The economy of the Cyrenaica region, which is located in modern Libya, depended on this plant to a great extent. On one side of a Cyrenaican coin, believed to date back to 3 BC, is depicted the portrait of Cyrenaican King Magas whereas an embossed image of silphium plant is shown on the other side. Gaius Iulius Caesar, who was a dictator during the civil war (bellum civile), spent not only the gold and silver in the state treasury, but used the silphium seeds as well. It was also used to feed sheep and goat because the meat of animals fed on it was very delicious.

The red paint, which was thought to be herbal during the Roman period, but in reality produced from an insect called Kermes (Kermes Latreille) living on Kermes oak (Quercus coccifera), was used to dye the military uniforms of the Roman legatus.

As it was also touched upon in the introduction part, the plants with a characteristic feature (related to its fruit, smell, or nutrition value, etc.), which do not belong to Italy or Hellas, were naturally named after the areas from where they spread. For instance, Medicago sativa L. an important forage legume for herbivorous animals was first introduced in Europe during the invasion of Hellas by Achaemenid Emperor Darius I (492-490 BC). It was coined this name since the native land of the plant was known as Media. The scientific name of the plant used today refers to this connection, as well. This plant helped reduce the cost of long and exhaustive military expeditions certainly with its nutrients, as well as its features such as being produced easily, kept and carried easily and being able to tolerate many habitat values.

4. PLANTS WITH ECONOMIC VALUE IN ROMAN CIVILIZATION

The Roman Civilization was basically an agricultural civilization, backbone of whose economy was based on revenues obtained in return for agricultural products, with the fertile Po Plain involving numerous vast latifundias. This system based on agriculture resulted in a great need for labor force; thus, the need to employ slaves led the Roman state to turn into an imperial state, having assumed an increasingly more militarist structure. Therefore, numerous works have been written regarding the selection of commercially valuable plants, location of the land to be cultivated, and the conditions necessary for cultivation, several of which include Marcus Porcius Cato’s De agri cultura, Marcus Terentius Varro’s De re rustica and Gaius Plinius Secundus’ Naturalis Historia. All of these works propose plants of economic and cultural value for the Roman peasants to cultivate; in addition, a number of methods are shown including the conditions of an ideal land of agriculture and the selection of workers. Moreover, how to produce important items of export such as honey, wine, and olive oil was demonstrated in detail, while recommending the cultivation of plants used in chaplets or perfume production.

In the early periods of Roman Civilization, gardens with various plants were a characteristic part of Roman houses. These gardens had a large number of plants both for

36 Theophrastus: VI. III.1-3.
37 Plinius: XXII.3.
38 Linnaeus, ibid, p. 778.
39 Plinius: XVIII.43.
40 Virginia Farmer, Roman Farm Management (The Treatises of Cato and Varro), London, Hodder and Stoughto, 1913, p. 31.
use in the kitchen and, to be dedicated to various gods, as a way of worship. However, due to the enlargement of the civilization’s borders, the population increased and these gardens gradually turned into agricultural lands, being cultivated to grow plants directly appealing to the market. In these gardens, many plants such as basil (*Ocimum*), dill (*Anethum*), lovage (*Ligusticum*), mint (*Mentha*), thyme (*Thymus*), marjoram (*Origanum*), parsley (*Petroselinum*), rue (*Ruta*), savory (*Satureja*), aniseed (*Pimpinella*), laurel (*Laurus*), fennel (*Foeniculum*), coriander (*Coriandrum*), cumin (*Carum*), leek and onion (*Allium*), opium poppy (*Papaver*), sesame (*Sesamum*), and many other plants were grown. These plants were both sold and used in the house for the needs of the household. Varro states that all Italy looked like a huge garden in 1st century BC. The data obtained from the Pompeii excavations clearly show the importance of gardens within the Roman economic system. Accordingly, 9.7% of the total lands were farms growing plants, 5.4% were gardens and 2.6% were public green spaces.\(^{41}\)

In addition to the plants grown as food, various plants that appealed to daily life were grown based on their monetary value. A rich symbology is manifest in the literature of Roman civilization, especially in the early periods since its foundations were laid on myths and legends. This is the natural consequence of the interactions the civilization formed with symbology-intensive cultures. In this respect, the Roman civilization could be likened to the neat and tidy version of the Hellenistic, Mesopotamian and Egyptian civilizations. Naturally, the use of plants both for religious and daily purposes was the result of this transfer. More precisely, 134analyse, which was considered to be highly sacred in the Roman civilization, had also been regarded as sacred in the previous Greek, Etruscan, and Celtic civilizations as well.

The first examples of using plants to obtain fragrance or oil and then turning these into commercial goods were seen in Eastern societies. As a result of the raids organized by first Alexander the Great and then the Roman civilization into the East, many things in these regions that could be considered foreign to Europe were taken back to Europe, including perfumery. In time, the consumption of fragrances and herbal oils became popular as a determinant of social class in Roman civilization; thus, their prices increased quite drastically. At the same time, it is observed that the number of works written in this field naturally increased as well.\(^{42}\)

In the Roman Empire, plants were used as a means of celebrating victories, congratulating, showing respect or appreciation and worshiping.\(^{43}\) A victory celebration parade was held along the main roads of Rome for the senior commanders of the army, which came back with a victory from the military expedition. The roads were decked with flowers and Roman people would strew flowers over the procession.\(^ {44}\) The triumphant soldiers would wear crowns made up of various plants in line with the degree of importance of their victory. These crowns of victory were regarded quite important and worn with pride by their owners.\(^ {45}\) The crowns earned at the end of competitions were so important that this issue was regulated by a specific article in the Law of the Twelve Tables (*Leges Duodecim*

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\(^{41}\) D’Andrea, ibid, p. 25.
\(^{42}\) Phillips, ibid, p. xiii.
\(^{43}\) Cato 134.
\(^{45}\) Suetonius: Augustus.22.
Tabularum). Hence, the law: “When man wins crown himself or through chattel (refers to the slave who participates in the race in his owner’s name; this is similar to hiring a jockey today) or by dint of valor crown is bestowed on him that it was a crown earned by the slaves or the horses which is said by the law to be won through his chattel has been doubted by no one.”

The increased importance given to plants in everyday life led to the development of the flower industry in Roman Civilization; the flowers which were customarily used for religious or cultural purposes were grown and sold at the markets before the victory parades or festivals.

Sage (*Salvia officinalis* L.): Sage is one of the plants attributed to God Jupiter and its medicinal value is rather high. In addition to being used for drying hair black, it was also referred to in ulcer treatment. Its use for miscarriage led its economic value to rise substantially.

Rosemary (*Rosmarinus officinalis* L.) was known as a symbol of both life and death. It was used in funeral because of its strong scent and in cooking because of its seasoning value. Rosemary was one of the traditional horticultural plants in the Roman civilization. It was used to make chaplets.

Walnut (*Juglans regia* L.): There were many varieties of walnut that were believed to represent marriage in terms of its fruit structure and it was a popular plant.

Laurel (*Laurus nobilis* L.): Laurel, which was accepted as the plant of Apollo, was considered very important in both Greek and Roman belief systems. A chaplet made of laurel leaves was given as an award to those who gets a place in the traditional games in Greece whereas it was given to the *legatus* who exhibit success in the battlefield. Traditionally planted in gardens and public areas in Rome, laurel was also used for cooking and perfume production and because of its medical value, it was considered to be a profitable plant to be grown. Cato also referred to the economic value of laurel and recommended that it be planted in the gardens together with myrtle. Laurel was regarded as so important in the Roman Civilization that it was strictly forbidden to cause any damage to this plant; so much so that it was even forbidden to be burned at the altar or for dedication to the Gods.

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46 Plinius: XXI.3-5.
48 Linnaeus, ibid, p. 23.
49 Dioscorides, III-40.
50 Linnaeus, ibid, p. 23.
51 Dioscorides, III-89.
52 Linnaeus, Tomus II, p. 997.
54 Linnaeus, ibid, p. 369.
55 Cato 31.
56 Plinius: XV.40.
Dill (*Anethum graveolens* L.\(^{57}\)): Used as food, medicine and for making chaplets in festivals. It was also a part of gladiators’ diet.\(^{58}\)

Basil (*Ocimum basilicum* L.\(^{59}\)): Basil was a love symbol in Rome while it referred to the concepts of hate, misfortune and lament in Ancient Greece. This plant was used as an aphrodisiac in addition to its culinary use and medical values.\(^{60}\)

Rose (*Rosa* L.\(^{61}\)): Rose was very popular to grow due to its aesthetic value. Although it was initially used in funerals, it was also used in wedding ceremonies, festivals, and victory parades in time. Roses were scattered over the way or the vessel while the army goes on an expedition or a cruise.\(^{62}\)

Esparto (*Stipa tenacissima* L.\(^{63}\)): Esparto was used to make clothes, shoes, rope, and forage. The Romans gained knowledge about the uses of esparto during the Punic Wars (264-146 BC) fought with Carthage.\(^{64}\)

Mustard (*Sinapis* L.\(^{65}\)): Mustard was regarded as an extremely important medical plant. It was used to prevent hair loss and to treat bruises as well.\(^{66}\)

Borage (*Borago officinalis* L.\(^{67}\)): Borage has both culinary uses and medical value.\(^{68}\)

Oregano (*Origanum vulgare* L.\(^{69}\)): Traditionally, oregano was planted on graves. Its medical value is extremely high.

Thyme (*Thymus vulgaris* L.\(^{70}\)): Thyme was believed to inspire courage so it was used by athletes and soldiers. It is favored for honey production. Its culinary uses are mainly as a seasoning and a herb. In addition, it was referred to due to its numerous medical benefits.\(^{71}\)

Chestnut (*Castanea sativa* Mill.\(^{72}\)): There were eighteen varieties of chestnut, which was one of the popular trees of Roman civilization, during the time of Plinius.

Flax (*Linum usitatissimum* L.\(^{73}\)): It was used while sacrifices were offered to gods. Battle of Actium (31 BC), the final war of the Roman Republic, took place among Cleopatra, Augustus, and Marcus Antonius. Cleopatra participated in the Battle of Actium with a

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\(^{57}\) Linnaeus, *ibid*, p. 263.

\(^{58}\) Dioscorides, *III*-67.

\(^{59}\) Linnaeus, *ibid*, p. 597.

\(^{60}\) Dioscorides, *I*-59.

\(^{61}\) Linnaeus, *ibid*, p. 491.

\(^{62}\) Folkard, *ibid*, p. 28.

\(^{63}\) Carl von Linnaeus, *Centuria I Plantarum*, Uppsala, Amoenitates Academicae, 1755, p. 6.

\(^{64}\) Plinius, *XIX*-7-9.

\(^{65}\) Linnaeus, Tomus II, p. 668.

\(^{66}\) Dioscorides, *II*-184.

\(^{67}\) Linnaeus, *ibid*, p. 137.

\(^{68}\) Dioscorides, *IV*-128.

\(^{69}\) Linnaeus, Tomus II, p. 590.

\(^{70}\) Linnaeus, *ibid*, p. 591.

\(^{71}\) Dioscorides, *III*-46.


\(^{73}\) Linnaeus, Tomus II, p. 277.
treasure ship with sails dyed in purple with flax. Afterwards, this color was used only in the emperor’s ship and became the official color of emperor’s ship.\(^{74}\)

Coriander \((Coriandrum sativum\) L.\(^{75}\)): In addition to its uses as a spice, herb, and medicine, it was also used as a food preservative.\(^{76}\)

Parsley \((Petroselinum crispum\) Mill. (Fuss)\(^{77}\)): Parsley was planted on graves and also it was given as an award to the winners of the Nemean Games.\(^{78}\)

Myrtle \((Myrtus communis\) L.\(^{79}\)): Myrtle was regarded as a plant sacred to goddess Venus. It was burnt during funerals due to its intense scent. Myrtle shrub the first to be planted in public places in Rome by the government itself was considered to be extremely important in all phases of civilization.\(^{80}\)

Mint \((Mentha\) L.\(^{81}\)): Mint was used during funerals because of its strong scent. Mint, used extensively during feasts, was also used as a spice and herb for culinary purposes.\(^{82}\)

Leek \((Allium ampeloprasum\) L.\(^{83}\)): Leek owes its fame to Emperor Nero to a great extent since he followed a strict leek diet to protect his voice.\(^{84}\)

Fennel \((Foeniculum vulgare\) Mill.\(^{85}\)): Fennel was highly significant for all the Mediterranean civilizations. It was cultivated and used as a part of various religious rites and consumed by athletes in Ancient Greece and soldiers in Rome due to its physical effects.

Saffron \((Crocus sativus\) L.\(^{86}\)): Saffron, the most important item of export in the Ancient Crete Civilization, maintained its importance in the Roman Civilization as well.

Garlic \((Allium sativum\) L.\(^{87}\)): Garlic was quite popular although those who it would be prohibited from entering the temples. Being a plant that belonged to Mars, the god of war, garlic would be consumed in high amounts both by the public and the army. In addition to its aphrodisiac effects, garlic was thought to boost one’s courage. Garlic would also be hanged at the entrances of houses with the belief that it would drive away evil spirits.\(^{88}\)

Rue \((Ruta graveolens\) L.\(^{89}\)): Rue had a high medicinal value, but it was use also for biologic warfare due to its poisonous effects.\(^{90}\)
Onion (*Allium cepa* L.\(^91\)): Onion was one of the primary foods and medicines for the poor people in the Roman civilization.\(^92\)

Iris (*Iris* L.\(^93\)): Iris was goddess Juno’s plant and it was one of the important items of floriculture in the Roman civilization. It was used intensively in the perfume production.\(^94\)

Vine (*Vitis vinifera* L.\(^95\)): It was a common religious rite to consecrate wine to gods in the antiquity. However, Romulus poured milk instead of wine to consecrate it to gods. With his Posthumian law, Numa Pompilius prohibited the pouring of wine on the ground in order to honor the dead in the funeral ceremonies. The main reason for passing this law was to prevent the scarcity of wine. The same law also banned the pouring of the wine produced from the uncut grapevines to consecrate it to gods. In this way, people were encouraged to prune the grapevines in order to increase the productivity.\(^96\) To demonstrate the economic importance of wine, it can be said that the legendary Etruscan king Mezentius agreed to help the Rutulians against the Latin attacks if they gave all wine produced in Latium to him.\(^97\)

Olive (*Olea europaea* L.\(^98\)): Olives and olive oil were important products for the Roman economy. Associated with goddess Minerva, olive was discussed extensively in the works of Fenestella, Columella, Varro, Caro and Plinius. The country lacked the olive trees during the early years of the Roman empire, but thanks to its economic value, it was introduced first to Italy, and then, by the hands of Romans, to Gaul and Spain. In the Roman Empire, the price of olive oil would be announced annually and it was traded with the announced prices. During the consulship of Pompeius, the Roman Empire was exporting olive oil.\(^99\)

5. CONCLUSION

The political and cultural transformation the Roman Civilization, one of the two greatest civilizations of the Classical Antiquity, went through between the dates from its first appearance in 753 BC until its transformation into being the most dominant empire in the Ancient Mediterranean world at the end of the Punic (264-146 BC) and Macedonian (III-II centuries BC) Wars, is quite interesting. The Roman Civilization, which influenced many different geographies and cultures from the British Island, isolated from the outer world to Hellas, the center of natural sciences; from the cold northern Europe covered with forests to hot Africa and Arabia covered with deserts in all areas, has been the subject of a myriad of research with its features such as policy, diplomacy, architecture, economy, military activities, belief system, etc.

To a certain extent, these works have preserved their importance for plant history researchers in that they present the accumulation of both the previous and contemporary

\(^{90}\) Plinius. XX.51.
\(^{91}\) Linnaeus, ibid, pp. 300-301.
\(^{92}\) Plinius. XX.20.
\(^{93}\) Linnaeus, ibid, p. 38.
\(^{94}\) Dioscorides. I-1.
\(^{95}\) Linnaeus, ibid, p. 202.
\(^{96}\) Plinius: XIV.13.
\(^{97}\) Plinius: XIV.13.
\(^{98}\) Linnaeus, ibid, p. 8.
civilizations. Today, most of the plants seen especially in Europe, Western Asia, and Northern Africa are known by the names used by Roman writers for these plants.

In parallel with both its political and cultural expansion, the Roman culture pioneered the transfer of many new plant species to the European continent and many commercially valuable species of trees and herbs were first introduced to European continent and cultivated there by the Roman Civilization. Likewise, many of the agriculture, horticultural, and farming related practices systematized by the Romans, although modernized today, continue to be used.

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An Institutional Approach to Industrial Intervention in Turkey: Analysis of Etibank Ereğli Coal Enterprises Activities (1937-1950)

Bengü Doğangün Yasa

1. INTRODUCTION

The state’s activities as an operator in the field of industrial interventionism began in the middle of the 19th century in Turkey. State administration in the industrial field has gone through three different periods. In the first period, the main purpose was to meet the official and military needs. In the second period which started with the Republic the state institutions were transferred to Industry and Mine Bank. The state enterprises wanted to gain an economic and commercial character. The 1930s, which were introduced into the statism model, formed the last period that brought a broad and planned State management regime (Apak, Aydınelli and Akın, 1952: 263).

Prior to the establishment of Etibank, the government did not have any similar initiatives in the field of mining. After the determination of the presence of coal in the Ereğli Coal Basin, the Ottoman Navy made some attempts to obtain the coal it needed. In 1848, coal mining activities in the Basin were given to some entrepreneurs by the İltizam procedure. Government institutions were prevented by public price application from being a profitable field of activity. Therefore private capital did not pay enough attention to Ereğli (Toros, 1954: 178).

Since the early days of the Republic, large capital has not been very enthusiastic about mining operations due to lack of mineral exploration activities. In addition, the mining industry, especially the coal industry, which involves underground operations, has presented various difficulties in terms of the supply of workers all over the world due to its risky character. The state has maintained its primary position for a long time because of considering the economic importance of energy generation and exploration of underground wealth.

The principle of increasing mine production capacity has been available with the establishment of the Republic in development plans (MTA, 1950: 5). Since then state activities in mining operations gradually began to show itself. In 1924, Zonguldak Mining Engineer School which was the first high school of the Republic was established in order to train mining engineers. In the same year, the Ministry of Finance owned 1/3 shares of Ergani Copper Mine Turkish Joint Stock Company. The state stake in this company was transferred to Industry and Mines Bank of Turkey in 1926; the only mining enterprise among the enterprises owned by the bank was this institution (Apak, Aydınelli and Akın, 1952: 264-265).

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Turkey Business Bank in conjunction with the company he founded in 1926, has been operating in the Ereğli Coal Basin. In 1926-1934, the establishment of Kozlu Coal Works in June 3, 1926, Mineral Coal in July 1, 1926 and Kilimli Coal Mining in March 1, 1927 were established.

In 1933, the Ministry of Economics prepared The Reports on Industrial Installations and Additions to the Organization of Enterprise and Attorney. This document, which will be called as First Five-Year Industrial Plan, was published as a book by the Ministry of Economics. The industrialization strategy adopted according to the plan aims at the production of basic necessities in Turkey. Based on these basic principles, the plan was prepared in accordance with the decision to establish factories in five sub-industry branches. These branches were selected as weaving, mineral, cellulose, ceramics and chemistry (Yücel, 2015: 36). The plan emphasized the necessity of a state organization in the mining area. Moreover, due to the importance of the mining sector, the aim of establishing a geological institute was exhibited. In 1935, the actual intervention of the state in mining, energy production and distribution has been started to be handled more systematically (Toros, 1954: 178).

The main economic framework of the Atatürk era emerged during the time of 1930s. Cultural, social and economic resources of the society were directed towards the goal of rapid development on a nationalist and Turkistic social basis. It was tried to develop underground and surface industries with holding type institutions such as Sümerbank and Etibank, which were named being inspired by Sumerian and Eti Turks (Zaim, 1965: 238-239).

The operation of the state in the field of mining and energy as an operator began with the establishment of Etibank in 1935. In addition to Etibank, in order to increase the efficiency of Etibank’s activities; It was decided to establish the Mineral Research and Exploration Institute (MTA) and the Electrical Power Resources Survey and Development Administration. According to the founding law of the Mineral Research and Exploration Institute; the Institute shall undertake the task of exploration of mineral resources. On the other hand all risks associated with exploration of the mine shall be undertaken by the Government. MTA which was founded to use scientific techniques in mine production has provided very useful information to Etibank (Yücel, 2015: 39).

2.INSTITUTIONALIZATION IN INDUSTRIAL INTERVENTION: ESTABLISHMENT OF ETIBANK

Etibank started its operations in December 1935 after a preparation period of approximately five months. Since 1936, it has started to produce mining and electrical energy and diversified its activities from year to year. In the first years following the establishment of the Bank; has undertaken investments in coal, lignite, chromium, iron and copper mines, and has undertaken the construction of a power plant in the energy field. During this period, as stated in the establishment law; has taken over some mining companies and established some businesses.

At the time when Etibank was founded, coal production in Ereğli was carried out by different enterprises. These institutions, which were technically very iptida, could not get
enough efficiency. Mining was often employed periodically, as farming was preferred over mining. The institution representing the state interventionism in the heavy industry field establishes and develops mining activities; it was also expected to transfer the establishments it established to private enterprises when economically favorable conditions arise. This expectation is expressed with the concept of 'institution' used in the establishment law. With the concept, a framework has been determined in which a state organization will be included in the scope of privatization within a certain period of time (Etibank Law Number 2805, Official Gazette, 22.06.1935, Issue: 3035). In addition to all these features, Etibank is required to follow a certain price policy.

Etibank, which started operations after the establishment of Sümerbank, shows that a certain institutional order has been achieved in the state-run model of heavy industry (Tuna, 2002: 70). The Authority also represents an important example in the control of economic resources. The necessity of ensuring the economic and political independence of an industrial economy has been shown as one of the important reasons for establishment (BUMH, 1940: 1).

Etibank has been established in many companies for the operation of different mines. In the following section, Ereğli Coal Enterprises, which is the largest institution of Etibank, will be analyzed for the years of activity between 1937-1950.

2.1. Etibank Ereğli Coal Enterprises Establishment Activities (1937-1950):

Ereğli Coal Enterprises has an important place in the history of Turkish economy. Although there are different views regarding the efficient management of the Ereğli Coal Mines by the Ottoman administration, it is known that the coal production in the basin has been sensitive.

The examinations on the Special Treasury records in the Ottoman Archives show that the mining activities in the basin have been carried out regularly since the month of Hijri 1257 Muharrem (February 1841). The gain from the operation of the mines appears to be 314,5 penny from the year 1841 to the end of 1862 (Ögreten, 2006: 142).

In 1847, Ereğli Coal Basin, which was taken over by the Treasury-i Hassa administration, was the first institution to operate coal with a six-partner company. It is observed that the duration of the company lasts three years (Ögreten, 2006: 142). Its partners consisted of statesmen who were in important administrative positions of the Ottoman Empire during the 19th century. This information shows that the Ereğli Coal Mine Company was founded earlier than the Şirket-i Hayriye, the first joint stock company established in the Ottoman Empire (Kazgan, 1999: 47).

The administration was taken from Special Treasury in 1865 and given to the Ministry of Navy because of the idea that the basin was not well managed and that sufficient coal could not be extracted. Dilâver Pasha, who started to work in Basin as the Minister of Mining in 1865, entered into an important reform movement in terms of work order and working conditions by removing Dilaver Pasha Ordinance (Topçuoğlu, 1956: 129; Alpdündar, 1965: 129). The first job obligation in the basin is allocated with this regulation (Alpdündar, 1965: 130).
After the proclamation of the Republic, the development of the basin was one of the issues that were taken into consideration in the forefront, and this work was primarily intended to be achieved through national capital. With the opening of the Grand National Assembly in Turkey (TGNA), the management of the Ereğli Coal Basin was transferred to the National Government. However, the basin was occupied during these dates. The coal extracted was saved by the Conflict Force Coal Commission established in Istanbul (Genç, 2007: 132).

Zonguldak Basin School of Mines Engineer, Industry and Mines Bank of Turkey and Turkey Business Bank institutions has played an important role in the development of the Ereğli Basin after 1923 Turkey Business Bank started to operate the quarries purchased in the basin with modern techniques (Savaşkan, 1993: 134). Through private banks, private capital entered into the Basin and production increased considerably. Turkey Business Bank increased the social opportunities of the workers (Alpdündar, 1965: 134). The Bank opened the Üzülmez Coke Factory in 1935. The plant was one of the pioneers of the steps to be taken for the coal industry.

2.1.1. Ereğli Coal Enterprises after Etibank Transfer

It was decided to transfer the Ereğli Coal Basin to Etibank and to operate it by an institution to be established by the Bank with Law 3241 dated 11.06.1937 (TBMM Z.C., Period 5, Year: 1937, Volume 19: 985-986). Ereğli Company, which has the most important and large production areas of the basin, thus passed to the administration of the state. Ereğli coal basin was the first example of this kind of enterprise. With the decision, the State owned a large enterprise in the Basin and at the same time retained the concession and license certificates of the quarries operated by a number of companies and entrepreneurs operating as tenants. One of the most important steps taken for coal mining was the nationalization of the basin.

Etibank Ereğli Coal Enterprise (Ekitaş) was established and put into operation with the decisions of the Board of Directors of Etibank in 1937. Some private quarries were purchased and joined Ekitaş between 1937-1939. This assignment has increased the strategic importance of the institution.

The close attention of the Republican Government to the mines and especially to the Zonguldak coal basin is evident from the parliamentary speech made by Prime Minister İnönü. He emphasizes the importance they attach to coal production with the expression; “Existing vehicles, conditions and opportunities in coal production are not wasted and to achieve maximum results” (MTA, 1939: 5). Coal production, which started with 597,499 tons increased to 2.588,957 tons in 1938.

The mines in the Ereğli Coal Basin by the state was decided to nationaliz by law 3867 in 30 May 1940. The law was named Nationalization Law or Fusion Law. Since than the quarries in Ereğli coal basin were nationalized for a certain compensation (TBMM ZC, Period 6, Year: 1940, vol 11: 166 ). Based on Article 1 of the Law; With the decision of Council of Ministers dated 15 October 1940 and numbered 2/14547, all private quarries were purchased from their owners and transferred to Ekitaş. With the decision of the Board of Directors of Etibank in October 23, 1943 and numbered 275/8, Ekitaş has been transformed into the Ereğli Coal Enterprise with this responsibility. With the transfer of the basin to the state, the capital of the establishment was increased from 6 million pounds to 52 million pounds in 1944.
For the more efficient operation of the basin, all these new regulations have been implemented. Although the coincidence with the years of World War II led to the postponement of the planned investment activities, many efforts were made to improve the infrastructure and new production facilities were established (BUMH, 1944: 3-5).

The years of World War II, together with the economic and social problems it created, constituted an important period. Although Turkey wasn’t into the war, war effects were encountered. It has been felt in almost all areas of economic and social life. Between 1938 and 1945, there was a 27% decline in GNP with fixed prices, while per capita GNP decreased to 63% of 1938 in 1945. After 1945, when the war was actually over, a stable process could not be entered immediately.

In addition to the difficulties experienced in the procurement of the means of production during the war years, one of the important problems was the shortage of labor. The absence of skilled workers has been felt in all victorious or defeated states, especially during the war years and the first years following the war (BUMH, 1946: 5). The problem of not providing sufficient labor force in the basin, including the pre-war period, was one of the factors that prevented coal production from reaching a sufficient level. When the profile of the labor force working in the basin is examined, it is seen that a very small portion of them are permanent mine workers, and the majority of the workers consist of short-term workers who work in mines during certain periods of the year and return to their villages (BUMH, 1944: 45).

In some documents of Etibank, it is stated that labor shortage will be met by the students to be sent to Europe by MTA (BUMH, 1943: 6). However, the lack of personnel is seen not only in technical affairs but also in administrative affairs, especially accounting. For this reason, Etibank gives importance to personnel training and education. The organization organized training programs on this occasion and also provided various social opportunities for seasonal workers. Etibank’s social policy includes issues such as providing various assistance to workers and their families, encouraging them to engage in cultural activities and taking care of health checks. Another point that draws attention to Etibank’s workforce policies is the employment of foreign employees to address the problem of lack of specialized personnel. By allowing the employment of foreign personnel who are experts in the work of the institution, it has tried to eliminate the lack of specialized personnel and aimed to train other personnel working in the institution by specialized persons. Foreign workers have also held senior management positions such as mining consultancy (BCA, 30.18.1.2/86.36.3).

In order to overcome this problem, the Government’s way of pursuing the National Protection Law was to establish job obligation in the Ereğli Coal Basin on 27 February 1940. This was followed by some other jobs and wage job liability decisions for the Eti Bank Garp Lignite Plant. Within the scope of this law, on September 2, 1942, overtime work was carried out in coal mines up to three hours a day. Furthermore, on May 20, 1940, all industrial institutions were exempted from the Week-Break Act. It was decided that boys over the age of 16 may be employed in mining on 22 February 1941.

2 It took time for the economic state enterprises to get used to the factory working conditions of the labor that was re-recruited from the villages in the first years of the establishment and this was an important problem that reduced productivity. For this reason, measures have been taken by the Government to improve the body and intellectual power of workers (Zaim, 1968: 123-124).
It is seen that the business obligation application is specifically issued for the projects to be carried out. In other words, it is subject to legal permission for each project. It is seen in the documents that the main purpose of the obligation is to increase production. Regarding the implementation engineers and physicians were also assigned. It is observed that the conditions of war impede the application of business obligation (BCA, 30.18.1.2/ 90.17.11; BCA, 30.18.1.2/ 98.42.16; BCA, 30.18.1.2/ 92.98.7).

The business obligation was not absolute and contained certain conditions for its application. In order to be able to apply the obligation, the worker must be from the Zonguldak province, worked in coal works or belonged to the families who have been able to work in these works and have reached the working age. Among those residing in other provinces, only craftsmen and workers who can benefit from their work and information in mining works are subject to obligation. In the 10th article of the same decision, the principle of returning the people who are not eligible to work to the villages by examining their health status is accepted, which is assumed to be their duty (Topçuoğlu, 1956: 310).

In accordance with the decision dated 27 February 1940 in the Eregli Coal Basin, the obligation of work was aimed at increasing the production of coal. The application remained in force until 1 September 1947. Liability applications has increased the number of workers in coal mines in Turkey considerably. The number of workers, which was 23,666 in 1937 and 24,804 in 1938, reached 45523 in 1943 after the obligation. The share of the workers in the coal mines among the total workers subject to the Labor Law has increased parallel to this and it has increased from 8.92% in 1937, 12.32% in 1938 to 15.46% in 1943. It is seen that the increase rate of the average number of workers in the basin has exceeded 50% since 1944. The total number of taxpayer workers has reached to 58,000, 52,000 of which are alternate and 6,000 are permanent taxpayers (BUMH, 1944b: 91). In the light of these figures, it can be said that job liability has at least quantitatively achieved the goals expected from it and significantly increased the use of labor in mining (MTA, 1941: 83).

2.1.1.1. Etibank Eregli Coal Enterprise Production and Investment Activities

Businesses which now Eti Bank and Eregli Coal Organization of establishment from the beginning realized tuvenane 1937 (unprocessed), tons of coal production and its share in Turkey’s total coal production of this production are given in Table 1:

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Production</th>
<th>Eregli Coal Organization</th>
<th>Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1937</td>
<td>2,306,869</td>
<td>692,060</td>
<td>30</td>
</tr>
<tr>
<td>1938</td>
<td>2,589,000</td>
<td>776,700</td>
<td>30</td>
</tr>
<tr>
<td>1939</td>
<td>2,696,497</td>
<td>775,782</td>
<td>28.77</td>
</tr>
<tr>
<td>1940</td>
<td>3,019,458</td>
<td>1,026,011</td>
<td>33.98</td>
</tr>
<tr>
<td>1941</td>
<td>3,019,626</td>
<td>3,019,626</td>
<td>100</td>
</tr>
</tbody>
</table>
It was observed that coal production, which was 597,000 tons in Ereğli in 1923, when the Republic was first established, increased considerably. The highest value of world hard coal production was realized in 1929 with 1,332,600,000 tons and the lowest value in 1932 with 960 million tons. Since then, production has been steadily rising. The bottom level of world coal prices was observed in 1933. Production increase can be considered as an important economic development (MTA, 1937: 4).

The production of Ereğli Coal Company, which is operated by Etibank, increased from 471,050 tons in 1937 to 763,456 tons in 1938. This value corresponds to approximately 30% of the total hard coal production in 1938. The remaining 70% of the production was realized by private enterprises. With the Fusion Law, the number of these enterprises decreased from 28 in 1936 to 22 in 1937 and to 16 in 1938. The capital of private enterprises varied between TL 20,000 and TL 400,000. The production scales of private companies also vary greatly. This situation was thought to cause fragmentation and inefficiency in the Basin and it was deemed necessary to combine the mining sites. This was stated by Prime Minister Refik Saydam; ‘’It is obvious that it is necessary to apply for a more punitive measure, such as gathering a working hand in the basin.’’ He also stated that the operation of the quarries in the coal basin under a single administration by the state was taken as a precaution not only for mining but also for the general economic situation. He emphasized that the increase in coal production was inadequate against the needs and demands of domestic and foreign markets. In this respect, he stated that the quarries should benefit from more advanced techniques and more capital (MTA, 1940: 2).

The increase in raw material consumption in the industry has led to an increase in the sales of hard coal, coke and briquettes to private enterprises (MTA, 1944: 161). For this reason, some measures have been taken by the government to regulate and expand the production conditions of the Basin. In order to facilitate shipment and loading operations, various investment plans have been prepared such as the modernization of Ereğli Port, the rehabilitation of the roads in the basin and the provision of the means for the workers to and from the work places. The life level of the workers was increased, hot food and bread

<table>
<thead>
<tr>
<th>Year</th>
<th>Hard Coal Production (tons)</th>
<th>Hard Coal Production (tons)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1942</td>
<td>2,509,614</td>
<td>2,509,614</td>
<td>100</td>
</tr>
<tr>
<td>1943</td>
<td>3,162,605</td>
<td>3,162,605</td>
<td>100</td>
</tr>
<tr>
<td>1944</td>
<td>3,554,279</td>
<td>3,554,279</td>
<td>100</td>
</tr>
<tr>
<td>1945</td>
<td>3,719,708</td>
<td>3,719,708</td>
<td>100</td>
</tr>
<tr>
<td>1946</td>
<td>3,830,538</td>
<td>3,830,538</td>
<td>100</td>
</tr>
<tr>
<td>1947</td>
<td>3,945,119</td>
<td>3,945,119</td>
<td>100</td>
</tr>
<tr>
<td>1948</td>
<td>4,021,797</td>
<td>4,021,797</td>
<td>100</td>
</tr>
<tr>
<td>1949</td>
<td>4,181,375</td>
<td>4,181,375</td>
<td>100</td>
</tr>
<tr>
<td>1950</td>
<td>4,360,598</td>
<td>4,360,598</td>
<td>100</td>
</tr>
</tbody>
</table>

*Compiled from the reports of the General Audit Committee and the balance sheets published in the MTA Journal in various years.*
were distributed free of charge and health care was given importance. As of 1.9.1942, social security law was applied to workers and their families. Employees are subject to the Barem Law and the promotion period of the employees in the quarry is shortened compared to other employees (MTA, 1943: 5). In order to form the team of masters, sergeants and mining technicians, MTA three-year sergeant school and a four-year 'Mining Technician' school were opened in Zonguldak. In order to meet the need for mining poles of the basin, a cooperation was made with the General Directorate of Forestry (MTA, 1944: 161).

In the Republican era, besides hard coal production, export is also an important economic resource. 23,610,046 tons of coal was produced from Zonguldak coal basin, 12,423,345 tons of this amount was used domestically and 4,527,985 tons could be exported (MTA, 1938: 2). World coal production reached 90% of 1929 production in 1938. On the other side Turkey’s coal production reached nearly doubled in 1938. The increase in hard coal production for the next 10 years has reached 1,275,000 tons (MTA, 1940: 156). In this increase, the nationalization application realized through Etibank has a large share. Since 1938, the mining program has been considered within the scope of three-year programs. These programs are aimed to increase exports at a high rate (MTA, 1938: 2). When the production of the year 1941, which is indeed the end of the first program, is examined, it is seen that this goal has been achieved despite the coincidence of the war years. During the period, the highest amount of hard coal was exported to Greece. But export stopped by the disruption of navigation (MTA, 1942: 189-190).

It is observed that Eregli Coal Enterprises has a 33.98% share in hard coal production in 1940. This figure, which reached 28.77% in 1939 production values, indicates a significant increase in the share of the establishment in production. The main reason for this increase is the nationalization of the mines in the Eregli-Zonguldak basin since 6.12.1940 and the production has been made to the Eregli Coal Enterprises account. In 1940, upon the purchase authority given by Law Number 3851, all the quarries of the basin were transferred to Eregli Coal Operations. The Basin was started to be controlled and managed from a single source with this law (MTA, 1941: 84). The most important result obtained by the fusion law is that production figures increased from 2,695,000 tons in 1939 to 3 million tons in 1940 (MTA, 1941b: 1).

In 1940, 25.76% of hard coal consumption was made by State Railways, 15.02% by Karabük Iron and Steel Factories, 9.92% by Seaways and 7.69% by Electricity Enterprises. These figures show that approximately 60% of annual coal production is generated by four main elements of modern economic life (MTA, 1941: 86).

In 1941-1942, due to the adverse weather conditions and the shortage of materials, especially the mining pole, the hard coal quarries stagnated compared to the previous years. The hard coal production of the basin amounted to 2,509,614 tons in 1942 and it was observed that it decreased by 20% compared to the production in 1941 (MTA, 1943: 3).

According to the statistics of 1942, the mining sector took the first place with 25 billion dollars which constitutes 25% of the national income which is 120 billion dollars in the United States. Mining in about 5 billion dollars in national income of Turkey took place
the same year, took place at a level that can be considered inadequate by 100 million pounds (MTA, 1947: 6). It can be said that this determination has an important role in shaping the plans and programs in the sector.

The development of mining continued despite the international instability. Despite the difficulties in terms of foreign trade, there was a significant increase in the sales of mines to the foreign market, which also improved the balance of foreign trade. It is thought that the coal industry constitutes the cornerstone of the economic development program in terms of the economic value it creates, and the increase in production and new investments in the mines for this purpose are prioritized (MTA, 1948: 5).

With the acceleration of statatical activities in mining, by 1945, the state’s share in hard coal production was 100%, 91.5% in lignite production, 95% in iron and steel production, 100% in copper production, 52% in chromite production, 97% in sulfur production and 67% in cement production (MTA, 1945: 5).

Despite the fluctuating developments in coal production in the establishment, it is seen that the objective of increasing production with the application of business obligation is reached except for periods where production is interrupted for certain reasons. In addition to labor force problems, among the reasons of production failure. In addition to the many problems experienced in parallel with the conditions of war; the lack of land and sea vehicles, the absence of materials and machinery or the necessity of producing with scraped machines, difficulties in supplying the mine mast. All these problems continued throughout the war period and increased the problems experienced in production (BUMH, 1941b: 4).

Among these problems, supply of mining pole, which has the most important share in total cost in terms of production inputs, is frequently emphasized. It is stated that the prices of the mining pole increased rapidly especially after 1939. The mine pole is obtained from the General Directorate of Forestry in Turkey and imported when the General Directorate of Forestry stocks are insufficient (BUMH, 1945: 16).

In the mining sector, which has high investment costs due to its nature, new facilities should be established and maintenance and repairs of existing facilities should be carried out in a timely manner in order to ensure efficient use of resources and sufficient production. With the transfer of the coal quarries within the basin to Etibank, a rational operating regime in line with the needs of the quarries began to be implemented, but since the transfer operations took place during the war years, the investment activities could not start following these operations. In time, additions were made to the technical equipment of the basin, new facilities were established and new social facilities were provided (Apak, Aydinnelli and Akın, 1952: 296). The most important investment activities in the Ereğli coal basin included the main production facilities and washing, loading, transfer and transport facilities, and the accrual of the plans for the establishment of these facilities was particularly dependent on the availability of financial facilities.

In the early years of Etibank’s operations, the activities in the mining field were more than re-establishing or improving the existing facilities. The institution is directed to transfer of capital to the institutions and affiliates affiliated to it. In this context, it is seen that an important capital transfer took place between 1938-1940 (Tuna, 2002: 322). In 1936, the
total investments made by Etibank were around 84 million TL, and in 1940 this figure amounted to 10 billion TL (Apak, Aydînelli and Akîn, 1952: 282-283).

The earnings of mining companies in 1948 reached the highest level in mining history. Therefore, the mining industry has gained importance and it is possible to invest more in the sector. In the Ereğli Coal Basin, Among the various works that constitute the first part of the General Management Program and amount to approximately 58,793,000 dollars; the mechanization and electrification material of the quarries, the lavuar and sediments; the construction and equipment of the Zonguldak port. As a result of these works, it is planned that hard coal production will increase by 25% and coal prices will decrease by approximately 20% (MTA, 1949: 5).

Especially the lack of materials during the war years, the difficulties in meeting the shortage of machinery and spare parts, the necessity of production in insufficient industrial facilities due to the lack of necessary investments in the same years and the rising costs; production activities have been damaged (BUMH, 1945: 5). Due to the loss of relations between the countries due to the war, there were problems in the procurement of materials which have vital role in mining production such as mine pole, steel rope, compressor and spare parts from abroad and this was reflected in production activities (BUMH, 1945: 9). Although some of these materials were started to be supplied in 1946, the supply shortage continued as a result of the lack of peace conditions.

1945 was the most depressive period of the war years in operation maintenance, industrial facilities could not be renewed, Ereğli Coal Enterprise central workshop was run like a workshop to make the facilities efficient. However, the production tools thus obtained were not efficient because of their high cost. In 1945, the pumice used for the extraction of water from the mines became unusable and a large part of the mines, especially in the underwater areas, were interrupted. Labor security has been unenforceable (BUMH, 1945: 18).

It has been determined that underground and surface facilities in the Zonguldak Hard Coal Basin have lost their lives and become a bottleneck for production increase. “Basin Large Management Preliminary Project” was designed; to maximize the use of existing facilities, on the other hand, to replace the small and incomplete facilities with high capacity and efficient facilities, to reduce costs, increase worker safety and to double production. In the Development Plans of 1945, projects for expanding the basin and increasing production and exports for hard coal that may be needed in the iron, steel and energy sectors were included.

As a result of the shortage of coal supply in Europe as of 1946, coal exports started in the same year. However, due to the importance given to meeting the domestic coal demand, the amount of exports was limited to the coal production of the basin. In order to meet the domestic demand, it is envisaged to increase the share of the lignite mine and to increase exports and to provide more foreign exchange sources (BUMH, 1946: 7-8). In the report of 1946, it is mentioned that the 1946 Devaluation played an important role on sales and increased exports (BUMH, 1947: 8).

One of the first investments made by Etibank was the briquette plant in Zonguldak in 1939 to produce briquettes made of hard coal. This property was operated until 1987. In 1941, with the fusion decision, power plants were connected to each other in Ereğli Basin. This
increased both productivity and job security. One of the important investments made was the construction of the 60,000 kilowatt large Çatalağzı power plant in order to supply energy needs (MTA, 1941: 88). Üzülmez and Karadom Lavuars, which are necessary to prepare coal for use in coal mining, started operations in 1942. Asma Kriblaj Installation which was an investment that would enable coal to be extracted and cleaned, was completed in 1943 (BUMH, 1943: 7). In the same year, infrastructure investments to overcome the transportation problems were given importance. Derivation of Kozlu, Kilimli and Üzülmez streams was made. In addition, construction of Zonguldak-Kozlu, Zonguldak-Asma, Zonguldak-Çaydamar, Zonguldak-Çatalağzı and Ereğli-Armutçuk railways were completed. Warehouses and hangars for the storage of food, barley, straw, mining pole and fuel were built. Kozlu Power Plant was completed in 1945 and a lamp shop was built in Armutçuk. Zonguldak Port and Loading Facilities, established to ship coal produced in the Basin in the late 1800s, have undergone many changes and have survived to the present day. During this period, Ereğli Port and some other loading docks and facilities as well as the facilities that were attempted to lighten the load maintained their importance at the beginning of this period. Within the scope of the Marshall Plan implemented in the Basin and in parallel with the Management Program, the increase of the production increase planned to be experienced in the Basin from Zonguldak has been extremely important for these reasons. In order to respond to increased production during the war years, EKİ and Etibank executives made efforts to renew and develop Zonguldak Port and Loading Facilities. Within this framework, a commission consisting of American experts and representatives of EKİ started the works. In 1949, the contract for the expansion of the existing port, the construction of railway connections and coal loading facilities was awarded to a Dutch company. The construction of the port and its facilities was completed in 1953 (Zaman, 2004: 114-117).

The labor intensive production relations and obligation period applied in the Basin was terminated as of the end of the war. With the help of the Marshall Plan, it was aimed to reduce production costs, increase production capacity, and ensure efficiency and safety. In order to realize this target, the mechanization and renovation needed in the production process have been tried to be realized. In addition, many new investments are planned to be implemented (MTA, 1954-1955: 115).

Etibank management wanted to plan the investments to be made in order to increase productivity and production within a program and since 1948, ‘Amenajman Programs’ were implemented. With the programs that will ensure the technical and economic development of the basin, the renewal of the underground and aboveground facilities and the organization of their activities are planned. With this program, it is aimed to increase the annual sales of 2.7 million tons of hard coal to 5.2 million tons. II. The investment projects launched to increase production after World War II has been implemented with some rearranging with little change provided under the Marshall Plan to 103.5 million dollars in external funding (MTA, 1954-1955: 115; BCA, 30.1.0.0/80.507.5). Measures that will enable the planned works to be implemented as desired within the framework of the program were also considered; important duties were assigned to the Ministries in these matters (BCA, 30.18.1.2/118.108.14).
An Institutional Approach to Industrial Intervention in Turkey: Analysis of Etibank Ereğli Coal Enterprises Activities (1937-1950) (Bengü Doğangün Yasa)

The Amenajman Project, which was put into practice in 1948, was divided into two periods as 1948-1952 and 1953-1957. Within the framework of Marshall aid, the first party aid material came to Zonguldak Port on December 26 1949. Many new investments have been realized within the scope of the project. The construction of the Çatalağzı power plant was completed in 1948 (Apak, Aydınelli and Akın, 1952: 296). The daily production capacity of the briquette factory, which was established in 1937 by the German Heinreich Koppers company, was 160 tons, and in 1953 another press machine was increased to 300 tons. The construction of the Tunçbilek la
vatory was started in 1948 (BUMH, 1948: 18). In this period, important technological breakthroughs were also included in the production process.

In 1949, the Marshall Loan came to the wider use of the loan and it was aimed to organize mining program and projects especially in terms of hard coal (MTA, 1950: 5). The mining sector was also detailed with the Law Number 5582 on line Transfer of Aid to Budget and Treasury Accounts under the Marshall Plan. By increasing the share of private capital in the sector in order to receive this aid are expected to go to the change in economic policy from Turkey.

Within the framework of the Marshall Plan prepared by the United States of America, approximately 5 billion dollars has been allocated for European Economic Cooperation between April 1948 and June 1949. Part of this amount allocated to Turkey was $ 30 million. Approximately 62% of this figure, 18.852.000 dollars is allocated to Etibank for the installation and equipment of mines (BUMH, 1948: 9). It is seen that Etibank has also been allocated a significant amount of indirect aid. A total of USD 5.589.876 was granted between 1949-1953 to be used in the importation of construction materials and machinery. The largest share of this amount was taken by Ereğli Coal Enterprises (Avşaroğlu, 2008: 22-23).

In order to ensure that private capital is located in the mining area, blocked sites were released for exploration, and various agreements were made with foreign companies to establish new projects to increase production. As of 1950, many new investments have been implemented to modernize the equipment in the basin. The impact of these measures was manifested in a short time, 619 of the citizens applying for searching were given exploration and 19 of them were granted operating licenses (MTA, 1951: 5-6).

Ereğli Coal Enterprise is the institution employing the most workers among Etibank institutions. Table 2 shows the average daily number of workers per year. Due to the presence of periodically employed workers, the total number of workers fluctuates. It is observed that the total number of workers employed within the organization within the year is well above the average daily number of workers.

<table>
<thead>
<tr>
<th>Year</th>
<th>Daily Average Number of Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1941</td>
<td>21.738</td>
</tr>
<tr>
<td>1942</td>
<td>21.793</td>
</tr>
</tbody>
</table>
It is observed that the total number of workers, including the seasons, increased significantly from year to year relative to the average number of workers. The total number of employed people reached 4,423,928 in 1940, and in 1950 this number reached 9,333,575. This huge difference between the two makes it clear that the employment problem in the sector is not preferred.

Table 3 shows the productivity of workers calculated by the amount of quarried coal produced per worker. According to the data, it is clearly observed that labor productivity increases with the investments made especially after 1945.

<table>
<thead>
<tr>
<th>Yeşil Başına Düşen Miktar (kg)</th>
<th>İşçi Başına Düşen Miktar (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1941</td>
<td>626</td>
</tr>
<tr>
<td>1942</td>
<td>618</td>
</tr>
<tr>
<td>1943</td>
<td>576</td>
</tr>
<tr>
<td>1944</td>
<td>608</td>
</tr>
<tr>
<td>1945</td>
<td>605</td>
</tr>
</tbody>
</table>

The workers working in the coal mines have been the peasants of the Zonguldak region since the first time coal mining was started. These workers alternately worked in the mine for a while in the fields. The majority of the workers coming to the mine for the period of the workers to go to the mine generally changed according to the current season. Particularly in the spring to autumn, especially in the summer, there is a shortage of workers. Most of the workers working in Eregli Coal Mine in Zonguldak are the people of the regions included in the Basin hinterland and villagers along the Black Sea coast. To keep the worker in the industrial zone, he has applied many measures to the establishment to provide a continuous mass of workers by making the mining workers attractive enough to discourage the peasant from farming (Topçuoğlu, 1956: 309). For married workers, it is decided to build blocks with flowers in front and vegetable gardens in the back. With these practices, it is aimed to derive workers who will obtain mining jobs continuously. It was desirable that mine labor be adopted and traditionalized by the people of the region as in the industrial countries (Çağlar, 1937: 39). One of the measures taken for this purpose was the social assistance expenditures paid to the workers.

In Table 4, the total wages, social benefits and cost per wage paid to the workers employed within the organization are given in TL. In order to meet the basic needs of workers such as transportation, shelter and nutrition, each year, the budget is allocated as part of social expenditures. In the table, it is observed that the amount of expense per journal increases every year.

<table>
<thead>
<tr>
<th>Year</th>
<th>Wage</th>
<th>Social Assistance</th>
<th>Per Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1946</td>
<td>636</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1947</td>
<td>647</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1948</td>
<td>688</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1949</td>
<td>726</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1950</td>
<td>756</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1951</td>
<td>823</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1952</td>
<td>880</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1953</td>
<td>916</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The profit and loss statement of Ereğli Coal Enterprise is given in Table 5 in order to evaluate the results of the operational activities. It is seen that the institution closes each year it operates with loss.

Table 5: Profit and Loss between 1937-1950 (TL)

<table>
<thead>
<tr>
<th>Year</th>
<th>Profit</th>
<th>Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>1939</td>
<td>-</td>
<td>470,114</td>
</tr>
<tr>
<td>1940</td>
<td>-</td>
<td>834,830</td>
</tr>
<tr>
<td>1941</td>
<td>-</td>
<td>3,551,606</td>
</tr>
<tr>
<td>1942</td>
<td>-</td>
<td>9,244,954</td>
</tr>
<tr>
<td>1943</td>
<td>-</td>
<td>1,561,917</td>
</tr>
<tr>
<td>1944</td>
<td>-</td>
<td>5,806,752</td>
</tr>
<tr>
<td>1945</td>
<td>-</td>
<td>12,293,963</td>
</tr>
<tr>
<td>1946</td>
<td>-</td>
<td>7,739,015</td>
</tr>
</tbody>
</table>
Between 1940 and 1945, the necessity of production in inadequate industrial facilities and the attempt to manufacture the production vehicles that could not be obtained from abroad but which could not be provided at home caused the costs to increase. In addition to this, the sale of low-cost coal to various public institutions, especially the military, has an important role in the accrued loss (BCA, 30.18.1.2/92.90.19). In addition, especially during the war years, world mineral prices were kept at constant prices and the prices determined were insufficient to cover production costs (BUMH, 1945: 5).

The Agency’s reports frequently draw attention to the difficulties experienced in obtaining financial resources. Firstly, the negative effects of the problems experienced in the supply of money and then in the supply of materials on production and operation activities are mentioned. The necessity of selling coal at a price lower than its cost, the high interest rates to be paid and the failure to meet the maturity of the bonds caused significant financial problems. The management of the Bank describes these financial problems as desperation from time to time and complains that some of the time and effort to be spent on production activities is spent on the solution of financial problems (BUMH, 1948: 9).

On the basis of the economic needs of the country, it was observed that the coal prices determined by the Government were below the production costs and that the Ereğli Coal Institution suffered in 1946, 1947, 1948 and 1949 (BUMH, 1948: 13-14; BUMH, 1949: 21). In 1950, coal sales prices were kept below the production costs for the same reasons. However, production was higher than the figures foreseen in production planning, which had a mitigating effect on fixed costs. In addition, one of the important cost items, the supply of the mine pole at a cheaper price and the provision of more rational working conditions throughout the enterprise reduced production costs and reduced the losses of the enterprise (BUMH, 1951: 9).

3. CONCLUSION

Etibank was founded on the idea that the state should take part in the field of mining as an operator. Representing the state in the field of heavy industry, the institution has many establishments to operate different mines. Head of the concepts to be used for the first time, with statism applied in Turkey shows that the adoption of the principles of a mixed economy and transience. In this context, Etibank was the first institution to show concrete perspective of private capital and privatization. Instead of the continuation of state capital; The main purpose of this course is to gain an important industrial branch to the national economy and to transfer the institutions to private capital over time. This matter has constituted one of the key principles of interventionism industry in Turkey.
It is observed in the BUMH Reports of the institution that we have reached from the republic archive, a very detailed analysis has been made regarding the economic activities of the institution. Both the relevant reports and the scientific articles published in the Mineral Research and Exploration Institute Journal published within MTA shed light on all developments related to the mining sector. They have been an important economic resource in determining the policies to be implemented and transferring economic developments at international level. These detailed analyzes are almost an industrial plan. In this respect, all these documents have contributed to the planning process is one of the important mechanisms of industrial interventionism.

Eregli among the largest corporate-owned establishments Coal Management Organization, has installed an important task in meeting Turkey’s coal needs. Most workers employed by Etibank worked for Ereğli Coal Enterprises. Therefore, the company constitutes the most important institutional model in the analysis of Etibank activities in terms of qualitative and quantitative aspects of production. Business activities in order to continue the implementation of all policies is seen as a move consistent with the statist model of integrity implemented in Turkey.

In the documents of the institution, it is often pointed out the difficulties in obtaining financial resources. Firstly, the negative effects of capital and then material supply problems on production and operation activities are mentioned. It is understood that there are two major problems in terms of the continuation of the activities of the institution. The most important of these problems was the quantitative and qualitative insufficiency of labor supply. The other one is the negative cyclical developments arising from the war years. In spite of these negativities, all of the main objectives such as the establishment of highly efficient facilities in the basin, increasing production and meeting the industrial coal need have been achieved. After being transferred to Etibank, it has begun to assume the entire coal production in Turkey.

Production activities continued and a remarkable development was observed in quantitative terms during the times of depression such as the crisis of 1929 and World War II in which production and export activities came to a halt. The steady attitude of the Republican government in line with the aim of industrialization, the importance given to mining, investments in infrastructure and efforts to form social policy have enabled production to increase despite the economic conditions.

The nationalization policies which one of the important elements of industrial interventionism has been applied in Ereğli. The Fusion Law brought about the increase in yields by gathering the mining sites in a single hand. Moreover, with the Mahrukat Law enacted within the framework of the National Protection Law, coal allocation was provided to governmental institutions at prices below the production costs. The implementation of business obligation which was put into effect as a non-substitutable policy in the solution of labor scarcity, was socially destructive, but it was economically beneficial with social laws to improve social rights.

The organization has allocated coal to the state-owned institutions below the market price and has made significant progress in establishing permanent staff and training qualified personnel. In addition, it has paved the way for the private sector with its investments and contributed greatly to gaining the potential power that private capital will need. Conditions
have been tried to be established to ensure that the private enterprise is included in the economy. This social benefit created makes it insignificant for the institution to close each year of activity with loss.

Ereğli Company is the basic institution of the coal industry in Turkey with all these features. It shows the stability and control of economic resources as well as the practices supporting private capital and the objective of economic independence. In this context, it has been an important institutional model which proved Turkey’s statism is pragmatic but not ideological.

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BCA, Fon No: 030.18.1.2 Kutu No: 92-Dosya No: 90-Sıra No: 19 Ordu birlikleri için alınacak maden kömürlerinin Etibank’tan pazarlıkla satın alınması, 13.09.1940.

BCA, Fon No: 030.18.1.2 Kutu No: 98-Dosya No: 42-Sıra No: 16 Kömür Havzası İş mükellefiyeti takip müdürlüğü emrinde Közlu Dispanseri görevinden Yd.Dr. Tgm. Osman Öner’in teciliin kaldırılması, 21.05.1942.

BCA, Fon No: 030.18.1.2 Kutu No: 92-Dosya No: 98-Sıra No: 7 Nafia Vekâletinin yol, köprü, meydan ve iskele inşaatlarına yeterli miktarda nakil vasıtası temini için malzeme ve eşya nakline ait bütün vasitalara ücretli iş mükellefiyeti konulması, 11.10.1940.


BCA, Fon No: 030.18.1.2 Kutu No: 118-Dosya No: 108-Sıra No: 14 Marshall Planının uygulanması için Bayındırlık Bakanlığı’nca yürütülecek teknik işlere lüzumlu kredi
sağlanması için Paris’e gönderilecek mühendis Şeref Karamürsel’e yevmiye verilmesi, 26.03.1949.
The Impact of Foreign Aid On Economic Growth: Empirical Evidence From Somalia Using ARDL Approach

Gülten DURSUN1  Omar Mohamed ISMAIL2

1. INTRODUCTION

It has been widely mentioned that the main objective of the official development assistance (ODA) is to transfer resources and know-how from richer countries to the developing countries in order to accelerate social and economic development in that poorer countries. Developing countries often experience many economic complications such as sluggish growth in GDP, lower per capita GDP, poor balance of trade and lack of investment in the economy. Many developing and underdeveloped countries including Somalia require funds in the form of Aid, Grant or Loans from developed nations, international financial institutions, and consortiums. Some development scholars claim that aid establishes a great deal in filling the capital gap experienced by developing economies in which saving rates are very low. Furthermore, those scholars argue that apart from its contributions in capitalizing the undercapitalized developing economies, aid can boost economic growth through the opportunities it offers for building the capacities of local cadres, elevating the healthiness of human capital and establishing better infrastructures.

A number of studies have been conducted in the area of foreign aid and there are several arguments whether the aid boosts economic growth or not. Normally the studies proposed three different about this issue; negative, positive and neutral effects. Using a regression analysis of a cross-country is found out evidence of an enormously positive effect of the foreign aid on the economic growth Applng samples of thirty-four and fifty-one countries in the 1950 and 1960 respectively Papanek (1973). Gupta et al. (1983), found in the same result and concluded their empirical analysis that aid has a substantial significance effect on economic growth.

Other authors argue that the ODA consequence the growth negatively, aid may often establish untrue expectations and likely be to carry out some normal implementation arrangements, which sometimes may result worsen at growth Burnside and Dollar (2000) though it is remarkable positive if monetary, fiscal and trade policies are supportive instruments, while (Mosley, 1980; Boone, 1996; Jensen and Paldam, 2006) indicated that aid has no significant evidence of showing economic growth contribution. A recent paper, Doucouliagos and Paldam (2009) and a more recent one, Doucouliagos and Paldam (2011), stated that aid or some components of aid has a small positive effect but not significant. Foreign assistances are unsuccessful as well as possible to the opposite (offset) the production, misshapes the market and creates corruption (Prokopijevic, 2006).

Underdeveloped nations such as Somalia are more likely perpetually unable for making development because of suffering a deficiency disease which means inadequate capital and

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technology (Morgenthau, 1962). Foreign aid recipients trust the ODA as an important source of revenue for instance in Somalia over one-third of the GDP is contributed by the aid (Pallage and Robe, 2001).

Most of the paper related aid studies are dealing with a cross country, proposing opposite results and no more studies about Somalia in this issue. Given this concern, this paper has analysed the impact of ODA on the economic growth in Somalia to determine whether it belongs to negative, positive, neutral or mixed effects. Towards this aim, the paper applies the autoregressive distrusted lag (ARDL) bounds tests for co-integration and utilizes a time series extend over the period of 1985 to 2017 to carry out the intended empirical investigation.

Apart from the introduction the paper is organized as following: The next section briefly discussed the quick overview on the evaluation of the foreign aid in Somalia, the third section deals with a study of literature relevant to the ODA and its role of economic growth, whereas Section four presents data and methodology- the specification of the econometric model, nature of the data and source. The empirical findings are exposed and discussed in Section five. Finally, the conclusion and appendix will be shown in the last section.

2. OVERVIEW OF FOREIGN AID IN SOMALIA

Somalia achieved its independence in 1960 with the union of Somalia, which had been under Italian administration as a United Nations trust territory, and Somaliland, which had been a British protectorate. The United States immediately established diplomatic relations with the new country.

In 1969, the Somali Army launched a coup that brought Mohamed Siad Barre to power. Barre adopted socialism and became allied with the Soviet Union. Within the first decade of the military rule, Somalia became self-sufficient in food production but after the war between Somalia and Ethiopia in 1977, refugees came from Ethiopia and food aid had begun, then domestic production started to decline because of the lower price of the food aid. In 1984, 63 percent of the food consumed domestically was imported and was completely became a reversal of the situation at independence in 1960 (Warsame, 2012).

For first two decades of the military, Somalia’s strategic importance had huge repercussions for humanitarian aid operations. High levels of economic and military support, first from the communist alliance and then from the Western countries, created a bloated and unsustainable central government and unresponsive to its own people. Corruption, gross violations of human rights and government manipulation of humanitarian relief were routinely tolerated by donors; foreign aid workers who dared complain about the diversion and misuse of aid were thrown out of the country.

Meanwhile, Siad Barre’s regime handled humanitarian crises to enrich itself and advance its own narrow interests, most egregiously following the Ogaden war in Ethiopia in the late 1970s, when Ethiopian refugee numbers were grossly inflated, aid planned for refugees was diverted and refugee camps were used as sites to recruit, train and encamp security forces. According to a subsequent US Congressional study, levels of aid diversion were the worst in the history of USAID (Warsame, 2012).
The military government collapsed in 1991 and after that time Somalia has been suffering from droughts and conflicts. The situation became worse as it was before and ignored by the international community. Nearly 300000 people starved to death in 1992 (Human Rights Watch, 1993). Somalia has been considered a failure state (Anderson, 2009). Becoming the most insecurity places in the world. In 2008 the two-third of the aid worker’s deaths were recorded in Somalia (Bradbury, 2010).

Official development assistant has increased from 0.47 Million in 1985 to 1.26 billion in 2017, it was fluctuating the first decade, reaching by the lowest level 1996, then started slowly to increase and after 2010 raised up since 2017.

![Figure-1](https://example.com/figure1.png)

**Figure-1.** Official Development Assistant (USD, Million)

**Source:** OECD, 2019.

Somalia has affected many famines but after the collapse of the regime, the most severe one occurred in 1992-1992 and it was the product of droughts and conflicts, the agriculture was decreased and the prices of the food were increased, causing extreme malnutrition and people started to flee their communities in search of food. As it was estimated in 1992, in between one-quarter and one-third of all underage children had died (Clark, 1992). In 2011 another famine affected the country 29.000 children had died and one-fifth of people were displaced internally. Unluckily, as the traditional government reported, 2009 and 2010, 96% of the bilateral assistance is corrupted.

Finally, the transition process ended in September 2012, establishing the first permanent central government and elected Hasan Sh. Mohamud the first permanent president of the country since the start of the civil war. Unfortunately, the problem still remained and not solved yet.

3. LITERATURE REVIEW

There is long literature focusing on the effects of foreign aid on economic growth. Before analysing the impact of ODA on the economic growth in Somalia, to determine whether it belongs to negative, positive, neutral or mixed effect, it should understand the results of other related studies. There are opposing arguments about effects aid on economic. The main goal of the official development assistance is to provide better well-being and economic development for those nations who gain as well as act a debt killer, creating higher domestic savings, poverty alleviation and initiating economic growth of the recipient (Bellone, 2008). The insufficient of the funds and have no investment for capital goods and human development projects of the developing and underdeveloped nations are due to the having minimal access to the international financial markets, this is why their
main source of revenue is the foreign aid for capital (Chervin and van Wijnbergen, 2010). Therefore, using these arguments, Somalia can be dedicated to such that as it is one of the underdeveloped/developing countries but nowhere in the literature the exact impact of aid on Somalia’s growth.

Ram (2003), argued that nations those are developing recipients of foreign aid with good policies, ODA yields economic growth. Hansen and Tarp (2000), summarized their findings that foreign aid has a positive effect on growth. On the other hand, there are some arguments relating to the policies of which the aid is under fulfilled and this might depend on the country’s political practice such that democracy, regime, etc.

Boone (1996), analysed the aid effectiveness to political regimes and found that aid doesn’t promote investment, nor enhance the living standard of the poor people, but only increases the size of the government and the aid effectiveness not depend on the type of the recipient government weather it is liberal democratic or not. Also, he has made a comparison of the regime and the legislative governments observing at indicators for longevity fundamental education and infant mortality and concluded that if the gainer of ODA belongs to more liberal politics, it has better for the lowering of the infant mortality than the least free regimes.

Burnside and Dollar (2004), addressed the connection between the ODA, growth and the economic policy but the major focus lies on the impact of ODA to growth by stating that aid is non-effectual because of the reality that aid is neither associated with government expenses nor with sudden upraising; aid stimulates growth and significant with good policy government. Here Burnside and Dollar showed a statement that is about the saying if good governance is practiced than aid is effective for generating growth of the recipient country.

For a nation development a various sorts of capital have to create because that facilitates the development as deprived countries need capital, it has to be created variety capital including; Human capital, physical capital, infrastructure, natural capital, public and institutional capital and knowledge capital, however, aid generates growth as it creates human capital accumulation (Sachs, 2006).

The association among foreign aid and economic growth is examined for a sectional of developing countries (Botswana, Ethiopia, India, Kenya, Sri-Lanka, and Tanzania) taking 1974-1996 data. The outcome shows that the variables are cointegrated in the panel stage and shown that the foreign aid has positively and statistically significant effect on the economic growth and also foreign capital or the FDI may lead a favourable influence on the real income and likely possible to help the savings (Hatemi-J and Irandoust, 2005).

Dowling and Hiemenz (1982), studied the effect of aid on economic growth in the Asian continent using a sample of 13 countries receiving a substantial amount of aid. After controlling for the effect of trade, finance and government intervention, they found that aid has a positive and significant effect on economic growth. Similarly, Levy (1988) studied the effect of aid in a sample of Sub-Saharan African countries from 1968 to 1982 and found a significant and positive relationship between the ratio of aid to GDP and economic growth.

Using a variety of samples and different econometric models, Durbary et al. (1998), studied the effect of aid on economic growth, focusing on the optimal amount of aid that
would produce economic growth. They found robust evidence that aid would enhance economic growth, contending that there is an optimal aid level that should be given to the developing countries to generate economic growth and—with a good macroeconomic policies, aid as a percentage of GDP around 40% to 45% would enable recipient countries to generate economic growth. Same to the above result, there are other studies found that aid has a positive impact on economic growth (Ismail and Adegbemi, 2012; Koç, 2016; Sheikh Ali et al., 2018). Contrary, some researchers found that a negative relationship exists between foreign aid and economic growth by using different methods and different areas, for example (Albiman, 2016; and Easterly, 2003), while Desire (2016) and Jinyang el at., (2018), found that aid has a conditionally positive impact on economic growth.

4. DATA AND METHODOLOGY

The study employs yearly time series data spanning from 1985 to 2017 for Somalia. The data on GDP per capita (per capita-constant 2010 US$), gross capital formation, official development assistance, and trade openness were collected from the Economic and Social Research and Training Centre for Islamic countries (SESRIC). The other series in the model apart from GDP per capita and official development assistance are seen as control variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measurement</th>
<th>Data sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnGDP</td>
<td>Natural logarithm of real GDP per capita (constant 2010 U.S. dollars)</td>
<td>Economic and Social Research and Training Centre for Islamic Countries (SESRIC)</td>
</tr>
<tr>
<td>lnODA</td>
<td>Natural logarithm of real total net official development assistance to the share of GDP</td>
<td>Economic and Social Research and Training Centre for Islamic Countries (SESRIC)</td>
</tr>
<tr>
<td>lnOPENS</td>
<td>Natural logarithm of Trade Openness to the share of GDP</td>
<td>Economic and Social Research and Training Centre for Islamic Countries (SESRIC)</td>
</tr>
<tr>
<td>lnGCF</td>
<td>Natural logarithm of real gross domestic capital formation to the share of GDP</td>
<td>Economic and Social Research and Training Centre for Islamic Countries (SESRIC)</td>
</tr>
</tbody>
</table>

4.1. ARDL Approach to Cointegration

In this study is employed the autoregressive distributed lag (ARDL) cointegration procedures, as proposed by Pesaran and Shin (1999) and Pesaran et al. (2001), to investigate for the existence of a relationship between the GDP per capita data, aid, gross
capital formation, and trade openness. As noted, this approach can be applied regardless of whether I(0), I(1) or mutually cointegrated. Just all the variables must be integrated order one. ARDL is chosen as the appropriate technique of this study because it possesses several superior econometric merits compared to other co integrating techniques. For example, Johansen cointegration test cannot be applied directly if variables of interest are of mixed order of integration or all of them are not non-stationary at same level; all the variables must be I (1) while the ARDL can be applied, as long as their order of integration underlying order one. Another merit of the ARDL cointegration technique is that it overcomes; serial correlation and homogeneity problems.

The ARDL procedure involves two steps, the first step is to examine the existence of long-run relationships among the variables by using bounds testing procedure proposed by (Pesaran, 1997; Shin and Smith, 2001). Wald-type (F-test) coefficient restriction test is conducted to test the null hypothesis. There are lower and upper critical values for the boundary test. The lower limit value is that all variables are I (0); the upper limit value is assumed to be all of the variables I (1).

If the F-statistics is greater than the upper limit critical value; there is a cointegration relationship between the variables and the null hypothesis is rejected. If F-statistics is below than the lower limit critical value; we accept the null hypothesis that means there is no cointegration relationship between variables.

F-test is the testing of the null of no cointegration, i.e. \( H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = 0 \) is tested against the alternative of \( H_1: \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq 0 \).

The second step is to estimate the long-run and short-run coefficients of the same equation. The second step is run, only in the case of a cointegration relationship was found in the first step.

The general error correction model is specifies as follows:

\[
\Delta \ln GDP_{pt} = \alpha_0 + \alpha_1 \ln GDP_{t-1} + \alpha_2 \ln ODA_{t-1} + \alpha_3 \ln GCF_{t-1} + \alpha_4 \ln OPENS_{t-1} + \sum_{j=0}^{m} d_{1j} \Delta \ln GDP_{t-j} + \sum_{j=0}^{m} d_{2j} \Delta \ln ODA_{t-j} + \sum_{j=0}^{m} d_{3j} \Delta \ln GCF_{t-j} + \sum_{j=0}^{m} d_{4j} \Delta \ln OPENS_{t-j} + \varepsilon_t
\]  

(1)

Where \( \alpha_1, \alpha_2, \alpha_3 \) and \( \alpha_4 \) are long run multipliers, \( m \) is the number of lags, \( \alpha_0 \) is the drift component and \( \varepsilon_t \) are white noise errors.

If the presence of the long run relationships among the variables is established, second step is to estimate the following long run and short run models that are represented in Eqs. (2) and (3) respectively.

\[
\ln GDP_t = \alpha_0 + \sum_{j=0}^{m} d_{1j} \Delta \ln GDP_{t-j} + \sum_{j=0}^{m} d_{2j} \Delta \ln ODA_{t-j}
\]
\[ \Delta \ln GDP_t = d_0 + \sum_{j=0}^{m} d_{1j} \Delta \ln GDP_{t-j} + \sum_{j=0}^{m} d_{2j} \Delta \ln ODA_{t-j} + \sum_{j=0}^{m} d_{3j} \Delta \ln GCF_{t-j} + \sum_{j=0}^{m} d_{4j} \Delta \ln OPENS_{t-j} + \varepsilon_t \]  

Where, \( d_1, d_2, d_3 \) and \( d_4 \) are the short-run dynamic coefficients of the model’s adjustment to equilibrium, \( \lambda \) is the speed of adjustment and \( EC_T \) are the residuals obtained from the estimated cointegration equation (1)


The symmetric causal relationship between the aid, trade openness, gross capital formation, and economic growth is analysed, by employing the causality test proposed by Hacker and Hatemi-J (2006). This test is based on Toda and Yamamoto (1995) causality test approach. The test is attained through bootstrap without the absence of abnormal distribution of errors. The causality test is based on the estimation of the Vector Autoregressive Model (VAR) model.

The VAR \((p + d_{max})\) process of the variables is estimated as in the following model:

\[ y_t = v + A_1 y_{t-1} + \cdots + A_p y_{t-p} + \cdots + A_P + d y_{t-p-t} + \varepsilon_t \]  

Where, \( y_t \) is a vector of \( k \) variables, \( v \) is a vector of intercepts, \( A \) is the matrix of parameters and \( \varepsilon_t \) represents the error vector, in addition, \( p \) is the optimal lag length of VAR model and \( d \) is the maximum order of integration of the variables. In order to examine the null of no-Granger causality against alternative hypothesis WALD statistics is employed.

### 5. RESULTS AND DISCUSSION

In this part, empirical results are discussed. The first section looks at the unit root test, and the second section looks at bound testing for cointegration, the third section looks at the short-run estimates of the model, the fourth section focus on the long-run elasticity. The final section looks at the stability and the diagnostic test of the model.

#### 5.1. Unit Root Test Results

The examination of stationarity remains an inevitable step before any treatment of the time series in order to avoid spurious regressions. It is, therefore, necessary to determine the order of integration of the time series using the Augmented Dickey-Fuller test (1979) (ADF) and Philips and Perron (1988). This test is carried out under two possible model specifications, constant with the trend and constant only. The results summarized in Table 2.

**Table-2. ADF and PP Unit Root Test Results**
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<table>
<thead>
<tr>
<th>Variables</th>
<th>ADF</th>
<th>PP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intercept only</td>
<td>Intercept with trend</td>
</tr>
<tr>
<td><strong>Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnGDP</td>
<td>-2.60278</td>
<td>3.182534</td>
</tr>
<tr>
<td>lnODA</td>
<td>1.37565</td>
<td>1.75567</td>
</tr>
<tr>
<td>lnGCF</td>
<td>2.141445</td>
<td>4.087830</td>
</tr>
<tr>
<td>lnOPENS</td>
<td>8.53165**</td>
<td>6.478621***</td>
</tr>
</tbody>
</table>

| **1st Difference** |     |     |     |
| ∆lnGDP          | -2.861401* | 5.928968*** | 5.74366**    |
| ∆lnODA          | 0.07262*** | 5.943863*** | 6.01483**    |
| ∆lnGCF          | 8.74934**  | 3.827213**  | 49344***     |
| ∆lnOPENS        | 8.53123**  | 6.478626*** | 2.379949     |

Note: *, **, *** denotes rejection at the 10%, 5%, 1% critical values, respectively.

As shown in table-1, all the variables are found to be stationary at the first difference by employing ADF test and Philips-Perron, except OPENS which is stationary both at the level and first different under ADF.

5.2. Bound Test Result

The ARDL model approach had two stages in estimating the long-term relationship. In the first stage, the existence of a long-run relationship was tested using the bounds test. The bounds test F-statistic had to be greater than the upper bound critical values at 1%, 5% or 10%. The table below provides the results for the long-run models being tested.
Table – 3. Bound Test Result

<table>
<thead>
<tr>
<th>K = 3</th>
<th>F-statistic:</th>
<th>31.43484</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical values Bounds</td>
<td>Lower Bound</td>
<td>Upper Bound</td>
</tr>
<tr>
<td>1%</td>
<td>4.29</td>
<td>5.61</td>
</tr>
<tr>
<td>5%</td>
<td>3.23</td>
<td>4.35</td>
</tr>
<tr>
<td>10%</td>
<td>2.72</td>
<td>3.77</td>
</tr>
</tbody>
</table>

Note: Critical value from Pesaran et al. (2001)

Table 6, presents the bounds test and the null hypothesis of a no long-run relationship was rejected at the 1% level of significance. Therefore, there are long-term relationships between the variables.

5.3. Short Run Estimates

Table-4 presents the short-term effects of the error correction estimates. According to the short-term results, when the share of foreign aid in GDP increases by 1% in the current period, per capita income increases by a very low level of 0.009%, while in lagged period increases by 0.017% at 10% significance level. The 1% increase of the share of capital formation in GDP in the current period, reduced GDP per capita by 0.33%. This result is consistent with long-term findings. The 1% increase in the openness ratio negatively affects the per capita income with three lagged periods. This might be due to lower levels of technological advancement, economic instability, a bad situation of state investment policy and a lower degree of openness.

The error correction term (ECT) is statistically significant and negative as expected. In other words, short-term deviations will be disappeared in the long run and the series converge again to the long-run equilibrium value. According to Narayan and Smyth (2006: 339), if the coefficient of lagged error correction is between -1 and -2, it implies that lagged error correction produces damped fluctuations. In the short-term model, the term error correction is -1.41. Rather than converging directly to the equilibrium path, the error correction shows fluctuations around the equilibrium.

However, once this process is completed, convergence to the path of equilibrium is rapid. Being the error correction coefficient -1.41 indicates that the deviation from the short term will disappear after 0.71 (1 / 1.41) period (less than 1 year).

Table-4. Error Correction Representations of ARDL (2,3,0,4) Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>t-statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>D(lnGDP(-1))</td>
<td>-0.198434***</td>
<td>-3.51834</td>
<td>0.0029</td>
</tr>
<tr>
<td>D(lnODA)</td>
<td>0.009964</td>
<td>1.755952</td>
<td>0.0982</td>
</tr>
</tbody>
</table>
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\[ D(\ln ODA) \quad 0.017739 \quad 2.624429 \quad 0.0184 \]

\[ D(\ln GCF) \quad 0.333381^{***} \quad 6.141217 \]

\[ D(\ln OPENS(-3)) \quad 0.227627^{***} \quad 6.787268 \]

\[ \text{CointEq}(-1) \quad 1.406744^{***} \quad 11.243958 \]

\[ R^2 \quad 0.99 \]

\textbf{Note:}*, **, *** denotes the significant at 10%, 5 % and %, respectively.

5.4. Long Run Elasticity

Table-5 presents the estimation of the long-run ARDL model. According to the coefficients obtained, if the share of foreign aid in GDP increases by 1% in the long term, GDP per capita decreases by 0.021%. 1% increase of the share of capital formation in GDP leads to in the long run 0.24% decline to the per capita income, while a 1% increase of the trade openness rises the GDP per capita by 5.12%. This implies has foreign aid and gross capital formation have a negative effect on economic growth while the trade openness positively contributes to the economic growth and the findings were also statistically significant at 1% and the donor aid to Somalia was not successful in generating growth.

\begin{tabular}{|c|c|c|c|}
\hline
Variable & Coefficient & t-Statistic & Prob. \\
\hline
\ln ODA & 0.020665 & 7.922720 & 0.0000 \\
\ln GCF & 0.236988 & 5.642875 & 0.0000 \\
\ln OPEN & 0.25815 & 25.4671 & \\
S & 6 & 27 & 0.0000 \\
\hline
\end{tabular}

\[ 5.12202 \quad 39.2292 \quad 0.0000 \]

5.5. Diagnostics Test

In summary, as shown in Table-6 and Figure-2, all tests of the diagnostics demonstrate that the model is stable and has no signs of autocorrelation, normality, or heteroskedasticity problems. The results of the residual normality test are significant. The residuals are
normally distributed, which is favourable for our model. “The stability condition test” both CUSUM and CUSUM square tests reveal that the blue line lies in between the red lines; hence from the analysis ADRL satisfies the stability condition. “The serial correlation” test gives a probability of 5.4% which is greater than 5% (level of significance) so the errors are serially uncorrelated. “The heteroskedasticity test” reveals an absence of heteroskedasticity in the model as shown by the probability value which is 59%.

**Table- 6. Diagnostic Tests**

<table>
<thead>
<tr>
<th>Tests</th>
<th>Statistics</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH</td>
<td>Prob.Chi-square(1)</td>
<td>No heteroscedasticity</td>
</tr>
<tr>
<td></td>
<td>=0.5992</td>
<td></td>
</tr>
<tr>
<td>Breusch-Godfrey</td>
<td>Prob. Chi-Square(2)</td>
<td>No serial correlation</td>
</tr>
<tr>
<td></td>
<td>=0.0544</td>
<td></td>
</tr>
<tr>
<td>Jarque-Bera Test</td>
<td>Probability = 0.69</td>
<td>Residual are normally</td>
</tr>
<tr>
<td></td>
<td></td>
<td>distributed</td>
</tr>
</tbody>
</table>

Figure-2 displays the stability of the model using the CUSUM test at a 5% significance level. From this figure, the results indicate the absence of any instability of the coefficients because the plots of the CUSUM and CUSUMSQ statistics fall inside the critical bands of the 5 percent confidence intervals of parameter stability.

**Figure- 2. Stability of the Model –CUSUM and CUSUM of Square tests.**

As shown in Table 7, according to the Hacker and Hatemi-J bootstrap causality test (2006) results, the test statistics proved the one-way causality relationship from foreign aid to GDP. There is a two-way causality between openness and GDP. While there is a one-way relationship from foreign aid to trade openness, there is also a one-way causality relationship from trade openness to gross capital formation. These results suggest that foreign aid is necessary for openness, income per capita and gross capital formation.

**Table- 7. Hacker and Hatemi-J (2006) Bootstrap Causality Results**

<table>
<thead>
<tr>
<th>Model</th>
<th>MWAL</th>
<th>P. Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ODA→</td>
<td>41.320*</td>
<td>21.288</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th></th>
<th>**</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GDP</td>
<td>ODA</td>
<td>GCF</td>
<td>GDP</td>
</tr>
<tr>
<td>GDP→</td>
<td>8.422</td>
<td>20.090</td>
<td>12.667</td>
<td>9.867</td>
</tr>
<tr>
<td>GCF→ ODA</td>
<td>0.947</td>
<td>18.488</td>
<td>10.979</td>
<td>8.013</td>
</tr>
<tr>
<td>GDP→ GCF</td>
<td>2.940</td>
<td>16.311</td>
<td>9.963</td>
<td>7.488</td>
</tr>
<tr>
<td>OPENS→ GDP</td>
<td>237.680</td>
<td>22.320</td>
<td>13.738</td>
<td>10.479</td>
</tr>
<tr>
<td>GDP→ OPENS</td>
<td>66.681*</td>
<td>17.889</td>
<td>11.050</td>
<td>8.690</td>
</tr>
<tr>
<td>ODA→ GCF</td>
<td>1.019</td>
<td>16.081</td>
<td>9.726</td>
<td>7.339</td>
</tr>
<tr>
<td>GCF→ ODA</td>
<td>6.144</td>
<td>16.144</td>
<td>9.657</td>
<td>7.104</td>
</tr>
<tr>
<td>OPENS→ ODA</td>
<td>0.023</td>
<td>12.316</td>
<td>7.616</td>
<td>5.509</td>
</tr>
<tr>
<td>ODA→ OPENS</td>
<td>20.140*</td>
<td>12.828</td>
<td>7.355</td>
<td>5.319</td>
</tr>
<tr>
<td>OPENS→ GCF</td>
<td>13.972*</td>
<td>16.093</td>
<td>8.772</td>
<td>6.172</td>
</tr>
<tr>
<td>GCF→ OPENS</td>
<td>1.334</td>
<td>16.178</td>
<td>8.070</td>
<td>5.549</td>
</tr>
</tbody>
</table>

**Note:** *, **, *** denotes the significant at 10%, 5% and 1%, respectively.

### 6. CONCLUSION

The purpose of this study empirically examines the causal relationships between foreign aid (ODA) and economic growth in Somalia using the annual data from 1985 to 2017. Data is employed and sourced from The Statistical, Economic and Social Research and Training Centre for Islamic Countries (SESRIC), having the core study objective of looking that whether ODA has a crucial role on the economic growth, considering the causal linkage among GDP per capita, foreign aid, gross capital formation, and trade openness. After the stationary test of variables, autoregressive distributed lag (ARDL) bounds testing approach of cointegration is employed. The results of the test support for the hypothesis that there is a cointegration among the variables.

The result reveals that aid has a negative impact on economic growth in the long run, while, the short-run positively effecting and appearing significant. Although the effectiveness of the aid is not considered by this study but previous studies have discussed
the effectiveness of foreign aid on economic growth and the findings point to the importance of a good policy environment to make aid more effective. In other words, the negative impact of the aid-policy interaction on growth indicates the role that inefficient policies can play in diminishing the positive effect of aid on growth. Thus setting a sound policy environment is crucial to use aid more effectively and make domestic investment efficient. Although the overall data shows the increasing of foreign aid flows to Somalia, unfortunately, based on our result it is not contributing to economic growth. Thus, it is too important to be noted that the less institutional effectiveness, injustice, poor planning and organization, corruption and political instability may caused the ineffectiveness of aid in Somalia.
REFERENCES


**APPENDIX**

**Trends of the variables**

**Capital Formation % GDP**

**ODA % GDP**
G. Capital Formation % GDP  

Trade Openness % GDP
The Analysis of The Relationship Between Economic Growth And Unemployment In Turkey With Markov Regime Change Models

Ş. Işıl AKGÜL

1.INTRODUCTION

The phenomenon of unemployment is one of the main problems that have been going on from the past to the present day, and closely concerns the countries and their economies. Nowadays, there is a serious unemployment problem in many countries and even this problem is increasingly observed. Economic growth and full employment are the main objectives of macroeconomic policies, and it is generally accepted that economic growth is the most effective way to reduce unemployment economically, in other words, to increase employment. However, when the data of the last thirty years are examined, it is seen that the expected decrease in unemployment rates has not been realized despite the fact that the world economy has grown nearly twice. This shows that the relationship between unemployment rate and growth has weakened, and growth does not meet expectations for job creation. This relationship is linked to what is commonly referred to as “Jobless Growth” in the relevant literature. But, in this study, the concept of “Jobless Growth” was not used in the interpretation. Because the New Keynesian theory emphasizes this concept in the context of stickiness and rigidity in the labor market. Undoubtedly, stickiness and rigidity are also important in the Turkish labor market, however, since the study does not focus on this point, expressions such as whether economic growth has an impact on unemployment has been preferred in the comments of the analysis results.

Besides, the relationship between economic growth and unemployment rate was empirically analyzed by Okun in 1962 and the relationship between them was shown to be negative. Thus, this negative relationship is called Okun’s Law. According to this law, today’s high growth rate brings a low unemployment rate in the next period. It has been seen in the literature that many economists focus on the concepts of growth and unemployment. The relationship between these two variables was empirically analyzed by Okun (1962) for the first time and it was found that there was an inverse relationship between the variables. Okun’s (1962) study assumed that the relationship between these two variables was linear, and other studies following this study were widely acted upon with this assumption. However, in some recent studies, it is seen that the nonlinearity is taken into account by stretching the hypothesis of being linear. In some of these studies, it was emphasized that the unemployment effect of growth during the expansion period of the economy may not be the same as the unemployment effect of growth during the contraction periods, but there is no definite decision regarding this issue. In this area, Courtney’s (1991) work is pioneering. Courney’s finding that Okun’s coefficient is asymmetrical was supported by the following studies; Harris and Silverstone (2000, 2001), Mayes and Viren (2000), Viren (2001), Silvapulle et al. (2004), Holmes and Silverstone (2006) and Huang and Lin (2008). The importance of the correct determination of Okun’s law in terms of the relationship between unemployment and growth has been particularly

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emphasized in the study by Harris and Silverstone (2001). They said that if the estimations are made by assuming relationship is linear, even though the relationship is not linear, the results will be wrong and policy makers will be misled.

Turkey’s economy in the 2000s has experienced two big crises. The effects of the crisis experienced in 2001 caused the unemployment level to exceed 8%. Stabilization policies implemented after the crisis, and combined with structural reforms from 2002 until the end of 2007, Turkey’s economy experienced serious expansion but could not hold a fall in the unemployment rate to expect. Despite the serious growth rates in the economy, the unemployment rate, which exceeded the 10% threshold for the first time in 2002, could not be reduced below this threshold. During this period, the increase in the unemployment rate as well as the high growth rate for Turkey’s economy has led to a questioning of the relationship between these two variables. Here, the relationship between growth and unemployment rates for Turkey’s economy will be analyzed. The aim is to determine whether this relationship is different during periods of expansion and contraction of the economy. Accordingly, the relationship between unemployment and growth is examined for the period 2005:01-2018:12 by various methods, especially non-linear methods.

In the second section after the introduction, a review of the literature, which analyzes the relationship between unemployment and growth, is included. In the third section, technical details are given about the methods to be used in the analysis, and in the fourth section, the results of the application and analysis are given. In the fifth and final section, the findings are evaluated for Turkey’s economy.

2. LITERATURE REVIEW

There are many studies on the relationship between unemployment and growth. As a result of empirical studies, a definite common finding could not be reached. Although the accuracy of the coefficient called the coefficient of the Okun is supported in many studies, the results regarding the coefficient size are not similar. Therefore, it would be appropriate to start a literature review by giving information about Okun’s 1962 study. In the studies on unemployment and growth relationship, the following can be shown as the main reasons why the Okun coefficient is different; whether variables such as working hours, technological developments, labor force participation and capacity utilization that will affect the relationship are included in the model, differentiation of econometric methods used in the prediction of models, and country economies have different dynamic structures. The relationship between unemployment and growth indicators was first empirically analyzed for the American economy by Okun in 1962 and was accepted as a pioneering study in the literature.

In his study titled “Potential GDP: Measurement and Its Importance”, Okun showed that the increase in growth rate had a decreasing effect on unemployment rate. Okun empirically proved the inverse relationship between real (output) growth and unemployment rate in the US economy using quarterly data from 1947-1960. This theory, which is called Okun Law in the literature, is based on the thesis that high increases in growth rates will decrease unemployment rate and low or negative growth rates will increase unemployment rate. In other words, Okun’s law provides information on how the unemployment rate will be affected if the actual product deviates from the potential product, ie how much the actual unemployment rate deviates from the full employment unemployment rate. Although this rule only gives an approximate result and does not function very precisely year after year, it still provides a meaningful transformation from
growth to unemployment (Dornbusch and Fischer, 1998: 19). In his study on the American economy, Okun used various approaches while examining the relationship between growth and unemployment and named the models as the difference model, the gap model, the fitted trend and elasticity model (Okun, 1962: 101). Okun stated that the increase in the production of goods and services depends on employing existing workers or increasing the level of labor use in the economy. He stated that the unemployment rate in the economy will give meaningful information about the level of labor force use. In his study, he tried to find a solution to the potential output estimation problem of the economy based on the question of how much output can be produced under full employment conditions in an economy. Okun determined that there would be a certain unemployment rate even in full employment and the natural unemployment rate was 4% for the American economy, and concluded that every 1% increase exceeding the unemployment rate would decrease real GDP by an average of 3%.

It is seen that applied studies are generally carried out by following Okun and as a coefficient based on comparison with Okun’s coefficient.

In some studies, it has been examined whether the coefficient of Okun will change according to the regions. Examples of these are Blackley (1991), Apergis and Rezitis (2003), and Villaverda and Maza (2007). In these studies, it was emphasized that the coefficient of Okun can change depending on the time and these changes may occur depending on the structure of the markets. It is stated that employment is more sensitive to growth in some countries, and the reason for this is the flexibility in the labor market. For example, Lee (2000) examined the asymmetric relationship in the Okun Law and said that the Okun coefficient decreased towards the end of the research period, the Okun coefficient was higher for the EU countries than the USA, and this was due to market rigidities in the EU. Moosa (1997), Sögner and Stiassny (2002) and Adanu (2005) also examined the variation of Okun’s coefficient depending on time and market structures.

Besides, Prachowny (1993) and Attfield and Silverstone (1997) criticized Okun for not adding variables that they thought might have an impact on growth. In Prachowny’s study for the USA, he analyzed the relationship between annual data and output gap and unemployment gap for the period 1947-1986. He also estimated the Okun coefficient by adding variables such as working time, capacity utilization rate and efficiency variables to the model. Attfield and Silverstone (1997) also changed the data set using the model used by Prachowny (1993).

Okun assumed that the relationship between unemployment and output is symmetrical. In most studies based on Okun’s work, the relationship between unemployment and output is considered to be linear and modeled with this assumption. Then, studies were carried out with the assumption that the relationship between unemployment and growth could be asymmetrical. In the literature, Courtney (1991) was the first to comment on the asymmetry of the Okun’s law. Courtney said that Okun’s coefficient changed during the periods of expansion and contraction caused by cyclical fluctuation, and used output gap and output surplus as the explanatory variable in the model that predicted the asymmetric relationship. As the output gap, it used the output gap that occurred during the expansion period if the growth rate was larger than the potential growth rate, and the output surplus that occurred during the contraction periods when the growth rate was smaller than the potential growth rate. As a result of the study, Courtney (1991) showed that Okun’s Law is valid for the US economy and the relationship is asymmetrical. At the same time, in his
research, symmetric regression estimation showed that unemployment increase during contraction periods was deficient and unemployment decrease during expansion periods was over-determined. Mayes and Viren (2000) also examined asymmetry in Okun’s Law in their studies, and found that the effects of the crises in the economy on unemployment were higher and faster than the effect in the periods of expansion. Harris and Silverstone (2000) examined the asymmetric structure of the cointegration relationship between unemployment and growth with TAR models. Harris and Silverstone (2001), on the other hand, examined the relationship between asymmetry in Okun’s Law and concluded that the relationship between unemployment and employment differs during periods of contraction and expansion. Their findings are similar to those of Courtney (1991), Mayes and Viren (2000) and Harris and Silverstone (2000). Studies analyzing the relationship between economic growth, unemployment and employment variables for Turkey are generally covered within the cointegration, causality and VAR analysis. The models mentioned here are based on the assumption that the series are linear. However, some recent studies have assumed that the relationship between unemployment and growth may be asymmetrical. For example, Barışık et al (2010) studied the presence of asymmetry in Okun’s relationship for Turkey, with MS approach for the period 1988:Q1-2008:Q4. In their study, they found that Okun’s Law applies to Turkey’s economy. While the results of the Markov regime change model showed that Okun’s coefficient was not the same during the expansion and contraction periods of the economy, and this finding also showed the existence of an asymmetry relationship. Ceyhan and Şahin (2010) examined the asymmetrical relationship between unemployment and economic growth with TAR and M-TAR models for Turkey. The analysis period is 1950-2007. As a result of the analysis, they found that the Okun coefficient has an asymmetrical feature. In other words, economic growth has a different effect on reducing unemployment in the expansion period and increasing unemployment in the contraction period.

3. ECONOMETRIC THEORY

Whether the economic variables behave differently during the phases of a business cycle or, in other words, whether they exhibit (a)symmetrical behavior is important for the analysis. According to Keynes (1936) and Mitchell (1927), who draw attention to asymmetry in economic variables, business cycles are characterized by long expansions interrupted by sudden, infrequent and severe contractions in economic activities. Mitchell (1927), Keynes (1936) and Burns and Mitchell (1946), who argue that cyclical fluctuations are asymmetric, whereas Goodwin (1951) conducted case studies for deterministic models producing asymmetric circles (Bildirici et al., 2010: 17). However, two important studies on asymmetry and non-linearity were performed by Neftçi (1984) and Hamilton (1989).

Neftçi (1984) found that with the help of the second-order Markov chain, the US unemployment rate shows asymmetrical behavior and increases in unemployment are sharper than decreases. Hamilton (1989), on the other hand, showed that the growth rate of the GNP of the USA changed with the first order Markov chain during the contraction and expansion periods of the economy. After these two important and pioneering studies, it became common to try to explain non-linear or (cyclical) asymmetry with both deterministic and stochastic models.
Markov Regime Switching Models

The more common use of the Markov regime switching approach in analysis began with Hamilton’s (1989) study and was referred to as the “Hamilton Model” in the literature. Hamilton’s basic approach is that the periods of expansion and contraction in the economy are accepted as the regime and the transitions between these regimes are probabilistic. In this context, Hamilton (1989, 1994, 2005) guided his methods with how to model sudden changes in a time series. Hamilton (1989) introduced a two-step algorithm to predict the MS model. The mass parameters, including the joint probability densities of the regimes not observed in the first step, are estimated. In the second stage, inference is made about the unobserved regimes using nonlinear filtering and smoothing (Özdemir and Akgül, 2015: 370). The estimation process of the Hamilton model parameters is based on finding filtered and smoothed possibilities for the unobserved regime variable $s_t$ using the estimated parameters by maximizing the log-likelihood function. In the event that the estimated number of parameters is high, it is recommended to use the Expectation Maximization (EM) algorithm introduced by Dempster, Laird and Rubin (1977) (Özdemir and Akgül, 2015: 370).

Hamilton (2005) explained this situation on a single $y_t$ variable with first order autoregressive process as follows:

$$ y_t = c_1 + \phi y_{t-1} + \varepsilon_t $$

Here it is assumed that $\varepsilon_t \sim N. i. i. d. (0, \sigma^2)$ and the observed data is defined as $t=1,2,3,...,t_0$. If, under these conditions, a significant change occurs in the mean value of the $y_t$ series at time $t_0$, the model is defined as follows;

$$ y_t = c_2 + \phi y_{t-1} + \varepsilon_t $$

In Markov change models, the classification of regimes and the dating of the cycles occurs by assigning each observation value to the regime in the system. The rule applied here is to assign the observation value based on the highest smoothed probability at time $t$. The probability of being in the regime (smoothed) for each point of time is calculated to be $m^*=\text{argmax} \ (st=m|Y_t)$ to indicate the regimes $m = 1, 2, 3$. Inference is made using all observation values, and then observations are assigned to the appropriate regime according to the highest smoothed probabilities (Koç and Akgül, 2013: 47).

The basic idea of MS-AR models, which will be the basis in this study, is as follows; the parameters of the AR process in MS-AR models depend on the unobservable regime variables, $s_t \in \{1, ..., M\}$ which represents the probability of being in a particular state from all possible states. A complete definition of the MS–AR model requires the formulation of a mechanism that controls the evolution of probabilistic and invisible regimes to which autoregression parameters depend. When a law is specified for $s_t$ states, the evolution of regimes can be removed from the data. The process that produces the regime in MS-AR models is a probabilistic, ergodic Markov chain that takes finite or countable integer values (Bildirici et al., 2010: 72).
The ergodic Markov chain, which creates the probabilistic and unobservable process, is shown as follows: $P_{ij} = \Pr(s_{t-1} = j | s_t = i)$, $\sum_{j=1}^{M} P_{ij} = 1 \forall i, j \in \{1, \ldots, M\}$

Here $P_{ij}$ is the probability of transition (Krolzig, 2001: 340). When the previous case is $j$, it indicates the probability that the future case will be $i$. The conditional distribution of $s_t$ depends only on the previous state and has no connection with other states.

4. EMPIRICAL ANALYSIS

This part of the study, the relationship between unemployment and economic growth for Turkey’s economy is examined by econometric methods. As explained above, Okun, and the studies conducted following it, analyzes were made assuming that the relationship between real output growth and unemployment rate was symmetrical. However, the fact that the relationship in question is symmetrical does not reflect an expected situation even as a result of examining the graph of variables over time. Therefore, in this study, the analysis has been made considering the asymmetry for Turkey’s economy. Therefore, when model predictions are made by nonlinear methods, the question of whether the relationship between these two variables gives the same reaction or different reactions during periods of expansion and contraction of the economy can be answered.

4.1. Data

The analysis period covers between 2005:01-2018:12. However, since the monthly data are used, industrial production index (IPI) data is used as the proxy variable instead of the GDP variable. The unemployment rate and IPI data were obtained from Turkey Statistical Institute electronic databases. IPI index values are based on 2015 base year. Natural logarithms of the series were taken first in order to ensure the stationarity in variance, and the growth rate series were obtained by taking the first difference of the variables whose logarithm was taken. The variables used in the study are abbreviated as unemployment rate growth rate $GR_{UR}$ and industry production index growth rate $GR_{IPI}$.

The analyzies were first started by testing the stationarity of the variables. Then linearity test was applied to the variables. After the results obtained, nonlinear unit root tests were performed, and then how the unemployment rate reacted during the expansion and contraction periods of the economy was investigated with MS-AR models.

Time series graphs of $GR_{UR}$ and $GR_{IPI}$ variables are shown in Figure 1 below.

![Figure 1: Time Graphics of GR-IPI ve GR-UR](image-url)
leads to a prediction in terms of the existence of jobless growth in Turkey’s economy. Further analysis of the relationship between unemployment and growth, Turkey will be observed in response to expansion and contraction of the economy for the period will be determined by nonlinear methods.

4.2. Empirical Results

At the analysis stage, firstly, the stationarity was tested, assuming the series were linear. After, the linearity of the series was tested and non-linear unit root tests were applied according to the findings. Finally, MS-AR models suitable for nonlinear stationary series have been defined and estimated.

4.2.1. Linear and Nonlinear Unit Root Tests and Linearity tests

As mentioned above, the analysis started with testing the stationarity of the series. ADF (Dickey and Fuller, 1979), PP unit root (Phillips and Perron, 1988) and KPSS stationarity tests (Kwiatkowski et al, 1992) were used to determine whether the series were stationary. The values of the test statistics calculated for the variables are shown in Table 1 together.

### Table 1: Unit Root and Stationarity Tests Results

<table>
<thead>
<tr>
<th>Tests</th>
<th>Variables</th>
<th>Critical Values (5%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GR-UR</td>
<td>GR-IPI</td>
</tr>
<tr>
<td>ADF- (with constant)</td>
<td>-6.1911</td>
<td>-20.1803</td>
</tr>
<tr>
<td>PP-(with constant)</td>
<td>-4.5904</td>
<td>-42.088</td>
</tr>
<tr>
<td>KPSS-(with constant)</td>
<td>0.1211</td>
<td>0.1313</td>
</tr>
</tbody>
</table>

Note: Lag lengths of unit root and stationary tests were determined with the help of Schwarz Information Criterion.

As a result of ADF and PP tests for GR-IPI and GR-UR series, the null hypothesis expressing the existence of the unit root was rejected and both series were determined to be stationary. For the KPSS test, the null hypothesis, which expresses stationarity, was not rejected because the calculated test statistics were less than 5% critical value and the series were determined to be stationary according to the KPSS test. As a result of the three tests applied, it was found that both variables were stationary.

Below, whether the variables of GR-UR and GR-IPI are linear or not have been investigated by BDS test (Brock et al, 1986) and the test results are given in Table 2.

### Table 2: BDS Test Results

<table>
<thead>
<tr>
<th>Dimension (ISZBO)</th>
<th>GR-IPI BDS Statistic</th>
<th>z-Statistic</th>
<th>Prob.</th>
<th>GR-UR BDS Statistic</th>
<th>z-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0.0507</td>
<td>1.046052</td>
<td>0.00000</td>
<td>0.015053</td>
<td>2.5124</td>
<td>0.012</td>
</tr>
<tr>
<td>3</td>
<td>0.075137</td>
<td>9.751441</td>
<td>0.00000</td>
<td>0.035596</td>
<td>3.73735</td>
<td>0.0002</td>
</tr>
<tr>
<td>4</td>
<td>0.095718</td>
<td>1.043204</td>
<td>0.00000</td>
<td>0.043044</td>
<td>3.794441</td>
<td>0.0001</td>
</tr>
<tr>
<td>5</td>
<td>0.100496</td>
<td>1.050049</td>
<td>0.00000</td>
<td>0.036474</td>
<td>3.084322</td>
<td>0.002</td>
</tr>
<tr>
<td>6</td>
<td>0.094627</td>
<td>1.026408</td>
<td>0.00000</td>
<td>0.025473</td>
<td>2.233372</td>
<td>0.0255</td>
</tr>
</tbody>
</table>
As a result of the BDS test, the null hypothesis, which states that the probability distribution of error terms obtained from the linear model is independent and homogeneous, was rejected for both variables. This shows that GR-UR and GR-IPI variables are not linear for all dimensions. BDS test results showed that both series are not linear in all dimensions. Therefore, the reliability of the results obtained from the linear unit root tests on the series is low. This is because tests performed without correct model definitions tend to lose power and reject the null hypothesis. Therefore, non-linear unit root tests MS-ADF (Hall et al, 1999) and KSS tests (Kapetanios et al, 2003) were applied for the series determined to be non-linear and test results are given in Table 3.

<table>
<thead>
<tr>
<th>Table 3: Nonlinear MS-ADF and KSS Unit Root Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
</tr>
<tr>
<td>Regimes</td>
</tr>
<tr>
<td>Test Stats.</td>
</tr>
<tr>
<td>Prob.</td>
</tr>
<tr>
<td>KSS Test</td>
</tr>
<tr>
<td>Variables</td>
</tr>
<tr>
<td>Test Stats.</td>
</tr>
<tr>
<td>Crit Value</td>
</tr>
</tbody>
</table>

While the KSS test results given in Table 3 show that GR-UR and GR-IPI series are stationary with soft structural breaks, MS-ADF test results show that non-linear series are stationary in both regimes.

4.2.2. Markov Regime Switching MS-AR Model

In this section, the existence of asymmetry relationship between GR-UR and GR-IPI are investigated by two regime Markov regime change model. Regimes cover the periods of expansion and contraction of the economy. Estimates with the MS model generally assume that there are two regimes in the economy. However, in some studies, it was stated that three-state MS models are better at explaining the business cycles. As an example, Sichel (1994) supported the claim that the three-state Markov process would better adapt to post-war business cycles in the US economy, so that business cycles could be classified as shrinkage, high and moderate growth with the MS (3) model created by 3 business cycle phases. (Koç and Akgül, 2013: 50). Therefore, all possible models with GR-IPI and GR-UR variables were estimated in two and three regimes, and all models were compared with others to determine the most suitable model. In the two-regime model preference, LR test was used to test the two regime models against three regime models, and it was decided according to the regime in which the economy has contraction and expansion periods. The findings, the relationship between the two regimes of unemployment and growth model for Turkey’s economy showed more successful than 3-regime models. It was observed that the periods in which unemployment increased and decreased were distributed more homogeneously in the two-regime model, in other words, the periods in which unemployment increased, regime 0 and the periods in which unemployment decreased and regime 1 supported the conclusion that the two-regime MS-AR model was stronger. Model estimation results for the two regimes are shown in Table 4.
Table 4: MSIH-AR(2,1)-X Model Estimation and Tests Results

<table>
<thead>
<tr>
<th>Dependent Variable: GR-UR</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>Robust-SE</th>
<th>t-</th>
<th>t- prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR-1 (0)</td>
<td>0.642521</td>
<td>0.0896</td>
<td>0.1225</td>
<td>5.24</td>
<td>0.000</td>
</tr>
<tr>
<td>AR-1 (1)</td>
<td>0.436342</td>
<td>0.1366</td>
<td>0.1227</td>
<td>3.56</td>
<td>0.001</td>
</tr>
<tr>
<td>GRIPI</td>
<td>-</td>
<td>0.0220</td>
<td>0.02150</td>
<td>-4.94</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-1)</td>
<td>0.642521</td>
<td>0.0896</td>
<td>0.1225</td>
<td>5.24</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-1)</td>
<td>-</td>
<td>0.0220</td>
<td>0.02150</td>
<td>-4.94</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-2)</td>
<td>0.436342</td>
<td>0.1366</td>
<td>0.1225</td>
<td>3.56</td>
<td>0.001</td>
</tr>
<tr>
<td>GRIPI(t-2)</td>
<td>-</td>
<td>0.0220</td>
<td>0.02150</td>
<td>-4.94</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-3)</td>
<td>0.166771</td>
<td>0.0205</td>
<td>0.02436</td>
<td>6.85</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-3)</td>
<td>0.195624</td>
<td>0.0318</td>
<td>0.03806</td>
<td>5.14</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-4)</td>
<td>-</td>
<td>0.0220</td>
<td>0.02150</td>
<td>-4.94</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-4)</td>
<td>-</td>
<td>0.0220</td>
<td>0.02150</td>
<td>-4.94</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-5)</td>
<td>0.166771</td>
<td>0.0205</td>
<td>0.02436</td>
<td>6.85</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-5)</td>
<td>0.195624</td>
<td>0.0318</td>
<td>0.03806</td>
<td>5.14</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-6)</td>
<td>-</td>
<td>0.0220</td>
<td>0.02150</td>
<td>-4.94</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-6)</td>
<td>-</td>
<td>0.0220</td>
<td>0.02150</td>
<td>-4.94</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-7)</td>
<td>0.166771</td>
<td>0.0205</td>
<td>0.02436</td>
<td>6.85</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-7)</td>
<td>0.195624</td>
<td>0.0318</td>
<td>0.03806</td>
<td>5.14</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-8)</td>
<td>-</td>
<td>0.0220</td>
<td>0.02150</td>
<td>-4.94</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-8)</td>
<td>-</td>
<td>0.0220</td>
<td>0.02150</td>
<td>-4.94</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-9)</td>
<td>0.166771</td>
<td>0.0205</td>
<td>0.02436</td>
<td>6.85</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-9)</td>
<td>0.195624</td>
<td>0.0318</td>
<td>0.03806</td>
<td>5.14</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-10)</td>
<td>-</td>
<td>0.0220</td>
<td>0.02150</td>
<td>-4.94</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-10)</td>
<td>-</td>
<td>0.0220</td>
<td>0.02150</td>
<td>-4.94</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-11)</td>
<td>-</td>
<td>0.0220</td>
<td>0.02150</td>
<td>-4.94</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-11)</td>
<td>-</td>
<td>0.0220</td>
<td>0.02150</td>
<td>-4.94</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-12)</td>
<td>-</td>
<td>0.0220</td>
<td>0.02150</td>
<td>-4.94</td>
<td>0.000</td>
</tr>
<tr>
<td>GRIPI(t-12)</td>
<td>-</td>
<td>0.0220</td>
<td>0.02150</td>
<td>-4.94</td>
<td>0.000</td>
</tr>
<tr>
<td>Constant</td>
<td>2.62515</td>
<td>0.4622</td>
<td>0.4492</td>
<td>5.84</td>
<td>0.000</td>
</tr>
<tr>
<td>Constant</td>
<td>-4.11829</td>
<td>0.3476</td>
<td>0.4104</td>
<td>-10.0</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Log-likelihood: -383.767913  SC: 5.60544108  AIC: 5.23075212  Linearity LR-test Chi^2(5) = 36.169

Descriptive statistics for scaled residuals
Normality test: Chi^2(2) = 0.33427 [0.8461]  ARCH F(2,131) = 0.16030 [0.8521]
Portmanteau(36): Chi^2(36) = 33.675 [0.5797]

Note: All coefficients are statistically significant coefficient values at 1% significance level.
Values in square brackets are probability values.

In the graphic below, the data and the fitted values obtained from the model are given together. Here, it is seen that the model fits the data very well and it can be said that the prediction success that captures all cycles is also very successful.

Figure 2: GR-UR and Fitted Values obtained from MSIH-AR(2,1)-X Model

As a result of the estimate, all coefficients of the two regime MS models were found to be significant and all assumptions were given. The findings show that the AR coefficients, constants and variance vary depending on whether the economy is in an expansion and contraction regime. The Markov transition probability matrix for the model and average durations are shown in Table 5.

Table 5: Transition probabilities, Total and Average Duration

<table>
<thead>
<tr>
<th>Regime</th>
<th>Regime</th>
<th>Total</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
When the transition probabilities between regimes are analyzed, the probability of GR-UR to remain at 0 while the regime is 0 is 0.84; the probability of staying in regime 1 is 0.73, while regime is 1. This shows that in the regime where the series is located, its permanence is high and it does not have a sudden transition feature. In other words, while GR-UR is in the regime where the unemployment rate has increased (contraction regime), the probability of being in the same regime in the next period is 84%, while the probability of switching to the regime where the unemployment rate has decreased is 16%. While GR-UR is in regime 1, the probability of staying in the same regime in the next period is 73%, while the probability of passing the regime to 0 is 27%. Besides, for this model, the tendency of the series to stay in the contraction regime was 61% with the ergodic possibilities, while the tendency to stay in the expansion regime was 39%. All findings show that the persistence rate is higher for the contraction regime.

Figure 2 shows the transition possibilities of regimes where unemployment rate increased (regime 0) and unemployment rate decreased (regime 1).

Figure 2: Transition Probabilities for Regime 0 and Regime 1

Regime 0 graph, in other words, while the economy becomes contraction, the rate of unemployment increases and the rate of growth decreases, while the regime 1 graph refers to the period when the economy expands. When the distribution of GR-UR series among regimes is examined, it is seen that the regimes are separated in a consistent manner. Especially in times of crisis and contraction, the unemployment rate is increasing (contraction regime), while other periods are in the regime where unemployment is decreasing (expansion regime). However, in the expansion regime, that is, in periods where there is an increase in growth rate, some periods where unemployment rate increased have been encountered. In this case, the growth in Turkey’s economy supports the case where there is no contribution to employment creation in this period.

When the regime periods are examined (Table 6), it is seen that the growth in many period intervals supports the fact that it is not enough to create employment. Regarding the contraction periods of the economy in particular, the crisis period of 2008, in which unemployment rates increased rapidly and growth rates dropped rapidly, and the second half of 2018, where unemployment rates increased rapidly and growth rates decreased, was also included in the regime zero. In times of crisis and contraction, regime strongly
supported the regime 0. Besides, when we look at 2018 as the last period of the analysis, it is seen that the economy is in the period of contraction after the 4th month of 2018.

Table 6: Regime Classification (based on smoothed probabilities)

<table>
<thead>
<tr>
<th>Regime 0</th>
<th>months</th>
<th>avg.prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006(3) – 2006(4)</td>
<td>2</td>
<td>0.958</td>
</tr>
<tr>
<td>2006(6) – 2006(8)</td>
<td>3</td>
<td>1.000</td>
</tr>
<tr>
<td>2006(10) – 2007(2)</td>
<td>5</td>
<td>0.922</td>
</tr>
<tr>
<td>2007(6) – 2008(2)</td>
<td>9</td>
<td>0.997</td>
</tr>
<tr>
<td><strong>2008(6) – 2009(8)</strong></td>
<td><strong>15</strong></td>
<td><strong>0.998</strong></td>
</tr>
<tr>
<td>2011(10) – 2012(2)</td>
<td>5</td>
<td>0.998</td>
</tr>
<tr>
<td>2012(7) – 2012(12)</td>
<td>6</td>
<td>1.000</td>
</tr>
<tr>
<td>2013(7) – 2014(1)</td>
<td>7</td>
<td>1.000</td>
</tr>
<tr>
<td>2014(5) – 2015(1)</td>
<td>9</td>
<td>0.990</td>
</tr>
<tr>
<td>2015(5) – 2015(11)</td>
<td>7</td>
<td>0.989</td>
</tr>
<tr>
<td>2016(5) – 2017(1)</td>
<td>9</td>
<td>0.957</td>
</tr>
<tr>
<td>2017(7) – 2017(11)</td>
<td>5</td>
<td>1.000</td>
</tr>
<tr>
<td><strong>2018(5) – 2018(12)</strong></td>
<td><strong>8</strong></td>
<td><strong>0.995</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Regime 1</th>
<th>months</th>
<th>avg.prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008(3) – 2008(5)</td>
<td>3</td>
<td>0.999</td>
</tr>
<tr>
<td>2009(9) – 2009(12)</td>
<td>4</td>
<td>0.999</td>
</tr>
<tr>
<td>2010(2) – 2010(7)</td>
<td>6</td>
<td>0.992</td>
</tr>
<tr>
<td>2010(9) – 2010(12)</td>
<td>4</td>
<td>0.928</td>
</tr>
<tr>
<td><strong>2011(2) – 2011(9)</strong></td>
<td><strong>8</strong></td>
<td><strong>0.999</strong></td>
</tr>
<tr>
<td>2012(3) – 2012(6)</td>
<td>4</td>
<td>0.968</td>
</tr>
<tr>
<td>2013(1) – 2013(6)</td>
<td>6</td>
<td>0.962</td>
</tr>
<tr>
<td>2014(2) – 2014(4)</td>
<td>3</td>
<td>0.904</td>
</tr>
<tr>
<td>2015(2) – 2015(4)</td>
<td>3</td>
<td>0.931</td>
</tr>
<tr>
<td>2015(12) – 2016(4)</td>
<td>5</td>
<td>0.990</td>
</tr>
<tr>
<td>2017(2) – 2017(6)</td>
<td>5</td>
<td>0.994</td>
</tr>
<tr>
<td>2017(12) – 2018(4)</td>
<td>5</td>
<td>0.927</td>
</tr>
</tbody>
</table>

When the distribution of GR-UR series among regimes is examined, it is seen that the regimes are separated in a consistent manner. Especially in times of crisis and shrinkage, the unemployment rate is increasing (contraction regime), while other periods are in the regime where unemployment is decreasing (expansion regime). However, in the expansion regime, that is, in periods where there is an increase in growth rate, some periods where unemployment rate increased have been encountered. In this case, the growth in Turkey’s economy supports the case where there is no contribution to employment creation in this period.
4.2.3. Contraction and Expansion Regime Estimates with MS-AR (1,1) Model

In Table 7, the individual estimation results of the contraction regime-R0 and expansion regime-R1 are given for MS-AR (1,1) models. Thus, the coefficients of both regimes can be viewed and evaluated separately.

While the coefficients of from (t) to (t-4) periods have the same characteristics, it is seen that the relationship between growth and unemployment after the 5\textsuperscript{th} period differs completely in two regimes. However, no coefficient was significant in the contraction regime. Therefore, it is not possible to talk about the existence of a growth unemployment relationship during the contraction period. These coefficients provide information about whether Okun’s coefficient meets the expectations economically during contraction and expansion periods.

<table>
<thead>
<tr>
<th>Dependent Independent</th>
<th>GR-UR(R0)</th>
<th>Regime 0</th>
<th>GR-IP(R0)</th>
<th>Regime 1</th>
<th>GR-UR(R1)</th>
<th>Regime 1</th>
<th>GR-IP(R1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR-1</td>
<td>0.5279</td>
<td>0.1089</td>
<td>0.1242</td>
<td>-0.2065</td>
<td>0.0462</td>
<td>0.0388</td>
<td></td>
</tr>
<tr>
<td>GRIP1</td>
<td>-0.0287</td>
<td>0.0428</td>
<td>0.0397</td>
<td>-0.2706</td>
<td>0.0454</td>
<td>0.0501</td>
<td></td>
</tr>
<tr>
<td>GRIP1(t-1)</td>
<td>-0.0833</td>
<td>0.0427</td>
<td>0.0478</td>
<td>0.0384</td>
<td>0.0430</td>
<td>0.0414</td>
<td></td>
</tr>
<tr>
<td>GRIP1(t-3)</td>
<td>0.0404</td>
<td>0.0408</td>
<td>0.0490</td>
<td>0.0784</td>
<td>0.0511</td>
<td>0.0377</td>
<td></td>
</tr>
<tr>
<td>GRIP1(t-4)</td>
<td>0.0678</td>
<td>0.0531</td>
<td>0.0567</td>
<td>0.0428</td>
<td>0.0509</td>
<td>0.0400</td>
<td></td>
</tr>
<tr>
<td>GRIP1(t-5)</td>
<td>-0.0207</td>
<td>0.0514</td>
<td>0.0645</td>
<td>0.0355</td>
<td>0.0515</td>
<td>0.0399</td>
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<tr>
<td>GRIP1(t-6)</td>
<td>-0.0012</td>
<td>0.0477</td>
<td>0.0476</td>
<td>0.1027</td>
<td>0.0518</td>
<td>0.0480</td>
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</tr>
<tr>
<td>GRIP1(t-7)</td>
<td>0.0184</td>
<td>0.0513</td>
<td>0.0509</td>
<td>0.1395</td>
<td>0.0526</td>
<td>0.0523</td>
<td></td>
</tr>
<tr>
<td>GRIP1(t-8)</td>
<td>-0.0324</td>
<td>0.0518</td>
<td>0.0493</td>
<td>0.0112</td>
<td>0.0452</td>
<td>0.0445</td>
<td></td>
</tr>
<tr>
<td>GRIP1(t-9)</td>
<td>-0.0517</td>
<td>0.0408</td>
<td>0.0390</td>
<td>0.0285</td>
<td>0.0448</td>
<td>0.0526</td>
<td></td>
</tr>
<tr>
<td>GRIP1(t-11)</td>
<td>0.0346</td>
<td>0.0406</td>
<td>0.0370</td>
<td>0.1289</td>
<td>0.0446</td>
<td>0.0526</td>
<td></td>
</tr>
<tr>
<td>GRIP1(t-12)</td>
<td>0.0158</td>
<td>0.0404</td>
<td>0.0370</td>
<td>0.0336</td>
<td>0.0074</td>
<td>0.0072</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.03181</td>
<td>0.0068</td>
<td>0.0065</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td></td>
</tr>
</tbody>
</table>

Tablo 7: Rejim 0 ve Rejim 1 için MS-AR(1) Model Tahminleri

<table>
<thead>
<tr>
<th>R0</th>
<th>R1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptive statistics for scaled residuals:</td>
<td>Descriptive statistics for scaled residuals:</td>
</tr>
<tr>
<td>Normality test: Chi\textsuperscript{2}(2)=6.2097 [0.0448]*</td>
<td>Normality test: Chi\textsuperscript{2}(2)=0.45777 [0.7954]</td>
</tr>
<tr>
<td>ARCH 1-2 test: F(2,63)=0.12754 [0.8805]</td>
<td>ARCH 1-2 test: F(2,42)=0.38545 [0.6825]</td>
</tr>
<tr>
<td>Portmanteau( 9): Chi\textsuperscript{2}(9)=7.6062 [0.5743]</td>
<td>Portmanteau( 7): Chi\textsuperscript{2}(7)=8.7440 [0.2716]</td>
</tr>
</tbody>
</table>

Note: * It shows statistically significant coefficient values at 5% , ** at 10% significance level.
The number in square brackets is the probability value

Time path graphs of the data in R0 and R1 regimes and fitted values obtained from the models are given in Figure 3 and the model seems to be quite compatible with the data.
However, the main important finding of the estimations can be outlined as follows; in the contraction regime, the relationship between economic growth and unemployment is statistically insignificant, that is, the relationship between economic growth and unemployment is broken during the contraction period. In the expansion period, while there was a meaningless relationship in some periods, a generally significant relationship was found. While it has an effect on reducing unemployment rate in the first periods when economic growth started, it is seen that this relationship reversed in later periods. This reveals that Okun’s relationship will only be valid during the expansion period. While the coefficient of Okun in the contraction regime was not statistically significant, it was statistically significant in the expansion period and was calculated as -0.20.

Okun’s coefficient for the expansion regime is -0.20 and statistically significant. It can be interpreted as follows; while the economy is in the expansion regime, a 1% increase in the GR-IPI (R1) variable will create a 0.20% decrease in unemployment. For the contraction regime, Okun’s coefficient is -0.02 and statistically insignificant. It is not interpreted because it is meaningless as well as very small.

As a result, it is found that the increase in economic growth in the expansion regime was found to be more effective than the contraction regime in reducing unemployment. Economic growth is weaker in creating employment in the contraction regime. The constant coefficient indicating what the GR-UR would be in the absence of any change in GR-IPI was negative in the expansion period, while it was positive in the contraction period. In both cases, the coefficients are statistically significant.

5. CONCLUSIONS

This study empirically examines the relationship between unemployment and growth in Turkey for the period of 2005-2018. The empirical estimation starts with testing the unit root using ADF, PP and KPSS tests. Here, the series is assumed to be linear. Then, whether they are linear or not were tested with BDS test, and they were found to be nonlinear. Thereupon, MS-ADF and KSS nonlinear unit root tests were applied to both series. For the preferred MS model because it is suitable for the purpose of the study, the number of regime was determined, and the two regime MS-AR model was estimated. As a result of the analyzes, it was determined that the relationship was different between the contraction regime in which unemployment rate increased and expansion regimes where unemployment rate decreased. The findings of regime estimates revealed that while there was a relationship between growth and unemployment rate during the expansion period, the relationship between them was broken during the contraction periods. This shows that in the contraction periods, the unemployment rate is not sensitive to changes in the output change. The evidence indicates that the relationship between unemployment and growth for the Turkey’s economy in expansion regime is consistent with Okun’s Law. Okun’s coefficient was found to be -0.20 and statistically significant during the expansion period. However, during the contraction period, the coefficient is statistically insignificant and very small in value. This indicates that 1% increase in growth will decrease unemployment rate by 0.20%. The coefficient indicates that 1% increase in unemployment rate will decrease growth by 5%. In other words, it can be said that to get a 1% decline in unemployment, 5% growth rate is required.
At this point, the most important thing that can be said about employment in Turkey is the job creation must be able to absorb the additional labor force. Based on the finding in the contraction regime, it can be said that production should be rejuvenated in a wider full employment strategy by interfering with demand structures, technology, size of companies and a calibrated relationship, and contextualized with the global market in order to prevent loss of unemployment rate and growth relationship.

The last point to be emphasized is the fact that the unemployment rate is one of the most critical indicators of the labor market and is an important measure of the state of the economy in general. It is one of the most important reference sources of economic policies that can be developed for the labor market. Therefore, it is important that the findings of unemployment and growth studies are taken into account by policy makers in that they are guiding. Thus, the analyses will be beneficial. In addition to inflation and growth, policy makers need to address unemployment and employment as one of the main goals of the country’s economy. However, when it is taken as the policy target of the country, it becomes more important to measure employment and unemployment data more reliably. Unemployment and employment data are published by SIS’s Household Labor Force Survey, SPO’s work and ISKUR’s publications. It is emphasized that despite the various regulations, still they are inadequate in detecting as unemployment, and the amount and rate of employment, and it is also stated that the real unemployment rate is higher than announced (Bölükbaş, 2018). In addition, youth unemployment and unregistered employment need to be seriously addressed and evaluated by the policy makers. Many theoretical and practical studies have been done on this subject. Examples are Bulutay and Taşçı (2004), Kayacan, Gürler and Birecikli (2017), Koç (2017), Topçu and Koç (2017), Bölükbaş (2018) and Uçari and Koç (2018).

REFERENCES


