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# ADMINISTRATIVE AND ECONOMICS SCIENCES

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**Theory, Current  
Researches and New  
Trends-5**

**Editor**

**Assoc. Prof. Dr. Filiz Gürder**



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## PREFACE

Economics is exciting. But acquiring a basic knowledge of economics and business management is often a time-consuming and laborious undertaking. To prevent misunderstandings right away: Even we cannot completely eliminate this problem with this book on business administration. Learning definitions, facts and basic facts always involves effort and commitment.

If learning business facts is not always fun, it can at least be done with a more easily designed effort. In this book, we have tried to make 8 different business topics more understandable and fun with case studies and examples.

In the first chapter, the authors analyzed and evaluated the Bank Audit Reports of Commonwealth of Independent States Member States such as Azerbaijan, Kyrgyzstan and Turkmenistan. The second chapter of the book deals with fraud. Here, the concept of fraud, the types of fraud, financial frauds, the Ponzi scheme, the consequences and precautions of the Ponzi scheme are discussed. The third chapter of the book examines the existence of a symmetrical and asymmetrical relationship between military spending and economic growth based on the CEE countries' documents. In the fourth part, glass ceiling and sticky floor in the Turkish manufacturing industry according to technological levels are investigated.

The fifth chapter of the book evaluates the general expenses. The study analyzes general expenses that must be deducted when determining commercial earnings. The subject of chapter six is the mathematics of constructing a non-stagflationist and anti-devaluation state budget, especially for developing countries. In the seventh chapter, a roadmap of how to build a logistics center in an organized industrial zone is proposed based on an example. In the final section, the authors use a study of SMEs to try to answer the question of whether the innovative climate moderates the relationship between social support and innovative work behavior.

A book with such a wide-ranging content cannot be produced in isolated individual work, but only with cooperation. I would like to take this opportunity to express my sincere thanks to the individual authors of the chapters, who made it possible for the book to come into being in its present form.

Editor

Assoc. Prof. Dr. Filiz GÜRDER



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## **CHAPTER I**

### **CONTENT ANALYSIS OF BANK AUDIT REPORTS OF COMMONWEALTH OF INDEPENDENT STATES MEMBER COUNTRIES**

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#### **1.Introduction**

The global financial crises experienced in recent years have shown that economic prosperity depends on reliable financial information and audits (Brenninkmeijer et al., 2018: 3). The national economies of the world countries and especially the banking sector were deeply affected by the global financial crisis which started in the USA in 2007. Many companies have faced problems securing sufficient credit to continue their operations, creating increasing pressure for audit firms to issue a going concern opinion (Riel and Tano, 2014: 16). In addition, fraudulent financial statements in global accounting scandals such as Enron, WorldCom, Freddie Mac and American International Group showed that independent audit firms did not fulfill their duties. Global financial crises and scandals have led to the questioning of the role of the auditor and the appropriateness of the audit reports.

The need for a global financial system has led to a reorganization of the requirements of accounting and auditing processes that determine the reliability of financial information (Ciger et al., 2019: 393). Audit reports, which are a communication tool between businesses and their stakeholders, are also an important tool in increasing investor confidence (Abdolmohammadi and Tucker, 2002: 43). Since the quality of the financial information presented about the enterprises, which are a part of

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the strong economic structure, is also related to the audit quality, international organizations publish regulations for the field of auditing. Regulatory bodies such as the Center for Audit Quality (CAQ), the European Commission (EC), the International Auditing and Assurance Standards Board (IAASB), the Public Company Accounting Oversight Board (PCAOB) and the UK Financial Reporting Council (FRC) started initiatives to increase audit quality and investor confidence (Ciger, 2020: 474). The European Union has published two pieces of legislation to address the need for audit reforms. These are Directive 2014/56/EU on statutory audit, Directive amending Directive 2006/43/EC and Regulation (EU) No 537/2014 on specific requirements for statutory audits of public interest organizations. This Regulation was adopted on 16 April 2014 and entered into force on 17 June 2016 (Ciger et al., 2019: 394)

It has made it necessary for countries that are trying to transition from a planned economy (Socialist system) to a free economy, to carry out studies in the field of accounting and auditing in order to realize international integration and attract foreign investors. With the decision taken on May 25, 2000 by the Economic Council that controls the economic affairs of the Commonwealth of Independent States (Azerbaijan, Belarus, Armenia, Kazakhstan, Kyrgyzstan, Moldova, Uzbekistan, Russia and Tajikistan), which are the countries in the transition economies, the Accounting Coordination Committee affiliated to the Executive Committee of the Community Board started its activities. In accordance with the Regulation on the Accounting Coordination Council, the Coordinating Council is responsible for coordinating the actions of the CIS member states on the development of initial requirements for accounting, organization and accounting regulations, the preparation of accounting (financial) statements, the organization of audit activities, actions on convergence and compliance and harmonization of national accounting and auditing systems with International Financial Reporting Standards (IFRS) and International Standards on Auditing (ISA). Based on this, the Committee systematically analyzes the experience of applying IFRS in the CIS member states and develops appropriate recommendations (cis minsk, 2010).

In this context, it has become important to provide reliable information to investors for the transition to a market economy and it has become inevitable to prepare audit reports in a common framework in accordance with international standards. The periods when CIS countries started to implement ISAs are given in the Table 1 below. (e-cis.info cooperation, n.d.).

Table 1: Applications of ISAs in CIS Countries

CIS Member Countries	Execution Time of ISAs	National standards Developed on the Basis of ISAs	ISAs are Nationally recognized	ISAs can be applied directly <sup>2</sup>
Azerbaijan	2010	-	-	+
Armenia	2011	-	+	-
Belarus	2020	+	+	-
Kazakhstan	2006	-	-	+
Kyrgyzstan	2003	-	+	-
Moldova	2012	-	+	-
Russia	2016	-	+	-
Tajikistan	2018	+	-	+ <sup>3</sup>
Uzbekistan	2020-2021	+ <sup>4</sup>	+	

Audit reports give reasonable assurance about the reliability of the prepared financial statements; it reveals both the communication tool between the business and the user and the critical issues and problems related to the sector in which the businesses are located. On the other hand, audit reports provide information about the audit market in the relevant sector. In addition, the audit reports provide information to form an idea about the gender approach in the audit market.

Banks play a central role in facilitating economic growth and it is stated that banking crises can be harmful to the economy and can spread rapidly around the world with contagious effects. Since banks have important benefits for the country's economy, banks are prudently supervised by financial authorities in almost all countries (Gaganis et al., 2013:308).

Banks need to establish a relationship based on mutual trust with all their stakeholders, starting with the customers from whom they collect their deposits, in order to create resources so that they can continue their activities. In ensuring this trust, the importance of independent auditing becomes indisputably important. It is stated that investors in developed countries are directly affected by the opinions of independent auditors in their decision-making processes (Rena et al., 2016:157).

<sup>2</sup> They are implemented without any action by the authority of the CIS member state.

<sup>3</sup> They are used by the largest international inspection organizations.

<sup>4</sup> National standards are valid until 26 Mai 2001, ISAs are effective from May 26, 2021.

The reason for examining the banking sector in the study is that banks have a key role in economic growth and the reliability of financial markets. As a matter of fact, the negative impact of the crises in the financial markets was clearly observed in the financial crisis in 2008. Therefore, continuous and independent audit of banks has become a legal obligation in almost every country, including the CIS countries. Analyzing the main factors such as financial stability, investing, going concern of the bank and making critical decisions are based on the information and opinions stated in the independent audit reports.

The reason for choosing the CIS is that the growth experiences, structural and economic reforms of these countries' economies have been an important research for economists. However, it has been determined that there is a gap in the literature in the studies conducted in the field of auditing. In this context, in the study, the audit reports of the banks, which are an important actor for the country's economies, are analyzed by content analysis method and answers were sought for the following questions:

RQ1: What is the distribution of local and international audit firms by country?

RQ2: What are the types of opinions by country and the basis for the opinions other than unqualified opinions?

RQ3: What are the number of key audit matters (KAM) and the sub headings of key audit matters by countries?

RQ4: Are there differences in the formal structure of the countries' audit reports?

In the first part of the study, the importance of audit reports is explained. In the second part, audit reports of banks in CIS countries are analyzed. The study is completed with the results and conclusions.

The originality of the study is that it is the first study to examine the audit reports of CIS countries and it is expected to make an important contribution to the literature for those who will do research in the field.

## **2. The Importance of Audit Reports**

Unreliable information hinders the effective use of resources. In addition, such information harms the society and the decision maker himself. The complexity of the accounting transactions, the fact that the users of the financial statements are far from the enterprise and the information is related to the decisions to be taken increases the possibility of unreliable information containing errors and mistakes. The benefits of independent auditing to the business, business partners and related third parties are quite high (Güredin, 2000: 36).

Independent auditing ensures the determination of errors in the content of the documents submitted by the enterprise. It also helps to optimize the costs of the business and prepare the organization for tender where relevant. Independent audit companies or independent auditors explain whether the audited companies have made false information in their reports. For this reason, investors give importance to audit reports before investing in the business (Zamaldinova, 2019: 12).

Investors are primarily concerned with the type of opinion when examining independent audit reports. Depending on the opinion given by the firm or the auditor, investors determine the going concern and financial stability levels of the potential investment business.

While independent auditing protects businesses from the negative effects of errors and frauds, it also helps to protect investors from financial loss by explaining the ways in which the costs of the audited companies can be reduced, and especially by explaining the key audit matters in the auditor's reports.

Independent audit is the process applied to confirm the degree of conformity with the national and/or internationally accepted accounting standards in the financial statements of the client company that continues its activities within the scope of an audit contract and is performed by independent auditors who have no affiliation to the client company (Akgül, 2000: 11).

The purpose of the independent audit is to provide a reasonable assurance about the financial information to the shareholders or other third parties interested in the activities of the business by revealing whether the financial statements reflect the true condition (Çamlıkaya, 2007: 4). Independent auditing will eliminate the situation of making wrong decisions based on incomplete or inaccurate information of people and organizations that will make decisions using financial statements. In other words, independent audit aims to increase the reliability of this information by examining the effects of events on financial information and business activities (Kavut, 2001: 2). The output of the independent audit process is the auditor's report. Auditor reports reduce asymmetric information between the presenters of the financial statements and the users of those statements. The fact that users cannot access financial information and the company directly increases the importance of auditor reports. Auditor reports are a tool that will increase the quality of financial reports and remove the doubt and uncertainty that users have towards those who present financial reports.

Independent audit reports are the most important type of audit report that helps to draw the financial statements of the enterprise at the end of

the period in an objective, independent and impartial manner. These reports are decisive and guiding for business management. Depending on the nature of the opinion given, the enterprise may eliminate the negativities in the operating system (for example, it may work on the reason for the qualified opinion report). In addition, business malfunctions in key audit matters can be detected through the independent audit report and work can be carried out to eliminate them. For potential investors, independent audit reports are a vector for the sectors or businesses to be invested in.

Today, independent audit activity is regulated by both national and international standards. However, during the process of unifying the content of the independent audit report and gaining a uniform order all over the world, most countries started to adopt the standards accepted by international audit organizations. Standards that have an important role among them are International Standards on Auditing (ISAs).

International Standards on Auditing (ISAs) are published by the International Federation of Accountants (IFAC) through the International Auditing and Assurance Standards Board (IAASB). ISAs are used in many ways in different countries. In Russia, the Netherlands and some other countries, ISAs are the basis for the development of their national standards. USA, UK, Canada, Sweden have their own national regulations. However, the ISA requirements in these countries are also taken into account in practice. In some countries such as Nigeria and Sri Lanka, ISAs are accepted as national standards (Arkharova, 2008: 9). International Standards on Auditing establish a unified fundamental regulatory principles for the quality and reliability of auditing.

In 2015, after five years of work on a project to revise audit reports, the International Standards on Auditing and Assurance Assurance Board (IAASB) published new and revised International Standards on Auditing (ISAs) The IAASB's purpose in developing new and revised ISAs is to increase transparency and confidence in the audit process, financial reporting and auditing profession. The revised standards have brought with them a number of new benefits in client business-audit firm relationships. These benefits are also reflected in the independent audit reports. The innovations are as follows (Deloitte, 2016: 7):

- 1) Auditor's meetings with the Audit Committee and management will be more intense and take place at an earlier stage of the audit.

- 2) The audit committee should prior review disclosures in the company's financial statements and annual report, including going concern disclosures (even where the uncertainty is not material).

3) The audit committee should regularly evaluate the independence of the auditor.

4) Additional procedures performed by the Audit Committee regarding other information.

International Standards on Auditing have been issued by the IAASB to cover the entire audit process. There are 6 standards starting with code number 7 and covering the subject of audit reports. These are (IAASB Handbook, 2020):

- ISA 700 “Forming an Opinion and Reporting on Financial Statements”
- ISA 701 “Communicating Key Audit Matters in the Independent Auditor’s Report”
- ISA 705 “Modifications to the Opinion in the Independent Auditor’s report”
- ISA 706 “Emphasis of Matter Paragraphs and Other Matter Paragraphs in the Independent Auditor’s Report”
- ISA 710 “Comparative Information—Corresponding Figures and Comparative Financial Statements”
- ISA 720 “The Auditor’s Responsibilities Relating to Other Information”.

In particular, the key audit matters standard are matters that, in the auditor's professional judgment, are most important in an audit of the current period's financial statements. The auditor must include a section in the auditor's report under the heading "Key Audit Matters (KAM)". The IAASB published the standard in 2015 to increase confidence in the audit process and financial statements, and to increase the communication value of the auditor's report (Yanik and Karataş, 2017:.7). The standard requires the auditor to disclose in the auditor's report the auditor's key areas of focus in the audit (material and risky areas) and the procedures applied in these areas (KPMG, 2018:8). For greater transparency, audit quality, and company-specific information value, in the KAM section, the auditor should have well defined material matters and audit procedures related to these matters (Ciger, 2020: 193). Key audit matters are selected from matters communicated to those charged with governance (ISA 701, para.8). The KAMs disclosed in the auditor's report not only provide benefits for financial statement users in decision-making, but also provide important information about the problems and structure of the sector.

### **3. Analysis**

#### **3.1. Purpose and Importance of the Research**

The aim of the research is to analyze the independent audit reports published by the banks of the member countries of the Commonwealth of Independent States in 2020 by using the content analysis method. The main motivation for the study is that there is no study in the literature on the audit reports of CIS countries with transition economies. The research is important in terms of comparing the compliance of the current audit report content with international standards in CIS countries. In addition, this research compares countries by considering factors such as the types of opinions given by independent audit firms in CIS countries, the number of KAMs, the sub headings of KAMs reported, audit firms and preferred gender of auditors.

In the research, it is aimed to examine the contents of the audit reports by considering factors such as the country of the banks, their capital types, the independent audit firms that audit them, the types of opinions given by these companies, Key Audit Matters (KAM) sub headings, other issues, other information and the gender of the auditor. In addition, one of the aims of this research is to determine the reasons for these opinions in the reports of the auditors in which qualified opinions are given.

#### **3.2. Scope of the Research and Methodology**

The research covers the independent audit reports published in 2020 by the banks of 9 countries (Azerbaijan, Belarus, Armenia, Kazakhstan, Kyrgyzstan, Moldova, Uzbekistan, Tajikistan Republics and Russian Federation) that are members of the Commonwealth of Independent States. A total of 478 banks are included in the research. The distribution of these banks by country is as follows: Azerbaijan-26 (Central Bank of the Republic of Azerbaijan, t.y.), Belarus-23 (List of Banks for Republic of Belarus, t.y.), Armenia-17 (Central Bank of the Republic of Armenia, n.d.), Kazakhstan-21 (Second Tier Banks of Kazakhstan, t.y.), Kyrgyzstan-18 (Commercial Banks of the Kyrgyz Republic, t.y. ), Moldova-11 (Moldova Licensed Banks, t.y.), Uzbekistan-31 (The Central Bank of the Republic of Uzbekistan, t.y.), Tajikistan-13 (National Bank of Tajikistan, t.y.), Russia-318 (Bank of Russia, t.y.). The independent audit reports of Russian banks for 2020 were obtained from the website of the Central Bank of Russia. (Banking Sector, 2021). Audit reports of banks in other countries were obtained from the websites of the banks in question. However, due to the fact that the independent audit reports of 9 banks (2 Kazakhstan, 1 Kyrgyzstan, 4 Uzbekistan and 2 Tajikistan banks) for the year 2020 could not be found, the relevant banks were excluded from the scope of the

research. In accordance with the scope of the research, 469 banks were examined.

In the study, secondary sources were used by making document analysis as a data collection method. While document review is a quantitative data collection method, it also allows for qualitative data collection over documented records (Tubitak, 2022). The data were edited, analyzed and evaluated in Microsoft Office Excel 2010 version.

### 3.3. Results

The distribution of banks according to their capital structure is given in Figure 1.

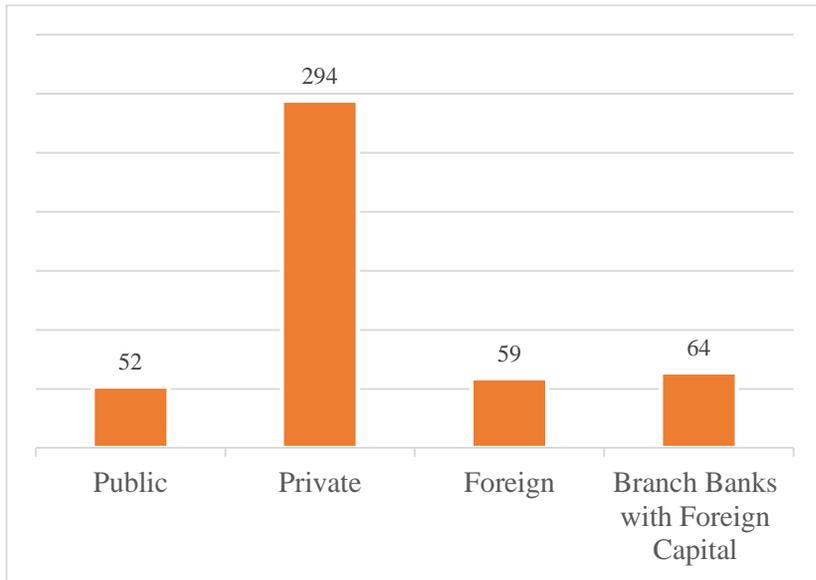


Figure 1. Distribution of Banks by Capital Structure

As can be seen in Figure 1, private banks constitute the majority. This is followed by branch banks with foreign capital.

The capital structure distribution of banks by country can be seen in Figure 2. Russia is not included in the Figure as a country. Since the number of banks in Russia is much higher than the total number of banks in other CIS member countries, the banks of this country are also examined.

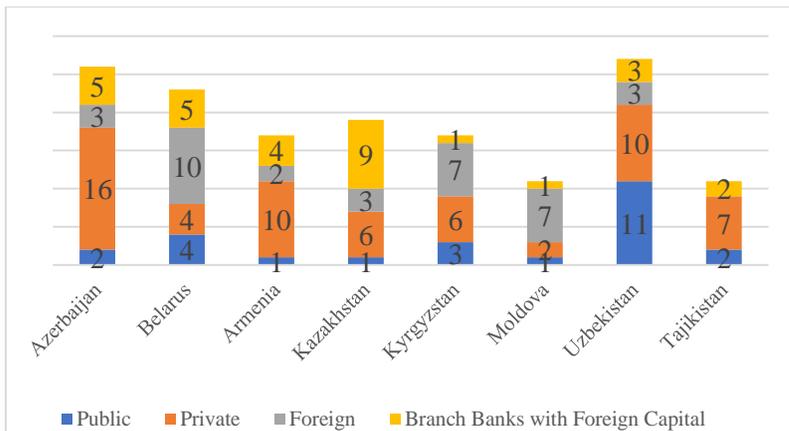


Figure 2: Distribution of CIS Countries (Except Russia) Banks by Capital Structure

When the number of banks according to the capital structure is analyzed in Figure 2, it is seen that there are more private banks in Azerbaijan, Armenia and Tajikistan, more foreign banks in Belarus, Kyrgyzstan and Moldova, and more public banks in Uzbekistan.

The distribution of banks in Russia by capital structure is shown in Figure 3.

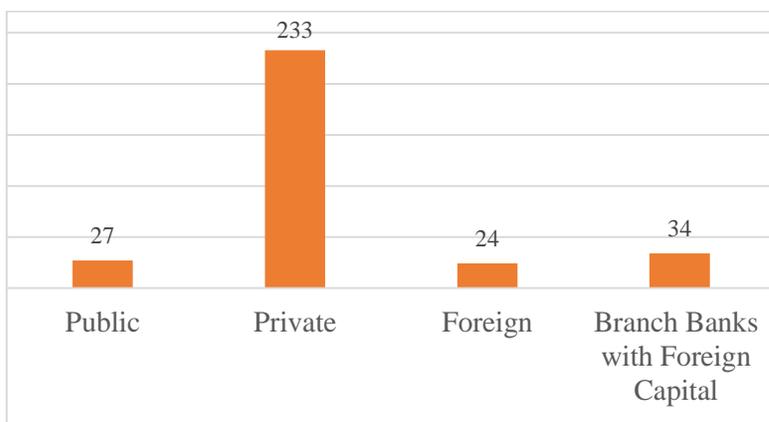


Figure 3: Distribution of Russian Banks by Capital Structure

Figure 3 shows that there are a remarkable number of private banks in Russia.

The distribution of independent audit firms by country is given in Figure 4. Audit firms are handled in 3 groups as 4 big audit firms (Deloitte, Ernst & Young, KPMG, PwC), international and local audit firms:

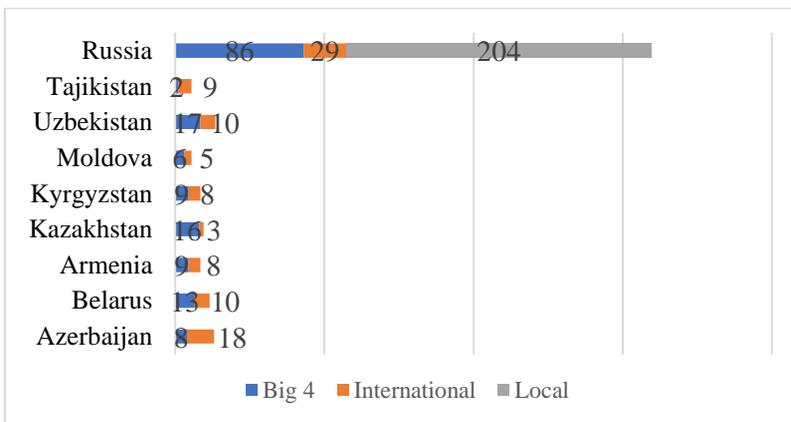


Figure 4: Distribution of Independent Audit Firms Supervising Banks by Country

It is seen that 4 big audit firms in Belarus, Armenia, Kyrgyzstan, Moldova and Uzbekistan are more than other firms and local audit firms in Russia are more than other firms. It is seen that local audit firms do not audit banks in all countries except Russia. In addition, the dominance of 4 big audit firms after local audit firms in Russia also attracts attention.

The distribution of the types of opinions given by the independent audit companies in the auditors' reports of the banks is shown in Figure 5.

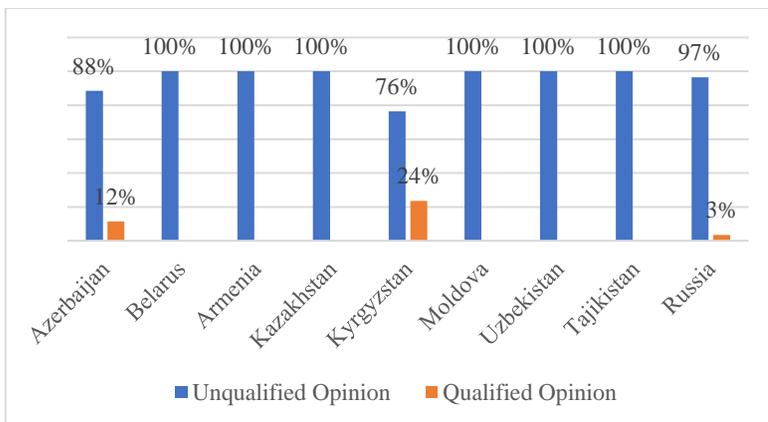


Figure 5: Distribution of Audit Opinion Types by Country

Two different types of audit opinions are expressed in the bank auditor's reports, as seen in Figure 5. The countries where the qualified audit opinion is given are Azerbaijan, Kyrgyzstan and Russia. In other countries, only the unqualified opinion type was reported.

Table 2 shows circumstances of qualified opinion by countries. Looking at the CIS countries, qualified opinions were given to 18 banks by independent audit companies. 11 of them are Russia, 3 are Azerbaijan, 4 are Kyrgyzstan banks. However, the total number of reasons for qualified opinions is 20. The reason for this is that 2 reasons were reported to 2 banks by independent audit companies in Kyrgyzstan. When the grounds for qualified opinion are examined, it is a contradiction to the IFRS 9 financial instruments standard, which is common in all countries. Calculation errors are the most common reasoning for qualified opinion in Russia. This is followed by the lack of audit evidence on going concern.

Table 2: Circumstances of Qualified Opinion by Countries

Circumstance of Qualified Opinion	Country		
	Azerbaijan	Kyrgyzstan	Russia
The Parent Bank's decision to cease operations for the bank	-	1	-
Error in expected loss provision calculations	-	1	-
Information Technology errors	-	1	-
Missing items in "Real Estate, Building and Fixtures"	1	-	-
Calculation error	-	-	4
Insufficient audit evidence on going concern	-	-	2
Lack of amount of provisions for loan losses	-	-	1
Not knowing who has ultimate control	1	-	-
Non-compliance with IFRS 9 Financial Instruments standard	1	3	4

Table 3 shows average number of KAM reported in audit reports of banks in CIS countries. It is revealed that the average number of KAMs is 2 in Kazakhstan and Moldova, and 1 in other countries. However, according to the number of auditor reports, it is seen that KAM is not reported in all auditor reports. KAM has been reported in the auditor's report of 4 banks out of 26 banks in Azerbaijan. The same is true in Armenia (9 out of 17 banks), Kazakhstan (11 out of 19 banks), Kyrgyzstan (8 out of 17 banks), Tajikistan (3 out of 11 banks) and Russia (104 out of 318 banks.) as well.

Table 3: Average Number of KAM Reported in Audit Reports of Banks in CIS Countries

Country	Number of Banks Notifying KAM	Average Number of KAMs
Azerbaijan	4	1
Belarus	22	1
Armenia	9	1
Kazakhstan	11	2
Kyrgyzstan	8	1
Moldova	8	2
Uzbekistan	25	1
Tajikistan	3	1
Russia	104	1

When the KAM sub headings determined by independent audit companies in the banks of the CIS countries excluding Russia are examined in Table 4, it is seen that the sub heading of "loan loss provisions " is reported in all countries. It is observed that the sub heading of "loan loss provisions" is also reported in all banks. In Moldova, the reason why this number is higher than the number of banks reporting KAM is that one of the bank reports subject to analysis examines the "loan loss provisions" and the terms and liabilities arising from them as separate key audit matters. Other important KAMs include "Loans given to Customers". In Kazakhstan and Uzbekistan, this sub heading has been included in 4 different independent audit reports. In 3 reports in Belarus, loans given to individuals belonging to different economic segments (corporate, individual, legal, etc.) are included as KAM. When examined in terms of the diversity of KAMs in these countries, Kazakhstan and Moldova draw attention. A total of 5 different KAM reports were reported in 11 banks in Kazakhstan that reported KAMs. Along with the previously mentioned "Loan loss provisions" (9) and "Loans given to customers" (4), "Credits received" (1), "Taxes" (1) and "Subsidies" (1) are reported in the reports. A total of 4 different KAMs from 8 banks reporting KAMs in Moldova were included in the reports. "Loans received", "Information technologies" and "Guarantees", 1 each, together with "Loan loss provisions" (9) are reported as KAMs. KAMs such as "Related Parties" (Belarus), "Goodwill" (Armenia) and "Sale of Subsidiary Company" (Tajikistan) are mentioned in the reports, once again, rather than the sub headings mentioned.

Table 4: KAM Sub Headings Reported in Auditor's Reports of Banks in CIS Countries (except Russia)

Country	Number of Banks Notifying KAM	Loan loss provisions	Loans Given to Customers	Related Parties	Goodwill	Taxes	Loans Received	Subsidies	Guarantees	Infor. Techn.	Sale of Subsidiary Company
Azerbaijan	4	4	-	-	-	-	-	-	-	-	-
Belarus	22	19	3	1	-	-	-	-	-	-	-
Armenia	9	9	-	-	1	-	-	-	-	-	-
Kazakhstan	11	9	4	-	-	1	2	1	-	-	-
Kyrgyzstan	8	8	-	-	-	-	-	-	-	-	-
Moldova	8	9	-	-	-	-	1	-	1	1	-
Uzbekistan	25	25	4	-	-	-	1	-	-	-	-
Tajikistan	3	2	-	-	-	-	1	-	-	-	1

Table 5: KAM Sub Headings Reported in Auditor's Reports in Russian Banks

KAM Sub Headings	Number of KAMs
Loan loss provisions	64
Loans given to Customers	41
Assets	8
Taxes	4
Financial instruments	4
Capital Structure Change	3
Provisions	3
Investments	3
Internal Control and Risk Management	2
Receivables	1
Information technologies	1
Funds	1
Common stocks	1
Related Parties	1
Performance Compliance	1

As it is shown in Table 5, KAM has been reported in 104 auditor reports of Russian banks. Most of the KAM sub headings are “Loan loss provisions” (64) and “Loans to customers” (41). These are followed by “Assets” in 8 different reports, “Taxes” and “Financial instruments” in 4 different reports. The sub headings of “Capital structure change”, “Provisions” and “Investments” were included 3 times in different auditor reports. The sub heading of “internal control and risk management” is included in the reports of 2 banks. Other KAM sub headings are reported as KAM in the auditor's reports once. These are “Related parties”, “Common stocks”, “Information technologies”, “Receivables”, “Funds” and “Performance compliance”.

Figure 6 shows the gender distribution of the audit engagement partners auditing the banks of the CIS countries.

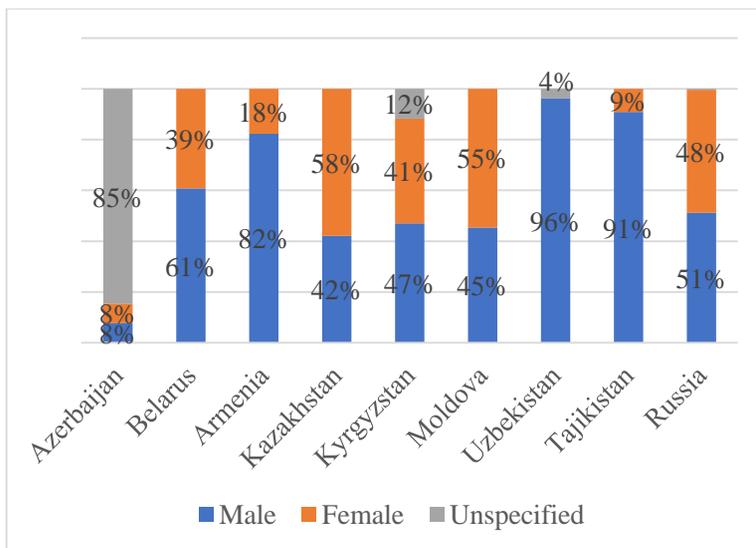


Figure 6: The Gender Distribution of the Audit Engagement Partner Auditing the Banks of the CIS Countries

When the gender distribution of the auditors appointed by the companies for the independent audit of the banks of the CIS countries for the year 2020 is examined in Figure 6, it is revealed that the audit engagement partners are mostly male. Especially in Armenia, Uzbekistan and Tajikistan, the dominance of male auditors attracts attention.

Although it is stated in IFRS, 85% of the auditors' reports in Azerbaijan do not include the audit engagement partner information. In Kazakhstan and Moldova, the number of female auditors is higher than the number of male auditors in the 2020 auditor reports. In Russia, on the other hand, it is seen that the number of male and female auditors is close to each other.

Table 6 shows the content of the independent audit report of the banks of the CIS member countries.

Table 6: Content Structure of Independent Audit Reports Published by Banks of CIS Member Countries

Azerbaijan	Belarus	Armenia	Kazakhstan	Kyrgyzstan	Moldova	Uzbekistan	Tajikistan	Russia
<i>Opinion</i>	<i>Opinion</i>	<i>Opinion</i>	<i>Opinion</i>	<i>Opinion</i>	<i>Opinion</i>	<i>Opinion</i>	<i>Opinion</i>	<i>Opinion</i>
Basis for Opinion	Basis for Opinion	Basis for Opinion	Basis for Opinion	Basis for Opinion	Basis for Opinion	Basis for Opinion	Basis for Opinion	Basis for Opinion
Key audit matters (if available)	Material uncertainty about going concern (if available)	Key audit matters (if available)	Key audit matters (if available)	Emphasis of matters (if available)	Material uncertainty about going concern (if available)	Material uncertainty about going concern (if available)	Key audit matters (if available)	Material uncertainty about going concern (if available)
Emphasis of matters (if available)	Key audit matters (if available)	Emphasis of matters (if available)	Emphasis of matters (if available)	Other matters (if available)	Emphasis of matters (if available)	Key audit matters (if available)	Emphasis of matters (if available)	Key audit matters (if available)
Other matters (if available)	Emphasis of matters (if available)	Other matters (if available)	Other matters (if available)	Other information (if available)	Other matters (if available)	Emphasis of matters (if available)	Other matters (if available)	Emphasis of matters (if available)
Other information (if available)	Other matters (if available)	Other information (if available)	Other information (if available)	Key audit matters (if available)	Other information (if available)	Other matters (if available)	Other information (if available)	Other matters (if available)
Material uncertainty about going concern (if available)	Other information (if available)	Material uncertainty about going concern (if available)	Material uncertainty about going concern (if available)	Material uncertainty about going concern (if available)	Key audit matters (if available)	Other information (if available)	Material uncertainty about going concern (if available)	Other information (if available)

Azerbaijan	Belarus	Armenia	Kazakhstan	Kyrgyzstan	Moldova	Uzbekistan	Tajikistan	Russia
Responsibility of management and internal audit committee in financial reports	Responsibility of management and internal audit committee in financial reports	Responsibility of management and internal audit committee in financial reports	Responsibility of management and internal audit committee in financial reports	Responsibility of management and internal audit committee in financial reports	Responsibility of management and internal audit committee in financial reports	Responsibility of management and internal audit committee in financial reports	Responsibility of management and internal audit committee in financial reports	Responsibility of management and internal audit committee in financial reports
Responsibility of the independent auditor for the independent audit of the financial statements	Responsibility of the independent auditor for the independent audit of the financial statements	Responsibility of the independent auditor for the independent audit of the financial statements	Responsibility of the independent auditor for the independent audit of the financial statements	Responsibility of the independent auditor for the independent audit of the financial statements	Responsibility of the independent auditor for the independent audit of the financial statements	Responsibility of the independent auditor for the independent audit of the financial statements	Responsibility of the independent auditor for the independent audit of the financial statements	Responsibility of the independent auditor for the independent audit of the financial statements
Name of the Audit Engagement Partner and signature	Name of the Audit Engagement Partner and signature	Name of the Audit Engagement Partner and signature	Name of the Audit Engagement Partner and signature	Name of the Audit Engagement Partner and signature	Name of the Audit Engagement Partner and signature	Name of the Audit Engagement Partner and signature	Name of the Audit Engagement Partner and signature	Report on the results of the audit in accordance with the requirements of the Federal Law "On Banks and Banking Activities"
Date of Audit Report	Date of Audit Report	Date of Audit Report	Date of Audit Report	Date of Audit Report	Date of Audit Report	Date of Audit Report	Date of Audit Report	Name of the Audit Engagement Partner and signature
-	-	-	-	-	-	-	-	Date of Audit Report

In Table 6 it is seen that there are different ordering and headings in the titles (explanatory paragraphs) in the auditor's reports. Accordingly, in the audit reports of Belarusian, Moldovan, Uzbekistani and Russian banks, there is the title of "Material uncertainty about going concern " after the title of " Basis for Opinion ". In the reports of Azerbaijan, Armenia, Kazakhstan and Tajikistan banks, "Key audit matters" are included after the "Basis for Opinion" heading. In Belarus, Uzbekistan and Russia, the sub heading of KAM comes after the section "Material uncertainty about going concern". In the reports of Moldovan banks, on the other hand, KAMs come after the headings of "Emphasis of matters", "Other matters" and "Other information".

In the reports of Kyrgyzstan banks, the order of content subjects differs more than in other countries. Here, "Key audit matters" and "Material uncertainty about going concern" are placed after "Emphasis of matters", "Other Matters" and "Other Information".

The last element that draws attention in the table is that in the independent audit reports of Russian banks, after the title of "Responsibility of the independent auditor for the independent audit of the financial statements", the title "Report on the results of the audit in accordance with the requirements of the Federal Law on Banks and Banking Activities" is included. This law was enacted in the Russian State Duma on December 2, 1990. As a result of the changes in the content of the Federal Law "On Independent Audit Activities" adopted on December 7, 2001, the presence of this report in the independent audit reports of banks has been made mandatory.

#### **4. Conclusion and Discussion**

It can be said that independent audit plays an important role in ensuring financial stability and going concern. This profession, which started with internal auditing in ancient times and gave place to impartial and objective auditing in the Middle Ages, is now regulated by states and even by interstate and international organizations in the new age. Independent audit is important for business management, potential investors and the public in determining the financial status of the relevant business, and therefore it provides benefits to the world of economy.

Today, there are standards that regulate external (independent) auditing such as ISA and IFRS. In the study, ISAs that regulate financial reports are included. The purpose of the standards is to make the financial reporting system one and common all over the world. In addition, these standards aim to increase the quality of both the auditor and the audit. ISAs that start with the code 7 explain the content of the report, the explanations to be made according to the type of opinion to be given, the details of other

information and issues, and the responsibilities of the independent auditor (audit company) and the client business in the preparation of the report.

In the study, the independent audit reports of banks in the member countries of the CIS, which is an interstate institution, for the year 2020 were analyzed. The majority of banks in Russia are private banks. In countries such as Belarus, Kazakhstan, Kyrgyzstan and Moldova, the fact that foreign capital banks are more than banks with other capital types shows that these countries need potential foreign investors.

In terms of independent audit companies, companies known as the “Big 4” (Deloitte, Ernst & Young, KPMG, PwC) in the CIS countries have been appointed for the audit of the 2020. Only in Azerbaijan and Tajikistan, other international independent audit companies were consulted. Due to the previously mentioned geographical width and the large number of banks, the services of local companies were generally used for independent auditing in Russia. Due to the remoteness of regions such as Siberia, Ural and Kamchatka, local independent audit companies operating in these regions had to audit small or single-branch banks on their application.

The majority of the types of opinions given in the auditor's reports of the CIS member countries are unqualified opinions. Only in Azerbaijan, Kyrgyzstan and Russia, some banks were given qualified opinions. When the basis for the qualified opinions is examined, it is generally seen that there is non-compliance with the IFRS 9 financial instruments standard as the reason. This shows that mistakes are made in the calculations and reporting order of banks that should be made according to IFRS.

In 6 of the 9 CIS member countries (Azerbaijan, Armenia, Kazakhstan, Kyrgyzstan, Tajikistan, Russia), the total of reports prepared by independent audit companies and containing KAMs is relatively low compared to all bank reports of the country. This leaves it in doubt whether banks are subject to full and comprehensive audit. In the specified KAM sub headings, 2 sub headings take place more frequently than the others. These are “Loan loss provisions” and “Loans given to customers”. “Loan loss provisions” has been included in at least 1 bank in all CIS member countries. The reason for this is generally the errors found in the calculations of the loss provisions to be made according to IFRS 9 “Financial Instruments”. Although these errors do not have a significant impact on the financial statements in most banks, they show that the ISAs are not fully integrated in the banks of the CIS countries. Most of the banks that have the “Loans given to customers” KAM also have “Loan loss provisions”. These two issues are interconnected and banks that have problems in calculating loss provisions also have problems in evaluating loans given to customers belonging to different groups (corporate, individual, etc.).

It is noteworthy that male auditors are appointed more in some countries in terms of the gender of the auditors appointed for independent auditing in the banks of the CIS member countries. Especially in the Republics of Armenia, Uzbekistan and Tajikistan, male auditors have been appointed for the independent auditing of almost all banks. The reason for this can be shown as the fact that women do not take role in important segments of the labor sector in the countries mentioned. In addition, the cultural structure of the countries is also in question here. Especially in Central Asian countries, there are more men in the independent audit sector, both in the management and as normal workers. Within the scope of the analysis, the countries in Central Asia that appointed more female auditors as CIS members are Kazakhstan and Moldova. It is also noteworthy that 22 out of 26 banks in Azerbaijan do not specify a engagement partner, although it is mandatory in the independent auditing standards.

In terms of banking, the integration of International Financial Reporting Standards in the CIS countries still remains on the agenda as the main problem. Independent audit companies, on the other hand, have difficulties in employing female auditors due to the cultural structure problem in some member countries of the CIS. The result of the study is expected to serve as a guide to the banking and independent auditing sectors. However, it also provides important information about the banking structure in the CIS countries.

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## **CHAPTER II**

### **FINANCIAL FRAUDS THROUGH PONZI SCHEMES**

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#### **1. Introduction**

Fraud is defined as the act of deceiving other people by using illegal methods. Frauds, which have existed since the humankind came into existence and will continue to exist in the future, have taken place in many different types and forms throughout history. One of the most common frauds in the world that people have been exposed to from past to present is financial frauds. Financial fraud refers to the action of obtaining investors' money through the use of fraudulent methods via various financial tools.

Financial frauds can take control of all financial markets regardless of their developmental levels. These frauds involve all kinds of actions that intend to derive financial profit from investors through deception. These kinds of fraudulence may take the form of many simple schemes from simple thefts where the investors cannot take back any of their money to more complex schemes such as Ponzi schemes or pyramid schemes. The schemes can be designed in many different regulated or non-regulated legal forms from joint stock companies to hedge funds or grouping of simple assets (Carvajal et al., 2009, p.4).

Ponzi scheme, on the other hand, is basically a fraud of investment where the scammer promises high financial profit or dividend which otherwise cannot be obtained through traditional investments. The scammer pays dividends to the first investors using the amounts invested by the subsequent investors. The scheme usually collapses in situations where the scammer flees with all the income or there is not a sufficient number of new investors to ensure the continuation of dividend payments. This fraud was named after Charles Ponzi, who operated in Boston, running a quite charming investment program which guaranteed investors a profit of 50% for reply coupons (Kovacich, 2008, p.123).

Numerous Ponzi schemes took place in the world after Charles Ponzi and investors lost great amounts of money. Most important Ponzi schemes that took place in the world include the schemes of Ivar Krauger (Sweden), Bernard Madoff (USA), Sergey Mavrodi (Russia), Allen Stanford (Antigua), Tom Petters (USA), Ezubao (China), Scott Rothstein (USA), Damara Bertges (Germany) and Ioan Stoica (Romania). One of the biggest losses of recent history, The Madoff investment scandal took place after the 2008 global crisis and resulted in investors defrauded as much as 73 billion dollars by Bernard Madoff (Cross, 2013).

This study aims to examine theoretically the Ponzi scheme, which was named after Charles Ponzi and provided an inspiration for the frauds that occurred in the financial markets in the following periods. In this context, the study presents information intended for increasing awareness of investors and regulatory and supervisory authorities regarding the Ponzi process. Increasing awareness of the parties about the Ponzi scheme will help reduce the potential victimizations that might occur.

Firstly, the concept of fraud and types of fraud will be dwelt on in the study. Next, financial frauds will be mentioned and then the birth, functioning, properties and important examples of the Ponzi scheme will be examined. The study will be concluded by pointing out the outcomes of the Ponzi scheme and the precautions that must be taken in order to prevent this scheme.

## **2. Definition of Fraud**

The concept of fraud in general involves a wide range of schemes such as embezzlement, identity theft, cybercrimes, frauds aimed at senior citizens, frauds of debt, credit card and counterfeit products (Wells, 2018, p. 3). Fraud is a general term that involves all sophisticated tools used by an individual that can be developed through human creativity aimed at obtaining advantage over another person through making a false declaration. Fraud comprises of surprising, deceptive, tricky and unfair methods through which other people are deceived, which makes it impossible to make an exact and unchanging definition of fraud. The only boundary that defines fraud is the boundaries that limit the human language (Singleton et al., 2006, p.1).

Fraud is an activity that takes place in a social environment and has serious consequences for the economy, corporations and individuals. The modern definition of fraud originated from case law and legislation law and incorporates most of the old elements. The origin of the word “fraud” can be traced back to the Latin noun “fraus” which has various meanings similar to the concept of harm, wrong doing and deceiving. Derived from

the case law, the modern definition focuses on the act of scammers' intention of dispossessing victims of their property or legal rights through deception for their own benefit. This deception involves any wrong or misleading word, action or the lack or concealment of facts that will lead to physical injury (Silverstone & Sheetz, 2007, p.3-4).

The act of fraud, which can also be defined as intentional false statement about a financial situation that brings harm to the victim (Coenen, 2008, p.7), comprises of three steps (Wells, 2018, p.4):

- *The Act:* The act of fraud is normally an act that takes place in the form of theft or a trick so that the schemer can gain the profit that he/she seeks.

- *Concealment:* The schemer usually tries to conceal the act when it is completed. Concealment is the keystone of fraud. Unlike the traditional criminals who make no effort to conceal their crime, frauds usually attempt to keep their victims in ignorance.

- *Conversion:* After the act of fraud has been completed and concealed, it is necessary for the schemer to convert the illegal profits for their own or another person's benefit. When the amount of money stolen is small, conversion usually takes place when the schemer deposits the funds in his/her own account or makes a purchase with the stolen funds.

### **3. Types of Fraud**

Fraud involves a wide range of behaviours related with deceit intended to acquire a sort of profit. This range of behaviours can be varied from corporate frauds such as embezzlement of a company's money by an employee who acts against the law in the firm to noncorporate frauds that take place at an industrial scale in the form of identity theft in order to guarantee a loan. Acts of fraud, which involve various crimes, can take the form of fraud aimed at individuals and small firms, mass marketing fraud, investment frauds and identity fraud (Button, Lewis & Tabley, 2009, p.6).

Albrecht et al. (2012, p.9-10) has classified frauds as employee fraud, seller fraud, customer fraud, management fraud, investment fraud (financial frauds) and other frauds.

*Frauds committed by employees against the organization* can take place directly or indirectly. Direct fraud takes place when an employee steals money, inventory, tools, equipment or other assets that belong to the company. Moreover, it can occur when employees set up fake companies or employers make payment for goods that are not delivered. In the employee fraud carried out directly, corporate assets are directly acquired by the schemer without the participation of third parties. Indirect employee fraud, on the other hand, occurs when employees accept a bribe or

commission from customers or other persons outside the company in order to allow low sale prices, higher purchase prices, failure to deliver goods or bad delivery. In these cases, the payment is usually made to the employees not by the employers themselves but the institutions that are associated with the employer of the employer (Albrecht et al., 2012, p.10-11).

*Seller fraud* refers to external frauds that take place when the sellers bill the buyers at higher amounts than the amount agreed upon or supply lower quality or smaller number of products (Albrecht et al., 2012, p.10). Dishonest sellers or contractors may resort to fraud in order to cheat the firm through cash or other assets (Wells, 2018, p. 35).

Frauds which involve situations where customers make little or no payment through deception are called *customer frauds*. Dishonest customers may use this method so as to get individual profit from corporate sales and rebate policies or try to purchase corporate goods or services free of charge (Wells, 2018, p.37).

*Management fraud* can be expressed as intentionally made false declaration of corporate or unit performance levels by employees working at managerial positions who have an intention of acts of fraud regarding promotion, bonus or other financial incentives and symbols of status (Singleton et al., 2006, p.2). Management frauds are usually performed by top management by manipulating the corporate financial statements and presenting the corporate status better or worse than it actually is. The victims are usually investors, creditors or government institutions (Bozkurt, 2009, p. 65).

*Financial frauds* can be defined as all sorts of actions or statements performed by financial market participants that violate the law or legal regulations and involve misguiding of other participants in the market intentionally or accidentally by offering wrong, missing or manipulative information regarding financial goods, services or investment opportunities (Reurink, 2016, p.7).

#### **4. Financial Frauds**

One of the most common frauds among the financial frauds that consumers are confronted with are investment frauds. Investment fraud is defined as the act of directing investors to a tricky venture, investment fund, real estate project or insurance policy and acquiring investors' money directly through deception (Reurink, 2016, p.36). Investment fraud is any kind of fraud that is related to stocks, bonds, commodities, limited partnerships, real estates or other types of investment. In investment fraud, the schemers generally make false promises in order to encourage people to make investment (Albrecht et al., 2012, p.553).

The investment frauds that took place throughout history have taken many forms and some of them became popular all around the world with various scandals. Some of the mentioned frauds are real estate fraud, Nigerian fraud, pyramid fraud and the Ponzi scheme.

*Real estate fraud* refers to the act of intentionally using or attempting to use the real estates (stocks, bonds or future rights) through concealment of facts or false statements in order to encourage a person to act against their own benefit. Real estate fraud, although not always, generally causes financial harm. Real estate fraud involves accounting fraud, stock manipulation, fraudulent reporting, insider trading, abuse and various money laundering tricks (Straney, 2011, p.16).

*Nigerian fraud* is a type of foreign advance fee fraud where individuals from Nigeria or other (usually underdeveloped) countries get into contact with the victims through e-mail, fax or phone and offer them millions of dollars. Names and bank account numbers of the victims are required in order to transfer this money. The scammer then uses this information to hollow out the victim's bank account and perform other types of fraud (Albrecht et al., 2012, p.543).

The Nigerian fraud was initiated by scammers who sent 30.000 letters in a week in West Africa at the beginning of 1990s. These scammers identified the potential victims of fraud via international phone books. This fraud scheme became so harmful that it made progress from letters to fax, and then to emails. This scheme was defined as a fraud named the 419 scheme as per the Law numbered 419, which involves acquisition of money through false pretence (Kovacich, 2008, p.110).

*The Pyramid schemes*, which are also named as the franchise fraud or chain suggestion programs, are frauds of marketing and investment which involve offering distributorship or franchise to an individual in order to market a certain product. The real profit is gained not from the product sales but from distributorship sales. The emphasis placed on selling franchise instead of products eventually leads to a point where the supply of potential investors is finished and the pyramid is collapsed. At the core of every pyramid fraud is the typical idea that new participants can compensate for their original investments by encouraging two or more potential customers to make the same investments (Kovacich, 2008, p.123-124).

*Ponzi scheme* is a type of investment fraud where the investors are paid back by a part of their own money or by other investors who join later, instead of a profit created by an investment or a real commercial activity (Lewis, 2012, p.294). A Ponzi scheme is an illegal business practice where

the new investor's money is used for paying the previous investors. In terms of accounting, the money which is defined as income and paid to the Ponzi investors is actually distribution of capital. Instead of giving back the profit, the Ponzi scheme spends the cash reserves in order to collect more funds. In situations where a basic investment fraud collects money and disappears, the Ponzi scheme remains in business by circulating the investor funds. Most of the funds are used by the founders for expensive lifestyles and transferred to property or overseas accounts ("Fraud 101: What is fraud", 2007).

The Ponzi and pyramid schemes are generally used interchangeably in order to define certain types of investment frauds where sustainability depends on the flow of investors. However, there are differences between the functioning of the two frauds (Carvajal et al., 2009, p.6). The differences and similarities between the Ponzi scheme and the pyramid scheme are given in Table 1.

Table 1. Differences and similarities between Ponzi and pyramid scheme

<b>Differences</b>		<b>Similarities</b>
<b>Ponzi Schemes</b>	<b>Pyramid Schemes</b>	
It is not necessary to attract other members into the program to receive payment	Every person search for new participants and tries to attract them to register in the program.	Both types of schemes usually have no investments or products.
A Ponzi scheme, delivers the money from the newcomers to previous members and gain high profit of investment.	A new participant in the pyramid scheme makes an advance payment and gains profit by finding new members who will become distributors of a product.	Both require new layers of members who can profit from previous investors.
There is only one person who officially promotes the Ponzi plan.	All participants of the pyramid scheme promote the scheme for their own profit.	Ponzi and pyramid plans are similar in terms of life cycles.
It usually grows at a higher rate compared to the pyramid scheme.	It usually at lower rate compared to the Ponzi scheme.	
In the Ponzi scheme, collapse process can be relatively slow if the existing participants invest money.	The pyramid scheme requires exponential growth of participant number so that the scheme will continue to exist, therefore, it can collapse faster than the Ponzi scheme.	
In the Ponzi scheme, the transaction is centralized.	In the pyramidal frauds, every member is responsible for creating an external layer.	
In the Ponzi scheme, generally all participants can communicate directly with the founder.	New participants enter the pyramid scheme at different levels and often do not get into contact with the founder of the scheme.	

Sources: (The Lectric Law Library, 2010; Frunza, 2016; Mugarura, 2017; Carvajal et al., 2009; “Ponzi scheme”, 2013).

## **5. Ponzi Scheme**

### **5.1. Birth of the Ponzi Scheme**

The Ponzi scheme was named after Charles Ponzi, who was one of the biggest scammers in history (Petsko, 2009, p.1). Charles Ponzi was born in Italy and came to New York in 1893 when he was 15. Having worked in various jobs as dishwasher, waiter, shop assistant and translator, Ponzi started to look for ways of earning a lot of money in a short time. This impatience led him to the simplest frauds. For instance, Charles Ponzi made a forged cheque in the bank where he worked and was sent to prison for this reason. Moreover, he was involved in a program which smuggled illegal Italian immigrants to the USA and was sent to prison for a short time for this as well. Later, Ponzi moved to Boston in 1919. Boston was always a difficult place especially for poor people. Feeling disappointed at the luxury that the local wealthy people were living in, Ponzi started to dream about becoming rich in a quick way. Meanwhile, he wrote letters to his family members since his family was worried that the wealth of the new world after World War I might corrupt their son. The letters at home later caused the birth of what Ponzi was later going to define as the “Big Idea”. The idea is basically similar to a currency speculation even though he could not explain it (Walsh, 2003).

At the beginning of the 1900s, a person could put a coupon in the envelope of the letter in order to protect the correspondent from return postage fee. These reply coupons (International Reply Coupon – IRC) introduced by an institution named Universal Postal Union could be exchanged with postage stamps in various countries around the world (Walsh, 2003). For example, one could buy IRCs and send them to the USA with a letter. The person who sent you products from the USA could use the IRCs instead of the USA postage stamps. Even though this seemed like a trivial idea for most people, it was a big idea for Ponzi. Inflation, debts, war and epidemics affected the old universal system negatively after World War I and the prices of IRCs were determined quite wrongly. Ponzi thought that the USA stamps that had equal value with IRC could be purchased at a price that is 25% of their value. He also thought that in this case, a \$10 investment on Italian IRCs could make a profit of over 40 US dollars and planned to make profit by buying IRCs at a low price from cheap economies and selling them at a high price in the USA. Therefore, he borrowed money from his friends and sent it to Italy. He asked his relatives to buy IRC with that money and send it back to him and then he started to sell those IRCs by cash. However, this did not last long and the

bureaucracy between the postal unions hindered Ponzi although the IRCs could be sold technically (Feierstein, 2012).

Towards the end of 1919, Ponzi made a decision which will make his name a symbol of modern robbery. He had quit buying international reply coupons and dealing with endless bureaucracy and focused on convincing investors to participate in the scheme instead. Having started to use the name "Charles" with a capital of 150 dollars in December 1919, Ponzi established a company of stocks and bonds in order to be able to borrow money over commercial papers (Walsh, 2003). Thanks to this company, he issued 90-day commercial papers with 50% interest which brought 400% interest at annual basis. He started business by inviting his friends and relatives to participate in this investment. He claimed that the extraordinary rate of profit was based on the arbitrage opportunities at the IRCs, which was theoretically possible. However, practically, there were neither an adequate number of coupons in the world to fund the profit Ponzi promised nor a secondary market where those coupons were sold (Marietta, 1996, p.81).

Ponzi promised unbelievable and unrealistic interest rates and paid big amounts of commission to sales representatives for every new customer they brought. In five months, he was able to collect a massive amount of money which was over \$400,000 until May 1920. Public trust towards Ponzi increased in time. Most of the police department and well-known celebrities became investors of Ponzi. Judges, lawyers and an old congress member also supported him (Marietta, 1996, p.81). Furthermore, everyone who exit the Ponzi scheme after earning money acted as a perfect advertisement for starters (Feierstein, 2012).

Ponzi had quite effective methods of pursuing his plan. For instance, when the investors entered Ponzi's office to give their commercial papers and get their money, they had to walk to one of the one, two or three pay desks until the end of the way. There were often long queues in front of these desks. After the investors got their money, they had to walk through dozens of cash desks and hundreds of people who were willing to make investments. Most of the investors turned back instead of going out of the front door and made investments again (Walsh, 2003).

By July 1920, the number of people who had invested in Ponzi's scheme had reached millions. People mortgaged their houses and invested their all savings in Ponzi's company. Many of them did not receive profit and reinvested believing that the massive returns would continue forever. What no one knew was that Charles Ponzi did not buy and sell IRCs. In fact, Ponzi arbitrated nothing. What he did exactly was to carry out the Ponzi scheme, which was growing like a pyramid. As long as the money

that was flowing in was more than the money withdrawn by the people, the existing investors (at the top of the pyramid) were paid by a part of the money brought by new investors (at the bottom of the pyramid). Working perfectly until 24 July 1920, the scheme made a surprising daily profit of \$250.000 for Ponzi's Stocks and Bonds Company (Petsko, 2009, p.2).

Money continued to flow in Ponzi's scheme. Ponzi invested 3 million dollars to a Boston bank and later purchased majority share of the bank (Feierstein, 2012). At the top of his liquidity, Ponzi had entertainment centres, suits, dozens of golds, diamonds for his wife, limousines and a 20-room mansion at the suburban town of Lexington, Boston and led a life of luxury (Walsh, 2003).

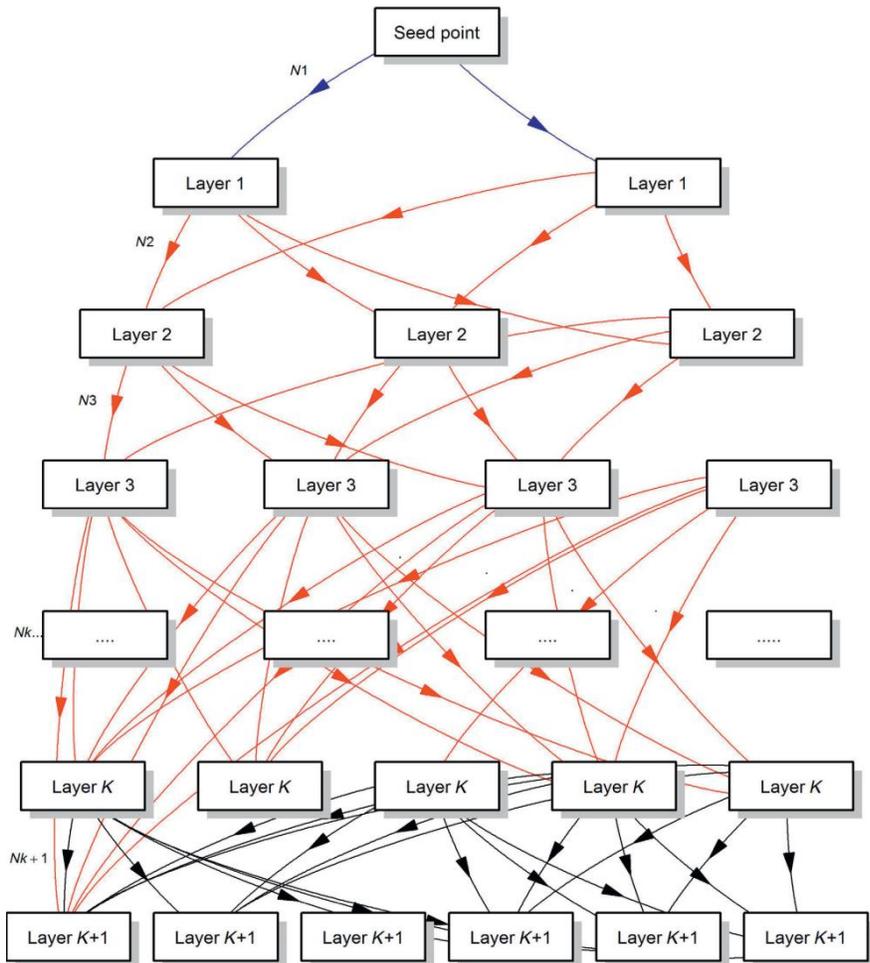
In a short time, Ponzi's plan drew the attention of a number of journalists and government officials. One of those journalists was Clarence Barron, who was the chairperson of Dow Jones & Company (Albrecht et al., 2017, p.257). Clarence Barron started to investigate Ponzi's extremely high income. He first noticed that Ponzi had not invested his money in his own company. This was always a sign of danger. Later, Barron calculated that about 160.000.000 IRCs had to be in circulation in order to meet the investments made by the Stocks and Bonds Company. However, the number of IRCs in circulation in the whole world was only 27.000. Barron later contacted the USA Postal Service and confirmed that there were not large amounts of domestic or international IRC sales or usage. Boston Post published the results of Barron's investigation and made a caption in 2 August 1920 saying that Ponzi had gone bankrupt. Federal agents launched raid at the Stocks and Bonds Company and closed the company on 10 August. They were not able to find a large number of IRCs of course, and Ponzi was arrested on 12 August 1920. Seventeen thousand people had invested in the company during a period of less than nine months. Many people lost their houses and all their money they had saved so far. After serving his time in prison for years due to both federal and state charges, Charles Ponzi was sent to exile to Italy in 1934, when he was 52 years old. He passed away as a poor man at a hospital in Rio de Janeiro on 18 January 1949 (Petsko, 2009, p.2).

Ponzi argued until the end of his life that his business was legitimate. People had a surprisingly much confidence in him. Many people believed that he would keep his promise if authorities did not take action (Marietta, 1996, p.81). However, Ponzi went down in history as a man who lived a useless and destructive life which was wasted for nothing (Feierstein, 2012).

## 5.2. Functioning of the Ponzi Scheme

The functioning process of a Ponzi scheme is quite simple. Firstly, the person who creates and organizes the scheme collects money from investors by promising large amount of profit in months or weeks. Later, the executive of the scheme convinces the investors to continue their investments and distributes a certain amount of the money as profit. While doing this, he/she draws new members to the scheme, collects money from them and offers this money to the investors who entered the scheme before (Walsh, 2012). Figure 1 shows mechanism of Ponzi scheme.

Figure 1. Ponzi scheme. Adapted from *Introduction to the Theories and Varieties*



*of Modern Crime in Financial Markets* (First edition, p.102), by M.-C. Frunza, 2016, Amsterdam: Elsevier. Copyright 2016 by Elsevier Inc.

In the Ponzi plan, the profits that are paid to the investors are not gained legally from successful or profitable investments. On the contrary, the payments that are made to existing and old investors come from the funds that are created unintentionally by the new investors (Ponzi Schemes and Pyramid Schemes, n.d.)

The start-up phase is significant since the new investors must be found in order to make payment to the first investors who participate in the scheme. After this phase is completed, news is spread about the investors who have gained high profit. After news is spread in the investors' community, it is crucial to have a growing number of investors since it attracts as many potential investors as possible. It is necessary to have a growing fund in order to provide the returns promised to the previous investors from the subsequent layer. In order to prevent the collapse of a Ponzi scheme, an infinite number of layers is required. However, this is not possible in reality. Therefore, new methods must be used in order to find new investors or convince new investors to reinvest their profit from the scheme (Frunza, 2016, p. 104).

The organizers of the Ponzi scheme try to attract new investors by combining their investments generally with minimum or risk-free warrants with a promise of extraordinarily high profit. In addition to promising high profits, the scammers usually create fake records and documents in order to legitimize their frauds. Some programs might make extra big amount of payments to the first investors in order to create a fake feeling of reality and convince new investors that there is extremely high profit in this successful and legitimate business. If the scheme is successful, the potential new investors are convinced that they have found a golden opportunity (Ponzi Schemes and Pyramid Schemes, n.d.)

An interesting feature of the Ponzi scheme is that the victims, although unintentionally, play a central role by continuing to be deceived. This deception is necessary for the program to continue in a growing manner. Since the investors take pride in increasing their money more than twice in six months, there needs to be a higher amount of money which is invested in the scheme. There is a highly consistent profit offered to the investors in the program. Therefore, the first participants in the scheme finish the capital of the participants who participate later, which means that the scheme has to grow exponentially. Programs that suit the Ponzi scheme are vulnerable since the wealth does not grow in the same rate that the receivables from the wealth grow (Monaghan & O'Flynn, 2012, p.871).

Experiences from different countries show that the "business opportunity" that encourages the investors to invest their money in a Ponzi scheme can take many forms from direct investments made in stocks or

bonds to less traditional financial products such as currency trade, non-financial assets such as property, cars and helicopters. These business opportunities can only be limited by the imagination of the schemer and naiveness of the investor (Carvajal et al., 2009, p.4).

Type of investors that are involved in the Ponzi schemes can vary. Most of the time, the schemes are designed to involve investors who belong to a certain group or community that share common characteristics in terms of ethnic origin, religion or occupation. Sometimes these investors are targeted and attracted to the scheme. In many cases, scammers introduce their schemes through the group leaders whom they are close to. In some cases, existing investors are given direct incentives in order to attract new investors. The harm that is caused when these schemes reach the inevitable ending is spread among people who have limited income and limited chance to make up for their possible losses. The ultimate outcome which is comprised of anger, betrayed trust, blame and loss of fortune and income might have serious political and social reflections (Carvajal et al., 2009, p.4).

A Ponzi scheme can be related to any business such as gold mines, finance companies, diamonds or cosmetic products just like many other frauds, however, the main business run by the company is that of a secondary business (Bertrand, 2000).

Ponzi schemes generally offer an economic purpose, which makes the investors think that they are investing in a business venture which makes profit such as giving a mortgage, selling oil or gas or lending money to small enterprises. The executive of the scheme usually has bright brochures and names of satisfied customers which they use as a reference (Bertrand, 2000).

In order to carry out a Ponzi scheme, the scammers continually need to involve new investors in the scheme and give the previous investors their profits. The Ponzi scheme collapses when the organizers of the scheme fail to attract an adequate number of new investors in order to make payment to the previous investors or too many investors simultaneously demand to withdraw their capital. Therefore, all Ponzi schemes inevitably collapse in the end (Ponzi Schemes and Pyramid Schemes, n.d.)

A good Ponzi program can continue for years. After the first investors who enter the program get the promised returns, they feel too much excitement not only because they tell their friends about it but because they reinvest the return money back into the program as well. When the scheme is exposed, competent authorities have difficulty convincing the victims of the scheme since the investors do not want the scheme to collapse. The

executive of the Ponzi scheme unfortunately do not care about the people who have just started to make investment and are definitely going to lose their money. The victims, who have been saving money for forty years in order to use it after retirement, generally lose their savings in these schemes. The victims get harmed not only by the financial outcomes but the physical and mental outcomes as well (Bertrand, 2000).

### **5.3. Features of the Ponzi Schemes**

Fraudulent investments with the Ponzi structure have certain features in common. These features can be summarized as follows (Ponzi Schemes and Pyramid Schemes, n.d.; “Ponzi scheme”, 2013; Frunza, 2016, p.105):

- *Minimum Risk – High Profit:* All investments carried out in the financial markets bear a certain level of risk. Investments with high risk are generally associated with high profit. Ponzi schemes, which claim to be risk-free or have minimum risk and high profit, are fraudulent investments which are claimed to guarantee high profits for possible investors.
- *Consistent Profits:* Especially investments with high profit are inconsistent and have fluctuations in time. Ponzi schemes, on the other hand, offer regular, positive and constant profits regardless of general market conditions.
- *Extreme Profits:* Average incomes of the investments are published online for various sectors and types of investments such as venture capital, investment funds and hedge funds. There might be extremely profitable returns which exceed the average return rates of the sector in the Ponzi schemes.
- *Secret or Complex Strategies:* The strategies that bring the guaranteed profit in the Ponzi schemes are usually not fully explained by the scammer. The companies that support this fraud are tightly linked to each other, which means that there are no independent auditors, protectors and asset owners. The scammers control the whole process.
- *Non-registered Investments:* Ponzi schemes usually involve investments which are not registered in the regulatory institutions. The sellers of these strategies are consultants or brokers who do not have a licence. Most of the Ponzi schemes are carried out by mediator companies which are not liable to regulations.
- *Private Investments:* Organizers of the Ponzi schemes claim that their investors use their money to invest in private companies. They do this in order to own audited financial statements, which are required for investments made on public stocks and bonds and avoid obligations such as providing audited investment tools for the investors. Investing in a private company can be legal and not all companies are required

to provide audited financial statements. If the investments are not audited by financial authorities or do not provide financial data audited by an esteemed accounting firm, they might actually be fraudulent investments like the Ponzi schemes.

- *Problems regarding Documents:* When the investors want to examine the written documents about the investment, Ponzi schemers come up with various excuses. Besides, errors and inconsistencies of statements that appear in the Ponzi schemes can be an indicator of the fact that the funds are not invested as promised.
- *Payments and Distributions:* Ponzi schemes become successful as long as the scammers and new investors can hold the capital subscriptions and prevent previous investors from withdrawing their funds. Therefore, Ponzi schemers try to convince their investors not to withdraw their funds. Ponzi organizers claim that they are about to make new investments that will bring higher profit and if the investors withdraw their money now, they are going to lose. If a business rejects to distribute the investment profits, rejects to return the customers' funds, closes a customer's account when asked to return a certain amount of funds or profit or constantly creates excuses in order not to repay for an investment, this investment is likely to be a Ponzi scheme.
- *Number of Investors:* The most important feature of the Ponzi schemes is the constant flow of new investors. Continuation of new investors is essential just like in every sector of investment; however, rate of new investor arrivals is of great importance as well. Since it gets more and more difficult to attract new investors, rate of new investors decreases exponentially. If the arrival rate is high, possibility of collapse is diminished and time of collapse gets shorter.

#### **5.4. Reasons of Investors to Believe in the Ponzi Scheme**

In some cases, it might be difficult to figure out how investors are attracted to the Ponzi scheme. Likewise, it is also hard to understand how supervisory authorities fail to detect the Ponzi schemes. Ponzi schemes can conceal themselves in many ways from known investment portfolios to new business opportunities and new complex investment techniques. However, all Ponzi schemes promise similar things such as high profit, low risk and low changeability. Mathematically, since Ponzi schemes require exponentially ever-growing number of new investors, it has nearly zero chance of sustainability. However, some schemes can last for years. This situation occurs as long as there is a solid number of new investors, the investors keep on investing their profit back in the scheme and too many investors do not withdraw their money simultaneously (Carey & Webb, 2017, p.590).

When the reasons why investors enter the Ponzi schemes and how they are deceived is examined, it is seen that there are various factors that motivate people. One of these factors is the trust that the investors have towards the Ponzi schemes. Financial fraud is based on trust. Financial fraud schemes know how to build trust and look reliable. An illegal Ponzi scheme is a kind of financial fraud that is based on the sustainable trust of many people (Carey & Webb, 2017, p.589).

Ponzi scheme involves deception and the element of trust. If the original investors are not paid, no one will invest extra money in the scheme. When payment is made earlier than due date, Ponzi earns investors' trust and convinces them that the business is legitimate. In fact, the most important factor for the success of the scheme is trust. If the deceived person does not trust the scammer, it becomes hard to deceive that person. As long as we do not trust the person who is trying to deceive us, fraud is impossible. Likewise, if employers do not gain employees' trust, they cannot deceive their employees. Besides, without investors' trust, fake companies cannot deceive investors (Albrecht et al., 2012, p.9).

When the high expectations of the first investors are realized, the trust in the scheme is considered right and it makes it easier for the more cautious investors to believe that the scheme is legitimate, transactions are really performed, funds are really growing and there is very little risk that the total capital might be lost (Monaghan & O'Flynn, 2012, p.871). Also, when people see their colleagues earn good money from fraud schemes, an irrational optimism starts to appear. This phenomenon causes rational people to ignore even logical and convincing facts against a fraud scheme (Eisenberg & Quesenberry, 2014, p.506).

Scammers use certain methods in order to build trust with the investors (Reurink, 2016, p.38). Words are one of the important symbols for building trust. Especially words such as *bank* or *stock exchange* stand for reliable institutions and are used by scammers frequently. Another method for building trust is to use behaviours rather than words. Scammers look rich just like potential investors and offer advice and support for the victims. As a result, rich people are interested in the rich investors class and this builds trust as well (Frankel, 2012, p.29-33).

Scammers live in big houses or private addresses and blend in the ultra-rich people and act like them in order to instil confidence in the investors. As a sign that they have good intentions and do not need money, they offer services free of charge. In order to build an atmosphere of exclusiveness, they are selective while choosing their clients (Lewis, 2012, p.303).

The trust that is developed naturally among the members of a community with common interests can be abused by a scammer who is a member of that community. Later, this trust can be used as a foundation for trust in personal relationships, especially when some people are actively engaged in more than one relationship (Blois & Ryan, 2013, p.186).

The Ponzi scheme involves the greed of the investors and the scammer who want more than a reasonable profit (Albrecht et al., 2012, p.9). Greed can be defined as a person's extreme desire or wish for more property, real estate and money than they actually need. Greedy people are seduced by a desire that is never satisfied and try to achieve more than what is good for them or more than they deserve (Frankel, 2012, p.135-136). Scammers who carry out various frauds and some of the victims of these frauds can have the psychological situation of greedy people. Although the scammers' greed attracts them to fraud, investors who are suspicious of this kind of fraud can make investment even when there is a rumour that their profit comprises of other people's money (Frankel, 2012, p.135-136).

Sometimes greedy people might try to avoid losing what they have gained instead of achieving more. For instance, when a company's financial future and fortune are at stake, the managers who are afraid of losing their income, prestige and dignity can push the limits and move slowly to the illegal side. Concealment of a small loss in the expenditure documents by accounting tricks or unreal data can result in fake account records and fake signatures. The greed of the scammers becomes the need to possess at this point. Once they achieve wealth and prestige through illegal ways, scammers no longer have a reason to stop (Frankel, 2012, p.136).

Ponzi schemers act with greed. In most of the cases, they prefer to steal money quickly instead of earning money slowly. They also count on the investors' greed in order to carry out their scheme. This trust is one of the key issues that law enforcement officers come up with (Walsh, 2003).

One of the most surprising factors that control the size and form of the Ponzi schemes is the participation of family members. Many pyramid schemes encourage investors to involve their family members in the business. This involvement of family members both helps provide an easy source for new investors and creates collaboration with the most likely critics (family) of the person who has invested hard-won money in a fraud scheme (Walsh, 2003).

Ponzi schemes generally exploit the victims' desire for social status. Most of the time, a Ponzi schemer plays the role of a person who is hard to

reach and rejects some potential investors (Collins, 2006: 440). This situation creates the impression that those who have the “privilege” to make investment in the scheme are members of “an exclusive club” and this explains why investors make so much effort to take part in the “exclusive” opportunity (Eisenberg & Quesenberry, 2014, p.511).

Current economic conditions can trigger fraud as well. People have faced various financial problems such as low income, decrease in house prices and increased costs after the 2008 global crisis. Any of these problems can make a person more vulnerable to fraud schemes that aim to become rich in a quick way (Blanton, 2012, p.2).

### **5.5. Characteristics of Ponzi Schemers**

A Ponzi schemer is a criminal entrepreneur who tries to gain his/her victim’s trust through deception. The victims’ trust is based on a misbelief that profit is acquired as a result of investments made on legal assets that actually exist. This misbelief is maintained through a combination of big and consistent profits gained by the investors and the data manipulation by the scheme. The success of the Ponzi scheme is measured by the size and duration and the amounts acquired through the scheme. Furthermore, the success can be positively correlated with whether the schemer and the victim share a common background in terms of religious or ethnic origins or the victim has a tendency to believe the “fairy tales” of the schemer. Successful Ponzi schemes make social contacts with the victims using marketing techniques that can attract victims and conceal the scheme from legal authorities (Deason et al., 2015, p.2).

Although there are many types of various scammers, most of them share certain common characteristics. In terms of personality traits, scammers are generally narcissistic, egocentric and flamboyant. They tend to have a feeling that they deserve everything, they are special and they deserve the right to lead a good life. If they have to act in deceptive, immoral and illegal behaviours in order to reach this good life, this situation is not a problem for them (Bertrand, 2000).

Scammers are likely to have a narcissistic personality. These people are devoured by an unsatisfied greed felt towards money, prestige and other people’s attention and admiration. This disorder causes them to lack empathy towards other people including those they have harmed. Therefore, they may not be able to feel other people’s pain (Frankel, 2012, p.111).

Ponzi schemers lack the tendency or ability to associate themselves with others, in other words, empathy. When people can imagine themselves as a victim, they can empathize with victims, which allows

them to demand justice in order to make up for a mistake. Empathy encourages people to contribute to fair resolutions. People with empathy not only feel other people's pain of hunger but they feel anger towards injustice about the hunger (Frankel, 2012, p.117-118).

Another characteristic of scammers is that they all have a high ego. In fact, this situation is part of the reason why they scam other people. The scammers have such a high ego and they think they are so smart that the possibility of going into prison does not bother them since they think they will never get caught. However, most of the time, they are wrong (Bertrand, 2000).

Ponzi scammers are known as generous donators and they regularly contribute to charity organizations, educational institutions and political campaigns. The more political connections the scammers have, the more confident they become about continuing their operations without getting caught (Jory & Perry, 2011).

Scammers are persuasive, good listeners and excellent speakers. They look charming and dress elegantly. Also, they specialize in playing the "good man". They exaggerate the good man affection and they are quite polite. It is quite hard for the investors to resist these characteristics (Frankel, 2009 cited by; Lewis, 2012, p.303).

In order to sell a consistent and highly profitable misbelief, Ponzi schemers are likely to be charismatic and have the ability to make a convincing sales speech successfully. At first, Ponzi schemers draw their attention to social or professional targets about themselves. The way they approach people is psychological rather than being realistic due to the nature of the scheme. They use the trust they build between themselves and their acquaintances. On the other hand, this first group will not be sufficient to sustain the scheme after the scheme is developed, and later they will move on to further groups of people (Jory & Perry, 2011).

Taking risks allows the Ponzi schemers to feel alive, and success makes them feel superior. A study carried out on the Ponzi scheme victims revealed that the victims also have a high tendency to take risks. However, the two groups are different from each other. The scammers start the risks whereas the victims are convinced to take the risks (Frankel, 2012, p.122). Ponzi schemers' urge to earn money ranks before any concerns about risk. This is because they need to finance their generous lifestyles without worrying about possible consequences (Jory & Perry, 2011, p.4)

## 5.6. True Examples of Ponzi Schemes in the World

While Charles Ponzi carried the same name with this type of investment scheme, he was not an original Ponzi schemer. Altman (2008) points out that this kind of financial frauds were carried out by William Miller from New York in 1899, which was 20 years before they were named after Ponzi. He states that Miller deserves the reputation. Miller told the investors about a method that offers a surprisingly high profit to make good use of their income. Miller's fraud was revealed by a newspaper and he was sentenced to 10 years in prison (Williams, 2017). In the following years, many Ponzi schemes appeared in the world and investors lost huge amounts of money. Some of the true examples of Ponzi schemes in the world are presented in Table 2.

Table 2. Some examples of Ponzi schemes throughout the world

<b>Schemer</b>	<b>Year</b>	<b>Country</b>	<b>Amount Scammed</b>	<b>Prison Sentence</b>
William Miller	1899	USA	\$29 Million	10 years
Charles Ponzi	1920	England	\$120 Million	5 years
Sergey Mavrodi	1990	Russia	\$10 Billion	4.5 years
Norman Hsu	1992	USA	\$93 Million	24 years
Damara Bertges	1994	Germany, Switzerland	\$1.1 Billion	8 years
Ioan Stoica	1994	Romania	\$1 Billion	27 years
Gerald Payne	1996	USA	\$614 Million	27 years
Bernard Madoff	2008	USA	\$73 Billion	150 years
Lou Pearlman	2008	USA	\$360 Million	25 years
Marc Dreier	2008	USA	\$750 Million	20 years
WinCapita	2008	Finland	€100 Million	4 years
Tom Petters	2009	USA	\$4 Billion	50 years
Nevin Shapiro	2009	USA	\$900 Million	20 years
Scot Rothstein	2010	USA	\$1 Billion	50 years
Tzvi Erez	2010	Canada	\$27 Million	8 years
Allen Stanford	2012	Antigua	\$8 Billion	110 years
Paul Burks	2012	USA	\$600 Million	14 years
Ezubao	2015	China	\$7,6 Billion	Life sentence
Fanya Metal Exchange	2015	China	\$6.7 Billion	18 years

Sources: (Hussain, 2016; Williams, 2017; Cross, 2013)

Table 2 demonstrates that Ponzi schemes are generally more intensely distributed in the USA and the frauds that appeared after the 2008 global crisis cause the loss of higher amounts. Also, it can be concluded that the Ponzi scheme made by Bernard Madoff in 2008 is the most comprehensive Ponzi scheme that took place in history.

Bernard Madoff was a leading member of the stocks and bonds sector and he worked in the board of directors and other managerial positions of both National Association of Securities Dealers and NASDAQ (Carjaval et al., 2009, p.35). He established the Bernard Madoff Investment Securities LLC. He reduced costs substantially and made a revolution in commerce. His company was a big market maker which comprised an important percentage of the general trade volume. While Ponzi schemes usually promise unrealistic profits, Madoff promised profits of 10 to 13 percent profit for long years. However, there was suspicion in the Wall Street regarding how Madoff was able to pay these high rates of profit to investors continually in good and bad years (Sarna, 2010, p.151).

Following the 2008 global crisis, a demand for 7 billion dollars fund outflow when there was no new fund inflow in the company resulted in liquidity crisis and the scheme collapsed (Sarna, 2010, p.151). Madoff admitted to his two sons, brother and wife that the investment consultancy business was a “giant Ponzi scheme” on 10 December 2008. That evening, his sons handed him over to the USA authorities. Madoff was arrested the following day and was charged with securities fraud (Gregoriou & Lhabitant, 2009). On 11 December 2008, SEC filed suit at the district court, claiming that the USA securities laws were violated and demanding a temporary restraining order against Madoff and his company (Carjaval et al., 2009, p.35).

Bernard Madoff was found guilty of 11 federal crimes in March 2009 and was sent to prison for 150 years due to probably the longest lasting and biggest Ponzi scheme in history. Madoff confessed to the court that he never invested his clients’ money in stocks and stock options like he promised (Sarna, 2010, p.147; Wilson, 2019, p.290).

## **6. Conclusion**

The Ponzi scheme, which was named after Charles Ponzi, laid the foundation of many financial frauds that took place in recent history. In these frauds where periods and people were changing, the method always remained the same. In the Ponzi scheme, which promises investments with low risk and higher profit than the market average, the returns of the existing investors are met with the funds invested by new investors. Therefore, the founder of the scheme focuses on increasing the number of new investors in the beginning and the number increases as the high profit is heard by more people.

Ponzi schemes that took place in various countries in various time periods can lead to negative consequences such as decreasing of trust in the financial markets, savings directed to inefficient uses rather than

efficient uses, high costs as a result of rescue operations, fluctuations in consumption due to individual gains or early withdrawal of money from the system, socio-economic conflicts owing to sudden losses experienced by many individuals and institutions and damaged reputations of political authorities, regulatory institutions and law enforcement units due to their failure to prevent fraudulent activities (Carvajal et al., 2009, p.5).

Ponzi schemes have negative economic and social consequence. Therefore, it is vital that policy makers and regulatory and supervisory authorities should take the necessary precautions. However, there will always be situations where the measures taken will not work and legal regulations and internal auditing will not prevent fraud completely. In this case, it will be useful if the investors act wisely and follow the red flags which act as a warning about possible frauds. Some of the red flags that warn the investors about fraudulent activities are given below (Albrecht et al., 2017, p.259):

- Unrealistic and unevicenced rates of return
- Companies with very little or no historical background
- Lack of details about the company, processes and procedures
- Statements or confirmations about the company from unknown sources
- New markets/industries with an unknown past or very few or no regulations
- Company owners or managers who lead extremely luxurious lives although the company has not matured enough relatively
- Making investments on complex and complicated hard transactions the success of which depends on the “unique expertise” of a person
- The pressure to maximise the investment funds
- Extremely aggressive investment tactics

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## **CHAPTER III**

### **SYMMETRIC AND ASYMMETRIC CAUSALITY BETWEEN THE MILITARY EXPENDITURE AND ECONOMIC GROWTH: EVIDENCE FROM CEE COUNTRIES**

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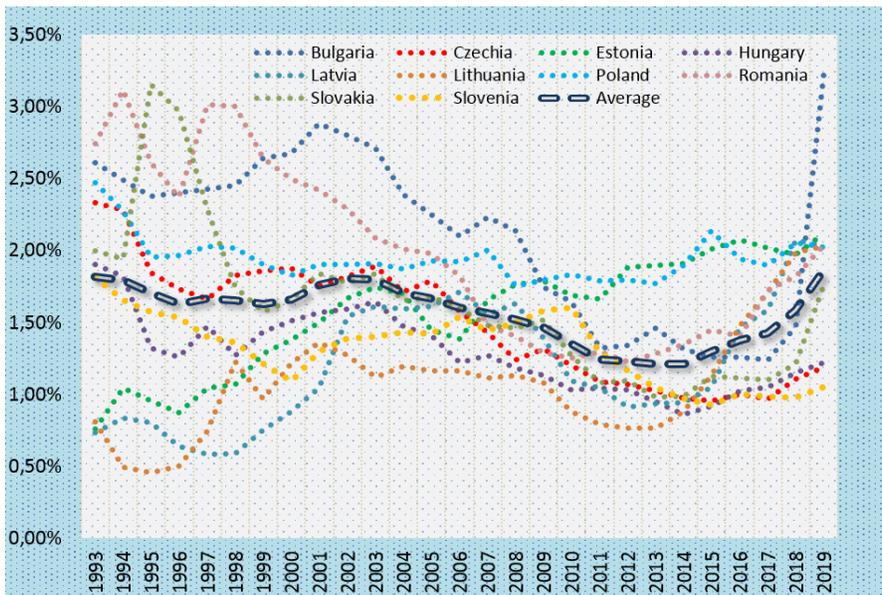
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#### **1. Introduction**

In order to understand whether military expenditures are important for economic growth, many studies have been conducted in recent years investigating the causal relationship between military expenditures and economic growth. For this reason, we are investigating the causal relationship between military expenditures and growth in a number of countries (CEE Countries) between 1992 and 2019. With the collapse of socialism and the end of the Cold War, the governments of CEE countries adopted a free market economy in line with the neoliberal economic approach. The increase in the growth rates and economic power of CEE countries after the 1990s has caused interest in these countries in the literature. In other words, CEE countries have tried to shape the market structure by reducing the share of the state in the economy and expanding the economic activity of the private sector in the economy within the framework of the neoliberal economic approach, and they have made an economic progress that is as striking as today. In view of these policies, from the 1990s to the 2010s, CEE countries adopted policies that reduced the share of military expenditures in GDP and allocated less share to military expenditures in their government budgets. However, since 2013, governments in almost most of the CEE countries have started to allocate

more shares from their budgets for military expenditures, and there has been an increase in the ratio of defense expenditures to gross domestic product in these countries. (Figure 1). According to the Stockholm International Peace Research Institute, the increase in military expenditures in CEE countries is primarily due to the insecurity created by the increasing threat of Russia, as well as the desire of these countries to renew their weapons equipment or to reduce their dependence on Russia in their existing weapons equipment (SIPRI, 2020). In addition, the conflicts in Ukraine increase the geopolitical risks in the region and cause the countries of the region to spend more on military.

Although many views have been put forward to explain the relationship between military expenditures and growth, it is seen that there is no consensus among these views. The relationship between military expenditures and growth is tried to be explained in a series of approaches (Benoit, 1973, 1978; Faini et al., 1984; Deger, 1986; Dunne et al., 2005; Dunne and Tian, 2013; Chang et al., 2014; Pan et al., 2015). The first of the main approaches is the Keynesian view, the second is the Neo-Classical view, and the others are the Institutional, Austrian school and Marxist approaches, respectively.



**Fig. 1:** Military Expenditures as a Percentage of GDP in CEE Countries (SIPRI, 2021).

The Keynesian approach assesses military spending as an element of total demand, arguing that military spending through the multiplier mechanism will positively impact growth (Dunne et al., 2005). In the multiplier mechanism, military spending increases total demand due to the purchase of goods and services, and therefore the level of output increases and economy grows. Also in this view, military spending contributes to capacity development in areas such as research and development, innovation and invention, infrastructure, machinery and iron and steel industry by creating positive externalities that lead to increased economic growth. In the Keynesian approach, military spending becomes an instrument of fiscal policy, especially during periods of recession, directing the level of economic activity. In addition, Keynesian thought argues that budget revenues will also increase as a result of new spending that leads to a revival of economic activity, and states that military spending will not be a burden on the budget.

The Neo-classical view suggests that scarce factors of production will be transferred from productive and/or efficient areas to non-productive and/or inefficient areas, and that economic growth will be negatively affected by this situation (Deger, 1986). According to this view, an increase in military spending reduces savings and investment rates and imposes a greater tax burden (Faini et al., 1984). An increased level of tax leads to a reduction in savings, resulting in increases in interest rates. In addition, borrowing for military spending also disrupts the balance of supply and demand of the national funds, causing interest rates to increase. According to this view, an increase in military spending leads to the exclusion of private investment due to high-interest rates, which leads to a slowdown in the level of economic activity (Dunne and Tian, 2016:). In addition, it is possible that military spending in developing countries (DC) will lead to a decrease in the country's foreign exchange reserves due to imported products (Dunne and Tian, 2013). As a result, military spending prevents the state from transferring funding sources to alternative uses and becomes an element that reduces or prevents countries from increasing their level of prosperity.

The Marxist approach argues that military spending is mandatory for the development of capitalism and preservation of capital, while institutionalists, though agreeing with the Keynesian view, put forward that it will lead to the spread of harmful pressure and interest groups for the economy that benefiting from military spending. Austrian School argues

that military expenditure is an extension of state intervention and considers it to be a type of spending harming the economy in the long run (Dunne and Tian, 2013).

According to another view put forward based on the relationship between military spending and growth, growth can affect military spending. For this view, changes in growth are decisive on military spending (Pan et al., 2015). As growth increases, national income increases, and also public revenues increase due to increased national income. Increasing public revenue also leads to a greater share of military spending. In addition, in order to sustain the development of capitalism, there is an increase in military spending when growth rate increases as well (Hatemi-J et al., 2018). However, changes in military spending are not affecting growth.

Four different hypotheses can be developed based on the interaction between military spending and growth. These hypotheses are listed as the military expenditure-led hypothesis, the growth-led hypothesis, the feedback hypothesis, and the neutrality hypothesis, respectively. According to the first hypothesis, a one-way causal relationship is established from military spending to growth. To the second hypothesis, there is a one-way causal relationship between growth and military spending. The third hypothesis assumes that there is a mutual causal relationship between military spending and growth. According to the fourth hypothesis there is no causal relationship between both variables (Benoit, 1973, 1978; Hatemi-J et al., 2018; Chang et al., 2014; Pan et al., 2015; Dunne et al., 2005; Dunne and Tian, 2013).

This study focuses on the relationship between military expenditures and growth in CEE countries, which we think has been neglected until now. In addition to the increasing economic and strategic importance of CEE countries at both the regional and global levels, the fact that these countries face a series of regional security problems has led us to address this group of countries. CEE countries were taken into account in the study for a number of reasons. First of all, CEE countries have a strategic location in Europe, and the majority of these countries are bordered by Russia and Ukraine. Secondly, CEE countries are former Eastern Bloc countries and have experienced economic system changes. After the collapse of the Soviet Union, these countries aimed to increase the level of income with economic policies that reduced the share of the state in the economy, accelerated growth and development, and reduced poverty. Thirdly, CEE

countries are among the countries that are affected by the geopolitical risks posed by Russia and the conflicts in Ukraine more than other European countries and in the first place. In addition, while the majority of CEE countries adopted policies that reduced their military expenditures from 1993 until the 2010s, all of these countries have preferred to allocate more shares from their budgets to military expenditures from the 2010s to the present. These developments lead us to examine the nature of the causality between military expenditures and growth for CEE countries between 1993 and 2019 with the Konya (2006) test.

## **2. Literature Review**

The first study to address the impact of military spending on growth was Benoit's studies published in 1973 and 1978. In his analysis based on the correlation method for 44 countries between 1950 and 1965, the author determined that countries with much military burden exhibited rapid economic growth. After Benoit's research, the relationship between military expenditures and growth became a topic that attracted more attention due to its national and international effects, and this topic continued to be studied theoretically and practically. Since the pioneering work of Benoit (1973, 1978), the relationship between military spending and growth has been of interest to a large number of researchers. However, given the studies carried out to date, no consensus has been reached on a common approach to the direction and interaction of the military-growth relationship, and the results remain uncertain. Some researchers claim that military spending can have a negative impact on growth depending on the weight it brings to the economy, while some researchers argue that military spending can have a positive impact on growth. According to some researchers, there is a mutual interaction between military spending and growth. In addition, there are few who say that there is no relationship between military spending and growth. The differences in the relationship between growth and military spending have led scientists to study the issue in depth with great interest. The fact that these studies covered different groups of countries, different regions, different periods and different methods of economic measurement led to difficulties in determining the interaction between military spending and growth.

Studies searching the relationship between military spending and growth are included and discussed in this part of the study. Studies that examined the relationship between public spending and growth searched health, education, and military spending. But since the study of all public

expenditures is beyond the scope of this study, the literature review is created only from research that focuses on military expenditures. In publications that examine military spending, only the group of variables consisting of military spending and growth and the control variable are included. The literature review is based on studies using military spending and growth as variables. National and international publications on the subject are numerous, but need to be systematic. In order to provide ease of reading, the tabulation method was used when introducing all the works.

**Table 1: Literature Summary**

Author/year	Country/period	Method	Variables	Result
Chowdhury (1991)	55 GOÜ/ 1960-1965	Granger Causality	Logarithmic values of GDP and military spending	<b>EG - DE</b>
LaCivita and Frederiksen (1991)	21 countries/ 1952-1982	Granger Causality	Real GDP growth rate and military spending	<b>DE ► EG</b>
Kusi (1994)	77 GOÜ/ 1985-1990	Granger Causality	GDP growth rate and military spending/ GDP	<b>EG - DE</b>
Tahir (1995)	Pakistan ve India/ 1961-1963	Engle-Granger co-integration, Granger Causality, Error Correction Model	Real GDP and real military spending	<b>EG ↔ DE</b>
Kollias and Makrydakias (2000)	Greece/ 1955-1993	Granger Causality	GDP growth rate and military spending/GDP	<b>EG - DE</b>
Chang et al. (2001)	Taiwan and China /1952-1995	VAR (Vector Autoregressive Model), Engle-Granger co-integration, Granger causality	Gross national product (GNP) and military spending logarithmic values	Taiwan; <b>EG ↔ DE</b>  China; <b>► EG DE</b>

Dakurah et al. (2001)	62 GOÜ/ 1975-1995	Granger Causality, Johansen co- integration	GNP and military expenditures	23 countries; <b>EG ► DE</b>  <b>DE ► EG</b>  7 countries; <b>EG ↔ DE</b>  18 countries; <b>EG - DE</b>
Kollias et al. (2004)	15 members of the European Union /1961-2000	VAR model, Granger causality, error correction model	GDP growth rate and military spending/GDP	<b>EG ► DE</b>
Kollias et al. (2004)	Cyprus / 1964-1999	VAR model, Johansen-Juselius co-integration	GDP growth rate and military spending/GDP	<b>EG ↔ DE</b>
Kalyoncu and Yucel (2006)	Turkey and Greece/ 1956-2003	Johansen co- integration and Granger causality	GDP and military spending	Turkey; <b>EG ► DE</b>
Görkem and Işık (2008)	Turkey/ 1968-2006	VAR model and Granger causality	Military spending and growth rate	<b>EG - DE</b>
Habibullah et al. (2008)	Asian Countries/ 1989-2004	Larsson et al. (2001) Panel co-integration and Pooled Mean Group (PMG) Mean Group (MG) Model	GDP, GDP per capita, military expenditures/GDP logarithmic values	There's co- integration.
Hirmissa and Baharom (2009)	5 countries of Association of Southeast Asian Nations	ARDL (Autoregressive distributed Lag Bound Test) and DOLS (Dynamic Least Squares)	GDP, GDP per capita, military expenditures/GDP logarithmic values	Singapore; <b>EG ↔ DE</b>  Indonesia, Thailand; <b>DE ► EG</b>

	(ASEAN)/ 1965-2006			Malaysia, Philippines; <b>EG - DE</b>
Karagianni and Pempetzoglu (2009)	Turkey/ 1949-2004	Linear and nonlinear Granger causality test	GNP and military spending	<b>DE ► EG</b>
Yılancı and Özcan (2010)	Turkey/ 1950-2006	Gregory-Hansen co- integration and Toda-Yamamoto causality	GNP and military spending logarithmic values	<b>EG ► DE</b>
Wijeweera and Webb (2011)	India, Pakistan, Nepal, Sri Lanka and Bangladesh /1988-2007	Kao, Johansen Fisher and panel Augmented Dickey- Fuller (ADF) co- integration tests Granger causality, fixed effects model	Real GDP and real military spending	<b>DE ► EG</b>
Alptekin (2012)	24 countries member of Organizatio n for Economic Developme nt and cooperation (OECD)/ 1991-2008	Pedroni, Kao and Johansen Fisher Cointegration- constant-effect regression	GDP and military spending	Negative impact
Ageli and Zaidan (2013)	Saudi Arabia/ 1970-2012	Johansen co- integration and Granger causality test	Non-oil growth and military spending/GDP	<b>EG ↔ DE</b>
Topçu and Aras (2013)	15 countries/ 1973-2011	ARDL and Toda- Yamamoto causality	Per capita GDP and military expenditures / GDP logarithmic values	Australia, Brazil, China, India, S. Arabia, South Korea and Turkey; <b>EG ► DE</b>

				Canada, Germany, Italy, Japan, Russia, UK and USA; <b>DE ► EG</b>  Japan; <b>EG - DE</b>
Aye et al. (2014)	South Africa/ 1951-2010	Johansen co- integration, VAR model, Granger Causality Test	Real GDP and military expenditures/GDP	<b>EG ↔ DE</b>
Yilgör et al. (2014)	11 member countries of the North Atlantic Treaty Organizatio n (NATO)/ 1980-2017	Pedroni co- integration and Granger causality	Economic growth and military spending	<b>EG ► DE</b>
Furuoka et al. (2016)	China / 1989-2011	Johansen co- integration Test	GDP per capita and military spending per capita	<b>EG ► DE</b>
Durgun and Timur (2017)	Turkey/ 1970-2015	VAR model, Granger causality test	Real military spending, GDP per capita	<b>EG - DE</b>
Masih (2017)	Sub- Saharan African countries/ 1961-2015	VAR model, Granger causality test, error correction model	Real GDP and military spending/GDP	Tanzania, Central Africa Rep. and Ethiopia; <b>EG ► DE</b> Kenya and Niger; <b>DE ► EG</b>

				Mali, Somalia and Sudan; <b>EG - DE</b>
Ajmair et al. (2018)	Pakistan/ 1990-2015	ARDL	GDP, number of military personnel, military expenditures logarithmic values	A positive relationship in the short term, the number of soldiers in the long term positively affects economic growth.
Topal (2018)	Turkey/ 1960-2016	Bayer and Hanck, Maki co-integration, Bootstrap causality	Per capita national income and military expenditures/GDP	<b>EG - DE</b>
Turan et al. (2018)	12 low and 29 high income countries/ 1988-2016	Westerlund Panel co-integration, Dumitrescu-Hurlin Causality	GDP per capita and military expenditures / GDP logarithmic values	Low- income countries; <b>EG ↔ DE</b>  High- income countries; <b>DE ► EG</b>
Çevik and Bektaş (2019)	Turkey/ 1968-2017	Breitung and Candelon causality test, Impact Response analysis	GDP and military spending	<b>DE ► EG</b>
Gölpek et al. (2019)	Turkey/ 2000-2016	Engle Granger co- integration, Toda- Yamamoto and Hacker - Hatemi-J causation	Military spending and economic growth	<b>EG - DE</b>
Lobont et al. (2019)	Romania/ 1991-2016	Granger Causality	GDP growth rate and military spending/GDP	<b>EG ↔ DE</b>

Raju and Ahmed (2019)	China/ 1989-2017, India/ 1980-2017, Pakistan/ 1989-2017	Engle Granger co-integration and Granger causality	GDP growth rate and military spending/GDP	<b>EG - DE</b>
Yağtu and Sezgin (2019)	Turkey/ 1980-2016	VAR model, Granger causality	GDP and military spending logarithmic values	<b>EG ► DE</b>
Yantur and Gürson (2019)	United States (USA), Japan and France/ 1960-2017	Engle-Granger co-integration and Granger causality	National income per capita and budget allocated to the military industry	<b>EG ↔ DE</b>
Yıldız and Akbulut Yıldız (2019)	Four Middle Eastern countries and Turkey /1990-2015	Konya Panel Bootstrap Causality	Real GDP and military expenditures logarithmic values	İran; <b>EG ↔ DE</b>  Panel; <b>EG ► DE</b>
Atuahene et al. (2020)	China/ 1995-2018	VAR model, Granger causality	GDP and military spending	<b>EG ► DE</b>
Gölpek et al. (2020)	G-8 Countries /2000-2016	Dumitrescu-Hurlin causality test and common associated effects (CCE) Estimator	Military spending and growth rate	<b>EG - DE</b>
Tao et al. (2020)	Romania/ 1980-2018	VAR model	GDP and military expenditures	<b>EG - DE</b>
Topal et al. (2021)	NATO Countries/ 1960-2019	Konya Panel Bootstrap Causality	Per capita real gross domestic product and per capita real military expenditure.	The direction of the symmetrical and asymmetric relationship varies by country.

**Note:** EG: refers to economic growth, DE: refers to military spending.

In the studies listed in the literature review, it is seen that various countries and different year intervals are used in terms of the level of development. Multi-country studies have focused on whether countries' military spending and growth behaviors are similar. It has been found that the methods used in research consist mainly of traditional co-integration and causality tests. The analysis finds that the common feature of research efforts is that military spending plays an important role in economic growth.

### **3. Methodology**

#### **3.1. Data**

In this study, the relationship between military spending and economic growth in CEE countries from the collapse of the Soviet Union to the present day has been investigated through the panel data analysis. In this context, the panel symmetrical and asymmetric causality test was applied for the period of 1993-2019 depending on the availability of the data. In the analysis, the ratio of military spending to GDP, representing military spending, and the real GDP growth rate series, calculated according to constant prices for 2010, were used to show economic growth. Data on military spending have been obtained from the SIPRI military expenditure database. Data on economic growth are taken from the World Bank's World Development Indicators database.

#### **3.2. Analysis**

The asymmetric causal relationship between military spending and economic growth was examined by the Konya test (2006). This test has two significant advantages. First, there is no need for a joint hypothesis for cross-sections in this approach. It allows for contemporaneous correlation between cross-sections and thus allows the use of extra information. Second, it does not require any preliminary tests, such as a unit root and co-integration test, except for determining the appropriate lag length (Konya, 2006). Although it has these advantages, as with all symmetric causality tests, this test does not consider that there may be a hidden relationship between two seemingly unrelated variables, and this relationship can only occur by taking into account the asymmetric effects between the positive and negative components of the series (Görmüş et al. 2016). Asymmetric relations, put forward by Granger and Yoon (2002), were developed by Hatemi J (2012) for causality tests for time series, and asymmetric causality tests were introduced into the literature.

Yılcı and Aydın (2017) developed a new panel causality test by following Granger and Yoon (2002) asymmetric relationship approach and converting the Konya (2006) causality test into asymmetric form in their work. In terms of obtaining critical values by bootstrap method, they argued that the test they developed was superior to the Hatemi-J causality test. In the new causality test of the panel they revealed, the variables in the following equations are first divided into their negative and positive components (shocks):

$$y_{i,t} = y_{i,t-1} + e_{i1,t} = y_{i,0} + \sum_{j=1}^t e_{i1,j} \quad (1)$$

$$x_{i,t} = x_{i,t-1} + e_{i2,t} = x_{i,0} + \sum_{j=1}^t e_{i2,j} \quad (2)$$

In equations,  $x_{i,0}$  and  $y_{i,0}$  indicate initial values of  $i=1,2,\dots,m$ ,  $m$  indicates the cross section dimension, and  $e$  refers to the white noise error term. In order to examine the asymmetric relationship between variables, the positive and negative components of each variable are defined as follows:

$$\begin{aligned} e_{i1,t}^+ &:= \text{Max}(e_{i1,t}, 0), & e_{i2,t}^+ &:= \text{Max}(e_{i2,t}, 0) \\ e_{i1,t}^- &:= \text{Min}(e_{i1,t}, 0), & e_{i2,t}^- &:= \text{Min}(e_{i2,t}, 0) \end{aligned} \quad (3)$$

Accordingly, cumulative forms for positive and negative components are obtained as follows:

$$\begin{aligned} y_{i,t}^+ &= y_{i,0}^+ + e_{i1,t}^+ = y_{i,0} + \sum_{j=1}^t e_{i1,j}^+ \\ x_{i,t}^+ &= x_{i,0}^+ + e_{i2,t}^+ = x_{i,0} + \sum_{j=1}^t e_{i2,j}^+ \\ y_{i,t}^- &= y_{i,0}^- + e_{i1,t}^- = y_{i,0} + \sum_{j=1}^t e_{i1,j}^- \\ x_{i,t}^- &= x_{i,0}^- + e_{i2,t}^- = x_{i,0} + \sum_{j=1}^t e_{i2,j}^- \end{aligned} \quad (4)$$

The Seemingly Unrelated Regression (SUR) model shown below is used to test the asymmetric relationship between positive components;

$$y_{1,t}^+ = \alpha_{1,1} + \sum_{j=1}^{ly_1} \beta_{1,1,j} y_{1,t-j}^+ + \sum_{j=1}^{lx_1} \gamma_{1,1,j} x_{1,t-j}^+ + \varepsilon_{1,1,t}^+$$

$$y_{2,t}^+ = \alpha_{1,2} + \sum_{j=1}^{ly_1} \beta_{1,2,j} y_{2,t-j}^+ + \sum_{j=1}^{lx_1} \gamma_{1,2,j} x_{2,t-j}^+ + \varepsilon_{1,2,t}^+$$

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$$y_{N,t}^+ = \alpha_{1,N} + \sum_{j=1}^{ly_1} \beta_{1,N,j} y_{N,t-j}^+ + \sum_{j=1}^{lx_1} \gamma_{1,N,j} x_{N,t-j}^+ + \varepsilon_{1,N,t}^+ \quad (5)$$

and

$$x_{1,t}^+ = \alpha_{2,1} + \sum_{j=1}^{ly_1} \beta_{2,1,j} y_{1,t-j}^+ + \sum_{j=1}^{lx_1} \gamma_{2,1,j} x_{1,t-j}^+ + \varepsilon_{2,1,t}^+$$

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$$x_{N,t}^+ = \alpha_{2,N} + \sum_{j=1}^{ly_1} \beta_{2,N,j} y_{N,t-j}^+ + \sum_{j=1}^{lx_1} \gamma_{2,N,j} x_{N,t-j}^+ + \varepsilon_{2,N,t}^+ \quad (6)$$

In equations, variables  $y$  and  $x$  indicate the cross-sectional units  $i$  ( $i=1, \dots, N$ ),  $t$  indicates time dimension  $t$  ( $t=1, \dots, T$ ), and  $l$  indicates lag length. The number of lags must be determined before the estimation because causality test results are critically dependent on the lag structure in this approach. Since there is no simple rule for deciding the maximum number of lag, it is accepted that the optimal lag length that makes the Akaike information criterion (AIC) and Schwartz Criterion (SIC) the minimum is between 1-4 (Konya, 2006; Görmüş et al., 2016). As a result, the causality relationship is determined by comparing Wald statistics with critical values obtained by the bootstrap method for each cross-section unit. If the Wald statistic for any cross-section unit is found to be greater than the bootstrap critical value, it can be stated that there is a causal relationship between variables, and in the opposite case, there is no causal relationship.

### 3.3. Empirical Results

Results of symmetrical and asymmetric causal relationships investigated by the Konya test (2006) are shown in the tables below. First, in Table 2, the results of the analysis performed with the original values of the series are presented to examine the symmetrical causal relationships.

**Table 2:** Symmetric Causality Test

Countries	H <sub>0</sub> : Military expenditures does not cause economic growth				H <sub>0</sub> : Economic growth does not cause military expenditures.			
	Wald Stat.	Bootstrap Critical Values			Wald Stat.	Bootstrap Critical Values		
		%1	%5	%10		%1	%5	%10
Bulgaria	1.348	18.382	9.974	6.776	0.642	18.802	9.293	6.275
Czechia	1.333	25.639	13.770	9.365	4.965	19.313	11.901	8.821
Estonia	7.131	29.888	15.225	10.587	1.098	16.643	9.821	7.306
Hungary	0.144	27.300	13.972	9.080	1.827	11.348	6.089	4.081
Lithuania	3.023	42.573	22.340	14.945	0.026	9.179	4.895	3.252
Latvia	8.519 <sup>e</sup>	20.866	10.134	6.693	1.514	8.527	4.605	3.174
Poland	0.882	32.920	17.160	11.796	0.076	22.991	11.170	7.119
Romania	0.645	26.470	15.145	10.496	0.017	16.912	10.405	7.614
Slovenia	0.221	31.968	17.339	11.280	0.035	8.161	4.625	3.198
Slovakia	8.058	33.363	15.671	10.534	0.132	13.154	7.130	4.918

According to the results of the symmetrical test, it was found that there is a one-way causal relationship from military spending to economic growth only in Latvia, and there is no causal relationship in other countries. Table 3 shows the results of asymmetric analysis of the causal relationship between the positive components of variables.

**Table 3:** Asymmetric Causality Test Results (+, +)

Countries	H <sub>0</sub> : Military expenditures does not cause economic growth				H <sub>0</sub> : Economic growth does not cause military expenditures.			
	Wald Stat.	Bootstrap Critical Values			Wald Stat.	Bootstrap Critical Values		
		%1	%5	%10		%1	%5	%10

Bulgaria	122.692 <sup>a</sup>	34.957	13.671	9.156	15.542 <sup>c</sup>	92.181	17.675	10.133
Czechia	5.175	70.794	46.648	36.555	6.987	42.632	26.997	21.446
Estonia	1.107	105.050	75.291	64.112	2.446	60.039	42.722	35.378
Hungary	7.889	23.899	14.570	11.008	3.626	40.724	27.495	22.329
Lithuania	26.403 <sup>b</sup>	32.728	19.827	15.217	2.885	26.977	16.425	12.222
Latvia	11.240 <sup>b</sup>	17.261	10.489	7.906	2.393	32.892	22.256	18.170
Poland	5.115	86.748	56.251	44.962	21.179	75.863	56.245	47.176
Romania	32.463 <sup>a</sup>	17.971	11.570	8.956	3.325	20.810	14.140	11.372
Slovenia	3.769	65.273	42.079	33.931	3.794	42.940	28.614	23.683
Slovakia	61.035 <sup>a</sup>	59.908	34.034	25.108	22.085 <sup>c</sup>	38.460	25.940	20.565

According to asymmetric test results between positive components, it was determined that there was a bidirectional causal relationship between positive shocks of military spending and positive shocks of economic growth in Bulgaria and Slovakia. In addition, it was concluded that there is a one-way causal relationship from positive shocks of military spending to positive shocks of economic growth in Lithuania, Latvia and Romania. But there is no causal relationship in other countries. Finally, Table 4 shows the results of asymmetric analysis of the causal relationship between the negative components of variables.

**Table 4: Asymmetric Causality Test Results (-, -)**

Countries	H <sub>0</sub> : Military expenditures does not cause economic growth				H <sub>0</sub> : Economic growth does not cause military expenditures.			
	Wald Stat.	Bootstrap Critical Values			Wald Stat.	Bootstrap Critical Values		
		%1	%5	%10		%1	%5	%10
Bulgaria	0.644	35.929	21.151	15.324	3.695	59.302	40.510	33.362
Czechia	42.904	97.040	72.942	62.664	8.237	81.362	58.296	47.653
Estonia	0.514	79.876	57.338	48.580	0.155	36.800	23.363	18.516
Hungary	46.459	117.390	85.932	72.733	0.407	77.596	52.933	43.213
Lithuania	8.790	140.118	100.935	85.263	5.333	55.480	38.736	32.041
Latvia	0.951	144.620	109.260	94.858	57.134 <sup>c</sup>	93.618	66.507	55.227
Poland	1.072	86.279	59.722	47.746	2.550	77.907	48.988	38.980
Romania	33.153	93.931	66.244	55.133	11.997	55.263	34.971	27.376

Slovenia	0.129	92.351	68.117	57.751	3.173	28.757	21.034	17.639
Slovakia	11.204	118.682	84.222	69.553	11.800	47.855	31.128	24.482

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According to asymmetric test results between negative components, there was a one-way causal relationship from negative shocks of economic growth to negative shocks of military spending only in Latvia. In other countries, no causal relationship was found between the variables.

## 5. Conclusions

The close relationship between the economic and military powers of Nations is one of the leading issues in world affairs. According to Kennedy (1994), it takes mostly wealth to support military power, and mostly military power to achieve and protect wealth. For example, towards the end of the 18<sup>th</sup> century, the industrialization and reaching great economic power of Britain made colonization activities possible by organizing overseas expeditions. But during this period of expansion, the high levels of military spending that Britain had to endure to increase and preserve its wealth had a negative impact on her economic power. Today, it can be said that the United States experience a similar process. Accordingly, the United States, as a result of its economic achievements in previous periods, officially revealed that it was a superpower at the end of World War II. After that, it had to make serious military expenditures with the expansionary policies that it followed, and recently, because of the burden that it has placed on the economy, these expenditures have become controversial in all aspects. Consequently, world history reveals that there is a close relationship between economic power and military power in relation to the capacity of nations to generate production and income.

There are many studies in the literature that develop and deepen our understanding of this issue by examining the interaction between military expenditures and economic growth. However, in these studies, it is seen that there is no consensus regarding the direction and importance of the interaction between the two elements. For this reason, the main purpose of this study is to investigate the relationship between military expenditures and economic growth. Another aim of this study is also to elucidate the growth and military expenditure behaviors in CEE countries. In this study, the interaction between military

expenditures and economic growth is reviewed with a relatively new technique for a new group of countries. Considering the results we have reached for this country group, we believe that our findings will contribute to deepen our understanding and conception of this subject.

In this study, the relationship between military spending and economic growth in CEE countries was investigated by considering the period between 1993 and 2019. By using Konya (2006) panel causality analysis, symmetric and asymmetric relationships between variables were revealed. According to symmetrical research results, a causal relationship from military spending to economic growth has been identified only in Latvia, and the military expenditure-led hypothesis has been found to be valid. Apart from this, no causality relationship between variables has been found in any country. According to asymmetric results, the feedback hypothesis was found to be valid in Bulgaria and Slovakia, as a bidirectional causality relationship between variables was determined when positive components were taken into account. Accordingly, it can be stated that the increase in both military spending and economic growth increases each other mutually. It has also been determined that military expenditure-led hypothesis is valid in Lithuania, Latvia and Romania. This indicates that the increase in military spending in 3 countries increases the rate of economic growth. Considering the negative components, it was concluded that the growth-led hypothesis is valid in Latvia, but that there is no causal relationship between the variables in other countries. In other words, it can be said that the decrease in economic growth in Latvia also led to a decrease in military spending.

Our results are of great importance for CEE countries. Our analysis shows that the findings are idiosyncratic in a number of countries. According to the findings of this study, both military expenditures and economic growth are important for each other in Bulgaria and Slovakia. In Lithuania, Latvia and Romania, only military expenditures appear to be important for growth. Military expenditures drive economic growth in these three countries. In Latvia, on the other hand, economic growth is important for military expenditures. Decreases in economic growth in Latvia have contributed to the slowdown in military expenditures. In the Czech Republic, Estonia, Hungary, Poland and Slovenia, neither military expenditures are important for growth, nor growth for military expenditures, nor military expenditures and economic growth are

important for each other, and there is no interaction between these two variables. In these countries, military expenditures and economic growth are insufficient to direct each other. According to the findings, no country other than Bulgaria and Slovakia is reciprocally dependent on growth and military expenditures. However, military expenditures can trigger growth in Lithuania, Latvia and Romania. In these countries, special attention should be paid to military expenditures and the development of the right military policies will contribute to economic growth in these countries. In fact, developments in external threats and risks may contribute to the decreases and increases in military expenditures in CEE countries before and after 2013 and 2014.

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## **CHAPTER IV**

# **GLASS CEILING OR STICKY FLOOR? EXAMINATION OF THE TURKISH MANUFACTURING INDUSTRY BY TECHNOLOGICAL LEVELS**

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### **1. Introduction**

The gender pay gap is inherent in world labor markets, with varying degrees in developed and developing countries. Although the labor force participation rate has been increasing for decades, women are not remunerated and treated equally as men in the workplace, especially in developing countries with weak labor market regulations. Gender wage and employment differentials are significantly pronounced in the manufacturing industry, which is traditionally characterized by male domination. Due to social norms, capital-intensive industrial manufacturing is perceived as unsuitable for the female labor force. Women are concentrated in low-cost, labor-intensive manufacturing, which demands skills similar to those used in routine household responsibilities of women. Since these skills are perceived as “natural” rather than gained via training, women are paid less than men who are generally employed in tasks demanding physical endurance or mobility and have typically been regarded as more skill-based and technical contrary to women’s jobs (Elson and Pearson, 1980; Mehra and Gammage, 1999; Jayasinghe, 2001). These gender-based wage differentials may not affect women employees equally across the wage distribution. When gender wage gaps are more significant at the top of the wage distribution, this situation is called “the glass ceiling,” a phenomenon that implies the existence of barriers for women to attain higher levels once they have reached a certain level in the workplace. Another gender-based distributional phenomenon is “the sticky floor,” which represents a more significant gender wage gap at the low end of the wage distribution and implies the existence of barriers for women to advance in the career and wage level.

A key element for explaining the gender wage differentials in the manufacturing sector is the industry's technology-based structural transformation, which aggressively accelerated during the past decades. However, this technological transformation has conflicting impacts on women's work and gender wage differential in the manufacturing sector. The technological transformation of manufacturing should boost women's employment and wage income by reducing the importance of physical strength that gives men a comparative advantage in the sector (Galor and Weil, 1996; Erdil et al., 2008; Ng and Mitter, 2006; Juhn et al., 2012, 2014; Weinberg, 2000). On the other hand, manufacturing research and development (R&D) activities are traditionally perceived as masculine and require continuous use and training. Men have a comparative advantage to access to shift work and training in the workplace since women are perceived to be inconsistent employees may leave the workforce due to child-rearing. Also, employers may have traditional stereotypical expectations of women's workload and responsibilities in the household (Zacharias, 2007; Grimshaw and Rubery, 2015; Magadla et al., 2019; Dumauli, 2019). These factors pressure women's employment and wages in technology-intensive manufacturing industries (Mehra and Gammage, 1999; Gaddis and Pieters, 2012, Dammert and Ural Marchand, 2015).

The technological transformation in manufacturing industries and related gender wage disparities are directly associated with the development level of the countries as well. While manufacturing has undergone structural change in a few decades in some countries, some developing and undeveloped countries have been falling behind in transforming their manufacturing activities into a technology-intensive sector. Technological improvement leads companies to move their labor-intensive manufacturing to developing countries while locating their R&D activities in developed countries (UNCTAD, 2022; Mortimore, 1999; Social Europe, 2017). While some developing countries in Asia, such as South Korea and Singapore, have undergone a substantial shift to technology-intensive manufacturing (ADB, 2007; Felipe, 2018), many others, including Latin American countries and Turkey, could achieve this structural transformation. Turkey is setting an important example to show the importance of the policies during the transformation process. As shown by Taymaz and Voyvoda (2012), diverging structural transformation experiences of Turkey and South Korea set a striking example in showing the importance of the

permanency of industrial development policies. In the 1960s, both countries had similar manufacturing sectors concentrated on low technology production. South Korea pursued a rapid and determined structural transformation policy and ended up with a highly industrialized manufacturing sector specialized in medium and high technology production in the 2000s. On the other hand, with the absence of a systematic technological transformation policy and a low level of investment to GDP ratio, Turkey lost the initial momentum of its industrialization process after achieving a medium technology level in manufacturing, then got stuck in producing low and medium technology products in the 2000s (Taymaz and Voyvoda, 2012).

In Turkey, where women have a significantly higher rate of unemployment and a lower rate of labor force participation relative to men in the domestic labor market, and in comparison to international standards<sup>1</sup>. Women in the manufacturing industries have an even more disadvantageous position in terms of their wage and working conditions, given the male dominance in the industry. This study aims to fill this gap by examining the gender wage differentials at different sections of the wage distribution in the Turkish manufacturing sector for different technology level groups in the industry. By employing Melly's (2006) quantile decomposition methodology, the behaviors of the raw gender wage gap, discrimination, and effect of the labor characteristics will be examined to explore the sticky floor and glass ceiling in the wage distribution. To the best of our knowledge, this study is the first attempt to examine the gender wage inequalities in a quantile context for different technology intensity groups in the Turkish manufacturing industry.

The structure of this study is as follows: section 2 briefly provides a review of the literature on the empirical evidence regarding sticky floor and glass ceiling effects observed in the wage distribution; section 3 elaborates the data, variable construction, and methodology employed; section 4 presents the decomposition results, and section 5 provides the conclusion. The appendix is presented at the end of the document.

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<sup>1</sup> As of 2021, women's labor force participation rate was 32.8%, and the unemployment rate was 14.7% in Turkey, the lowest and highest rate among OECD countries. For the same year, OECD rates for female labor force participation and unemployment were 52.4% and 6.4%, respectively.

## 2. A Brief Literature Review

There is a vast body of literature examining the gender wage gaps in the median wages, which ignores the distributional differences between women at the different sections of the wage distribution. The influential paper of Buchinsky (1998), led to the development of some quantile regression methodologies (such as Machado and Mata, 2005; Firpo et al., 2009; Fortin et al., 2011; Chernozhukov et al., 2013; Melly, 2006) for the examination of the gender wage gap at different parts of the wage distribution, which resulted in the emergence of the literature on the glass ceiling and sticky floor effects.

Many research on industrialized economies, including those in the US, Australia, and Europe, showed the dominant glass ceiling effect in labor markets (for exp: Arulampalam et al., 2007; Christofides et al., 2013 for European countries; Baron and Cobb-Clark., 2010; Chzhen et al., 2013; Kee, 2006; Miller, 2005 for Australia; Etienne and Narcy, 2010 for France; Albrecht et al., 2009 for the Netherlands; Antonczyk et al., 2010., Hübler., 2005; Collischon, 2019 for Germany; Chzhen and Mumford, 2009; Duchini et al., 2020; for the UK; Albrecht et al., 2003; Wahlberg., 2010 for Sweden; Castagnetti and Giorgetti, 2019 for Italy; Miller, 2009; Lee and Miller, 2010; Blau and Kahn, 2017 for the USA; De la Rica et al., 2008; Dolado et al., 2004; Del Rio et al., 2011; Dueñas-Fernández et al., 2015 for Spain). Ciminelli et al. (2021) reported that the glass ceiling effect is dominant in Northern and Western Europe, while the gender wage disparity is more significantly explained by sticky floors in most Central and Eastern European countries. By examining Latin American economies, Carrillo et al. (2014) showed that glass ceilings are more common in higher-income countries with lower income inequality, while lower-income countries with higher income inequality tend to experience sticky floors. Several studies on Asian economies showed the existence of sticky floors (for exp: Xiu and Gunderson, 2014; Chi and Li, 2008; Tang and Scott, 2017; for China; Fang and Sakellariou, 2011 for Thailand; Faruk, 2021, for Bangladesh; Tromp, 2016 for South Korea; Khanna, 2012; Singhari and Madheswaran, 2015 for India).

For the Turkish economy, only a limited number of studies examined the gender wage differentials at different parts of the wage distribution despite the vast body of literature on gender wage gaps based on mean wages. Cudeville and Gurbuzer (2007) showed the glass

ceiling effect potentially stems from the selectivity of highly educated women in Turkey. Aktas and Uysal (2016) found no gender wage difference at the lower wage levels. However, they reported a significant gender wage gap that cannot be attributable to differences in characteristics at the higher end of the wage distribution. Celik and Selim (2016) and Tokatlioglu and Dogan (2021) found sticky floor effects with increasing gender wage gaps at lower wage levels. Kaya (2017, 2021) showed more pronounced gender differentials at high wage levels, indicating the glass ceiling effect in Turkey. Sefil-Tansever (2021) showed that knowledge-intensive services in the Turkish economy are dominated by the glass ceiling, while there is an apparent stick floor in the less knowledge-intensive services. To our knowledge, so far no additional research has been done to explore the sticky floor and glass ceiling effects in the Turkish manufacturing industries for different technological intensity levels. This study, therefore, contributes to this strand of literature by exploring how the manufacturing industries with different technological intensity levels differ in the magnitude of the gender wage gaps at different parts of the wage distribution.

### 3. Methodology and Data

The quantile regression method developed by Melly (2006) is based on decomposing the quantile wage differentials into an unconditional distribution by employing Monte Carlo simulations. The procedure starts with the regression estimation of a quantile conditional distribution:

$$Q_{\theta} = (W/X) = X_i\beta(\varphi) \quad (1)$$

Where  $\varphi \in (0,1)$  is the number of the quantiles. After estimation of the vector of coefficients for  $\beta(\varphi)$  and the integration of conditional distribution over the ranges of the covariates part (see Melly [2006] for the details of the estimation procedure), the unconditional estimator ( $\theta$ ) belonging to the dependent variable can be written as:

$$q(\theta, X, \beta) = \inf \left\{ q: \frac{1}{n} \sum_{i=1}^N \sum_{j=1}^J (\varphi_j - \varphi_{j-1}) (X_i \hat{\beta}(\varphi_j) \leq q) \geq \theta \right\} \quad (2)$$

With the estimation of the above unconditional estimator, the counterfactual distribution can be estimated, and the differences of quantiles from the unconditional distribution can be decomposed into a component explained by the coefficients and a component explained by characteristics:

$$q(\theta, X_M, \beta_M) - q(\theta, X_F, \beta_F) = [q(\theta, X_M, \beta_M) - q(\theta, X_M, \beta_F)] + [q(\theta, X_M, \beta_F) - q(\theta, X_F, \beta_F)] \quad (3)$$

In the above decomposition, the first bracket stands for the effects of differences in coefficients i.e., the discrimination (unexplained component) and the second bracket stands for the effects of differences in the characteristics (explained component). The correction for selection bias is left for further research since this study is mainly descriptive, and the selection correction procedure in the quantile framework is problematic and brings substantial difficulties along with the instrument validity issues (for details, see Andrews and Schafgans, 1998; Buchinsky, 1998 and Salardi, 2013).

The individual-level microdata employed in the study is from the 2020 Household Labor Force Survey (HLFS) conducted by the Turkish Statistical Institute (TurkStat). HLFS offers a wide range of information on the employees' personal and labor characteristics, including wages, age, gender, educational attainment, employment status, economic activity, type of employment contract, managerial positions, and region of residence. The first Mincerian equation includes independent variables being a set of personal characteristics, namely age, quadratic age, dummies for high school education, vocational high school education, and being married. The second Mincerian wage equation controls the first one with tenure and the occupational control dummy variables for part-time jobs, temporary jobs, being employed in a small business, being a manager, administrative duty, and residing in a region with wages above the mean. Introducing the variables of labor characteristics to the model in the second equation will enable us to examine the effect of occupational choices on the gender wage gaps in manufacturing with different technology levels.

The data is limited to adult employees (20–60 years old) who are paid more than half the minimum wage to prevent possible biases. Therefore the sample of the observation was reduced to 3341 observations, corresponding to 2553 men and 788 women. Two Mincerian wage equations are employed for the decomposition procedure for all technology levels. The dependent variable of the equations is the logarithm of hourly wages which is obtained by dividing the net monthly wage income by the average working hours per month in the primary job (calculated by multiplying "usual weekly hours spent in the primary job" by 4.33.).

For the classification of manufacturing sectors by technological intensity, the taxonomy proposed by the Industrial Statistics Guidelines (UNIDO, 2010) compiled by United Nations (UN) is followed. Technology classification of the UNIDO is constructed on research and development (R&D) costs of manufacturing industrial products. UNIDO groups the manufacturing industries into three categories by technology intensity: medium-high and high technology, medium technology, and high technology (see Annex 1 for the details on the classification of manufacturing industries into categories). This classification is slightly different from the taxonomy of OECD, which includes four categories, namely, high, medium-high, and medium-low technology manufacturing. The classification of UNIDO is more suitable for developing countries since it yields better results by aggregating middle high technology and high technology manufacturing, considering that some high-technology manufacturing industries are not common in developing countries.

**Table 1. Descriptive statistics By the Technology Level of the Manufacturing Sector**

Technology Level	Variable	Men				Women			
		Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
High and Medium-High Tech.	Log hourly wage	2.79	0.47	1.86	5.85	2.70	0.48	1.98	4.75
	Age	37.19	8.88	20	60	36.29	8.16	20	54
	Tertiary education	0.26	0.44	0	1	0.35	0.48	0	1
	Vocational high school	0.27	0.45	0	1	0.13	0.34	0	1
	High school	0.09	0.29	0	1	0.17	0.38	0	1
	Married	0.75	0.43	0	1	0.67	0.47	0	1
	Tenure	7.24	6.74	0	33	5.57	5.64	0	28
	Part-time job	0.01	0.07	0	1	0.03	0.18	0	1
	Temporary job	0.02	0.12	0	1	0.01	0.09	0	1
	Small business (1-10)	0.07	0.25	0	1	0.07	0.26	0	1
	Manager	0.11	0.31	0	1	0.21	0.41	0	1
	Administrative duty	0.10	0.30	0	1	0.06	0.23	0	1
	Region-above mean wage	0.39	0.49	0	1	0.46	0.50	0	1
Medium Tech.	Log hourly wage	2.68	0.48	1.42	4.44	2.61	0.36	2.22	3.94
	Age	37.72	9.62	20	60	36.63	8.09	21	54
	Tertiary education	0.23	0.42	0	1.00	0.31	0.47	0	1
	Vocational high school	0.21	0.41	0	1.00	0.13	0.33	0	1
	High school	0.10	0.29	0	1.00	0.13	0.33	0	1
	Married	0.75	0.43	0	1.00	0.84	0.37	0	1
	Tenure	7.24	7.20	0	35.0	4.73	5.13	0	23
	Part-time job	0.00	0.06	0	1.00	0.02	0.13	0	1
	Temporary job	0.01	0.12	0	1.00	0.03	0.18	0	1
	Small business (1-10)	0.15	0.36	0	1.00	0.16	0.37	0	1
	Manager	0.09	0.28	0	1.00	0.14	0.35	0	1
	Administrative duty	0.08	0.27	0	1.00	0.08	0.27	0	1
	Region-above mean wage	0.47	0.50	0	1.00	0.52	0.50	0	1
Low Tech.	Log hourly wage	2.49	0.36	1.19	5.04	2.41	0.25	1.61	4.06
	Age	37.26	9.46	20	60	37.31	9.55	20	59
	Tertiary education	0.11	0.32	0	1	0.12	0.33	0	1
	Vocational high school	0.14	0.35	0	1	0.10	0.30	0	1
	High school	0.10	0.30	0	1	0.13	0.33	0	1
	Married	0.76	0.43	0	1	0.70	0.46	0	1
	Tenure	5.95	6.27	0	37	4.16	4.36	0	28
	Part-time job	0.00	0.05	0	1	0.02	0.13	0	1
	Temporary job	0.03	0.17	0	1	0.04	0.20	0	1
	Small business (1-10)	0.20	0.40	0	1	0.11	0.31	0	1
	Manager	0.04	0.20	0	1	0.04	0.18	0	1
	Administrative duty	0.06	0.24	0	1	0.03	0.18	0	1
	Region-above mean wage	0.45	0.50	0	1	0.53	0.50	0	1

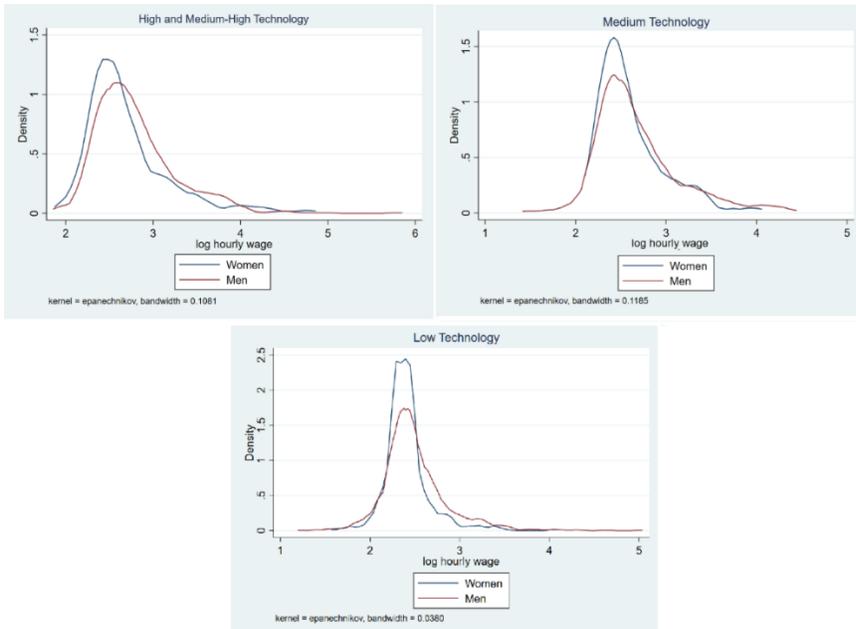
**Source:** Elaborated by the author based on HLSF data

Table 1 presents some descriptive statistics on the main variables for men and women in the manufacturing sector for technology levels: high and medium-high technology, medium technology, and low technology. The mean of the log hourly wage is greatest in high and medium-high technology and lowest in low technology for both men and women. It is 2.79 on average for men and women, 2.70 for women in high and medium-high technology manufacturing, 2.68 for men and

2.61 for women in medium technology level, and 2.49 for men and 2.41 for women in low technology manufacturing. Similarly, the mean tertiary education level decreases from high and medium-high technology to low for both men and women. In high and medium-high technology and medium technology, the mean of higher education for women is significantly greater than for men, with 0.26 and 0.35 in high and medium-high technology and 0.23 and 0.31 in medium technology for men and women, respectively. Also, in low technology manufacturing, women are slightly more highly-educated than men, which implies that, despite being more educated than men, women receive lower wages, which can be attributed to discrimination. Women are slightly younger than men in high and medium-high and medium technology manufacturing and slightly older in low technology manufacturing. Also, being married is relatively more common for men on average in high and medium-high technology and low technology manufacturing, the opposite is true in medium technology manufacturing. Men have approximately two years more tenure on average than women. Holding a part-time job is more common among women in the whole sector. Also, women are more common in temporary jobs in medium and low-technology manufacturing. Low technology manufacturing differs from others in some employment characteristics. In the low-tech technology category, there are twice more men than women working in a small business, while there is no difference between men and women in others. Also, men and women managers are equally common in low technology manufacturing, unlike the other categories where women managers are relatively more common. In all categories, residing in a region with wages above the mean wage level is relatively more common for men employees. Descriptive statistics for the whole manufacturing sector can be seen in Annex A1.

Figure 1 presents the kernel distributions of the manufacturing sector by the technology levels in the logarithm of hourly wages. The figure shows that women are characterized by a density function higher around the mode and lower dispersion in each technology class. The distance between men's and women's distribution densities represents the raw gap in each graph. Although the differential favors men at each technology level, the differences between the men's and women's wage distributions are more pronounced in the high and medium-high technology levels. For the high and medium-high technology, the wage

distribution is skewed to the left for both men and women, suggesting that the mean is greater than the median and that men are not as concentrated at the bottom end of the distribution as women. As a result, lower wages are much more common for women.



**Figure 1. Kernel Densities by Technology Levels**

**Source:** Elaborated by the author based on HLSF data

#### **4. Melly (2006) Decomposition Results**

Melly decomposition results obtained through a quantile regression performed for the gender wage gaps throughout the wage distribution for each technology level can be seen in Table 2. The wage gap is the differential between the hourly wage logarithm for men in a given quantile of the men's wage distribution and the hourly wage logarithm for women at the same quantile of the women's wage distribution. Within this context, quantile regressions are performed in each technology class through 100 bootstrap replications. As seen in Table 2, the wage differential between women and men in all quantiles is negative and significant; that is, women receive lower wages than

men along the wage distribution in all technology levels in the manufacturing sector.

**Table 2. Melly Decomposition Results By Technology Level (Quantile Regression)**

Quantile	High and Medium-High Technology Wage Difference	Medium-Technology Wage Difference	Low-Technology Wage Difference
10 <sup>th</sup>	-0.079**	-0.059*	-0.076**
20 <sup>th</sup>	-0.079*	-0.048*	-0.113**
30 <sup>th</sup>	-0.109*	-0.042*	-0.130**
40 <sup>th</sup>	-0.080*	-0.096*	-0.099**
50 <sup>th</sup>	-0.112**	-0.089*	-0.085**
60 <sup>th</sup>	-0.059*	-0.055*	-0.033***
70 <sup>th</sup>	-0.106*	-0.121*	-0.035***
80 <sup>th</sup>	-0.117*	-0.169*	-0.056**
90 <sup>th</sup>	-0.144*	-0.115*	-0.013*
Mean	-0.147*	-0.076*	-0.083**

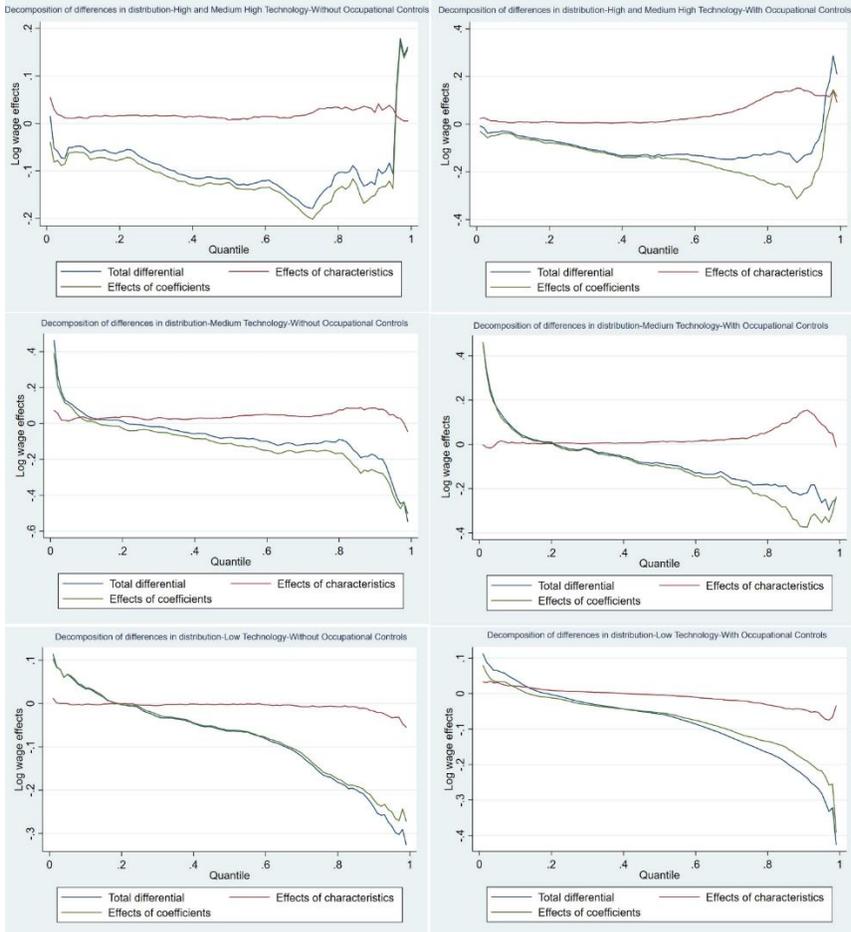
**Note:** Estimations are based on the models with occupational controls \*\*\*p<0.01, \*\*p<0.05, \*p<0.1

**Source=** Elaborated by the author based on HLSF data

The graphs in Figure 2 plot the Melly decomposition results for the models controlling for personal and occupational variables as a function of the percentiles. In the graphs, the total differential curve represents the raw gender wage gap; the effects of the characteristics curve represent the gender wage gap deriving from the differences in the experience characteristic. Lastly, the effects of the coefficients curve represent the effect of variable coefficients between men and women and can be interpreted to represent discrimination. Left-hand side graphs show the decomposition results for the main set of personal characteristics (tertiary high school and vocational high school education, age, age square, and being married) without occupational control dummy variables, while the right-hand side graphs show the effect of labor attributes on the wage gaps by introducing the occupational control variables (tenure, part-time and temporary job, being employed in a small business, being manager, administrative duty and residing in a region with wages above the mean) into the model.

The effects of characteristics seem to be above the raw wage gap and the effects of coefficients except for the bottom and the top of the wage distributions in some cases. In all technology levels of manufacturing, the effects of coefficient pull down the raw gender wage

gap despite the more stable effects of the characteristics, which indicate the domination of the discrimination against women employees (See Annex 2 for 95% confidence interval for the effects of coefficients (discrimination)).



**Figure 2. Melly Decomposition Results by Technology Levels**

**Source:** Elaborated by the author based on HLSF data

Medium and low technology manufacturing exhibit an explicit sticky floor behavior in the raw gender gap and effects of coefficients implying a higher gender wage gap and high level of discrimination subjected to women at the low quantiles of the wage distribution. For the case of medium technology manufacturing, introducing the labor

characteristics into the models strengthens the sticky floor behavior in total differential and effects of coefficient curves between the 20<sup>th</sup> and 90<sup>th</sup> quantiles implying the raw gender gap and decreasing discrimination effects of the occupational characteristics between these quantiles. At the high quantiles of the wage distribution of medium technology manufacturing, controlling the wage decomposition with occupational controls reverses the trends of all components of the Melly decomposition. In the low technology level manufacturing sector, adding the occupational control variables into the model removes the minor fluctuations in the decomposition components and smooths the downward trends in raw wage gap and discrimination, highlighting their sticky floor behaviors. For the case of high and medium-high technology production, raw gender gap and discrimination components of the decomposition in the model without occupational controls shows sticky floor behavior between the 10<sup>th</sup> and 70<sup>th</sup> quantiles and a fluctuating glass ceiling behavior between the 70<sup>th</sup> and 99<sup>th</sup> quantiles. The effects of characteristics seem to be stable over the wage distribution. When the gender wage decomposition is controlled with the occupational characteristics in the high and medium-high technology production, the effects of coefficients and total differentials curves gradually decrease up to the 90<sup>th</sup> quantile, then sharply decrease along the top quantiles of the distribution. Also, the steady behavior of the effects of characteristics is replaced with an upward trend in the top end of the wage distribution. In other words, high and medium-high technology production, raw gender wage gap, and discrimination against women decrease from to bottom of the distribution to the 90<sup>th</sup> quantile. At the same time, they increase for the top-earner women.

## **5. Conclusion**

The gender wage gap impacts of technological change in the manufacturing sector is a controversial topic, while the discussion on developing countries is more straightforward, highlighting the detrimental effects on women's wages and employment in those countries. As a developing country with a traditionally high gender wage gap and low labor force participation rate, Turkey ended up having a low and medium-low technology intense manufacturing sector after a non-systematic structural transformation process, which potentially contributed to women's worsening employment and wage conditions in the manufacturing industry. This study explores the gender wage differentials along the wage distribution in the Turkish

manufacturing sector for technology intensity levels defined by UNIDO (2010). By employing Melly's (2006) quantile decomposition methodology, the behaviors of the raw gender wage gap, discrimination, and effect of the labor characteristics are examined to explore the glass ceiling and sticky floor effects in the wage distribution for three different technology intensity levels namely, high and medium-high technology, medium technology and low technology levels. It is shown that high and medium-high technology manufacturing differentiates from others with a glass ceiling effect, while the sticky floor effect dominates the medium and low technology intense manufacturing. Those effects are apparent in the discrimination and the raw gender wage gap at all technology levels, and controlling the decomposition with labor characteristics intensifies their magnitude. These findings suggest that women in high and medium-high technology level manufacturing sectors face difficulties in trying to move up the hierarchy of an organization by being subjected to more substantial discriminatory treatment after reaching a certain level in high-paying positions. On the other hand, women in low and medium technology level manufacturing sectors face more substantial discrimination at the bottom of the wage distribution, leaving them stuck in low-paying positions. The findings of this study indicate the need for further research to understand better the disparities in wage, labor, and personal characteristics between men and women via a detailed examination of job and skill compositions at different sections of the wage distribution with the treatment of the self-selection. Furthermore, the characteristic behavior of the gender wage gap and discrimination at the top end of the wage distribution requires a detailed investigation of the top quantiles in each technology group.

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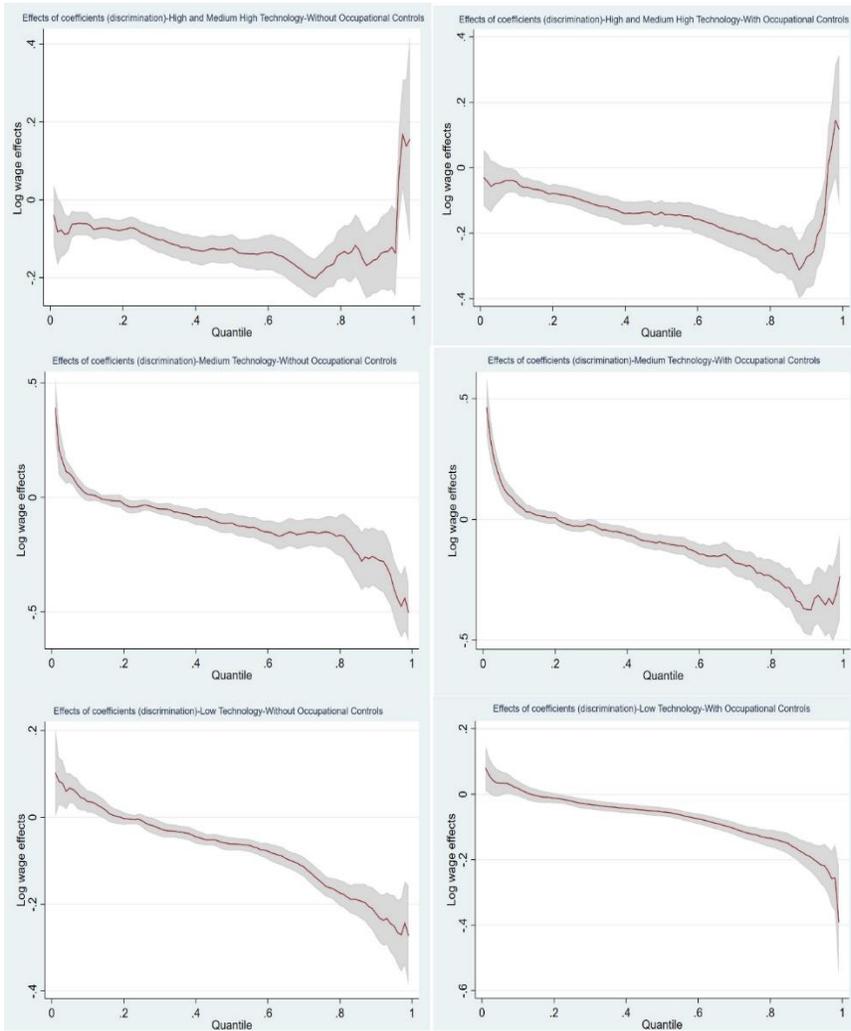
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## **Annex. A1. The manufacturing sector (ISIC Rev 4) by technology levels**

<b>Medium-high and high technology</b>	
Division 20	Chemicals and chemical products
Division 21	Pharmaceuticals
Division 26	Computer, electronic and optical products
Division 27	Electrical equipment
Division 28	Machinery and equipment n.e.c.
Division 29	Motor vehicles, trailers and semi-trailers
Division 30	Other transport equipment except ships and boats
<b>Medium technology</b>	
Division 22	Rubber and plastics products
Division 23	Other non-metallic mineral products
Division 24	Basic metals
Division 32	Other manufacturing except medical and dental instruments
Division 33	Repair and installation of machinery and equipment
<b>Low technology</b>	
Division 10	Food products
Division 11	Beverages
Division 12	Tobacco products
Division 13	Textiles
Division 14	Wearing apparel
Division 15	Leather and related products
Division 16	Wood and products of wood and cork
Division 17	Paper and paper products
Division 18	Printing and reproduction of recorded media
Division 19	Coke and refined petroleum products
Division 25	Fabricated metal products except weapons and ammunition
Division 31	Furniture

**Source:** UNIDO (2010) Industrial Statistics: Guidelines and Methodology. United Nations.

## Annex. A2. 95% confidence interval for the effects of coefficients (discrimination)



Source: Elaborated by the author based on HLSF data

## **CHAPTER V**

### **GENERAL EXPENSES THAT ARE DEDUCTIBLE IN THE DETERMINATION OF THE COMMERCIAL EARNINGS**

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#### **1.Introduction**

In Article 1 of the Turkish Income Tax Code, it is stated that income is the net amount of earnings and revenues acquired by a natural person in a calendar year. In the 2nd article of the Income Tax Code Commercial earnings, Agricultural earnings, Wages, Self-employment earnings, Real estate capital incomes (earnings from immovable property), Securities capital incomes and other earnings and revenues are counted as earnings and revenues within the scope of this income. The net amount of these earnings and revenues is subject to income tax. Unless otherwise stipulated, the above-mentioned earnings and revenues are taken into account in the determination of income, with their real and net amounts. In the taxation of income, calendar year is taken as the taxation period. For the income to become taxable, it should be acquired. The Income Tax Code does not contain the definition of the “acquisition of income” (Çelik ve Vural 1996). For each type of income and proceeds, acquisition is accomplished in different stages. The net totals of the income and proceeds become subject to income tax. Detailed explanations concerning the calculation of the net total of each gain and proceeds, are provided under the relevant articles. In these regulations, it is stipulated that which expenses can be deducted in determining the net amount of earnings and revenues. In this context, the accrual principle applies to commercial income (or earning). In commercial earnings, the fact that all transactions that give rise to such commercial income have reached maturity, will be adequate for the acquisition of the income.

According to the 37th article of the Income Tax Code, the earnings arising from all kinds of commercial and industrial activities are commercial income. The most distinctive feature of commercial activities is that the activity is based on an organization consisting of capital and labor and the transactions of this organization are carried out continuously. It can sometimes be quite difficult to determine whether an activity is carried out continuously and/or whether this activity is carried out within

a certain organization (Karadağ and Yakar, 2018). According to the generally accepted application results, a transaction made more than once in a year is deemed to have been done continuously. In the meantime, generally accepted basic criteria that show the existence of a commercial establishment include practices such as capital allocation to the establishment, recruitment of workers, and registration of the establishment in the trade registry (Özbalcı, 1998). In addition, the continuous execution of a transaction is accepted as a criterion for the existence of the commercial organization. Gains from incidental commercial activities are taxed as other gains and revenues.

Taxpayers earning commercial income can be classified according to various criteria. In this context, the first classification was made according to whether the person earning commercial income is an income taxpayer or not. The second classification is based on the method of determining commercial profit. In this type of classification, earnings are classified as those subjects to income tax on the basis of simple earnings and those subject to income tax on the basis of actual earnings. In the actual earnings method, taxpayers are also divided into two groups as taxpayers on the basis of the balance sheet and taxpayers on the basis of the trade account.

According to the balance sheet basis, commercial earnings represent the outstanding difference in the shareholder's equity during the period between the end of a fiscal year and the beginning of that fiscal year. This outstanding difference that is determined as the commercial earnings, are subject to the following treatment during this period by the owner or the owners of the enterprise: The assets added to the enterprise are deducted from this difference; The assets withdrawn are added up to the difference. Also, the provisions of the Tax Procedures Code regulating the appraisal procedure, and those of the Income Tax Code regulating the deductible and the non-deductible expenses apply during the determination of the commercial earnings according to this method (Metin ve Yalçın 1996).

The subject matter of the Corporation Tax Code consists of the corporate earnings that are listed in Article 1 of the Turkish Corporation Tax Code. Accordingly, the earnings derived by share capital (incorporated) companies; cooperatives; public economic establishments; business operations belonging to associations and foundations; and joint ventures are subject to corporation tax. Corporate income consists of the earnings that are included within the scope of the Income Tax Code. All of the elements of income derived by the corporation tax liabilities, shall be treated as corporate profits and the net total of this corporate profit shall become subject to corporation tax.

Corporation tax burden is calculated over the net corporate earnings derived by the taxpayers within one fiscal year. During the determination of the net corporate earnings, the provisions of the Income Tax Code regulating the commercial earnings are applied (Ecevit, 1970). Companies that are engaged in agricultural activities take into consideration the provisions of the Income Tax Code regarding the determination of the agricultural earnings, in the determination of their commercial earnings. During the determination of the net corporate earnings, besides Article 7 and the subsequent articles of the Corporation Tax Code, Article 40 of the Income Tax Code regulating the deductible expenses shall be taken into consideration.

Costs and expenses are used interchangeably, but when running a business, it is important to be able to distinguish between the two. From management perspective general expense are costs incurred by a business as part of its day-to-day operations. Costs do not directly affect taxes. However, the cost of an asset can be used when determining depreciation expenses for the year-end. As a result, depreciation reduces income for tax purposes.

## **2. Expenses that are deductible in the determination of the commercial earnings**

### **2.1. Cost and expense in tax application**

In practice, the concepts of expenditure, cost and expense are often confused and often misused. Expenditure is defined in different ways in various sources. In the most general definition, an expenditure is a payment or borrowing made due to the provision of a good, benefit or service or an obligation that arises without any compensation. Expenditure is the transfer of resources to obtain something. As it can be understood from the definition made, expenditure is much more comprehensive than the expense, which is often used as a synonym. In fact, it would not be wrong to say that expenditure includes the concepts of cost and expense. In general terms, an expense can be defined as any outflow that causes a decrease in the equity capital of the enterprise. There are also definitions that describe the expense from various perspectives. The concept of cost, on the other hand, can be defined as “the sum of the expenditures made to acquire an asset” with a very general determination. In contrast to this very concise and simple definition, the concept of cost is broadly defined in economics and business from various perspectives (Egesoy, 1993).

Determining whether an expenditure made in terms of tax application has the nature of cost or expense plays an important role in determining the tax base. If an expenditure is a cost element, its conversion to an expense

occurs over time, often covering several taxation periods. In addition, the expenditures in the nature of expenses are directly deducted in the determination of the tax base of the accounting period they are related to. Therefore, it is necessary to clarify what should be understood from the concepts of cost and expense in terms of tax application (Egesoy, 1993).

In terms of tax application, most economic values in a business are valued at cost. For example, real estate, fixtures, purchased commodities, manufactured commodities. In Article 262 of the Tax Procedure Code, the definition of cost is made. According to this, "Cost value refers to the sum of the payments made by acquiring or increasing the value of an economic asset and all other expenses associated with them." As it can be clearly understood from the examination of the article of the law, some expenses can also form part of the cost price. In this case, if we detail the explanations above in terms of expenses, it is possible to examine the expenses in two parts according to our tax legislation.

Expenses that are part of the cost can be divided into two parts. The first of these is general manufacturing expenses and the other is special expenses. General Manufacturing Expenses are all costs incurred for the manufacture of a product and are directly related to the manufactured items. Acting from this point of view, the legislator counted the aforementioned costs among the cost elements of the product in article 275 of the Tax Procedure Code. In addition, expenditures made exclusively for the acquisition of an economic asset are considered as special expenses. Shipping and commissions made until a good arrives at the purchased establishment are of this nature. Likewise, the transportation, insurance and installation expenses of a machine or installation, and the notary, title deed, court valuation, commission and broker expenses of a real estate are special expenses. According to Articles 262 and 270 of the Tax Procedure Code, these expenses are counted among the cost elements of the economic asset they are related to. However, by making an exception to this rule, Article 270 gave the taxpayers a choice for the above-mentioned expenses related to a real estate and allowed these expenses to be imported into the cost price or included in the general expenses.

Expenses not included in cost and directly deducted expenses are of a general nature and do not concern one or a few economic assets but are expenses that concern the entire enterprise. Therefore, they are recorded as expense in the year they are directly related. Almost all of the expenses listed in Article 40 of the Income Tax Code are expenses of this nature (Özbalcı, 1998).

## **2.2. Periodicity principle and its significance**

Periodicity assumption implies the division of the life periods of the indefinite operations into time periods and the determination of the respective results of operations independent from one another. According to this principle, results of the operations are accounted for in the relevant periods. Accrual basis recognition of the revenues and expenses, and the matching of gains, revenues, and profits with the costs, are the requirements of this concept (Durgun, 2001).

As could be understood from the definitions and explanations, the principle of periodicity encompasses the following requirements:

- The indefinite operating periods of the enterprises should be divided into definite periods.
- The operating results of each period should be determined independently from the other periods.
- The revenues, income and profits should be matched against the costs, expenses and losses.

Pursuant to the principle concerning the independence of the account periods and the concept of periodicity, there exists two account groups. These are the balance sheet accounts and the P/L statement accounts (Demir, 1995).

The profit and loss (income) statement of an enterprise, includes all the incomes earned by the entity within a given period, all costs and expenses incurred within the same period and the net profit for the period or the net loss for the period received by the company as the result of these operations.”

The balance sheet is defined as “a financial statement listing the assets of a given entity at a certain time, together with the liabilities through which these assets have been procured.”

Pursuant to the accrual basis, in commercial earnings, whether or not a revenue and a loss item has been physically collected or paid, is not important. The accrual of the concerned income or loss item is considered as adequate for purposes of commercial earnings. However, pursuant to the periodicity principle, even if a given income or loss item has accrued, it should be transferred to the relevant account period. In fact, articles 283, 287 and 288 of the Tax Procedures Code confirms this understanding. Therefore, the income and expense items that are relevant to the oncoming periods, are disclosed under the balance sheet and not under the P/L statement (Üstünel, 1995).

During the taxation of the business profits and the corporate profits, periodicity principle precedes the accrual basis. However, an issue that needs to be considered at this point is that, in order for an income or expense item to be taken into account in the determination of the business profits and the commercial profits, the said item should have accrued. Pursuant to the principle of periodicity, an income or an expense item that has not accrued cannot be considered during the determination of the tax base. In other words, in order for the principle of periodicity to become effective, the presence of an income or expense item that has accrued for tax purposes, is a requirement.

At this point, we can assert that accrual basis always takes precedence, however, the principle of periodicity is a determinant factor.

### **2.3. The concept of deductible and non-deductible expenses**

Regulations concerning the deductible expenses in the determination of the commercial earnings, are provided in Article 40 of the Income Tax Code. Through this article, the type of expenses that are allowed for deduction, are called “deductible expenses” both in application and in written sources. The provision stated in Article 40 of the Income Tax Code, are in the nature of a restrictive provision (Urgan, 1995). The expenses that are not included in this article, shall not be treated as expense, even if they cause a reduction in the equity capital. Based on this approach, we can define all expenses that are not included within the scope of Article 40 of the income tax code, as “Non-Deductible Expenses” (Bellek, 1996).

The type of expenses that are allowed for deduction in the determination of commercial earnings are listed in Article 40 of the Income Tax Code (Bellek, 1996). The deduction of the following expenses is acceptable for the determination of net earnings:

- General expenditures made in order to acquire commercial earnings and perpetuate them.
- Food and lodging expenses for employees and workers at the place of business or in its annexes, expenses for treatment and pharmaceuticals, insurance premiums and retirement payments, clothing expenses listed in Article 27.
- Losses, damages, and indemnities paid based upon written agreements, judicial decrees, or by order of law, provided they are relevant to the business.
- Expenditures for travel and lodging made relevant to the business and as befit the importance and extent of the business
- Expenses for vehicles which are part of the enterprise and used in the business.

- Building, land, outlay, consumption, stamp and municipal taxes, taxes in kind, duties, and charges such as charges and registration fees, on condition that they be related to the enterprise.
- Amounts of depreciation set aside in accordance with the provisions of the Tax Procedures Code.
- Membership fees paid by to unions by employers pursuant to the Trade Unions Code.
- The contribution shares paid by employers to the retirement system on behalf of the wage earners.
- The cost value of the foodstuff, cleaning materials, clothing and fuels donated to associations and foundations that are engaged in food banking activities for purposes of helping the poor and the needy.
- Amounts actually paid to beneficiaries of on-the-job training programs organized by the Turkish Employment Agency by the employers running the program.

In addition, the legislator has listed some expenses that cannot be deducted in the determination of commercial income in Article 41 of the Income Tax Code. These expenses are defined as non-deductible expenses in the determination of commercial income. In this context the deduction of the following payments as expenses shall not be accepted.

- Monies withdrawn from the enterprise by the owner of the enterprise, or by his spouse or children, or other assets in kind taken by them.
- Monthly salaries, wages, bonuses, commissions, and indemnities paid to the owner of the enterprise, to his spouse, or to his children in their minor.
- Interest on the capital which the owner of the enterprise invests in the enterprise.
- Interest based on the current accounts of the owner of the enterprise, his spouse, or his minor children in the enterprise or on other forms of receivables.
- All fines and tax penalties as well as indemnities arising from offenses by the owner of the enterprise.
- Announcement and advertising expenditures for all kinds of alcohol and alcoholic beverages, as well as tobacco and tobacco products.
- Of the sea vessels and aircraft such as yachts, cutters, boats, speedboats acquired through leasing or capitalized by the enterprise, the expenses and the depreciation allowances

relating to those that are not directly relevant to the main field of activities of the enterprise.

- Financing expense restrictions specific to businesses whose foreign resources used exceed their own resources.
- Indemnification expenses arising from the tangible and intangible losses and damages arising from actions committed through press, and radio and television broadcasts.
- Expenses of advertisements given to those who are subject to an advertising ban within the scope of additional article 4 of the Law on the Regulation of Broadcasts Made on the Internet and Fight Against Crimes Committed Through These Broadcasts, dated 4/5/2007 and numbered 5651.

### **3.General expenses that are deductible in the determination of the commercial earnings**

#### **3.1. The principal characteristic of general expenses**

The principal characteristic of general expenses is that they concern the enterprise as a whole. In other words, this group of expenses depend on the commercial organization. Basically, all of the expenses included under Article 40 of the Income Tax Code are in the nature of general expenses (Karabacak, 1982). However, after incorporating the wording “general expenses incurred for the acquisition and continuation of commercial earnings” in the first paragraph of the article, the law maker has provided certain special provisions concerning some expenses. This systematic may have to rational justifications: If the types of expense were not enumerated one by one in the second and the subsequent paragraphs of Article 40 of the Income Tax Code, whether or not a part of these expenses can be treated as expense for purposes of income tax applications, would have become a subject matter of dispute. Certain expenses are separately regulated in these sub-paragraphs, and accordingly, certain specific limitations were introduced, such as, the limitations concerning travel and accommodation expenses (Kızılot, 1989).

When we take into consideration the method of formulation of this article, it will be noted that the type of expenses to be evaluated within the framework of this paragraph, will be as follows:

- Expenses of the office staff,
- Insurance costs,
- Rents, Stationery and office expenses,
- Hospitality and Entertainment expenses,

- Financial expenses (those other than the cost),
- Postage Expenses, etc.
- Energy and telephone expenses relating to the office.

Moreover, in order for a general expense to become subject to deduction it should comply with the following conditions:

- A direct cause and effect relationship should exist between the incurring of the concerned expense item and the acquisition and continuation of the income. As could be noted, this subject matter will differ from one enterprise to another. An expense item that is considered as deductible in one sector, might be considered as non-deductible in another sector. Moreover, a proportion should exist between the amount of the expense total, and the volume of the enterprise. For example, as in the case of the offering of meals by a supermarket to its customers in a luxury restaurant.
- In order for a given expense item to be in the nature of general expense, it should not be included among the factors that constitute the cost value of a given economic asset.
- The expense item should not be an “arbitrary” expense. Whether or not an expenditure is arbitrary, shall be determined according to the criteria to be determined by the enterprise. It is natural that the expenditures of a firm that engages in international trade and employs thousands of personnel and the expenditures of a small-scale firm are different. In the decisions made by the judicial authorities, the element of "arbitrariness" is brought to the fore. The search for the element of necessity is another determinant.

In principle, the tax laws do not accept the deductibility non-documented expenses. However, through a special regulation introduced, the deductibility of certain minor expenses that cannot be documented has become allowable. However, such expenses are very limited. The typical examples of such expenses are, train, boat fees. Also, parking lot fees can also be included within this scope. In order for the expenses borne in such circumstances to become treated as deductible expenses, an expenditure list should be prepared, and this expenditure list should contain detailed explanations regarding the date, amount, and the relation of the expense item with the company (who went where). Otherwise, the expenditures shall not be allowed for deduction. Moreover, the expenditures incurred, should be in consistency with each other. Meanwhile, the documents received for such minor expenditures might not be considered as legally valid. However, since that document shows verifies the authenticity of the

expenditure incurred, in such minor expenditures, as a rule, every document that can be procured, should be obtained.

### **3.2 Lump-sum expense application in exports.**

Article 40/1 of the Income Tax Code containing the heading “The Expenses to be Deducted”, regulates the general expenses that are incurred for the acquisition and the continuation of business profits. The authentication of these expenses in the manner explained under Article 227 and the ensuing articles of the Tax Procedures Code is obligatory, and the expenses that have not been authenticated within the framework of these regulations, are disallowable for deduction. However, through a provision incorporated in the first paragraph of the Income Tax Code, it is stated that even if they cannot be authenticated in accordance with the relevant provisions of the Tax Procedures Code, certain expenses can still be deductible in the determination of business profits. The concerned provision reads as follows:

“(Taxpayers who are engaged in exportation, and in construction, repair, installation and transportation activities abroad can, in addition to the expenses referred to in this paragraph, deduct the expenses that they have calculated on lump-sum basis in consideration of the above activities they have performed abroad, provided that such lump-sum expenses do not exceed 0.5% of the revenues they have collected in foreign currency from such activities.)”

Accordingly, the income and corporation tax liable who conduct export, activities, as well as taxpayers who are engaged in construction, repair, installation and transportation activities abroad, including those that are registered as non-resident (limited liable) taxpayers shall be entitled to benefit from the lump-sum expense application. Pursuant to Article 40 of the Income Tax Code, taxpayers who are not engaged in the above-mentioned operations, are not allowed to record their expenses on lump-sum basis, and to deduct their expenses in the determination of their business profits (Burhan, 1996).

Meanwhile, since the gains derived by nonresident taxpayers from their transportation operations conducted between Turkey and the other countries are determined through the application of the average arm’s length ratios determined by the Ministry of Finance on their revenues derived in Turkey, during the determination of their taxable profits, their entitlement to lump-sum expense application additionally, is out of question. Recording of lump-sum expenses as a provision for the undocumented expenditures, does not constitute an impediment to the

expense recording of the expenditures incurred by taxpayers that are duly authenticated according to the general principles.

According to the provision added in parenthesis to Article 40/1 of the Income Tax Code through Law Numbered 4108, the total to be recorded as expense on lumpsum basis, as a provision set aside for expenses that cannot be authenticated, shall not exceed 0.5% of the revenues to be derived in foreign currency from the exports and from the construction, repair, assembly, technical services to be rendered abroad. The totals in foreign currency, that will be considered as “revenue”, shall not be required to be brought to Turkey pursuant to the foreign exchange regulations (Burhan, 1996).

Revenues derived in foreign currency from all types of exports and international transportation activities, may be considered in the calculation of the maximum total taken as basis in the recording of lumpsum expense. Meanwhile, export revenues that are derived in Turkish lira shall not be taken into account in the determination of the maximum expense total. However, exports to the TRNC made in Turkish lira, shall be considered as revenues derived in foreign currency.

During the determination of the Turkish lira counterpart of export revenues derived in foreign currency, the rates of exchange prevailing at the date on which the revenue in question was recorded in the legal books and that were determined and announced by the Turkish Central Bank shall be taken as basis.

“The revenues derived in foreign currency from all types of international transportation activities can become subject matter of lumpsum expense application. The term “international transportation” refers to transportation activities of whose either one or both departure and arrival points are outside Turkey. Besides cargo transportation, revenues derived from passenger transportation, can also become the subject matter of lumpsum expense application.

In construction, repair, assembly and technical service applications, the revenue total to be taken into consideration in lumpsum expense application, refers to the revenues derived in foreign currency from abroad, generated by taxpayers from their activities of this type, and that can be authenticated within the framework of general principles. During the calculation of maximum lumpsum expense, the buying rate of exchange announced by the Turkish Central Bank, at the date on which the gain has been transferred to the general final accounts will be taken as basis. Accordingly, the maximum lumpsum expense total shall be determined through the application of the rate of exchange prevailing on that date, to

the revenues derived in foreign currency by the taxpayer, from the construction, repair, assembly and technical services.

### **3.3. The general administrative expenses of the holding companies**

The Turkish legislation does not contain a definition concerning holding companies. This gap in the Turkish legislation was attempted to be filled through the formulation of certain definitions in the current literature by various scholars. Some of these definitions are provided below: *“A legally independent firm, which does not perform any commercial or industrial activity by itself, but which owns the shares of other companies for purposes of ensuring of a control on these companies...”* *“Holdings are corporations that purchase or possess the companies that are diversely located, whose partners are same, and which are engaged in different fields of activity...”*

In this respect, a holding company is not a type of company, but a concept that implies a type of conglomeration relation between the companies. The Holding companies may provide a variety of services to their subsidiaries, in such areas as research and development, procurement of finance, marketing and distribution, preparation of investment projects, determination of objectives, planning, organization, implementation of decisions, computer services, management, financial revision and tax consulting, market research, public relations, recruitment and training of personnel, accounting organization and control, legal consulting. The billing of the services provided by the holding companies to their subsidiaries is obligatory, and the cost of the services rendered, should be determined in consistency with the arm's length principle regulated in Article 3 of the Corporation Tax Code.

In order for such services rendered by the holdings to their subsidiaries; The services must be physically rendered, the type of service rendered must be explained in detail on the invoice, in cases when a single invoice contains more than one service, the price of each service should be disclosed separately. Provided that the above conditions are met, the subsidiaries are allowed to disclose the totals invoiced by the holding, in their legal records as expense.

### **3.4. General expenses in the framework of the uniform chart of accounts**

There are basically two groups of accounts in businesses, namely balance sheet accounts and income statement accounts. General Expenses are current period expenses and therefore they are associated with income statement accounts, not balance sheet accounts. However, an exception to this rule is the prepaid expenses related to other taxation periods due to the

periodicity principle. Current period expenses are shown in four groups in the Income Statement included in the Uniform Chart of Accounts application.

Below are the expenses related to the operating period shown in the Income Statement. Next to the expense items, the numbers in parentheses show the code numbers of the relevant expense and loss accounts.

E-Operating Expenses

- 1- Research and Development Expenses (630)
- 2- Marketing, Sales and Distribution Expenses (631)
- 3- General Administrative Expenses (632)

G- Ordinary Expenses and Losses from Other Operations

- 1- Commission Expenses (653)
- 2- Provision Expenses (654)
- 3- Losses on Marketable Securities' Sales (655)
- 4- Foreign Exchange Losses (656)
- 5- Interest Expenses on Discounted Notes (657)
- 6- Other Ordinary Expenses and Losses (659)

H- Financial Expenses

- 1- Short Term Borrowing Expenses (660)
- 2- Long Term Borrowing Expenses (661)

J- Extraordinary Expenses and Losses

- 1- Idle Capacity Expenses and Losses (680)
- 2- Previous Period Expenses and Losses (681)
- 3- Other Extraordinary Expenses and Losses (689)

**4. Conclusion**

Financial profit and commercial profit (business profits) are two different concepts, The basic difference between the two types of profits arise from the different principles that are taken in their calculation. The financial profit represents the profit that is calculated pursuant to the regulations that are provided in the tax laws and is generally taken as the assessment base of the tax. During this stage, the most important difference between the commercial profit and the financial profit is that, while certain expenses can be deducted in the calculation of commercial profits, for

purposes of tax applications, they are considered as non-deductible expenses. Also, these expenses are not taken into consideration during the determination of the financial profits.

Earnings arising from all types of commercial and industrial activities are commercial earnings. According to the balance sheet basis, commercial earnings represent the outstanding difference in the shareholder's equity during the period between the end of a fiscal year and the beginning of that fiscal year. Also, the provisions of the Tax Procedures Code regulating the appraisal procedure, and those of the Income Tax Code regulating the deductible and the non-deductible expenses apply during the determination of the commercial earnings according to this method. Unless otherwise stipulated, commercial earning is considered in the determination of income, with their real and net amount.

Regulations concerning the deductible expenses in the determination of the commercial earnings, are provided in Article 40 of the Income Tax Code. Through this article, the type of expenses that are allowed for deduction, are called deductible expenses. The expenses that are not included in this article, shall not be treated as expense, even if they cause a reduction in the equity capital. Based on this approach, we can define all expenses that are not included within the scope of Article 40 of the income tax code, as "Non-Deductible Expenses". In addition, the legislator has listed some expenses that cannot be deducted in the determination of commercial income in Article 41 of the Income Tax Code. These expenses are defined as non-deductible expenses in the determination of commercial income.

Determining whether an expenditure made in terms of tax application has the nature of cost or expense plays an important role in determining the tax base. If an expenditure is a cost element, its conversion to an expense occurs over time, often covering several taxation periods. Expenses not included in cost and directly deducted expenses are of a general nature and do not concern one or a few economic assets but are expenses that concern the entire enterprise. Therefore, they are recorded as expense in the year they are directly related. Almost all of the expenses listed in Article 40 of the Income Tax Code are expenses of this nature.

From management perspective general expense are costs incurred by a business as part of its day-to-day operations. They can be found in the selling, general and administrative expenses section of the income statement, and the three together make up a company's operating expenses. On a company's income statement, overheads are classified as indirect expenses as they do not directly contribute to the production of a product or the delivery of a service. They are fixed costs as they tend to remain

constant even when production volumes change. Costs and expenses are used interchangeably, but when running a business, it is important to be able to distinguish between the two. Learning the differences between costs and expenses will help CEO or CFO manage company's finances properly.

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## **CHAPTER VI**

### **THE MATHEMATICS OF THE THEORETICAL FOUNDATIONS OF CREATING A STATE BUDGET THAT IS NON-STAGFLATIONIST AND ANTI-DEVALUATION (FOR DEVELOPING COUNTRIES)**

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#### **1.Introduction**

When the developed countries are excluded, the size of the spending parts of the budgets of the developing countries has reached enormous dimensions, even with their national currencies. If we give an example of the spending sizes of the budgets of these countries, as of October 2021, the budget spending size of Brazil is 195 billion \$ (IMF, 2021), and the budget spending size of Turkey on the same date is 125 billion \$(Ministry of Treasury and Finance, 2022) and these amounts are not negligible. Due to the large size of expenditures in budgets, it is necessary to prepare public budgets in a non-stagflationary and anti-devaluation manner during the preparation phase, and the importance of such studies is obvious these days.

The problem in terms of the public budget in the fight against stagflation is in the determination and effective implementation of the appropriate policy mix regarding public expenditures and public revenues. Voters express their objections that unemployment rates and interest rates increase in the fight against stagflation since the appropriate policy mix cannot be determined. Of course, what voters mean here is the problems related to determining the appropriate policy mix in terms of monetary and fiscal policies (Sellekaerts, 1983, p. 19). There are such problems for sure. However, the problem for us here is that we cannot determine the appropriate policy mix for public revenues and public expenditures in terms of the public budget. The theoretical problem in terms of an anti-devaluation public budget is that when financial devaluation produces the same movements in the real effective exchange rate caused by foreign trade and a nominal devaluation, it is only generally weak support for the

forecast, and this can be explained as follows: while trading partners do the opposite, if a country changes the tax rate ranging from social security contributions to value added tax, the relative prices also decrease in the short term (Arachi and Assisi, 2020, p. 703). The problem with implementation here is to reduce the contribution of the public budget to a possible devaluationist process.

My suggestions for the solution to the problems presented above will be as follows. The informal economy will be recorded on the basis of a general declaration of wealth, thereby increasing public revenues. Public investment expenditures will be increased to address the problem of economic recession. When demand inflation increases due to this increase, direct taxes will be increased. Expenditure increase and the direct tax increase will be realized at the same time. All of the fiscal policy tools (tax, public expenditure, borrowing) will be used. Long, medium, and short-term external debts and those due from domestic debts will be included in the budget. No re-borrowing will be applied for the debts that are due; if the opposite is done, stagnation will occur. Indirect taxes will be reduced to eliminate the recession. However, here, indirect taxes on luxury consumer goods will not be deducted. The reduction in indirect taxes will be replaced by an increase in direct taxes. It will be ensured that the M3 money supply will be increased at the rate of GNP increase and thus long-term and low-interest loans will be opened to investment banks if it is not preferred to provide financing to the budget with the increase of foreign debts and domestic debts. In other words, this increase in money supply will be used in investment expenditures. Customs duties will be increased in order to prevent the increase in the money supply from causing devaluation. It will be ensured that the energy production will be directed to domestic input resources. There will be no savings in public expenditures in terms of fighting stagflation, and indirect tax rates will be reduced. If indirect tax rates on luxury consumer goods are reduced, this can lead to deviations in savings targets. Interest rates should not be raised in order to attract direct foreign capital investments, as this deepens the current recession.

Studies on the theory of non-stagflationary and anti-devaluation public budget design, especially for developing countries, have not been carried out due to the complexity of this process. However, such theoretical studies should be carried out in order to overcome the stagflationary and devaluationist process with the least possible damage in terms of the public budget.

## **1. Concepts and Theoretical Background**

Although serious inflation and recessions provide fairly clear opportunities for economic policy, there is an enormous area of gray between these extremes. Occasionally, the economy also suffers from both unemployment and inflation - a situation called stagflation. For example, in 1975, the unemployment rate (8.5 percent) and the inflation rate (9.1 percent) were both very high. With a rising slope of the total supply curve, there is no easy way to bring down both ratios at the same time. Any demand-side incentive to achieve full employment worsens inflation. Likewise, restrictive demand policies increase unemployment. Although any rising sloping total supply curve reveals such a trade-off, the state of the curve also shows how strong the preferences are (Schiller, 2002, p. 367). Unemployment, which often combines automatic correction and the appeal of free trade against the use of tariffs, also suggests the need for an alternative policy to restore domestic and foreign balance. The main policy tool for overcoming payment deficits is devaluation, which often needs to be combined with restrictive money and/or fiscal policy. A devaluation is an increase in the domestic cash price of the currency. Considering nominal prices in two countries, devaluation increases the relative price of goods imported in the devaluing country and reduces the relative price of exports in the devaluing country. Devaluation is a major spending maneuvering policy (Dornbusch, Fischer, and Startz, 1998, p. 497).

The theoretical reference showing the effects of currency devaluation can be reached through impartial changes in the tax structure of the budget. Some economists have used the New Keynesian open economic model associated with dynamic stochastic overall equilibrium and have found two types of fiscal devaluation under certain conditions, capable of replicating the real allocation reached under a nominal exchange rate devaluation. While the second type requires deductions in withholding taxes (social security contributions) and a uniform increase in value-added tax, the first type is related to uniform increases in export incentives and customs duties. By taking into account the type of price adjustment (i.e., that prices occur in producers' cash or local cash-wage inactivity, assumed in both cases-) and by allowing different asset market structures (including balanced trading, full competitive markets, and risk-free nominal bonds, and disrupted competitive markets with international trade in stocks), the authors examine the impact of financial devaluations (both expected and unexpected) under different assumptions. In some cases, different assumptions affect the results in the sense that there is a need to implement

supportive financial measures or to reach equivalence between the rations reached under partial default, financial and foreign currency devaluations to foreign bondholders (Vuksic and Holzner, 2016, p. 571).

Stagflation and devaluation damage the central public budget, which is an element of the public sector economy. With the hypothesis we will put forward here, we state the assumption that the public budget will remove the public sector from the stagflationist and devaluationist process with the least possible harm, and we defend the hypothesis that the public budget can be redesigned in this regard.

European Union countries have designed two separate structures as core block countries and peripheral block countries while forming the monetary union. While the core block countries follow a stability-oriented policy, the peripheral block countries are countries with high public debt or countries with high budget deficits. The initial values of the two blocs' public debt or budget deficits were in line with their structures during the major depression in 2007. A combination of persistent budget deficits without policy interference or an inverse economic environment led to a rapid rise of public debt to 200% of GNP for each of the core bloc countries and 450% for each of the peripheral bloc countries. It is noteworthy that there was no budget deficit in the core block countries after the first form of regulation of the monetary union, and in the peripheral block countries, a rapidly balanced budget was reached after the third form of regulation with a more restrictive fiscal policy method in the collaborative solution. All these developments took place in stagflationary environments (Neck and Blueschke, 2016, pp. 131, 133, 135-136).

Acharya calculated three major macroeconomic characteristics in his study: domestic savings-investment ratio, export-import ratio, and budget deficit-public expenditure ratio. With regard to the shrinking budget deficit, due to the higher growth of the economy under devaluation, the state can collect more tax revenues and reduce the budget deficit. However, the budget deficit ratio follows an inverse trend compared to public expenditure in the study. The higher rate of devaluation means a budget deficit compared to lower public spending. According to the investment rate, the domestic savings ratio improves faster compared to the export-import ratio, whereas the budget deficit ratio declines very slowly compared to public expenditures (Acharya, 2010, p. 424).

Scharpf (1987) stated in his study that as long as the Keynesian game is played, neo-corporatist institutions are interested in macroeconomic

policy. Scharpf emphasized that if the government changes a monetarist strategy, the wage restriction still needed for its success no longer depends on the organizational concentration of the union movement and the centralization of collective bargaining. He stated that logic is analytically understandable. Scharpf stated that business losses that are not similar to inflation are not a collective evil, but that the protection of individual workers from inflation is an individual risk that is in the immediate self-interest and therefore should not be disregarded. Since unemployment is allowed to rise, Scharpf stated that the predominant interest in preserving existing jobs will also encourage wage increase agreements at lower levels of collective bargaining, and consequently this view is not only advocated by the trade union movement. There is no reason to assume that there has been a transition to independent management as a union and that there is no reason to assume that the union movements, which are characterized as more determined, are disintegrating; Scharpf argued that under such circumstances it is advisable to be a little mild-mannered without requiring a high degree of centralization and containment of trade union movements. Scharpf stated in his study that the ideas he put forward were completely reasonable and that neo-corporatist institutions brought much economic change during the Keynesian 1970s and much less economic change during the Monetarist 1980s. Khan and Lizondo(1987) state that since a devaluation itself produces only a temporary reduction of the exchange rate and a temporary improvement in the balance of payments, other policies are constantly needed to correct these effects. Khan and Lizondo argue in their study that the long-term steady-state balance of payments deficit is equal to the public sector deficit. According to them, therefore, a continuous improvement in the balance of payments necessarily requires a reduction in the public sector deficit, and especially the long-term balance of the balance of payments requires the government budget balance.

## 2. Propositions and Proofs

Here we will create a set of propositions to create a non-stagflationist and anti-devaluation general budget set and prove this whole.

### Proposition 1

$$SE_n > 0 \tag{1}$$

$$PR_n > 0 \tag{2}$$

$$GDWB \rightarrow SE_n \tag{3}$$

$$SE_{n+1} < SE_n \quad (4)$$

$$IT_n > 0 \quad (5)$$

$$IT_n \times SE_{n+1} = PR_{n+1} \quad (6)$$

$$IT_{n+1} > IT_n \quad (7)$$

**Proof 1**

$$IT_{n+1} < PR_{n+1} \quad (8)$$

In the above equations, the symbols are:

*SE*: Shadow Economy.

*PR*: Public Revenues

*GDWB*: General Declaration of Wealth Basis

*IT*: Income Tax.

**Proposition 2:**

$$GDP_{n+1/4} > 0 \quad (9)$$

$$GDP_{n+2/4} < GDP_{n+1/4} \quad (10)$$

$$GDP_{n+3/4} < GDP_{n+2/4} \quad (11)$$

$$PIO_n > 0 \quad (12)$$

$$PIO_{n+1} > PIO_n \quad (13)$$

**Proof 2:**

$$PIO_{n+1} \rightarrow GDP_{n+1/4} \quad (14)$$

In the above equations, the symbols are:

*GDP*: Gross Domestic Product

*PIO*: Public Investment Outlay.

**Proposition 3:**

$$PIO_{n+1} \rightarrow DPI_{n+1} \quad (15)$$

$$DPI_n > 0 \quad (16)$$

$$DPI_{n+1} > DPI_n \quad (17)$$

**Proof 3:**

$$DT_n > 0 \quad (18)$$

$$DT_{n+1} > DT_n \quad (19)$$

In the above equations, the symbols are:

*DPI*: Demand Pull Inflation

*DT*: Direct Taxes.

**Proposition 4:**

$$DPI_{n+1} > DPI_n \quad (20)$$

$$DB_n > 0 \quad (21)$$

$$DB_{n+1} > DB_n \quad (22)$$

**Proof 4:**

$$DPI_{n+2} < DPI_{n+1} \quad (23)$$

In the above equations, the symbols are:

*DB*: Domestic Borrowing.

**Proposition 5:**

$$DB_{stn} + DB_{mtn} + DB_{ltn} + EI_{stn} + EI_{mtn} + EI_{ltn} \rightarrow PE_n \quad (24)$$

$$PE_n > PE_{n-1} \quad (25)$$

**Proof 5:**

$$GDP_{n+4/4} > GDP_{n+3/4} \quad (26)$$

In the above equations, the symbols represent:

*EI*: External Indebtedness

*PE*: Public Expenditures.

**Proposition 6:**  $GDP_{n+4/4} > GDP_{n+3/4} \quad (27)$

**Proof 6:**  $INT_n < INT_{n-1} \quad (28)$

$$INT_{lcn} \cong INT_{lcn-1} \quad (29)$$

In the above equations, the symbols are:

*INT*: Indirect taxes

*INT<sub>lcn</sub>*: Indirect taxes related to luxury consumption goods.

$$\mathbf{Proposition 7:} DB_{n+1} > DB_n \quad (30)$$

$$EI_{n+1} > EI_n \quad (31)$$

$$BD_n < 0 \quad (32)$$

$$BD_{n+1} > BD_n \quad (33)$$

$$DB_{n+1} + EI_{n+1} \rightarrow BD_{n+1} \quad (34)$$

$$\mathbf{Proof 7:} M3_n > 0 \quad (35)$$

$$GNP_n > 0 \quad (36)$$

$$GNP_{n+1} > GNP_n \quad (37)$$

$$M3_{n+1} > M3_n \quad (38)$$

$$GNP_{n+1} \cong M3_{n+1} \quad (39)$$

$$T_n > 0 \quad (40)$$

$$T_{n+1} > T_n \quad (41)$$

$$M3_{n+1} \rightarrow T_{n+1} \quad (42)$$

In the above equations, the symbols are:

*BD*: Budget Deficit

*GNP*: Gross National Product

*M3*: M3 money supply

*T*: Treasury

$$\mathbf{Proposition 8:} STE_n > 0 \quad (43)$$

$$T_{n+1} \rightarrow STE_{n+1} \quad (44)$$

$$\mathbf{Proof 8:} HE_n > 0 \quad (45)$$

$$QES_n > 0 \quad (46)$$

$$QHA_n > 0 \quad (47)$$

$$T_{n+1} \rightarrow HE_{n+1} + QES_{n+1} + QHA_{n+1} \quad (48)$$

In the above equations, the symbols are:

*STE*: Social Transfer Expenditures

*HE*: Housing Expenditures

*QES*: Quality Education Expenditures

*QHA*: Quality Healthcare Services

Korkut BORATAV states that in the economic stability program which is the opposite of the IMF recommendations followed by Argentina, the central bank reserves are transferred to the Argentine treasury and directed to social expenditures. Of course, the end of external deficits only resulted in the rise of public deficits in this case (Boratav, 2018).

$$\textbf{Proposition 9: } NUSD_n = NTL_n > 0 \quad (49)$$

$$CD_n > 0 \quad (50)$$

$$\textbf{Proof:} M3_{n+1} \rightarrow NUSD_{n+1} = NTL_{n+1} \not\approx NUSD_n = NTL_n \rightarrow CD_{n+1} > CD_n \quad (51)$$

In the above equations, the symbols are:

*USD*: United States Dollar

*TL*: Turkish Lira

*CD*: Customs Duties

$$\textbf{Proposition 10:} EG_n \rightarrow I_n \quad (52)$$

$$\textbf{Proof 10:} NUSD_{n+1} = NTL_{n+1} \not\approx NUSD_n = NTL_n \quad (53)$$

In the above equations, the symbols are:

*EG*: Energy Generation

*I*: Import

$$\textbf{Proposition 11:} CPI_n > 0 \quad (54)$$

$$CPI_{n+1} < CPI_n \quad (55)$$

$$GDP_{n+4/4} > GDP_{n+3/4} \quad (56)$$

$$\textbf{Proof 11:} PE_{n+1} > PE_n \quad (57)$$

In the above equations, the symbols are:

*CPI*: Consumer Price Index.

$$\textbf{Proposition 12:} CPI_{n+1} < CPI_n \quad (58)$$

$$GDP_{n+4/4} > GDP_{n+3/4} \quad (59)$$

$$\textbf{Proof 12:} INT_{n+1} < INT_n \quad (60)$$

$$\textbf{Proposition 13: } INT_{lcg_{n+1}} < INT_{lcg_n} \quad (61)$$

$$\textbf{Proof 13: } S_{n+1} < S_n \quad (62)$$

In the above equations, the symbols are:

*S*: Savings

$$\textbf{Proposition 14: } FDCI_n > 0 \quad (63)$$

$$FDCI_{n+1} > FDCI_n \quad (64)$$

$$\textbf{Proof 14: } IR_n > 0 \quad (65)$$

$$IR_{n+1} \not> IR_n \quad (66)$$

In the above equations, the symbols are:

*FDCI*: Foreign Direct Capital Investments

*IR*: Interest Rates

$$\textbf{Proposition 15: } IR_{n+4/4} > IR_{n+3/4} \quad (67)$$

$$\textbf{Proof 15: } GDP_{n+4/4} < GDP_{n+3/4} \quad (68)$$

### 3. Conclusion

In proposition 1, the shadow economy, public revenues, and general wealth declaration basis are manipulation variables, and income tax is the control variable, and there is no difference between these two groups. The shadow economy is under control and the collection of income tax and public revenues is increasing when the general wealth declaration principle is applied. Our hypothesis is supported. In proposition 2, GDP is the manipulation variable and public investment expenditures are the control variable, and these two groups have no difference. GDP increases when public investment expenditures are increased. Our hypothesis is supported. In proposition 3, public investment expenditures and demand-pull inflation are manipulation variables, and direct taxes are control variables, and these two groups have no difference. Demand-pull inflation is brought under control by increasing direct taxes when public investment expenditures increase demand-pull inflation. Our hypothesis is supported. In proposition 4, domestic borrowing is the manipulation variable and demand-pull inflation is the control variable, and these two groups have no difference. When the domestic borrowings increase, demand-pull inflation is brought under control. Our hypothesis is supported. In proposition 5, domestic

borrowing, external indebtedness, and public expenditures are manipulation variables, and GDP is the control variable, and these two groups have no difference. When domestic borrowings and external indebtedness is used to finance public expenditures, GDP increases. Our hypothesis is supported. In Proposition 6, the GDP is the manipulation variable, and indirect taxes and indirect taxes on luxury consumer goods are control variables, and these two groups have no difference. Indirect taxes and indirect taxes on luxury consumer goods are not increased in order to increase GDP. Our hypothesis is supported. In proposition 7, domestic borrowing, external borrowing, and budget deficit are manipulation variables, and M3 money supply, GNP, and Treasury are control variables, and these two groups have no difference. When domestic borrowing and external borrowing are not used to finance the budget deficit, the M3 money supply is increased as much as the increase in GNP, and the M3 money supply is recorded as income to the Treasury. Our hypothesis is supported. In proposition 8, social transfer expenditures and treasury are manipulation variables, and housing expenditures, quality education services, and quality health services are control variables, and these two groups have no difference. When the treasury finances social transfer expenditures, it will also finance housing expenditures, quality education services, and quality health services. Our hypothesis is supported. In proposition 9, US Dollar, Turkish Lira, and customs duties are manipulation variables and M3 money supply is the control variable, and these two groups have no difference. In order for the Turkish Lira not to be devalued against the US Dollar, customs duties should be increased. Our hypothesis is supported. In proposition 10, energy production and imports are manipulation variables, and the US Dollar and Turkish Lira are the control variables, and these two groups have no difference. In order to avoid devaluation, energy production should be made with domestic input sources. Our hypothesis is supported. In proposition 11, the consumer prices index and GDP are manipulation variables and the public expenditure is the control variable, and these two groups have no difference. When the consumer price index does not increase and there is no economic recession, public expenditures increase. Our hypothesis is supported. In proposition 12, the consumer prices index and GDP are manipulation variables, and indirect taxes are control variables, and these two groups have no difference. When the consumer price index does not increase and the economy does not stagnate, indirect taxes do not increase. Our hypothesis is supported. In proposition 13, indirect taxes on luxury consumer goods are the manipulation variable, and the savings are the

control variable, and these two groups have no difference. When indirect taxes on luxury consumer goods are not increased or remain approximately the same, savings will not increase. Our hypothesis is supported. In proposition 14, direct foreign capital investments are the manipulation variable, and interest rates are the control variable, and these two groups have no difference. When direct foreign capital investments increase, interest rates do not increase, that is, foreign direct capital investments are related to profitability. Our hypothesis is supported. In proposition 15, interest rates are the manipulation variable, and the GDP is the control variable, and these two groups have no difference. When interest rates increase, economic recession occurs. Our hypothesis is supported.

#### **4. Discussion**

Our work shows that it is mathematically possible to simultaneously create a non-stagflationary and anti-devaluation budget. The study proves that it is possible for the public economy to create an economically impartial(non-provoking) public budget without simultaneously provoking the stagflationary and devaluationist process. Our study theoretically proves that a successful economic policy can be implemented in terms of the public sector without deepening the stagflationary and devaluationist process, that is, without worsening the economic situation.

Our study helps the practitioner by proving that it is possible for the practitioner to create a general budget that is non-stagflationary and anti-devaluation in a one-year budget period. The study also contributes to the practitioner by ensuring that the budget policy is implemented as a fine-tuning policy. The study also contributes to the practitioner by fitting the flexible budget implementation into a one-year time frame.

Our study is a solution for countries with a balance of payments deficit and stagflationary tendencies. Since Turkey is a country with these characteristics, we designed the model for this country. The study is designed for countries that do not have a balance of payments deficit but have stagflationary tendencies. The study is not generalizable in general terms in this respect. What we do not do here is to exclude countries that have a stagflationary tendency but do not have a balance of payments deficit. While future researchers are preparing a non-stagflationary and anti-devaluation public budget, they should also work on the estimates of the cash flow statements of the treasury, the estimates of tax revenues, and the estimates of public expenditures. Future researchers should also carry out detailed studies on the balance of payments table estimates, and these

studies will contribute to the public budget process, which is against devaluation.

In our study, we found that it is theoretically and mathematically possible to create a public budget that will contribute to the solution of inflation and recession, and devaluation, which are in conflict with each other. Therefore, we found that it is possible to contribute to the solution of these problems within the framework of auditable financial flows within the public budget.

The purpose of the article is to prevent the public budget to be designed primarily to deepen stagflation and devaluation. Another purpose of the article is to design the public budget to combat stagflation and devaluation. The final purpose of the article is to contribute to the design of the public budget in a way that will be least affected by stagflation and devaluation while designing.

The article will contribute to the creation of a conjunctural public budget for short periods. Our study will contribute by opening the way for the fight against stagflation and devaluation to be predictable with accurate budget practices. Our article will ultimately contribute to the construction of a sustainable budget policy in the medium and long term.

When the shadow economy is taken under control in a stagflationary environment, there is an increase in direct tax collection and public revenues. Considering the current literature, there is no practice or suggestion such as taking the informal economy under control. This is because this literature has been made for developed countries, which often have a small size of the informal economy problem. The literature argues that increasing public revenues in a stagflationary environment will increase the recession. For this reason, when the informal economy is recorded simultaneously, public revenues will increase and increased public revenues will be transferred to public expenditures. So, there is a synchronicity here. Salih Turhan (1987) did not mention this in his study. In an environment where the stagflationary and informal economy is under control when public investment expenditures are increased in order to prevent an economic recession, the stagflation phenomenon will not deepen at least as public revenues will increase. In the current literature, the effort to prevent stagflation with public investment expenditures was mentioned in a master's thesis study conducted. Saadet Kahya (1994) states in her thesis study that the stagflationary environment can be prevented from gaining depth with public investment expenditures. In the

stagflationary environment, when public investment expenditures are likely to cause demand inflation, increasing direct taxes will prevent this inflation. There is no such study in the literature. The reason for this is that direct taxes are not seen as a tool in the stagflationary environment simultaneously so that increasing public investment expenditures do not cause demand inflation. In order to combat stagflation, when there is an increase in domestic borrowing simultaneously to prevent an increase in demand inflation, there is a possibility of a decrease in demand inflation. There is no study in the literature on reducing demand inflation by using domestic borrowing in an open economy. We estimate that the reason for not conducting an application and study on this subject is the concern of deepening the recession. When public expenditures are financed using domestic borrowing and foreign borrowing, economic growth can increase, in other words, the problem of economic stagnation can be solved. Tülümce (2017) and Yavuz (2017) concluded in their studies that while domestic borrowing affects growth positively, external borrowing affects it negatively. In other words, the negativity about foreign borrowing does not support our proposal. This negativity is due to the weight of the external debt burden. In order for economic growth to continue, it is necessary not to increase indirect taxes and indirect taxes on luxury consumer goods. There are studies in the literature that support our proposition. Sagdic (2018) and Aydin (2018) found a bilateral causality relationship between indirect taxes and economic growth in the long term. And in the short term, they found a one-way causality relationship from indirect taxes to economic growth. When it is not possible to finance the increasing budget deficit by increasing domestic borrowing and external borrowing, to increase the M3 money supply as much as the increase in GNP, and to record this increase as income to the treasury is necessary. The literature supports this suggestion. Tayyar (2017) states in his study that especially before the elections there occurs an increase in the M3 money supply in Turkey. Our proposition is that when resources are transferred from the treasury to social transfer expenditures, the share allocated from the budget to housing expenditures, quality education services, and quality health services increases. Tekpinar (2013) states in his study that social transfer expenditures are increased to eliminate the effects of low-wage policy, and our thesis' opinion is within this scope. In our proposition, increasing the customs tax rates is proposed to prevent devaluation. The reason for this proposal is the concern that the increase in the M3 money supply will lead to a devaluation. Cadirci (2021) stated in his study that monetary and fiscal policies should be carried out in a

coordinated manner so that expansionary monetary and fiscal policies do not lead to a devaluation, and our proposition is in accordance with this statement. Our proposition is that when the practice of meeting energy inputs with imported resources is limited, the possibility of devaluation is weakened. Cengiz (2017) argues in his study that the main factors that prevent energy imports in Turkey from causing a current account deficit are that the production of export products is based on the use of intensive labor and medium technology with low added value; if this is not the case, it will be seen that our thesis is in line with this study. When the consumer price index is low and there is no economic recession, our suggestion is that the probability of increasing public expenditures is strong. Our proposal is not supported by the literature. The reason for this is that in an environment of high economic conjuncture and low inflation, increasing public expenditures will increase inflation; in this regard, Tuzun (2018), Ekinci (2018), and Karabulut (2018) stated in their study that the restrictive practices of taxes should be utilized in the environment of high conjuncture. According to our thesis, when the consumer price index is low and there is no economic recession, there will be a decrease in indirect taxes. This is because increasing indirect taxes causes inflation and economic recession. However, the literature is incompatible with our proposition. Sen (2019) found in his study that indirect taxes positively affected economic growth in Turkey. The reason for this is that indirect taxes are allocated to public expenditures in our country since tax revenues consist mainly of indirect taxes. Our proposition is that when the tax rates remain the same in luxury consumer goods, savings will not increase. This is true for our country because our tax policy is not conducive to savings. Yilmaz (2014) states in her study that since there is no tax policy in Turkey, there is no effect on savings through taxes, including indirect taxes on luxury consumer goods. When direct foreign capital investments increase, our argument is that interest rates will not rise. The literature states that when there is no current account deficit problem, direct foreign capital inflows will reduce interest rates. Terazi (2011) argues in her study that the current account deficit problem prevents the decrease of interest rates in Turkey. Our argument is also in this direction. Our proposition is that when interest rates increase, GDP growth will slow down and decrease. Uzgoren (2016) and Akalin (2016) stated in their study that there is a significant relationship between interest rates and foreign direct investment in the long term, and our argument is also in this direction.

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## **CHAPTER VII**

### **ROADMAP OF ORGANIZED INDUSTRIAL ZONES IN THE LOGISTICS CENTER ESTABLISHMENT: EXAMPLE OF PRELIMINARY SURVEY AND DETERMINATION OF THE INFRASTRUCTURE AND SUPERSTRUCTURE UNIT AREAS**

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#### **1. Introduction**

Logistics centers have started to be one of the leading units of global trade and its related distribution in the last 15-20 years. Now, the crowding / irregularity of the logistics centers and production areas is eliminated and hope is given for the future as production standardization reflects on the logistics discipline. The establishment of logistics centers in a region should start with a field survey / demand analysis first of all. In this regard, depending on the capacity and type of the enterprises, an entry should be made about the establishment work. We can evaluate this study as the establishment map of these centers on an organized industrial region, which has recently become a popular place in the establishment of logistics centers. In this respect, it is important to start the establishment of a logistics center in an organized industrial zone with a preliminary request and to determine the infrastructure and superstructure services for the activities of the logistics center in line with the response to be received. Would be after the demand analysis to be made in the establishment of the logistics center, which data will be needed has been clarified with this study. While creating the working methodology, two drafts of information were used. These;

1- Feasibility reports of Logistics Centers in Turkey and the World (UTİKAD, 2018; KTSO, 2014; ZTSO, 2020; DAKA; 2018; ÇTSO ; 2014; GEKA; 2022).

2-The report is the data of the Logistics Center of the Organized Industrial Zone of Aydın Province Söke District in Turkey, for which we have prepared the report.

This work has been supported by literature and application projects, and this book has been prepared with a more qualified approach.

The establishment of logistics centers must be tested with a feasibility study and every step must be included in this study. The feasibility report must be suitable for the conditions of the region and must include future demand analysis. Organized industrial zones are considered as a good potential especially for the logistics services of the factories to which they are affiliated. In this respect, it is thought that this study will support the stakeholders in the logistics center preparation projects.

## **2. General Structure of Logistics Centers**

Today, logistics is one of the most important sectors in the economy. The rapid growth in the logistics sector; This has led to an increase in competition, work to be carried out to reduce logistics costs, and the concentration of logistics activities at a single point. For this reason, the concept of “logistics center” has emerged. Logistics village, freight and transportation companies and all kinds of Official Institutions, including, Connected with the mode of transport, storage, maintenance, repair, loading, unloading, weighing, dividing loads, combining, packaging, etc. These are the regions with low cost, fast, secure, transfer area and equipment that have the opportunity to implement the activities. (Dinçel, 2019). The concept of logistics center is used to describe the service centers where additional values such as labeling, assembly, half-production and adaptation are offered in addition to the storage services expressed as traditional activities. Logistics center is a system that includes the activities of the enterprises that provide services for logistics and transportation, including urban conditions, traffic and environmental effects, and energy use. The structure can be expressed as efforts that try to reveal the best solutions for the spring (Yücel and Yılmaz, 2019: 73). Logistics villages, performance and cost items in a well-designed logistics water process that reveals the synergy between manufacturing enterprises and logistics companies. These are the structures that aim to bring the best from the ground up (Winkler and Seebacher, 2011: 282).

Logistics Center / Freight Village: All activities related to international and / or national transportation, logistics and distribution of products. Different transportation vehicles arranged for logistic purposes so that they can be clustered and converted into reality by using self-owned / rented buildings, land or vehicles by different businesses It is the private domain that has active links to their own businesses. Logistics centers are classified as A, B and C types in TLMP. These; (UTİKAD, 2018).

- **Type A International Logistics Center: With at least 2,000 acres of land, at least 25 million tons of handling capacity per year, with a direct delivery of loads to all countries in its region. At least**

three transportation vehicles in which all logistics and customs services are provided, on at least one global and one national transportation corridor that can send and receive. It is a logistics center with at least two intermodal terminals, with effective highway and/or railway connections of three or these types, with a minimum 200 km road distance from another international logistics center.

- **Type B Regional Logistics Center:** With at least 1,000 acres of land, with a capacity of at least 15 million tons of haulage and handling per year, with a load of kg directly to all provinces in its region. At least three transport vehicles that can send and receive, are on at least one global and /or one national transport corridor, provide storage, packaging and customs services. It is a logistics center with at least one intermodal terminal, with a minimum 100 km road distance from another regional logistics center, with effective highway and/or railway connections to one or more of these types.

- **Type C Local Logistics Center:** With at least 500 acres of land, with a handling capacity of at least 7.5 million tons of cargo per year, with direct transportation to the city center and its districts. Other local logistics center that can send and receive kg, provide storage and packaging services, have at least two types of transport or have effective highway and/or railway connections to these types of transport. It was a logistics center with a distance of at least 50 km between

### **3. Logistics Center Investment Operation**

Investing in the logistics center should start with the required demand and situation analysis report. Afterwards, it should continue with the determination of service unit areas and their application around the service-time relationship with some schemes.

#### **3.1. Preliminary Survey Study Criteria for Determining the Capacities and Distribution of Logistics Center Service Unit Areas**

##### **3.1.1. Status of Businesses**

**The** status of logistics businesses is a criterion that should be looked at in direct proportion to the aspect from which it is desired to be evaluated and perceived. From an economic point of view, its status can be looked at in terms of production capacity or working personnel capacity or from a legal point of view.

*Since the focus here is service capacity planning, the size of the logistics enterprises is within the framework of " production volume depending on the number of employees "evaluation is recommended.*

*This issue has been framed with the amendment of the law numbered 2005/9617 in Turkey in the year 2005 and numbered 2012/3834 in 2012. According to this; micro, small and medium - sized businesses employing less than two hundred employees and annual net sales are defined as businesses whose revenue or financial balance sheet does not exceed forty million Turkish Lira. Again stated in the 5th article of the same law;*

*a) **Micro - scale enterprise:** Employing less than ten employees and having any annual net sales revenue or financial balance sheet enterprises, one of which does not exceed one million Turkish Liras.*

*b) **Small - scale enterprise:** Employing less than fifty employees and annual net sales revenue or businesses whose financial balance sheet does not exceed eight million Turkish Liras.*

*c) **Medium - sized business:** Businesses that employ less than two hundred and fifty people and whose annual net sales revenue or financial balance sheet does not exceed 40 million Turkish Liras.*

*d) **Large - scale business:** Businesses employing more than two hundred and fifty people and with annual net sales revenue or financial balance sheet of more than 40 million Turkish Liras.*

In this regard, a more specific explanation of the business status is given in the table below (Dinçel, 2019).

**Table 1: Business Status Scales**

<b>Business Status</b>	<b>Number of Employees</b>	<b>Economic Volume [TL]</b>
Large Enterprises	250 and above	40.000.001 ≤...
Medium Sized Businesses	between 50-250	8,000,001 ≤ 40,000,000
Small Businesses	between 10-50	1,000,001 ≤ 8,000,000
Micro Scale Enterprises	0-10	0 ≤ 1,000,000

In this direction, the status of the business; (Dinçel, 2019).

- Large - scale enterprises
- Medium - sized businesses

- Affixed with small scale
- A distinction should be made over micro - scale businesses.

An example table is given below.

**Table 2: Business Status Table**

<i>Example Table</i>		
<b>Business</b>	<b>Piece</b>	<b>%</b>
Micro - Scale Business (0-10 employees)	6	25.0%
Small Business (10-50 employees)	4	16.7%
Medium Enterprise (50-250 employees)	5	20.8%
Large Enterprise (250 and more employees)	7	29.2%
Business Affiliated with a Holding	2	8.3%
Total	24	100.0%
<i>The numbers given above serve as an example to understand the subject.</i>		

### 3.1.2. Field of Activity of Businesses

While determining the fields of activity of the enterprises, the fields of activity of the firms in the organized industrial zone should be written by dividing them into preliminary categories. Then, depending on the storage criteria, these fields of activity can be combined according to the production or service categories.

For example, 3 companies in the energy sector, 5 companies in the pharmaceutical sector, and 4 companies in the food sector should be separated into separate warehouse and warehouse areas in the Logistics Center. A distinction should be made so that the pharmaceutical industry and the textile industry are in separate warehouse areas. An example table is shown below.

**Table 3: Field of Activity Table of the Enterprises**

<i>Example Table</i>		
<b>Sector Name</b>	<b>Piece</b>	<b>%</b>
Agricultural Machinery Manufacturing	4	16.7%
Construction Material Manufacturing	8	33.3%
Energy	1	4.2%
Blacksmithing	2	8.3%
Logistics	1	4.2%

Fish and feed	2	8.3%
Continue	1	4.2%
Fertilizer	1	4.2%
Paper	1	4.2%
Textile	2	8.3%
Milk and Milk Products	1	4.2%
Total	24	100.0%
<i>The numbers given above serve as an example to understand the subject.</i>		

### 3.1.3. Number of Current Employees in Businesses

The current number of employees, which is an important scale in determining the capacity of the logistics center, is an important factor. The number of employees primarily serves to determine the status of the business. Afterwards, the current number of employees can be looked at in order to understand how much physical labor potential the enterprises have. In this way, it can help to determine the number of personnel that the enterprises foresee to work in the logistics center. An example table is given below.

**Table 4: Current Number of Employees of the Enterprises**

<i>Example Table</i>		
Number	Number of Employees	%
1 to 9	3	12.5%
between 10-49	7	29.2%
between 50-249	10	41.7%
between 250-999	3	12.5%
No comment	1	4.2%
Total	24	100.0%
<i>The numbers given above serve as an example to understand the subject.</i>		

### 3.1.4. Load input amount to businesses (Ton)

Of the parameters used to determine the capacity of the logistics business is the load input amount of the enterprises. The amount of load input is made on the basis of years and is used to determine the future projection. At this point, with the demand forecasting method, an estimate of the amount of input for the future is made, and the capacity potential of the logistics business in terms of new products is predicted in the establishment of the logistics center. possible. An example table is given below.

**Table 5: Amount of Load Entry to Businesses**

<i>Example Table</i>								
<b>Load Entry Amount from Enterprises in 2015 and 2020 (Ton)</b>								
Company Order No.	Load Entered by Highway		Load Entry by Railroad		Cargo Entry by Seaway		Freight Entered by Airline	
	2015 Year	2020 Year	2015 Year	2020 Year	2015 Year	2020 Year	2015 Year	2020 Year
1	2200	2800						
2	273000	325000						
3	1000	1000						
4	15000	15000	1000	2400	20000	32000	100	250
5	500	600						
Total	291700	344400	1000	2400	20000	32000	100	250
%	42.16%	49.78%	0.14%	0.35%	2.89%	4.63%	0.01%	
<i>The numbers given above serve as an example to understand the subject.</i>								

### **3.1.5. Load Output Amount from Enterprises (Ton)**

One of the parameters used to determine the capacity of the logistics enterprise is the load output of the enterprises. The amount of load output is made on the basis of years and is used to determine the future projection. At this point, the amount of load output for the future is estimated using the demand forecasting method, and the capacity potential of the logistics business in terms of new products is predicted in the establishment of the logistics center. it can be. At this point, the amount of load output also shows the development of the potential production point of the enterprises. With this data, a database can be created for production capacity planning. An example table is given below.

**Table 6: Table of Load Output Amount from Enterprises**

<i>Example Table</i>								
Load Output Amount from Enterprises in 2015 and 2020 (Ton)								
Company Order No.	Load Exited by Highway		Load Exited by Railroad		Load Exited by Seaway		Freight Out by Airline	
	2015 Year	2020 Year	2015 Year	2020 Year	2015 Year	2020 Year	2015 Year	2020 Year
1	1400	2200						
2	253000	290000						
3	1000	1000						
4	10000	10000	1000	2400	20000	32000	100	250
5	400	400						
Total	265800	303600	1000	2400	20000	32000	100	250
%	42.52%	48.56%	0.16%	0.38%	3.20%	5.12%	0.02%	
<i>The numbers given above serve as an example to understand the subject.</i>								

### 3.1.6. Existing Warehouse Area of the Enterprises (m<sup>2</sup>)

The existing warehouse areas of the businesses in terms of m<sup>2</sup> shows how much warehouse areas these businesses will need in the logistics center to be established. These data will be taken into account for the settlement of the logistics center warehouse area to be established. An example table is given below.

**Table 7: Existing Warehouse Area Table of the Enterprises**

<i>Example Table</i>		
<b>Warehouse Area (m2)</b>	<b>Piece</b>	<b>%</b>
0-500 m <sup>2</sup>	3	12.50%
501-1000 m <sup>2</sup>	3	12.50%
1001-2000 m <sup>2</sup>	3	12.50%
2001-5000 m <sup>2</sup>	4	16.67%
5001-20000 m <sup>2</sup>	5	20.83%
20001-100000 m <sup>2</sup>	2	8.33%
No comment	4	16.67%
Total	24	100.00%
<i>The numbers given above serve as an example to understand the subject.</i>		

### **3.1.7. Waiting Time of the Loads in the Warehouse**

The waiting time of the loads in the warehouse is especially important at the point of separation of the warehouse areas in the logistics center. This process is all about the warehouse management process. It is known in warehouse management that the settlements of warehouse areas are also programmed according to the waiting period in the warehouse. According to which type of warehouse investment will be made within this data. For example, the warehouse that should be in the cold air chain is also divided according to the waiting time in the warehouse. The process is shown in an example table below.

**Table 8: Waiting Time of the Loads in the Warehouse**

<i>Example Table</i>		
<b>Duration (day)</b>	<b>Number of companies</b>	<b>%</b>
1-7	4	16.67%
8-15	1	4.17%
16-30	6	25.00%

31-45	0	0.00%
46-100	2	8.33%
101-200	3	12.50%
201-365	2	8.33%
No comment	6	25.00%
Total	24	100.00%
<i>The numbers given above serve as an example to understand the subject.</i>		

### 3.1.8. Annual Average Logistics Expenditure of Companies:

Annual average logistics expenditures of the companies will be decisive at the point of investment in the logistics center to be made. How advantageous is this logistics center investment, by making a comparison with the current logistics expenditures of the enterprises regarding their logistics center investment, and with a cost-benefit analysis. They will decide. An example table is given below.

**Table 9: Annual Average Logistics Expenditure of Firms**

<i>Example Table</i>		
<b>Spending (USD)</b>	<b>Number of Firms</b>	<b>%</b>
0-100,000	7	29.17%
100,001-200,000	3	12.50%
200,001-500,000	2	8.33%
500,001-1,000,000	3	12.50%
No comment	9	37.50%
Total	24	100.00%
<i>The numbers given above serve as an example to understand the subject.</i>		

### 3.1.9. Daily / Annual Number of Highway Vehicles Entering - Exiting the OIZ for Logistics Purposes:

The logistics center will use the amount of vehicles entering and leaving in the parking lot planning and logistics center planning. The number of these vehicles is also important in the administration of the provincial / county roads. For the entrance of the logistics center at the vehicle traffic point, it may also be necessary to construct a road that will directly reach the logistics center without entering the settlement. For this reason, it can be said that the number of vehicles entering and leaving the Organized

Industrial Zone where the enterprises are located is a necessary data for determining a capacity. An example table is given below.

**Table 10: Number of Road Vehicles Entering - Exiting Table**

<i>Example Table</i>		
<b>Number of Entry and Exit Vehicles (Daily)</b>	<b>Number of Firms</b>	<b>%</b>
0-9	12	50.00%
10-20	3	12.50%
21-40	3	12.50%
41-70	2	8.33%
70-100	1	4.17%
No comment	3	12.50%
<b>Total</b>	<b>24</b>	<b>100.00%</b>
<i>The numbers given above serve as an example to understand the subject.</i>		

### 3.1.10. Number of Firms to Operate in the Logistics Center:

The number of companies to be operated is a situation that will be used to determine the capacity of the logistics center. At the same time, it should be determined in order to distinguish between companies that need a logistics center. A table related to this is given below.

**Table 11: Number of Firms to Operate in the Logistics Center**

<i>Example Table</i>				
	<b>Yes</b>	<b>No</b>	<b>No idea</b>	<b>Total</b>
<b>Number of companies</b>	10	10	4	24
<b>%</b>	%42	%42	%17	%100
<i>The numbers given above serve as an example to understand the subject.</i>				

### 3.1.11. Estimated Duration of Operation in the Logistics Center:

Businesses are legal, social and technical units that want to generate sales revenue and profit. Like every living thing, they are born, grow, and their activities may decrease and disappear. However, in general, the idea of each company is to transfer its activities to the next generations. For this, they have to make their plans real in this direction and make a future person development and situation analysis.

Another question that should be asked to the companies located in the organized industrial zone when establishing the logistics center is the estimated time they plan to remain operational in this logistics center. The answer to this question will show how many years the logistics center will carry out its activities with an investment. The investment model that has been decided will also constitute the legal extension of this logistics center. For example, as a result of the survey conducted, when the demand for the logistics center to be built with an investment of 10 years is seen, these logistics center providers are " build - operate - transfer ". " or " build - operate " model. A sample survey table on the subject is given below.

**Table 12: Number of Firms to be Operated in the Logistics Center**

<i>Example Table</i>		
<b>Duration</b>	<b>Number of companies</b>	<b>%</b>
1-2 years	3	12.50%
3-5 years	1	4.17%
5-10 years	0	0.00%
10-20 years	2	8.33%
No comment	18	75.00%
Total	24	100.00%
<i>The numbers given above serve as an example to understand the subject.</i>		

### 3.1.12. General Services You Want To Have:

Organized industrial zone should be asked about the general services required to be included in the establishment of the logistics center. This is one of the most important issues in the establishment of the logistics center. The determination of the main investment areas of the logistics center can be taken into a framework after this study. Data suggestions for general services that companies want to have are given in the form of a table below.

**Table 13: General Services Table of Desired Logistics Center**

<i>Example Table</i>					
<b>General Services You Want to Have in the Logistics Center</b>					
<b>Requested Services</b>	<b>There is definitely a need</b>	<b>There is a need</b>	<b>There is little need</b>	<b>No need</b>	<b>No comment</b>
Railway Connection and Transfer Center	15	4	2	4	4

Port Connection and Transfer Center	13	4	2	1	9
Airline Transfer Center	5	3	1	6	14
Proximity to Energy Infrastructure	20	3	1	0	5
Container Field	18	2	3	3	3
Manual Knitting Center	5	2	2	6	14
Assembly and Disassembly	8	4	4	4	9
Substance Warehouse	5	5	2	1	14
Warehouse	14	3	1	5	6
Packing Area	22	4	1	1	1
Open and Closed Warehouse	20	5	0	1	3
Dangerous Goods Warehouses	7	4	4	8	5
Security Buildings and Financial Institutions	14	2	10	2	1
International Terminal	6	4	2	5	12
Gas Station etc.	12	2	5	5	5
Tire Maintenance, Truck and Truck Parking	20	2	1	1	5

### 3.1.13. Being in the Logistics Center Desired Public Services:

In addition, the demands of the companies may differ according to the diversity of their field of activity. It is very important to give the requested answer to each question here. Data suggestions for general services that companies want to have are given in the form of a table below.

**Table 14: Public Services Desired to be in the Logistics Center**

<i>Example Table</i>				
Requested Services	Wants	Not want	We decide	No comment
Customs Clearance	17	3	4	5
PTT	18	1	4	6
Notary	19	0	2	8
Highways Inspection and Control Station	7	13	3	6
Bank Branch	10	5	10	4
Chamber of Commerce Representation	7	3	13	6
Cooperative Representative	3	16	2	8
R& D / University Representative	3	21	2	3

### 3.1.14. Special Services Desired to be in the Logistics Center

In the logistics center may have special requests within the scope of logistics and transportation activities, depending on the diversity of their field of activity. It is very important to give the requested answer to each question here. Content suggestions for special services that companies want to be found are given in the form of a table below.

**Table 15: Special Services Required to be in the Logistics Center**

<i>Example Table</i>				
Special Requested Services	Wants	Not want	We decide	No comment
Precision scales	28	0	1	0
Intermediate scales	29	0	0	0
Reach Truck	19	2	4	4
Forklift, Pallet Truck	27	0	2	0
Crane Tools	18	4	5	2
Meeting and Training Center	6	15	3	5
Automation	4	14	1	10
Insurance Transactions	13	3	7	6
Cold Storage	9	13	5	2
Containers	11	4	5	9
Health Center	8	8	7	6
Cafeteria	9	2	2	16
Restaurant	14	1	2	12
Barber	3	8	8	10

### 3.2. Logistics Center Service Unit Areas

Logistics center service unit areas are evaluated in three parts. First of all, basic service unit areas should be determined. Afterwards, infrastructure and superstructure investments should be made real. 3.2.1 and 3.2.2. These data are stated in the articles.

### 3.2.1. Basic Service Unit Areas That Can Be Found in the Logistics Center

**Table 16: Logistics Center Service Unit Areas Table**

<i>Example Table</i>	
<b>Unit Name</b>	<b>m<sup>2</sup></b>
Logistics Center Warehouse Area (Can be divided)	6.300
Open and closed transfer depot with rail connection	5.000
Seaway connected open and closed transfer depot	4.480
Airline - connected open and closed transfer depot	4.220
Container Field	3.000
Open Warehouse	4.000
Closed Warehouse	2.500
Substance Warehouse	1.500
Gas Station	1.500
Repair Maintenance Service Area	500
Weighing Area	1.750
Administrative / Technical / Social / Finance / Health Service and Cargo offices building	500
Truck / Truck Parking Area	9.500
Agent and Brokers building	1.500
Road, Park and Green area	16.000
<b>Total</b>	<b>62.250</b>

### 3.2.2. Logistics Center Pre - Investment Infrastructure and Superstructure Investment Areas to be Realized

**Table 17: Infrastructure and Superstructure Investment Areas Table to be Realized Before Investment**

<b>Infrastructure Investment Expenses</b>
Unit Name
Land, Title Deed, Parceling, Ground Survey Expense (Lot)
Survey Project Engineering and Public Expenditure (Lot)
Asphalt Road Construction (Km) (by public)
Environmental Arrangement, (Lot)
Wire Fence (Meters)
Infrastructure Expenses (Meters)
Sewer Infrastructure Expenses (Meters)
Electricity, Line, Cable, Transformer Expense (Meter)
Treatment (Lot)

<b>Superstructure Investment Expenses</b>	
Unit Name	Unit
Joint Industries Logistics Center	m <sup>2</sup>
Construction Ceramic Logistics Center	m <sup>2</sup>
Paper Energy Logistics Center	m <sup>2</sup>
Agriculture, Food, Pharmaceuticals, Chemistry Logistics Center	m <sup>2</sup>
Railway Transfer Center	m <sup>2</sup>
Container Field	m <sup>2</sup>
Open Warehouse	m <sup>2</sup>
Closed Warehouse	m <sup>2</sup>
Substance Warehouse	m <sup>2</sup>
Gas Station	m <sup>2</sup>
Repair Maintenance Service Area	m <sup>2</sup>
Weighing Area	m <sup>2</sup>
Administrative / Technical / Social / Finance / Health Services	m <sup>2</sup>
Customs / Cargo offices	m <sup>2</sup>
Truck / Truck Parking Area	m <sup>2</sup>
Agent and Brokers building	m <sup>2</sup>

### **3. Conclusion and Evaluation**

As in every business organization, the Logistics Center organization should be established within a discipline framework. There is not much common information in the literature studies on the establishment of the Logistics Center, which is a niche area in terms of business organizations. For this reason, the parameters mentioned in this study will be a guide in this study in the establishment of the logistics center. “ Preliminary survey study criteria for determining the capacities and distribution of logistics center service unit areas ” studies that should be known first in a logistics center establishment is at the head of it. This pre - survey study data must be absolutely accurate, so its limitations and constraints are highly inaccurate and careful should be reported as well.

Accordingly, the pre - survey work is as follows;

- 1- Status of businesses
- 2- The field of activity of the enterprises
- 3- Number of current employees in enterprises
- 4- The amount of load input to businesses
- 5- The amount of cargo exit from the enterprises
- 6- Existing warehouse area of enterprises
- 7- Waiting time of the cargoes in the warehouse
- 8- Annual average logistics expenditure of companies
- 9- Daily / Annual number of road vehicles entering and leaving the Organized Industrial Zone for Logistics Purposes
- 10- Number of companies that will operate in the logistics center
- 11- Estimated duration of operation in the logistics center
- 12- General services required in the logistics center
- 13- Special services required in the logistics center

should be evaluated in its scope.

study must be determined by a preliminary survey study and included in the Logistics Center feasibility project. This preliminary survey will give clues in determining the capacity of the Logistics Center in general terms. At the same time, these data will be used as the first constraint in demand

forecasting methodologies for the coming years. For this, pre-demand work is very important.

this preliminary survey, the second step, “ Basic service unit areas that can be found in the Logistics Center ” should be determined. Logistics center warehouse area (can be divided), Rail connection open and closed transfer warehouse, Sea connection open and closed transfer warehouse, Airway connection, Open and closed transfer warehouse, Container area, Outdoor warehouse, Closed warehouse, Special material warehouse, Fuel station, Repair and maintenance service area, Weighbridge area, Administrative/Technical/Social/Finance/Health Service and Cargo offices building, Truck / Truck Parking Area, intermediary and brokers building and unit areas as Road, Park and Green area are used in this respect. can be listed. It is important to make the determination of these unit areas before the determination of the infrastructure and superstructure areas. Because it is necessary to prepare the technical and architectural infrastructure of the sufficient and useful area in accordance with the capacity of these service unit areas.

This study (Kazançoğlu et al., 2019; Leem et al., 2007; Aulin et al., 2020; Dablanc and Ross, 2012; Aleksanin, 2018; Li et al., 2011, Wang and Liu, 2007; Tambi et al. ., 2013) also show similarities with the data of their studies.

As a result, determining the technical and commercial capacities of logistics centers to be established especially in organized industrial zones should start with a preliminary survey, and then a preliminary survey should be carried out. Based on the results of the study, it is recommended that the infrastructure and superstructure works be put into practice in order to determine the service unit areas and to put the logistics center into operation.

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## **CHAPTER VIII**

### **DOES INNOVATIVE CLIMATE MODERATES THE RELATIONSHIP BETWEEN SOCIAL SUPPORT AND INNOVATIVE WORK BEHAVIOR?: A STUDY IN SMEs**

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#### **1. Introduction**

Along with the development of cutting-edge technology and goods in the 21st century, human resources management has evolved into a more competitive force, making it more important for businesses to make progress in the global marketplace (Indermun, 2014). Because of technological progress, more complicated behaviours have evolved in the workplace (Devanna and Tichy, 1990). Some researchers and practitioners in the industry place an emphasis on social support from supervisors and co-workers in order to gain a competitive advantage and rapidly increase productivity in the workplace (Vuong et al., 2022). This is carried out with the goal of better comprehending and addressing the challenges posed by exponential developments (Usman et al., 2021). It is necessary for the employees to have support from both their co-workers and their supervisors in order to address their socio-emotional demands (Suseno et al., 2020). The success of a business as a whole may be improved by recognizing the importance of quality of work life (Cohen et al., 1997).

In its most basic form, the concept of social support refers to the actions that supervisors as well as co-workers to inspire the members of their social networks to complete their tasks and advance the goals of the organization (Michel et al., 2010). Individuals who are able to provide employees with emotional and social support in the workplace include supervisors, co-workers, friends, and members of the employee's family (Greenglass et al., 2020). Ganster et al. (1986) provides an expanded explanation of the meaning of the term "social support," which is defined as providing aid to employees in an emotional manner so that they can do their tasks and enhance their abilities. In addition, the majority of researchers who contributed to the body of academic literature proposed two aspects of

social support in the workplace: support from supervisors and support from co-workers (Davis-Sacks et al., 1985; Vuong et al., 2022; Snyder, 2009). The term "supervisor support" refers to the process of employees being directed and guided by their superiors in order to mold their innovative work behaviour and improve their overall job performance (Mishra et al., 2019). On the other hand, the concept of "co-worker support" refers to the assistance that one worker provides to another worker so that the latter can successfully complete their work by providing one or more of the following four types of support: emotional, appraisal, informational, and physical support (Muse and Pichler, 2011). Innovative behaviour is defined as the "*intentional creation, introduction, and application of new ideas within a work role, group, or organisation, in order to benefit role performance, the group, or the organisation*" (Janssen, 2000: 288). Vuong et al. (2022) revealed that social support may speed up the innovative work behaviour of employees. Social support at work may boost creativity and novel behaviours of employees at work (Op den Kamp et al., 2020). This results in a quick improvement in the performance of employees, as well as the establishment of their creative behaviors while they are on the job.

As a result of the findings concerning the aforementioned significance of the connection between social support and innovative work behaviour, as well as the paucity of studies on the moderating role that an innovative climate plays on this connection, we have decided to conduct academic scrutiny and scientific investigation into this connection. Recently, there has been a growing interest in conducting research on social support and innovative work behaviour, which has been brought to light in a number of different industries, most notably in large firms; however, this topic has not yet received a significant amount of attention from academics working on small and medium-sized enterprises (SMEs). As a result, this research fills up this void that existed within the scope of SMEs in Türkiye.

This research adopted to concentrate on the two primary aspects of social support, namely supervisor and co-worker support, as they relate to employees' innovative work behaviour in Turkish SMEs. Some researchers have shown that social support offers a benefit to SMEs, allowing them to obtain a vital competitive advantage and advance innovative work behaviour among employees (Setyawati et al., 2019). A culture that encourages an innovative climate may not only help a company gain a competitive edge, but it can also be a significant source of inventiveness and productivity for employees (Shanker et al., 2017). In addition, the findings of this current study try to analyse the moderating impact that innovative atmosphere has on the link between social support and innovative work behavior in SMEs in Türkiye.

## **2. Theoretical background**

Homans (1958) is credited with being the first person to conceive and develop social exchange theory, which is now recognized as a classical theory. In later years, researchers extended this idea to the study of organizational attitudes and behaviours (Blau, 1964). Then, social exchange theory expands its context to include the structural and organizational context by taking into consideration norms, behaviour, and particularly social and formal organizational behaviours and relationships (Agarwal, 2014). This theory considers personalities, individual characteristics, and social norms among employees (Duan et al., 2022). According to the findings of Salam et al. (2000), there is a connection between individuals and organizations that allows them to take advantage of their benefits and minimize their costs. It is critical to have a solid understanding of the social support and innovative work behaviour that exists inside the organization. This research makes use of the social exchange theory in order to explain the idea of social support and its influence on innovative work behaviour in Turkish SMEs, with the innovative climate serving as a moderating factor.

Many academics have already done studies on innovative work behaviour and social support (Suseno et al., 2020; Vuong et al., 2022; Monica and Krishnaveni, 2019). However, the function of social support in innovative work behaviour remains unclear (Orrick et al., 2011). The purpose of the research is to investigate the connection between human relationships, structured social networks, and the manner in which such relationships contribute to the fulfilment of individual requirements (Colvin et al., 2002). According to the principle of social support theory (Lakey and Cohen, 2000), this might potentially promote innovative work behavior by using the assistance of human cooperation or social support (Vuong et al., 2022). The social support theory suggests that by teaching morality and responsibility to employees (Lakey and Cohen, 2000), the innovative behaviour of employees will be better inside the organization (Vuong et al., 2022). This theory is consistent with the variables that are social support, innovative work behaviour, and innovative climate in the helping behaviour among the employees (Halbesleben, 2006; Vuong et al., 2022).

## **3. Literature review**

### **3.1. Social support and innovative work behaviour**

Employees that demonstrate innovative work behaviours contribute to the innovativeness of operational activities such as the development of new items and services, new processes, and improvements to organizational

procedures (Saether, 2019). Innovative work behaviour shapes the employee's behaviour towards thinking and implementing proper ideas according to the company's vision and mission (Ramamoorthy et al., 2005). On the other side, innovative work behaviour helps organizations enhance their operations, products, and services, as well as their strategic development (Janssen, 2000). In the line with social exchange theory (Blau, 1964), to foster an atmosphere conducive to innovation in the workplace, it is necessary to encourage communication and collaboration between employees and supervisors. Supervisor support refers to employees' well-being as well as considering all of their contributions, employees react in a good way to provide new ideas and become more innovative for their organization (Maertz et al., 2007). In addition, the co-workers can contribute to innovative work behaviour in different ways (De Jong and Kemp, 2003). Colleagues reinforce and motivate an employee to share their expertise when assigned complicated tasks (Vuong et al., 2022). Social support (supervisor and co-worker) encourages employees to become more confident in their ability to face challenges (Vuong et al., 2022) and to adapt and implement new ideas for their organization (Bani-Melhem et al., 2018). Hence, supervisor or co-worker support could enable employees to gather new resources, learn new ideas, and acquire task-relevant knowledge to remove the skill gap inside the organization (Suseno et al., 2020). Furthermore, the research showed that social support has a positive impact on the innovative work behaviour of employees (Suseno et al., 2020; Vuong et al., 2022). Thus, the following hypotheses were proposed:

H1: Supervisor support has a positively significant relationship with innovative work behaviour.

H2: Co-worker support has a positively significant relationship with innovative work behaviour.

### **3.2. Moderating role of innovative climate**

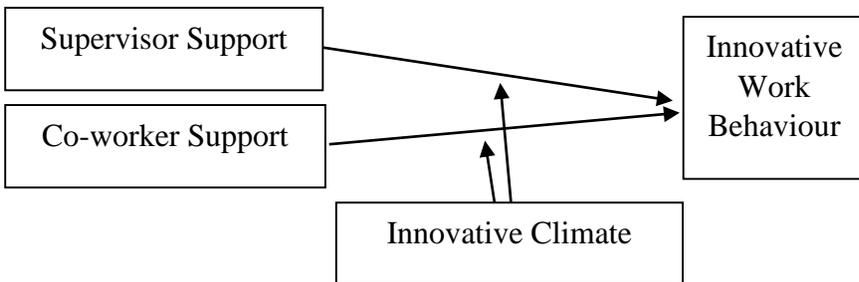
In the literature, it is suggested that employees would benefit from the innovative climate by having the ability to acquire new information, create new expertise, and experience new things in their working surroundings (Newman et al., 2020). In an innovative atmosphere, there will be an exchange of experience and information, as well as brainstorming on activities that are relevant to the work at hand, and the development of new abilities (Vuong et al., 2022). An organization has a duty to consider the cultivation of an innovative spirit within its surrounding environment. In a climate that fosters innovation, employees do not report feeling intimidated, and the culture supports taking risks and increasing the number of projects that are implemented in operations (Afsar and Umrani,

2020). A climate that fosters innovation enables employees to take greater chances, which in turn helps the organization meet its goals and achieve higher levels of performance (Ren and Zhang, 2015).

When an organization is able to effectively build an innovative climate, the two elements of social support known as supervisor and co-worker support might boost innovative work behaviour (Vuong et al., 2022). In the context of social exchange theory (Blau, 1964), it is proposed that organizations value innovative work behaviour in order to acquire successful performance from their employees. Hence, an innovative climate could reinforce the impact of social support on innovative work behaviour by creating an innovative atmosphere (Karatepe et al., 2020). Further, supervisor and co-worker support may enhance innovativeness behaviour among employees if an innovative climate is established successfully in an organization (Bos-Nehles and Veenendaal, 2019). When an employee feels valued and supported for their innovative ideas by their supervisors and co-workers, they have a better understanding of the organization's ideals and supports for innovation (Suseno et al., 2020). Thus, the following hypotheses were proposed:

H3: Innovative climate moderates the effect of supervisor support on innovative work behaviour.

H4: Innovative climate moderates the effect of co-worker support on innovative work behaviour.



**Figure 1: Research Model**

#### **4. Methodology**

The current study used a cross-sectional research approach. A paper-and-pencil questionnaire was distributed to 210 full-time professionals working in the service sector. In addition to providing their demographic information, the employees were asked to score their degree of agreement

with regard to social support, innovative climate, and innovative work behaviour. It was informed that the confidentiality and identities of the participants would be protected. During regular business hours, the data collection was carried out with the assistance of the departments of human resources that were present in the various service businesses. 195 questionnaires were returned. Because of missing information, four of the questionnaires had to be excluded from the analysis. Consequently, 191 relevant surveys were acquired. The research began with descriptive statistics, followed by validity and reliability analyses. Then, according to the research model, Hayes' PROCESS macro was used to test the hypotheses.

#### **4.1. Measures**

##### **4.1.1. Social support**

Social support was measured with an eight-item social support scale which was developed by Mack and Rhineberger-Dunn (2021) and consisted of two dimensions, supervisor support, and co-worker support, was used. Sample items included (Supervisor support: e.g., "*My supervisor actively helps me to prepare for my next career move.*"; Co-worker support: e.g., "*I am able to talk about non-work related problems with my co-workers*"). Responses were given on 5-point scales (ranging from 'strongly disagree (1)' to 'strongly agree (5)'). Internal consistency (Cronbach alpha was used) for supervisor support and co-worker support is 0.96 and 0.95, respectively.

##### **4.1.2. Innovative climate**

Innovative climate was measured with a five-item innovative climate scale which was developed by Malik and Wilson (1995). A sample item is "This organization is always moving toward the development of new answers." Responses were given on 5-point scales (ranging from 'strongly disagree (1)' to 'strongly agree (5)'). Cronbach alpha was 0.92.

##### **4.1.3. Innovative work behaviour**

Innovative work behaviour was measured with a ten-item scale which was developed by De Jong and Den Hartog (2010). Because the original scale was supervisor-rated scale, we removed "does this employee" and added, "do you". A sample item is "*How often do you put the effort in the development of new things?*" Responses were given on 5-point scales (ranging from 'never' to 'always'). Cronbach alpha was 0.96.

## 5. Research findings

### 5.1. Frequency analysis

For respondents, the average age was 28.4 years (SD = 6.2), 56.1% were male (n=107), and 43.9% were female (n=84). The average organizational tenure was 3.2 years (SD = 1.8). In terms of education level, 142 of the respondents (%74,3) have bachelor's degrees.

### 5.2. Validity and reliability

An exploratory factor analysis (EFA) was used in the process of establishing the analysis of the data set. The principal components extraction method was used with the varimax rotation, and four components were found to have an eigenvalue greater than 1 and make up 87.61 percent of the total variance. All four of the constructs (supervisor support, co-worker support, innovative climate and innovative work behaviour) were shown to be one-dimensional by the results. Table 1 shows that all of the items had factor loadings of more than 0.5. A statistically significant result was reported for Barlett's test of sphericity ( $p < 0.001$ ), and the Kaiser–Meyer–Olkin (KMO) value was more than the boundary value of 0.50.

**Table 1:** Rotated component matrix

Items	Component			
	1	2	3	4
ic1		0.85		
ic2		0,87		
ic3		0,90		
ic4		0,83		
ic5		0,76		
ss1			0,86	
ss2			0,82	
ss3			0,78	
ss4			0.82	
cs1				0.88
cs2				0.84
cs3				0,81
cs4				0.77
iwb1	0.90			
iwb2	0.79			
iwb3	0.92			
iwb4	0.89			
iwb5	0.91			

iwb6	0.88			
iwb7	0.92			
iwb8	0.77			
iwb9	0.91			
iwb10	0.89			
<b>Note</b> =ic=Innovative climate, ss=Supervisor support, cs=Co-worker Support, iwb=innovative work behaviour.				

Internal consistency of measures were carried out with the value of Cronbach's alpha. Cronbach's alpha of supervisor support, co-worker support, innovative climate and innovative work behaviour scales were 0.96, 0.95, 0.92 and 0.96, respectively.

**Table 2:** Correlations among study variables

<b>Variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>1. IC</b>	1			
<b>2. CS</b>	0.45**	1		
<b>3. SS</b>	0.47**	0.61**	1	
<b>4. IWB</b>	0.36**	0.44**	0.46**	1

**Note** = n = 191, \*\*p<0,01, IC=Innovative Climate, CS=Co-worker Support, SS=Supervisor Support, IWB=Innovation Work Behaviour

Results reported in Table 2 indicated that innovative work behaviour was significantly and positively correlated with supervisor support ( $r=0.46, p<0.01$ ), co-worker support ( $r=0.44, p<0.01$ ) and innovative climate ( $r=0.36, p<0.01$ ). Moreover, supervisor support was positively associated with co-worker support ( $r=0.61, p<0.01$ ) and innovative climate ( $r=0.47, p<0.01$ ).

### 5.3. Hypotheses testing

Model 1 was used in Hayes's PROCESS Macro to test the hypotheses. The results showed that supervisor support affects innovative work behaviour positively ( $\beta = 0.36, p<0.001$ ). Moreover, the interaction effect of SSxIC on innovative work behaviour was significant and positive ( $\beta = 0.16, p<0.05$ ) (see Table 3).

**Table 3:** Interaction effect of SSxIC on IWB

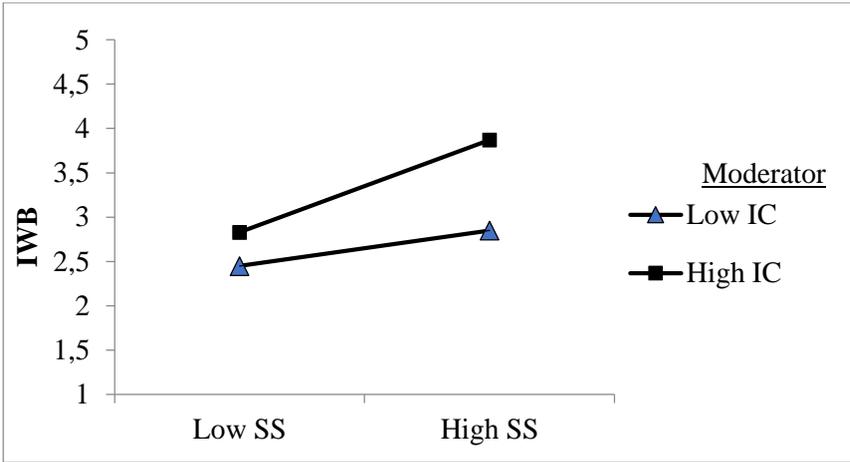
Outcome Variable: IWB				
	<b>B</b>	<b>se</b>	<b>LLCI</b>	<b>ULCI</b>
SS	0,36	0,06	0,22	0,49
IC	0,35	0,10	0,14	0,55
SS X IC	0,16	0,07	0,01	0,31
Conditional effects of the focal predictor at values of the moderator				
<b>IC</b>	<b>B</b>	<b>se</b>	<b>LLCI</b>	<b>ULCI</b>
-0.68	0.24	0.07	0.09	0.39
0.00	0.36	0.06	0.22	0.49
0.37	0.42	0.08	0.26	0.58
Not= n= 191, R-sq=0.25; p=0.000				

The results also showed that co-worker support affects innovative work behaviour positively ( $\beta = 0.31$ ,  $p < 0.001$ ). Moreover, the interaction effect of CSxIC on innovative work behaviour was significant and positive ( $\beta = 0.19$ ,  $p < 0.05$ ) (see Table 4).

**Table 4:** Interaction effect of CSxIC on IWB

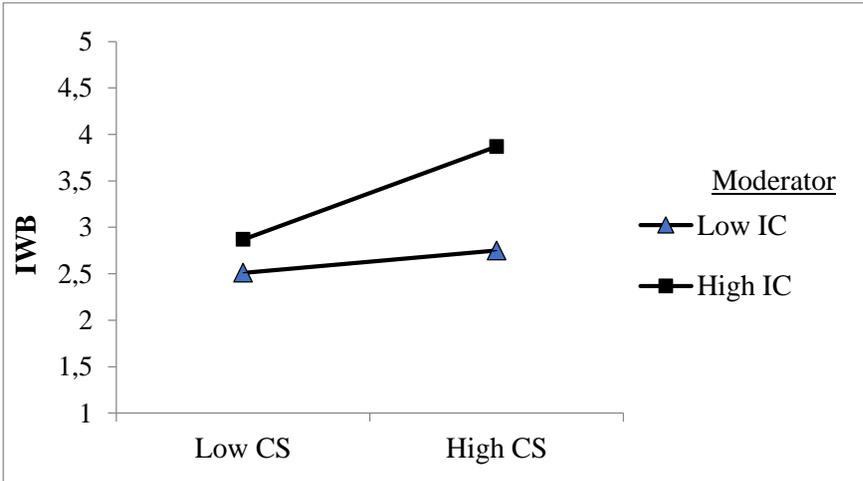
Outcome Variable: IWB				
	<b>B</b>	<b>se</b>	<b>LLCI</b>	<b>ULCI</b>
CS	0,31	0,06	0,18	0,43
IC	0,37	0,09	0,17	0,58
CS X IC	0,19	0,09	0,008	0,37
Conditional effects of the focal predictor at values of the moderator				
<b>IC</b>	<b>B</b>	<b>se</b>	<b>LLCI</b>	<b>ULCI</b>
-0.68	0.18	0.08	0.01	0.34
0.00	0.31	0.06	0.18	0.42
0.37	0.38	0.07	0.23	0.52
Not= n= 191, R-sq=0.22; p=0.000				

A simple slope test was carried out in accordance with the suggestions made by Aiken and West (1991) in order to provide a clearer illustration of the shape of the interaction effects on IWB (-1, 0, +1 standard deviation).



**Figure 2:** Plot of significant SS x IC interaction for predicting IWB

Figure 2 shows that an innovative climate strengthens the positive relationship between supervisor support and innovative work behaviour. In other words, supervisor support is more positively related to innovative work behaviour when the innovative climate is high.



**Figure 3:** Plot of significant CS x IC interaction for predicting IWB

Figure 3 shows that innovative climate strengthens the positive relationship between co-worker support and innovative work behaviour. In other words, co-worker support is more positively related to innovative work behaviour when innovation climate is high.

## **6. Discussion and conclusion**

The recent study investigates the moderating role of innovative climate in the relationship between social support and innovative work behaviour. The current research addresses the demanding research question: Does innovative climate moderate the relationship between social support and innovative work behaviour in SMEs, in Türkiye? This research has a crucial contribution to innovative work behaviour literature (Perry-Smith and Shalley, 2003), and it expands the literature by investigating the moderation role of innovative climate on the relationship between social support and, innovative work behaviour. Specifically, when an innovative climate is well-established and adopted by employees, the effect of social support has increased on innovative work behaviour.

This study contributes to social support, innovative climate, and innovative work climate in different ways. The first and most critical contribution is that we have built and evaluated a new research model that integrates social exchange theory with social support theory. The next contribution is that it is the first research that examines the moderation role of innovative climate and how innovative climate boosts the effect of social support on innovative work behaviour in Turkish context and Turkish SMEs. Studies that investigate the moderating effect that an innovation climate has on SMEs are in scant supply. The third contribution of the study is rigorous research design and constructs to the SMEs in Türkiye made this research valuable to literature. The last contribution is that research has made a substantial addition to the existing body of knowledge on innovative work behaviour by elucidating the influence of an innovative climate on the connection between social support and innovative work behaviour.

Sustaining employees' innovativeness becomes hard for the whole organizational structure because internal networks such as supervisors, friends, and co-workers provide appropriate information, vision, and assistance to generate and implement new ideas inside organizational operations (Granoveter, 1973; Kanter, 1988; Krackhardt, 1992; Lin, 2001). The decision-makers must understand that the establishment of an innovative climate in the organization moderates and strengthen the relationship between social support and innovative work behaviour. The social support that comes from supervisors and co-workers increases the innovative behaviour of employees in the workplace. Also, when an innovative climate is created successfully in the organization, the effect of social support increases on innovative work behaviour in a business environment. In this research, we propose that the support between supervisors & employees and peers & employees could increase the

innovativeness in the organization. When they find an innovative climate in their workplace, the environment boosts the generation and implementation of innovative ideas.

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